FOR CONTRACT NO.: 12-0F0604

INFORMATION HANDOUT

MATERIALS INFORMATION

FINAL FOUNDATION REPORT

FOUNDATION REPORT FOR OVERHEAD SIGN

GEOTECHNICAL DESIGN REPORT

PROJECT REPORT

ROUTE: 12-Ora-5-5.6/6.6

State of California

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: Ms. Mina Pezeshpour
Chief, Bridge Design Branch 22

Date: November 18, 2009

File: 12-ORA-5-PM 5.8
12-0F0601
Camino de Estrella OC (Widen)
Bridge No. 55-0224

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South 1
Branch C

Subject: Final Foundation Report

1.0 INTRODUCTION

1.1 Purpose

In response to the request from your office, dated February 9, 2009, the Office of Geotechnical Design South 1 prepared this Memorandum to provide the foundation recommendations for the construction of the Camino de Estrella OC bridge widening, on Route 5, in the cities of Dana Point and San Clemente, Orange County.

This bridge widening is a part of the SB I-5 and Camino De Estrella OC Interchange improvement project. The entire project consists of various improvements; this report contains findings, conclusions and recommendations for the proposed bridge widening only.

1.2 Scope of work

Geotechnical tasks performed for the proposed bridge widening include:

- Field investigation including drilling, sampling, and logging three exploratory borings.
- Laboratory soil tests on selected soil samples.
- Geotechnical engineering analyses.
- Preparation of this report presenting our findings, conclusions and recommendations.

1.3 Project Description

This project proposes to improve the operation of the interchange at Camino de Estrella OC and I-5 on and off ramps intersection. This bridge widening is a part of this improvement project. The proposed project is to widen the existing structure from five lanes to seven lanes, adding an additional left-turn lane from Westbound Camino de Estrella to south bound I-5 On-ramp, and an additional Eastbound Camino de Estrella through lane. The overall bridge width will include 82 feet of existing bridge and 28 feet of bridge widen.

The widening will be a 2-span structure that uses precast, pre-stressed, post-tensioning girders supported on a single column integral bent and seat type abutments. The bent will be supported by pile foundation and abutments will be supported by spread footings

The existing bridge is a continuous two-span, CIP/PS box girder bridge supported by a three-column bent and two open-end diaphragm abutments with spread footings. It was constructed in 1981 as a replacement of the original bridge.

2.0 FIELD EXPLORATION PROGRAM

Site-specific field exploration was performed between February 15, 2007 and March 11, 2009. The field investigation included two hollow stem auger borings and three mud rotary borings.

Borings were logged and sampled using a Standard Penetration Test (SPT) sampler and 2-inch tube sampler at selected intervals. The SPT was performed in accordance with ASTM Test Method D1584-84 using a standard 1.4 inch I.D. sampler with a 140-lb hammer dropped 30-inch. Following drilling, sampling and logging, the borings were backfilled with bentonite chips, and patched with cold asphalt.

A summary of borings is presented in Table No. 2. Surface elevations, stations, and offsets of the Borings were provided by District 12 Surveys Branch.

LOTBs (Log of Test Borings) are being prepared by the Office of Geotechnical Support and will be submitted to your office upon completion.

Table No. 2 – Summary of Borings

Boring No.	Date Drilled	Station	Offset (ft)	Reference Line	Surface Elevation (ft)	Total Depth (ft)	Groundwater/ perched water Elevation (ft)
A-07-005	2/15/07	316+55.89	62.77 L	I-5 C/L	207.67	51.5	perched water was present from elevation 182.7 to 177.2
A-07-007	2/21/07	316+45.99	143.13 L		224.98	41.5	Not encountered
R-07-008	2/28/07	316+53.53	76.79 R		208.09	51.5	Not measured.
R-09-009	3/11/09	316+56.19	158.20 R		236.21	61.5	Not encountered
R-09-010	3/10/09	316+52.58	6.22 L		208.58	61.5	Not encountered

Note: Vertical datum NAVD 88

3.0 LABORATORY TESTING

Some selected soils samples and bulk samples obtained from the borings were tested for following laboratory testing:

- Mechanical Analysis
- Atterberg Limits
- Corrosion
- Direct Shear
- Consolidation

Laboratory tests were performed in accordance with California Test Methods and/or ASTM procedures (see Table No. 3 below), at the Geotechnical Laboratory in Sacramento. A summary of corrosion test results is presented in Table No. 4.

Table 3 – Laboratory Test Methods

Test	Standard
Mechanical Analysis of Soils	CTM 202, 203
Atterberg Limits of Soils	CTM 203
Moisture Content	CTM 226
Direct Shear	ASTM D3080
Consolidation	CTM 219
Corrosion – Resistivity, pH	CTM 643
Corrosion – Chloride content	CTM 422
Corrosion – Sulfate content	CTM 417

Table No. 4 - Corrosion Test Results

Boring	Sample Depth (ft)	pH	Minimum Resistivity* (ohm-cm)	Sulfate Content (PPM)	Chloride Content (PPM)
A-07-007	0-10.0	8.37	410	2030	1790
A-07-008	0-5.0	6.96	590	2130	1200
R-07-008	5.0-10.0	7.49	1000	140	280
R-09-009	0-5.0	7.89	770	1200	620
R-09-010	5.0-10.0	8.59	1400	N/A	N/A

Note: * The Corrosion Technology Branch policy states that if the minimum resistivity is greater than 1000 ohm-cm the area is considered to be non-corrosive and sulfate and chloride contents are not tested.

The Department considers a site to be corrosive if one or more of the following conditions exist for the representative soil and/or water samples taken at the site:

Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

Based on the on the results of corrosion analyses, the site is considered corrosive to metal and reinforced concrete. Therefore, corrosion resistant design and construction materials are advised.

4.0 GEOLOGY

4.1 Regional Geology

The subject site is located within the Peninsular Range Geomorphic Province. The Peninsular Ranges are characterized by northerly and northwesterly trending mountain ranges and associated valleys. The site is located along the southwest foothills of the Santa Ana Mountains in Orange County, which are comprised of Tertiary marine sediments overlain by Quaternary alluvium and terrace deposits along stream terraces and valleys (Edgington, W. J., CDMG 1970). The southwest foothills of the Santa Ana Mountains are bounded by the Santa Ana Mountains to the north, east and southeast and bounded by the San Joaquin Hills to the west and bounded by the Pacific Ocean to the south. Northwest-southeast trending strike-slip faults are present bordering the Santa Ana Mountains and the San Joaquin Hills (Newport-Inglewood-Rose Canyon Fault (offshore) and Whittier Elsinore Fault).

4.2 Site Geology

The project site is located along a broad gently rolling portion of an old marine terrace. The existing freeway cuts through the northeast edge of a Quaternary marine terrace deposit and the underlying Capistrano Formation. The terrace deposits consist of poorly consolidated clay, silt, sand and gravel. The Capistrano Formation consists of siltstone, mudstone and silty shales and interbedded sandstones. Depth to bedrock has been found from one boring (A-09-010) conducted for this investigation to be approximately 30 feet below the ground (freeway) surface at an elevation of 181.1 feet above sea level. The bedrock is the clay and silt of the Capistrano Formation. The proposed bridge abutments will be founded in terrace deposits. The proposed pile foundation for the bent location will be founded in approximately 30 feet of terrace deposits and the underlying Capistrano Formation. The terrace deposits encountered range in thickness from approximately 30 feet to 40 feet at this location.

The closest fault to the site is the Newport-Inglewood-Rose Canyon (NIE) fault oriented in a northwest-southeast direction and it has been included on maps by Mualchin (1996) approximately 4.5 miles southwest of the proposed project.

4.3 Subsurface Conditions

Subsurface soil conditions at the proposed bridge widening were determined based on two hollow stem auger borings and three rotary wash boring performed for this project. The subject area generally consists of terrace deposits composed of poorly graded loose to dense, fine to medium grained sand with some gravel and cobbles layers interbedded with layers of clay and silt. Below the terrace deposit material, is the Capistrano Formation that

is composed of soft to very stiff clay, with a trace of thin layers (2-3 inches) of interbedded medium dense sand.

4.4 Groundwater

Groundwater was encountered during the 2007 investigation for this project in boring R-07-005 from approximately 25 feet below ground surface (bgs) to 30.5 feet bgs (corresponding approximate elevations are 182.7 feet and 177.2 feet). This groundwater is most likely a localized perched water zone within the sand and gravel layers near the base of the terrace deposits. Groundwater was not encountered during the 1966 investigation for Bridge 55-0224, Camino de Estrella OC.

5.0 SEISMICITY

The project site is not located within any established Alquist-Priolo Earthquake Fault Zone. Based on the Caltrans Seismic Hazard Map, the Newport-Inglewood-Rose Canyon fault is the nearest active seismic source from the proposed project site.

The Table No. 5 summarizes the Moment Magnitude of the Maximum Credible Earthquake (MCE), type of faulting, distance and Peak Bedrock Acceleration of the fault mentioned above. The Peak Bedrock Acceleration is based on the Attenuation relationships by Sadigh et al, 1997.

Table No. 5 - Summary of Seismic Parameters

Fault	Type of Faulting	Mw	Distance, mi.	Direction	PBA
Newport-Inglewood-Rose Canyon (NIE)	Strike-Slip	7.0	4.5	SW	0.5g

ARS CURVE

The Acceleration Response Spectra (ARS) Curve is presented on Figure 1 in Appendix A.

5.1 Liquefaction Potential

Liquefaction is a phenomenon in which loose, saturated, fine grained granular soils behave like a fluid when subjected to high intensity ground shaking. Liquefaction occurs when three general conditions exist: (1) shallow ground water (2) low-density, fine, sandy soils and (3) high-intensity ground motion. Saturated, loose and medium dense, near surface

cohesionless soils exhibit the liquefaction potential, while dense cohesionless soil and cohesive soil exhibit the lowest, negligible liquefaction potential. Effects of liquefaction on ground surface include sand boils, settlement and lateral spreading.

Since the localized perched water zone is within the dense sand layer and the material below that is clay the liquefaction potential is considered to be low.

6.0 FOUNDATION RECOMMENDATIONS

6.1 Geotechnical Design Parameters

Subsurface soil conditions at the project site were determined based on the borings performed for this project. The soil strength parameters used for the geotechnical analyses are shown in the Table No. 6.

Table No. 6 – Soil Strength Design Parameters

Approximate Elevation (ft)	Soil Type	Total Unit Weight (pcf)	Friction Angle (degrees)	Cohesion (psf)
236-209	Stiff silty Clay interbeded with medium dense silty Sand	120	10 29 (drained condition)	1600 200 (drained condition)
209-203	Stiff Clay	120	0	1500
203-197	Medium stiff to stiff Clay	120	0	1000
197-188	Medium dense to dense Sand	120	33	0
188-181	Dense Sand with gravel and cobbles	120	36	0
181-176	Stiff to very stiff Clay	120	0	2000
176-166	Hard Clay	120	0	4000
166-156	Hard Clay	120	0	5000
156-151	Very stiff to hard Clay	120	0	3500
151-146	Hard Clay	120	0	5000

6.2 Foundation Data Provided by Structural Designers

The foundation design data and foundation loads were provided by the Structural Designers. Table No. 7 shows the foundation design data for the Abutments 1 and 3 with spread footings. Table No. 8 shows the foundation design data for the Bent 2. Table No.9 shows the design loads for the abutments and bent.

Table No. 7 – Foundation Design Data for the Abutments

Support No.	Design Method	Finished Grade Elevation (ft)	BOF Elevation (ft)	Footing Size		Permissible settlement under Service Load (inch)
				B'(ft)	L' (ft)	
Abut 1	WSD	220.3	215.8	11	30	1
Abut 3	WSD	226.8	222.3	11	30	1

Table No. 8 – Foundation Design Data for the Bent

Support No.	Design Method	Pile Type	Finished Grade Elevation(ft)	Cut-off Elevation (ft)	Pile Cap Size		Permissible settlement under Service Load (inch)	Number of piles per support
					B (ft)	L (ft)		
Bent 2	LRFD	Class 200	208	202.25	18	18	1	16

Table No. 9 – Design Loads for the Abutments and Bent

Support No.	Service-1 Limit State (kips)		Strength Limit State (kips)				Extreme Event Limit State (kips)			
	Total Load Per Support (kips)	Permanent Load Per Support (kips)	Compression		Tension		Compression		Tension	
			Per Support	Max. Per Pile	Per Support	Max. Per Pile	Per Support	Max. Per Pile	Per Support	Max. Per Pile
Abut 1	880	700	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bent 2	1800	1500	2850	280	N/A	N/A	1500	370	N/A	180
Abut 3	1000	800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

6.3 Foundation Design Recommendations for Spread Footings at Abutments

The allowable gross bearing capacity for the spread footings at the abutments adjacent to the sloping ground was calculated using Terzaghi's bearing capacity equation. A factor of safety of 3 was used. The permissible gross contact stress was estimated for the foundation material to verify the tolerable settlement for the bridge abutments was not exceeded. Foundation recommendations for the abutments are provided in the Table No. 10 below.

Table No. 10 – Foundation Design Recommendations for Spread Footings

Support No.	Footing Size		Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	WSD (Service-1 Limit State Load Combination)	
	B' (ft)	L' (ft)			Permissible Gross Contact Stress (ksf)	Allowable Gross Bearing Capacity (ksf)
Abut 1	11	30	215.8	4.5	4.0	4.5
Abut 3	11	30	222.3	4.5	4.0	4.5

6.4 Bridge Approach Embankments

The proposed widening will need additional fill behind the abutments to approach the bridge structure, and to raise the ground surface for the proposed footing elevations for the abutments. The fill should be placed and compacted according to the Sections 19 of Caltrans Standard Specifications (2006).

6.4.1 Embankment Slope Stability

The global stability of the slopes at the bridge abutments was evaluated using the computer program SLOPEW under both static and pseudo-static conditions. The slope stability analysis under pseudo-static condition was performed using a seismic coefficient equal to one-third of the horizontal ground acceleration and not exceeding 0.2g. The slope stability analyses were performed using the Bishop method for circular slip surfaces. Analyses indicate that these slopes meet the required minimum factors of safety, 1.5 for static condition and 1.1 for pseudo-static condition.

6.4.2 Settlement due to Embankment Fill and Settlement of Spread Footing at Abutments

Up to about 9 feet of approach embankment fill will be placed at Abutment 1, and up to about 12 feet of approach embankment fill will be placed at Abutment 3, on the slopes of the existing embankments. Based on the subsurface soil condition, ground subsidence is estimated to be less than 0.5 inch. The anticipated settlement of the spread footing of the proposed widening is estimated to be less than 1 inch.

Preloading the proposed footing area with 15' high surcharge with a settlement period of one month is recommended to eliminate the 95% of the total settlement. A settlement monitoring program is recommended to observe the rate and the magnitude of settlement.

6.5 Foundation Design Recommendations for Piles at the Bent

6.5.1 Axial Pile Capacity

Axial capacity for individual piles and pile group were evaluated using the computer program APile Plus 5.0. Foundation recommendations for the bent are provided in the Table No. 11 below.

Table No. 11 – Foundation Design Recommendations for Bent No. 2

Support No.	Pile Type	Cut-off elev. (ft)	Service-1 Limit State Load (kips) per Support	Total Permiss. Support Settle. (inches)	Required Factored Nominal Resistance (kips)				Design Tip Elevations (ft)	Specif. Tip Elev. (ft)	Nominal Driving Resistance Required (kips)
					Strength Limit		Extreme Event				
					Comp. (ϕ= 0.7)	Tension (ϕ= 0.7)	Comp. (ϕ= 1)	Tension (ϕ= 1)			
Bent 2	Class 200 (Alt "X" Std. Plans)	202.25	1800	1	260	112	400	260	141 (a-I) 174 (b-I) 139(a-II) 150(b-II) 163 (c) 173 (d)	139	400

Notes:
1. Design Tip elevations are controlled by: (a-I) Compression (Strength Limit), (b-I) Tension (Strength Limit), (a-II) Compression (Extreme Event), (b-II) Tension (Extreme Event), (c) Settlement, (d) Lateral Load

6.5.2 Lateral Pile Capacity

Lateral pile capacity of a single pile is estimated as shown in the Table 12.

Table 12 – Lateral Capacity for a Single Pile

Boundary Conditions	Pile Type	Length of Pile	Lateral Deflection at Pile Head	Mmax and Depth for Mmax
Fixed Head Condition (Lateral Load at Pile Head is 32.5 kips with an average p-multiplier 0.66)	14" Square Pile	30'	0.6"	1300 kip-inch at pile head 365 kip-inch at 10' from pile head

6.6 Spread Footing Data Table and Pile Data Table

Table 13 - Spread Footing Data Table

Support Location	Working Stress Design (WSD)	
	Permissible Gross Contact Stress (ksf)	Allowable Gross Bearing Capacity (ksf)
Abut 1	4.0	4.5
Abut 3	4.0	4.5

Table No. 14- Pile Data Table

Support Location	Pile Type	Nominal Resistance (kips)		Design Tip Elevations (ft)	Specif. Tip Elev. (ft)	Nominal Driving Resistance Required (kips)
		Compression	Tension			
Bent 2	Class 200 (Alt "X"_ Std. Plans)	400	260	139 (a) 150 (b) 163 (c) 173 (d)	139	400

Notes:

1. Design Tip elevations are controlled by: (a) Compression, (b) Tension, (c) Settlement, (d) Lateral Load

6.7 Bridge Abutment Wall Design

6.7.1 Abutment Earth pressures

The abutment walls for the proposed widening should be backfilled with structure backfill in accordance Caltrans Standard specifications (2006). If the abutment walls are free to move laterally at the top, a static active lateral earth pressure of 36 psf per foot of depth is recommended (an active earth pressure coefficient of 0.3 and a soil unit weight of 120 pcf were used for calculations).

For seismic conditions, the abutments may be designed to resist an additional active earth pressure of 10 psf per foot of wall applied as an inverted triangle along the abutment height with the resultant acting at a distance of 0.4 times the abutment height measured from the top of the abutment.

If lateral movement at the top of the abutment is restrained, the evaluation of lateral earth pressure should follow section 5.5.5.11 of the Caltrans BDS (August, 2004), with an active earth pressure coefficient of 0.3, an at-rest earth pressure coefficient of 0.5 and a soil unit weight of 120 pcf using for calculations.

If applicable, a uniform lateral pressure of 72 psf due to vehicle loads, equivalent to a vertical pressure produced by 2 feet of earth should be added to the above lateral earth pressures.

6.7.2 Passive Resistance at Abutment

As per Section 7.8.1 of the Caltrans Seismic Design Criteria (June, 2006), the maximum pressure of 5.0 ksf may be used for abutment walls with a height equal to or greater than 5.5 feet. For abutment walls with heights less than 5.5 feet, the passive pressure may be calculated proportionately.

7.0 CONSTRUCTION CONSIDERATIONS

7.1 Earthwork

Earthwork should be performed in accordance with Section 19 of the Caltrans Standard specifications. Appropriate measures should be taken to prevent damage to adjacent structures and utilities.

Groundwater is not anticipated during construction. However, if ground water is encountered within e: ca' .tions it is the responsibility of the contractor to control ground water during construc ior

Preloading the proposed footing area with 15' high surcharge with a settlement period of one month is recommended to eliminate the 95% of total settlement. A settlement monitoring program is recommended to observe the rate and the magnitude of settlement for the widened embankments.

Any temporary sloping or shoring should be made the contractor's responsibility.

7.2 Driven Pile Construction

From approximate elevation +188 to approximate elevati)n +181, there is a dense sand layer (of approximate thickness 7 feet) that consists o: gravels and cobbles. Driving through this layer will be very difficult and may cause amage to the piles. Therefore, undersized predrilling (the diameter of the hole should be 8-10 inches for a 14-inch concrete pile), up to elevation +181 is recommended.

8.0 REFERENCES

1. California Geologic Survey, Maps of the Alquist-Priolo Earthquake Fault Zoning Act, Southern California CD, 2000.

2. Edgington, W.J., Geology of the Dana Point Quadrangle, Orange County, California, California Division of Mines and Geology, 1974.

3. Mualchin, L., Caltrans California Seismic Hazard Map, California Department of Transportation, 1996.

4 Caltrans Bridge Design Specifications (2004).

5. Caltrans Standard Plans (2006).

6. Caltrans Standard Specifications (2006).

7. FHWA Manual on Design and Construction of Driven Pile Foundations (2006).

8. AASHTO LRFD Bridge Design specifications (2007).

The recommendations contained in this report are based on specific project information that has been provided by the Office of Structure Design. If any conceptual changes are made during final project design, the office of Geotechnical Design South-1 should review those changes to determine if these foundation recommendations are still applicable.

If you have any questions or comments, please call Deepa Wathugala at (213) 620-2134, or Ted Liu at or (213) 620-2136.

Prepared by: Date: 11/18/2009 Reviewed by: Date: 11/18/2009

Deepa Wathugala, Ph.D., P.E., G.E. 2674
Transportation Engineer
Geotechnical Design-South 1
Branch C

REGISTERED PROFESSIONAL ENGINEER
DEEPA N. WATHUGALA
Exp. 9/30/2010
GEOTECHNICAL
STATE OF CALIFORNIA

C. Ted Liu, Ph.D., P.E., G.E.
Senior Transportation Engineer
Office of Geotechnical Design – South 1
Branch C

REGISTERED PROFESSIONAL ENGINEER
CHI-TSENG TED LIU
No. 2669
Exp. 6-30-2010
GEOTECHNICAL
STATE OF CALIFORNIA

11/18/09
Christopher Harris, P.G., C.E.G.
Engineering Geologist
Office of Geotechnical Design South 1
Branch C

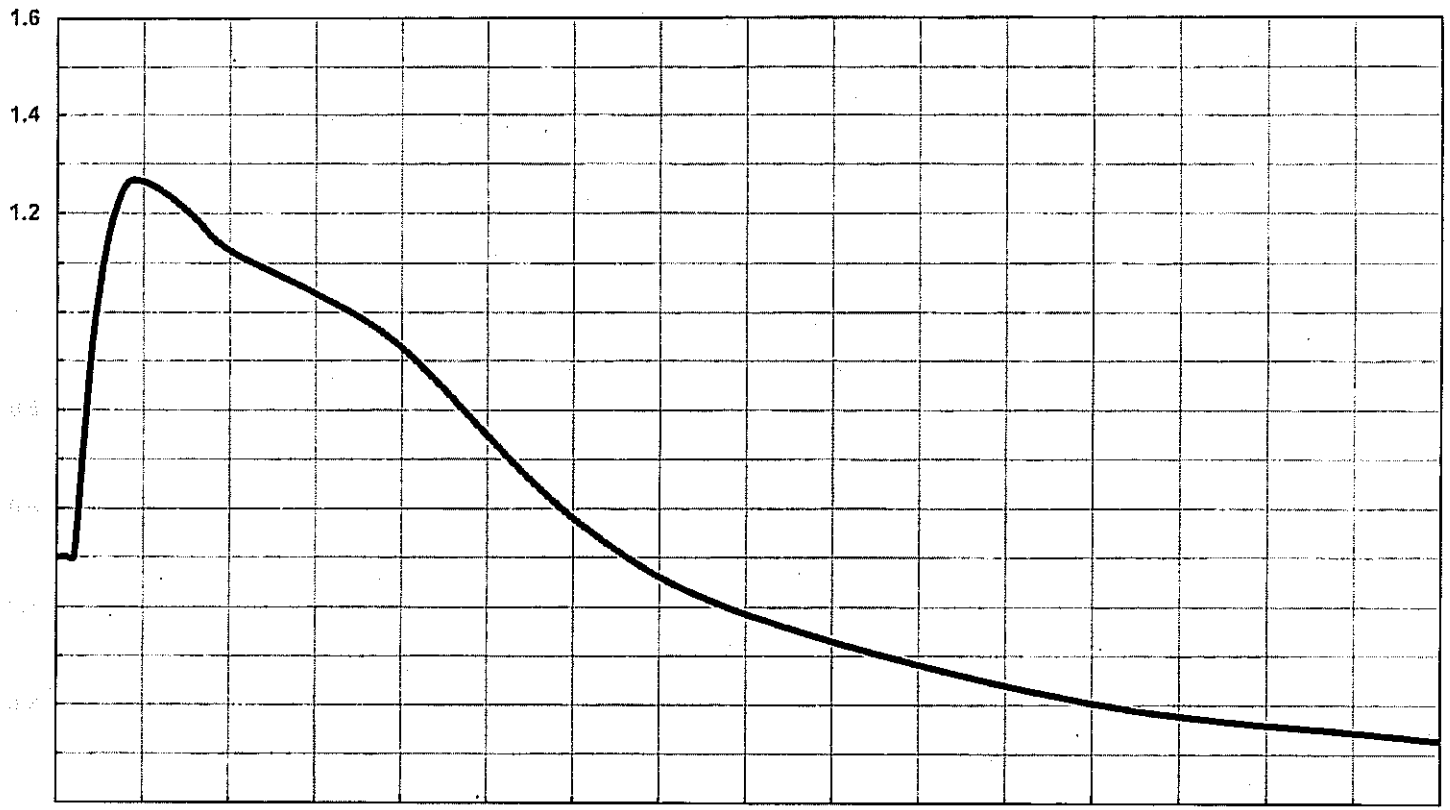
PROFESSIONAL GEOLOGIST
CHRISTOPHER R. HARRIS
2196
CERTIFIED ENGINEERING GEOLOGIST
Exp 9/30/11
STATE OF CALIFORNIA

cc: OGDS1 – LA File
OGDS1 – SAC File (MS-5)
GS – SAC File (MS-5)

APPENDIX A

Figures

12-ORA-5-PM 5.5/6.6
Bridge No. 53-0224



State of California **Business, Transportation and Housing Agency**

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: Mr. Adel Malek, Branch Chief
District 12, Design Branch

Attention: Mr. Richard Dang

Date: July 9, 2010

File: 07-ORA-PM 5.6/6.6
12-0F0601
OH Sign Nos. 100 and 300

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design-South 1, Branch C

Subject: Foundation Report for Overhead Sign Nos. 100 and 300

INTRODUCTION

In response to the request from your office, dated May 4, 2010, the Office of Geotechnical Design South 1 (OGDS-1) prepared this Memorandum to provide the foundation recommendations for the proposed overhead sign structures (OH signs), 100 and 300. Overhead Sign Nos. 100 will be located at STA 318+80 "B" Line on SB I-5 off-ramp to Camino De Estrella. Overhead Sign Nos. 300 will be located at STA 329+70 "A" Line on SB I-5.

PERTINENT DOCUMENTS

The following documents were reviewed for the preparation of this report:

1. Log of Test Borings for Camino De Estrella Overcrossing (Widen) (Bridge No. 55-0224), 2009. Soil data from the boring A-07-006 were used for foundation analysis of the proposed OH sign no. 100.

2. As-built Log of Test Borings for Sound Walls on SR 5 from PM 5.8 to PM 6.6 (EA 12-001084), 1999. Soil data from the boring B-16 were used for foundation analysis of the proposed OH sign no. 300.

3. Final Foundation Report on De Estrella Overcrossing (Widen) (Bridge No. 55-0224), dated November 18, 2009, prepared by OGDS-1.

GEOLOGY SEISMICITY

Geology and Seismicity of the location of the proposed OH Signs are the same as those for the proposed bridge widen project at SR 5/Camino de Estrella Interchange (PM 5.6/6.6) (same EA: 12-0F0601). Please refer to the Final Foundation Report on Camino de Estrella OC (Widen), dated November 18, 2009, prepared by OGDS-1.

GROUNDWATER

Groundwater was encountered during the 2007 investigation for this project in boring R-07-005 from approximately 25 feet below ground surface (bgs) to 30.5 feet bgs (corresponding approximate elevations are +182.7 feet and +177.2 feet). Groundwater was encountered in boring R-07-006 at elevation +181.4 feet. This groundwater is most likely a localized perched water zone within the sand and gravel layers near the base of the terrace deposits as ground water was not encountered in the other four vertical borings in the vicinity of Camino de Estrella OC. Groundwater was not encountered during the 1966 investigation for Bridge 55-0224, Camino de Estrella OC.

LIQUEFACTION EVALUATION

Liquefaction is a phenomenon in which loose, saturated, fine grained granular soils behave like a fluid when subjected to high intensity ground shaking. Liquefaction occurs when three general conditions exist: (1) shallow ground water (2) low-density, fine, sandy soils and (3) high-intensity ground motion. Saturated, loose and medium dense, near surface cohesionless soils exhibit the liquefaction potential, while dense cohesionless soil and cohesive soil exhibit the lowest, negligible liquefaction potential. Effects of liquefaction on ground surface include sand boils, settlement and lateral spreading.

Since the localized perched water zone is within the dense sand layer and the material below that is clay the liquefaction potential is considered to be low.

FOUNDATION RECOMMENDATIONS

Cast-in-drilled hole (CIDH) piles are proposed for the support of the subject OH signs. The axial pile capacity evaluation for the proposed CIDH piles was performed using SHAFT for Windows, V5.0 by ENSOFT Inc. The lateral load-deformation response of single pile was analyzed utilizing the LPILE plus for Windows, V5.0 by ENSOFT Inc.

The depth of sign foundation was computed based on the boundary conditions shown in Table 1. These unfactored loads were provided by the Office of Design and Technical Services.

Table 1 – Unfactored Loadings

Sign Post No.	Station	Bending Moment at Pile Head (Kip-ft)	Shear Force at Pile Head (Kips)	Axial Load (Kips)
100 (both posts)	318+80 "B" Line	163	6.6	5.8
300	329+70 "A" Line	495	16.3	24.1

Based on the axial and lateral pile analyses, the foundation depths are recommended as given in the Table 2 below.

Table 2 – Recommended Foundation Depths

Sign Post No.	Pile Type	Foundation Depth (Length from top of pile pedestal to pile tip) (ft)	Elevation of Bottom of Base Plate (ft)	Pile Tip Elevation (ft)
100 (left post)	36-inch Diameter CIDH Piles	15.0	223.8	208.8
100 (right post)	36-inch Diameter CIDH Piles	15.0	220.6	205.6
300	60-inch Diameter CIDH Piles	25.0	209.3	184.3

A maximum bending moments and maximum shear forces computed are presented in Table 3 below.

Table 3 Maximum Bending Moments and Maximum Shear Forces

Sign Post No.	Max. BM (in-Kips)	Depth of Max BM below the pile head (ft)	Max. Shear (Kips)	Depth of Max Shear below the pile head (ft)	Maximum lateral pile head deflection (inch)
100 (both posts)	2109	2.9	25.6	10.6	0.2
300	6743	6.5	60.0	19.5	0.1

CORROSION EVALUATION

OGDS-1 tested the composite soil samples from the 2007-2009 field investigation for corrosivity potential. Based on the results of the corrosion analysis, the site is corrosive. Therefore, corrosion resistant design and construction materials are advised.

CONSTRUCTION CONSIDERATIONS

The following recommendations are made for construction of CIDH pile for sign structures.

- The contractor shall be required to clean out the bottom of the shaft prior to placing the cage and the concrete.

- Concrete placement for construction of the CIDH piling shall be completed within the same day that drilling of the pile boring has been completed.

- Some caving should be anticipated during excavation of the pile boring and during CIDH pile construction due to the presence of scattered gravel and cobbles. It will be necessary for the Contractor to utilize a stabilizing method, such as temporary casing, to keep the holes open during construction.

- Localized perched water zone was encountered during 2007-2009 field investigation. Based on the pile tip elevations and the elevation of the localized perched water zone, groundwater is not anticipated during construction. However, if groundwater is encountered within excavation, it is responsibility of the contractor to control groundwater during construction.

- Corrosion resistant design and construction materials are advised.

If you have any questions, please contact Deepa Wathugala at (213) 620-2134 or Ted Liu at (213) 620-2136.

Prepared by:

Deepa Wathugala, Ph.D., P.E., G.E.
Transportation Engineer
Office of Geotechnical Design South 1
Branch C

Reviewed by:

Chi-Tseng Ted Liu, Ph.D., P.E., G.E.
Senior Transportation Engineer
Office of Geotechnical Design South 1
Branch C

c.c. OGDS-1-Los Angeles File (2)
OGDS-1-Sacramento

State of California

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MS. MILI LIM
Chief, Design Branch A

Date: July 22, 2009

File: 12-ORA-5-PM 5.6/6.6
12-0F0601
Type1 Retaining Wall

Attention: Mr. Joseph Lee

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South 1
Branch C

Subject: Geotechnical Design Report

1.0 INTRODUCTION

In response to the request from your office, dated November 3, 2006, the Office of Geotechnical Design South 1 has prepared this Memorandum to provide the geotechnical recommendations for the construction of the Type 1 retaining wall along southbound Route 5, in the city of Dana Point, Orange County.

The project proposes to add an additional auxiliary lane from Pacific Coast Highway to Camino De Estrella OC to convert the existing one lane southbound off-ramp to two lane off-ramp. Addition of auxiliary lane requires the proposed retaining wall.

Table No. 1 shows the information on the proposed retaining wall.

Table No. 1- Retaining Wall Data

Wall No.	Structure Type	Begin Station	End Station	RW Design Height (ft)	Bottom of Footing Elevation (ft)
1	Type 1 RW	350+20	351+70	8	195.73
	Type 1 RW	351+70	356+40	10	196.46
	Type 1 RW	356+40	357+70	8	196.63

2.0 FIELD EXPLORATION PROGRAM

Site-specific field exploration was performed on February 14, 2007. The field investigation included two hollow stem auger borings and one mud rotary boring using Caltrans drill rig models CME-85 and CS 2000 respectively.

Borings were logged and sampled using a Standard Penetration Test (SPT) sampler and 2-inch tube sampler at selected intervals. The SPT was performed in accordance with ASTM Test Method D1584-84 using a standard 1.4 inch I.D. sampler with a 140-lb hammer dropped 30-inches. Following drilling, sampling and logging, the borings were backfilled with bentonite chips, and patched with cold asphalt.

A summary of exploratory borings is presented in Table No. 2. Surface elevations, stations, and offsets of the Borings were provided by District 12 Surveys Branch.

LOTBs (Log of Test Borings) are being prepared by the Office of Geotechnical Support and will be submitted to your office upon completion.

Table No. 2 – Summary of Borings

Boring No.	Date Drilled	Station	Offset (ft)	Reference Line	Surface Elevation (ft)	Total Depth (ft)	Groundwater Elevation (ft)
R-07-002	2/14/07	354+55.42	77.43 L	I-5 C/L	203.16	29.5	Not encountered.
A-07-003	2/14/07	353+25.12	77.87 L		202.63	47.0	
A-07-004	2/14/07	351+94.79	76.79 L		201.98	21.5	

Note: Vertical datum NAVD 88

3.0 LABORATORY TESTING

SPT soil samples and bulk samples obtained from borings are being tested for the following laboratory testing:

- Mechanical Analysis
- Atterberg Limits
- Corrosion
- Direct Shear
- Consolidation

Laboratory tests are being performed in accordance with California Test Methods and/or ASTM procedures (see Table No. 3 below), at the Geotechnical Laboratory in Sacramento. A summary of corrosion test results is presented in Table No. 4.

Table 3 – Laboratory Test Methods

Test	Standard
Mechanical Analysis of Soils	CTM 202, 203
Atterberg Limits of Soils	CTM 203
Moisture Content	CTM 226
Direct Shear	ASTM D3080
Consolidation	CTM 219
Corrosion – Resistivity, pH	CTM 643
Corrosion – Chloride content	CTM 422
Corrosion – Sulfate content	CTM 417

Table No. 4 - Corrosion Test Results

Boring	Sample Depth (ft)	pH	Minimum Resistivity* (ohm-cm)	Sulfate Content (PPM)	Chloride Content (PPM)
R-07-002	5.0	8.13	570	530	1250
A-07-003	5.0	8.51	8700	9	4
	30.0-40.0	7.51	550	5070	1060

The Department considers a site to be corrosive if one or more of the following conditions exist for the representative soil and/or water samples taken at the site:

Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

Based on the on the results of corrosion analyses, the site is considered corrosive to metal and reinforced concrete. Therefore, corrosion resistant design and construction materials are advised.

4.0 GEOLOGY

4.1 Regional Geology

The subject site is located within the Peninsular Range Geomorphic Province. The Peninsular Ranges are characterized by northerly and northwesterly trending mountain ranges and associated valleys. The site is located along the southwest foothills of the Santa Ana Mountains in Orange County, which are comprised of Tertiary marine sediments overlain by Quaternary alluvium and terrace deposits along stream terraces and valleys (Edgington, W. J., CDMG 1970). The southwest foothills of the Santa Ana Mountains are bounded by the Santa Ana Mountains to the north, east and southeast and bounded by the San Joaquin Hills to the west and bounded by the Pacific Ocean to the south. Northwest-southeast trending strike-slip faults are present bordering the Santa Ana Mountains and the San Joaquin Hills (Newport-Inglewood-Rose Canyon Fault (offshore) and Whittier Elsinore Fault).

4.2 Site Geology

The project site is located along a broad gently rolling portion of an old marine terrace. The existing freeway cuts through the northeast edge of a Quaternary marine terrace deposit and the underlying Capistrano Formation. The terrace deposits consist of poorly consolidated silt, sand and gravel. The Capistrano Formation consists of siltstone, mudstone and silty shales and interbedded sandstones. Depth to bedrock has been found from the three borings conducted for this investigation to be approximately 15-20 feet below the ground surface. The bedrock is the clay and silt of the Capistrano Formation. The proposed retaining walls along the southbound Interstate 5 Freeway will be founded on terrace deposits. The terrace deposits encountered range in thickness from 15 feet to approximately 20 feet at this location.

The closest fault to the site is the Newport-Inglewood-Rose Canyon (NIE) fault oriented in a northwest-southeast direction and it has been included on maps by Mualchin (1996). approximately 4.5 miles southwest of the proposed project.

4.3 Subsurface Conditions

Subsurface soil conditions at the proposed retaining wall were determined based on 3 rotary wash borings performed for this project. The subject area generally consists of terrace deposits composed of poorly graded loose to dense, fine to medium grained sand with some gravel and cobbles layers and few thin layers of clay. Below the terrace deposit material, is the Capistrano Formation that is composed of soft to very stiff clay, with a trace of thin layers (2-3 inches) of interbedded medium dense sand.

4.4 Groundwater

Groundwater was not encountered during the 2007 investigation for this project to the total depth explored of approximately 47 feet below ground surface (elevation 155.63 feet). Groundwater was not encountered during the 1966 investigation for Bridge 55-0224, Camino de Estrella OC.

5.0 SEISMICITY

The project site is not located within any established Alquist-Priolo Earthquake Fault Zone. Based on the Caltrans Seismic Hazard Map, the Newport-Inglewood-Rose Canyon fault is the nearest active seismic source from the proposed project site.

The Table No. 5 summarizes the Moment Magnitude of the Maximum Credible Earthquake (MCE), type of faulting, distance and Peak Bedrock Acceleration of the fault mentioned above. The Peak Bedrock Acceleration is based on the Attenuation relationships by Sadigh et al, 1997.

Table No. 5 - Summary of Seismic Parameters

Fault	Type of Faulting	Mw	Distance, mi.	Direction	PBA
Newport-Inglewood-Rose Canyon (NIE)	Strike-Slip	7.0	4.5	SW	0.4g-0.5g

5.1 Liquefaction Potential

Liquefaction is a phenomenon in which loose, saturated, fine grained granular soils behave like a fluid when subjected to high intensity ground shaking. Liquefaction occurs when three general conditions exist: (1) shallow ground water (2) low-density, fine, sandy soils and (3) high-intensity ground motion. Saturated, loose and medium dense, near surface cohesionless soils exhibit the liquefaction potential, while dense cohesionless soil and cohesive soil exhibit the lowest, negligible liquefaction potential. Effects of liquefaction on ground surface include sand boils, settlement and lateral spreading.

Due to the fact no groundwater was encountered at the site, the liquefaction potential is considered to be low.

6.0 FOUNDATION ANALYSIS AND RECOMMENDATIONS

6.1 Geotechnical Design Parameters

Subsurface soil conditions at the proposed retaining wall location were determined based on the borings performed for this project. The soil strength parameters used for the geotechnical analyses are shown in the Table No. 6.

Table No. 6 – Soil Strength Design Parameters

Approximate Elevation (ft)	Soil Type	Total Unit Weight (pcf)	Friction Angle (degrees)	Cohesion (psf)
203 - 195	Stiff Clay	120	0	1500
195-185	Medium Dense Sand	120	32	0
185-175	Very Stiff to Hard Clay	120	0	2500

6.2 Bearing Capacity

The standard design details for the Type1 retaining walls are presented in Caltrans Standard Plans (May 2006) sheets B3-1 and B3-7. Allowable bearing capacity was calculated using Terzaghi's bearing capacity equation. A factor of safety of 3 was used. The allowable bearing capacity obtained was compared against the toe pressure given on the Caltrans Standard Plans. Shallow spread footing is recommended to support the proposed retaining wall from a geotechnical standpoint. The bottom of spread footings shall be founded on the existing competent soils or properly compacted fill. Allowable bearing capacities are provided in Table No. 7 below.

Table No. 7- Spread Footing Data

Structure Type	Begin Station	End Station	Bottom of Footing Elevation (ft)	RW Design Height (ft)	RW Width (ft)	Maximum Toe Pressure (ksf)	Allowable Bearing Capacity (ksf)
Type 1 RW	350+20	351+70	195.73	8	5.25	2.1	3.0
	351+70	356+40	196.46	10	6.25	2.5	3.0
	356+40	357+70	196.63	8	5.25	2.1	3.0

6.3 Settlement of Spread Footings

Total immediate settlement was estimated to be less than 1-inch, and differential settlement was estimated to be less than 1/500 whereas these values are the tolerable values given in the Section 5.5.9 of FHWA Earth Retaining Structures Manual.

The soil up to a depth of twice the footing width below the bottom of footing elevation consists predominantly of sandy material. Below that, very stiff to hard clay and silt have been found. Therefore, the long-term total and differential settlements are expected to be negligible.

6.4 Slope Stability

As there is a slope behind the retaining wall, the slope stability analyses were performed to verify the overall stability using the computer program SLOPEW under both static and pseudo-static conditions. The slope stability analysis under pseudo-static condition was performed using a seismic coefficient equal to one-third of the horizontal ground acceleration and not exceeding 0.2g. The slope stability analyses were performed using the Bishop method for circular slip surfaces. Analyses indicate that these walls meet the required minimum factors of safety, 1.5 for static condition and 1.1 for pseudo-static condition.

For the construction of the retaining wall, an excavation into the existing slope may be expected. The stability of slope for this situation also was analyzed. Analysis indicates that the factor of safety is 1.1 for this temporary condition. This excavation should not be steeper than 1:1.

7.0 CONSTRUCTION CONSIDERATIONS

1. During construction, an excavation into the existing slope may be expected for the construction of the retaining wall. The slope of this excavation should not be steeper than 1:1.

2. The proposed retaining wall with spread footing should be founded on the existing competent soils or properly compacted fill. Loose or soft material is not expected at this project site; however, if such material is encountered within the areas to receive retaining walls, soil should be over-excavated for 5 feet and replaced with compacted fill. The compacted fill beneath the retaining wall footing should be granular in nature, have a Sand Equivalent value of 20 as determined by California Test Method 217, and have less than 50% of material passing No.200 sieve size. The compacted fill beneath

the retaining wall footing should be placed in horizontal loose layers of approximately 8-inch thick, and compacted to at least 95% relative compaction.

3. Earthwork should be performed in accordance with Sections 6 and 19 of the latest Caltrans Standard Specifications. Soils with an Expansion Index of less than 50 or a Sand Equivalent of 20 or more should be used within the approach embankment, in accordance with standard Caltrans requirements.

4. On-site material may be used as replacement material. However, oversized material (greater than 8-inch in the widest dimension) should be excluded from the replacement fill material.

8.0 REFERENCES

1. California Geologic Survey, Maps of the Alquist-Priolo Earthquake Fault Zoning Act, Southern California CD, 2000.

2. Edgington, W.J., Geology of the Dana Point Quadrangle, Orange County, California, California Division of Mines and Geology, 1974.

3. Mualchin, L., Caltrans California Seismic Hazard Map, California Department of Transportation, 1996.

If you have any questions or comments, please call Deepa Wathugala at (213) 620-2134, or Ted Liu at or (213) 620-2136.

Prepared by: Date: 7/22/2009

Deepa Wathugala, Ph.D., P.E., G.E.
Transportation Engineer
Geotechnical Design-South 1
Branch C

REGISTERED PROFESSIONAL ENGINEER
DEEPA W. WATHUGALA
No. GE2674
Exp. 9/30/2010
GEOTECHNICAL
STATE OF CALIFORNIA

Reviewed by: Date: 7/22/2009

C. Ted Liu, Ph.D., P.E., G.E.
Senior Transportation Engineer
Office of Geotechnical Design – South 1
Branch C

REGISTERED PROFESSIONAL ENGINEER
CHI-TSENG TED LIU
No. 2669
Exp. 6-30-2010
GEOTECHNICAL
STATE OF CALIFORNIA

Prepared By: Date: 7/22/09

Christopher Harris, P.G., C.E.G.
Engineering Geologist
Office of Geotechnical Design South 1
Branch C

PROFESSIONAL GEOLOGIST
CHRISTOPHER R. HARRIS
2196
CERTIFIED
ENGINEERING
GEOLOGIST
exp 9/30/09
STATE OF CALIFORNIA

cc: OGDS1 – LA File
OGDS1 – SAC File (MS-5)
GS – SAC File (MS-5)

12 - ORA - 5, PM 5.6/6.6
EA 0F0600
SHOPP Project
Mobility-Operational Improvements
Program Code: 20.10.201.310

PROJECT REPORT

At Camino De Estrella Southbound I-5 Off Ramp
IN CITIES OF SAN CLEMENTE AND DANA POINT
IN ORANGE COUNTY, CALIFORNIA

I have reviewed the right of way information contained in this Project Study Report and the R/W Data Sheet attached hereto, and find the data to be complete, current and accurate.

Marie Shatto 1/16/08

MARIE SHATTO *Date*
Chief, Right of Way Project Coordination

APPROVAL RECOMMENDED BY:

Mili L Stamation 1/11/08

MILI LIM STAMATION *Date*
Chief, Design Branch A

AHMED ABOU-ABDOU 1/11/08 *Date*
Project Manager

APPROVED BY:

1/29/08

JIM BEIL *– Deputy District Director, Capital Outlay Programs* *Date*

CINDY QUON
District Director

This Project Report has been prepared under the direction of the following civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

Joseph Lee, REGISTERED CIVIL ENGINEER — *DATE* 1/10/08

Table of Content

CONCURRENCE:

FRANK LIN
Office Chief of
Design

Date: 1/27/08

ADNAN MAIAH
Office Chief
Program/Project Management

Date: 1/24/08

GALE McINTYRE
Deputy District Director
Planning

Date: 1/24/08

SYLVIA VEGA
Office Chief
Environmental Planning

Date: 1/25/08

JAMES PINHEIRO
Deputy District Director
Operations and Maintenance

Date: 1/25/08

PROJECT REPORT

1. INTRODUCTION

This project proposes to improve the operation of the interchange at Camino de Estrella Overcrossing (Br. No: 55-224) and southbound I-5 on and off ramp intersection. In addition, this project proposes to improve the storage capacity of the southbound I-5 off ramp preventing traffic from queuing onto the freeway. It is recommended to modify the southbound I-5 off ramp at Camino de Estrella to address the queuing on the freeway. The southbound offramp will be modified from a single to a two lane exit including widening the ramp terminal at the intersection. Local street improvements including widening the overcrossing structure from five lanes to seven lanes, adding an additional westbound Camino de Estrella left turn lane to the southbound I-5 on-ramp, and adding an additional eastbound Camino de Estrella thru lane. The proposed interchange improvements are located in the Cities of Dana Point to the north and San Clemente to the south. The proposed interchange improvements will relieve current traffic congestion to both the southbound off ramp and Camino de Estrella overcrossing structure.

The project is proposed to be funded through the 2006 State Highway Operations and Prevention Program, SHOPP, under the Operational Improvement program. It is planned to be constructed in the 2009/2010 fiscal year. The estimated project cost of Alternative 2 is $ 11 million.

2. RECOMENDATION

In order to improve the overall operation of the interchange at Camino de Estrella, it is recommended to approve Alternative 2 and prepare plans, specifications, and estimates for this project.

3. BACKGROUND

A. Project History

This project was initiated by District 12 Traffic Operations Branch in 8/01/2001. The PSR was approved on 3/21/2006.

B. Community Interaction

This project does not appear to have a significant impact to the community to require community interaction meetings. A copy of the Project Report will be submitted to the Cities of San Clemente and Dana Point.

C. Existing Facility

The existing southbound I-5 consists of four (4) 12-ft general-purpose lanes and an 12-ft auxiliary lane, 10-ft left and right shoulders, a single lane off ramp that opens up to a three (3) lane off ramp, and a single lane on ramp which begins with two (2) lanes. In the

northbound direction, there are four (4) 12-ft general purpose lanes, a 10-ft left and right shoulders, a single lane off ramp that opens up to a (2) two lane off ramp, a single lane loop on ramp from eastbound Camino de Estrella, and a single lane tangent on ramp which begins with two (2) lanes. A concrete barrier separates the northbound and southbound freeway lanes.

The Camino de Estrella overcrossing was constructed in 1981. The overcrossing is a continuous two span Cast-In-Place/Pre-Stressed box (11 cell) girder overcrossing structure on three column reinforced concrete bents and open end reinforced concrete diaphragm abutments, all on a spread footings. The total width of the overcrossing structure measures 82-ft. The westbound Camino de Estrella consists of a 7-ft wide sidewalk and a total of 38-ft of general-purpose lanes (two (2) thru lanes, a 10-ft optional left turn lane to southbound I-5 on-ramp, and a 4-ft shoulder). The eastbound direction consists of a 26-ft traffic lane (two (2) eastbound thru lanes, a 7-ft sidewalk, and a 4-ft shoulder). A 2-ft raised median island separates the eastbound and westbound lanes. The overcrossing structure also includes a Type 7 Chain Link rail on a Type 26 Bridge rail. The existing vertical clearance measures 16.5-ft. The traffic signal at the intersection of Camino de Estrella and the southbound I-5 off ramp is currently programmed at 70-second pre-timed cycles.

4. NEED AND PURPOSE

A. Problem, Deficiencies, Justification

Based on the findings by the District 12 Traffic Operations Branch, there is a need to increase the capacity of this interchange. The capacity of the current intersection is not sufficient to handle the 2006 peak hour volume of 1728 vehicles per hour (vph). A field observation and traffic counts were conducted at the interchange. A traffic analysis was later performed based on the traffic data. It was determined that the intersection was operating at a Level of Service (LOS) F during the PM peak. The 2006 peak hour volume for Camino de Estrella is 1812 vph. The 2006 peak hour volume at the southbound I-5 off ramp during the PM Peak is 1728 vph. Section 504.3.6 of the Highway Design Manual indicates that the capacity for a single lane off ramp is 1500 vph.

The purpose of the proposed project is to alleviate the traffic delay caused by the increasing number of vehicles at the Camino de Estrella over crossing and increase the storage capacity of the southbound I-5 off ramp.

B. Regional and System Planning

A Transportation Concept Report (TCR), formerly referred to as a Route Concept Report (RCR), was prepared and developed by the Department of Transportation District 12 Division of Planning. It was approved in April 2000. The TCR identifies the addition of two HOV lanes (one in each direction) from Avenida Pico to the Los Angeles County Line. The

TCR is HOV compatible with the TCR for this route in District 7 (Los Angeles County), and District 11 (San Diego County).

The I-5 Southern Orange County Transportation Infrastructure Improvement Project (SOCTIIP) is currently evaluating alternatives to complete the south leg of the SR-241. One alternative is referred to as the I-5 widening alternative. This alternative assumes full build out of the Master Plan of Arterial Highway (MPAH) and the RTP. This proposed alternative provides one HOV lane in each direction, except where HOV already exists between Camino Las Ramblas and Avenida Pico. Other improvements include various construction of interchanges and structures and realignment of the I-5. Significant right-of-way impacts are anticipated under this alternative from Lake Forest Drive to Cristianitos Road.

This proposed improvement project is included in the 2004 RTP list of Unconstrained Projects. The RTP is a long-range vision of the regional transportation system for the six county in the Southern California Region. The counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura are included in the RTP. All I-5 projects programmed and planned under the Regional Transportation Improvement Plan (RTIP) are contained in the RTP. These concepts are consistent with the regional planning efforts.

The County of Orange is working with various cites to implement a South County Regional Improvement Plan (SCRIP) with the Rancho Mission Viejo Company to fund a major portion of the proposed improvements. The proposed projects are being proposed between 2006 and 2016 to mitigate the effects of the Rancho Mission Viejo Company's development.

Coordination is required with the following projects that propose improvements on I-5 near this project.

EA	RTE	BPM	APM	DESCRIPTION	LOCATION
0C870	5	0.7	1.6	"HWY PLANTING RESTORATION"	IN SAN CLEMENTE FROM SAN MATEO CREEK BRD TO EL CAMINO REAL UC
0E030	5	6.8	14.5	"NB/SB SLAB REPLACEMENT AND GRINDING"	IN SAN JUAN CAPISTRANO ROUTE 1 TO OSO CREEK
0G730	5	6.1	31.2	"PROVIDE ENHANCED GORE PAVING,ROCK BLANKET AND ACCENT PLANTING "	"IN SAN JUAN CAPISTRANO,DANA POINT," "LAGUNANIGUEL,MV,LH,LF,IRVINE ,"TUSTIN AND SANTA ANA FROM CALLE JUANITA TO 4TH STREET (PORTION)

C. Traffic

- Current and Forecasted Traffic

Traffic volumes have been increasing due to developments around the facility. The 2006 Annual Average Daily Traffic (AADT) for the I-5 southbound off ramp is 16,036. The 2006 I- 5 mainline AADT at Camino de Estrella is 119,080 with 4.25% being truck traffic. In addition, the forecasted AADT 2030 volume for the ramp is 20,527.

The forecasted year 2030 traffic volumes are based on a 28% increase of population and employment growth rate.

- Accident Rates

A Tasas Selective Accident Retrieval (TSAR) was obtained for time periods beginning April 1, 2004 to March 31, 2007 (see Attachment F). There have been a total of ten (10) accidents that occurred over a period of three (3) years in the project area.

Accident Rate Summary (Accident/Million Vehicle Miles)

Location	Number of Accidents			Accident Rate					
				Actual			Average		
	Total	Fatal	I	Fatal	F + I	Total	Fatal	F + I	Total
SB Camino de Esterlla Off Ramp (PM 5.970)	8	0	4	0	0.29	0.59	0.005	0.61	1.5
SB Camino de Estrella On Ramp (PM 5.587)	2	0	2	0	0.27	0.27	0.002	0.32	0.8

5. ALTERNATIVES

The following alternatives were considered for the project:

A. VIABLE ALTERNATIVE

Alternative 2: Add optional auxiliary lane and south side overcrossing structure

1. Proposed Engineering Features

This build alternative proposes to convert the existing southbound auxiliary lane to a choice lane and to merge it to the mainline beyond the off ramp, add an additional auxiliary lane from Pacific Coast Highway (PCH) southbound on ramp to Camino de Estrella, and to convert the existing single lane southbound off ramp to a two lane off ramp. The existing auxiliary lane that will be extended will taper at approximately 1640-ft from the gore point to provide additional weaving length with the mainline. A third exclusive left turn lane will be added to the southbound off ramp at its terminus to increase the storage capacity, accommodate the high volume of left turn movement, and improve the overall LOS at this intersection. This ramp improvement will not degrade the existing corner sight distance at the intersection which is standard. In addition, the south side of the existing overcrossing structure will be widened to accommodate two additional lanes (one additional left turn lane from westbound Camino de Estrella to the southbound I-5 on ramp and one additional eastbound thru lane Camino de Estrella). This proposed alternative would improve the operation to both the Camino de Estrella southbound off ramp and the overcrossing traffic. As a result of this proposal, right-of-way acquisition is anticipated at the southwest corner of the interchange. There are also number of utilities that will have to be relocated on Camino de Estrella as part of this project. The known utilities are shown in the utilities plans (Attachment B). Utilities along the south side of Camino de Estrella will have to be relocated to achieve the proper taper for the widening. Non-standard design features are not anticipated for this project.

B. REJECTED ALTERNATIVE

Alternative 1: No Build

The No Build Alternative would leave the Camino de Estrella off ramp intersection in its present condition. No major improvements would be undertaken to increase the capacity at both the intersection and the southbound I-5 off ramp at Camino de Estrella.

Traffic congestion would worsen and delays would increase. Based on the signalized intersection analysis conducted by Traffic Operations South, the peak period LOS on southbound I-5 would decline to F for a duration of an hour per day by the year 2030 throughout the study area in this report.

Alternative 3: Add an exclusive auxiliary lane and widen the south side of the overcrossing structure

This build alternative is similar to Alternative 2 with the exception that the second 1640 ft of weaving length is not provided. The inclusion of the 1640 ft of weaving length provided in Alternative 2 will result in a operationally superior design.

6. CONSIDERATIONS REQUIRING DISCUSSION

A. Hazardous Waste :

A lead investigation study was performed in the project area and the results show the upper 4 ft of the soil excavated from the shoulder has the potential to be classified as a hazardous waste per Title 22 of the California Code of Regulations (CRC). Based upon the guidelines of the Department of Toxic Substance Control (DTSC) Variance and statistical analysis, soil at the site is suitable for re-use within the Caltrans right-of-way. If the soil within the project limits is to be re-used or disposed within Caltrans right-of–way, the upper 4 ft should be placed under 1 ft of clean fill or pavement and at least 5 ft minimum above the depth of groundwater in accordance with the DTSC Variance issued to Caltrans. Any excavated soil to be disposed should be handled as hazardous material that is contaminated with lead.

Any yellow traffic striping and pavement marking material should be tested during the design phase and removed (if necessary) during construction in accordance with the Caltrans Construction Manual (Chapter 7-106).

B. Value Analysis

A value analysis study is not required for the project with the cost estimate under $25,000,000.

C. Resource Conservation

Existing AC to be removed may be recycled to be reused as aggregate base for new pavement structural section. Excess materials from excavation work will be reused as fill material.

D. Right of Way Issues

- Right of Way acquisition required
- No Railroad involvement
- Utility involvement
- See Right of Way data sheet

E. Environmental Issues

It has been Determined that a Categorical Exemption and Categorical Exclusion (CE/CE) is the appropriate environmental compliance by California Environmental Quality Act (CEQA) Class 1c and National Environmental Policy Act (NEPA) 771.117 (c) (13). No significant environmental consequences are anticipated with the proposed project. A CE/CE has been approved for the project contingent upon adherence to the conditions set forth by the District Archaeologist and Biologist in addition to the measures relating to construction noise, air pollution control, water pollution control, and erosion, as given in the Caltrans Standard Specifications. The final Environmental Document is included in Attachment D.

This project is located in the jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB). Special consideration must be taken in any segment of the project which discharges into water bodies that may contain sensitive habitats.

This project will need to be evaluated for any potential water quality impacts. Although the proposed project is expected to result in an increase in impervious surface area, no substantial impacts are expected to occur during construction or from the proposed project if proper construction and post-construction Best Management Practices (BMPs) are employed.

F. Permit/NPDES Compliance

This project is covered under the Caltrans Statewide NPDES Permit (Order No. 99-06-DWQ, NPDES No. CAS000003) and the Statewide General NPDES Permit for Construction Activities (Order No. 99-08-DWQ, NPDES No. CAS000002) issued by the State Water Resources Control Board (SWRCB) and is located within the jurisdiction of the San Diego Regional Water Quality Control Board (SDRWQCB). This project must conform to all applicable water quality regulations and/or permit requirements of the SWRCB, SDRWQCB, and the Caltrans Storm Water Management Plan (May 2003), and any subsequent revisions and/or additional requirements at the time of construction.

Since the project would require more than 0.4 hectares (one acre) of Disturbed Soil Area (DSA), a Storm Water Pollution Prevention Plan (SWPPP) must be prepared and implemented. The SWPPP must fully conform to Caltrans requirements and includes SWRCB Resolution No. 2001-046, Sampling and Analytical Procedures (SAP) Plan.

A Storm Water Data Report (SWDR) has been prepared for this project per the guidelines given in the Caltrans Project Planning and Design Guide. The Storm Water Data Report documents the need for design, construction and treatment BMPs required for this project.

G. Air Quality Conformity

A $PM_{2.5}$ and PM_{10} Conformity Hot Spot Analysis will be prepared and submitted to the Southern California Association of Governments (SCAG) for their approval and submitted to Federal Highway Administration (FHWA). It was determined by the "Project Sponsor" (Caltrans) and The Conformity Working Group (TCWG) in January 2007 that the project is not a Project of Air Quality Concern (POAQC).

H. Title VI Considerations

This project is not anticipated to have impacts on the surrounding area.

7. OTHER CONSIDERATIONS AS APPROPRIATE

A. Traffic Management Plan for Use During Construction

No significant traffic delays are anticipated during construction of this project. Lane closures will be required during construction. A Traffic Management Plan will be developed during the final plans, specifications, and estimate preparation.

B. Permits

No permit requirements are anticipated for this project.

8. PROGRAMMING

This project is federally funded. It is on the Interstate system and is not an interstate completion but is considered a reconstruction. Therefore, per FHWA/Caltrans stewardship agreements, this project is not exempted from federal review and oversight (Figure 2, page 2-39 of the *Project Development Procedure Manual (7th edition).*

The project is categorized under the *Project Development Procedure Manual* in category 4B project since the project does not require substantially new right-of-way and does not substantially increase traffic capacity. Caltrans' Traffic Operations Branch has initiated this operational improvement project to increase the capacity at the off ramp interchange and at the off ramp.

This project will be funded through the 2006 State Highway Operation and Protection Program (SHOPP) under the Operational Improvements of the Mobility program (Program code 20.10.201.310). It is programmed in the 2009/2010 fiscal year.

The tentative schedule of the project is as follows:

- Project Report and Environmental Approval 02/01/2008
- District PS&E to HQOE 08/01/2009
- Right-of-Way Certification 10/01/2009
- Ready to List 11/01/2009
- Start of Construction 05/01/2010
- Completion of Construction 05/01/2012

9. REVIEWS

The Project Report has been circulated for review to the functional units, HQ reviewers, and FHWA. The resulting comments have been addressed on this Project Report.

10. PROJECT PERSONNEL

Joseph Lee Project Engineer, Design Branch A	(949) 724-2144
Ahmed Abou-Abdou Project Manager, Project Management	(949) 724-2097
Mili Lim-Stamation Branch Chief, Design Branch A	(949) 724-2167
Frank Lin Office Chief of Design	(949) 724-2126
Marie Shatto Chief, R/W Project Coordinator	(949) 724-2447
Smita Deshpande Chief, Environmental Planning	(949) 724-2243
Raouf Moussa Chief, Traffic Operations South	(949) 724-2912

11. LIST OF ATTACHMENTS

Attachment A — Location Map
Attachment B — Preliminary Plan Sheets
Attachment C — Right of Way Data Sheet
Attachment D — Environmental Document
Attachment E — Project Estimate
Attachment F — Traffic Investigation Package
Attachment G — TSAR Table B

ATTACHMENT – A
LOCATION MAP

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

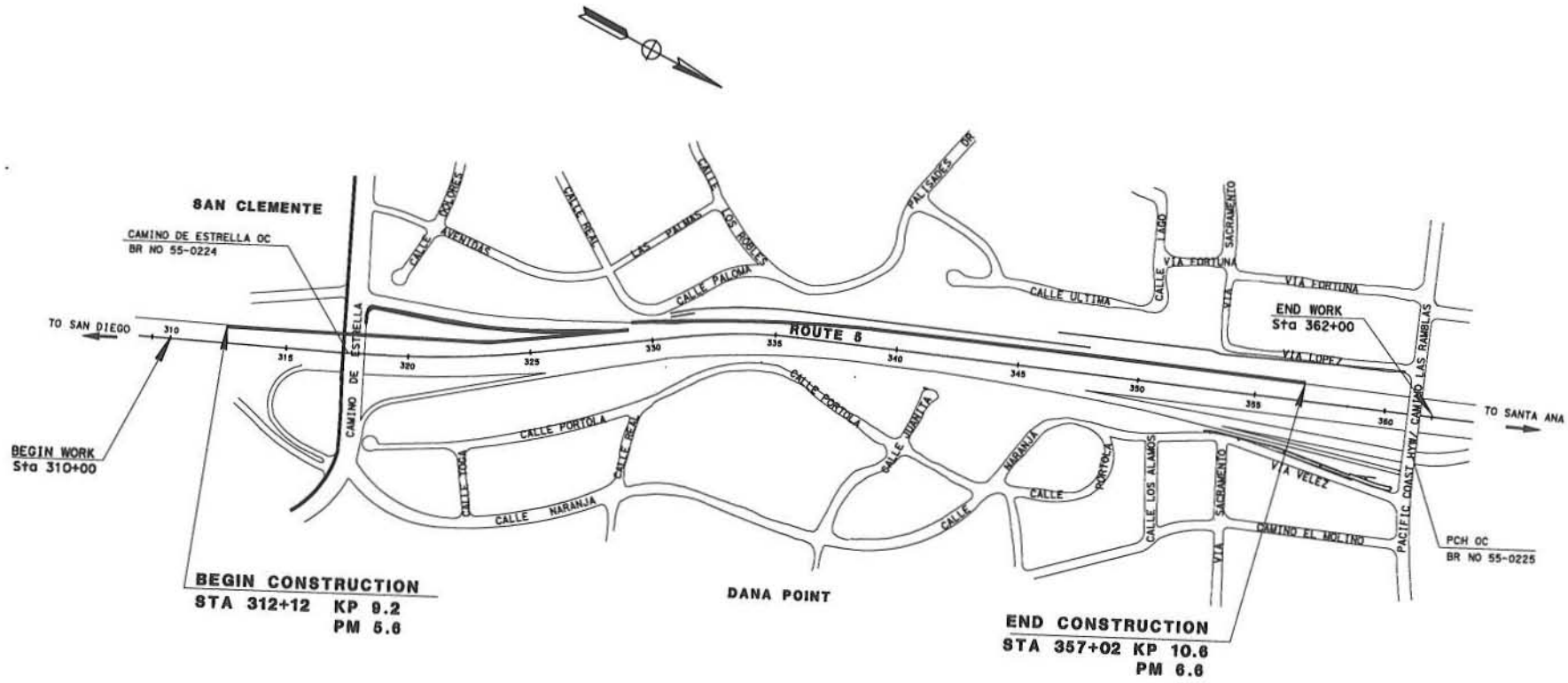
To get to the Caltrans web site, go to: http://www.dot.ca.gov

* THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO CONTRACTORS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY
IN ORANGE COUNTY
IN SAN CLEMENTE & DANA POINT

& BRIDGE OVERCROSSING WIDENING@ CAMINO DE ESTRELLA

To be supplemented by Standard Plans dated May 2006



* The Contractor shall possess the Class (or Classes) of license as specified in the "Notice to Contractors".

Contract No.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER	DATE	REVISED BY	DATE REVISED	CALCULATED/ DESIGNED BY	CHECKED BY
Caltrans						

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => tcjlee
DGN FILE => cover sheet.dgn

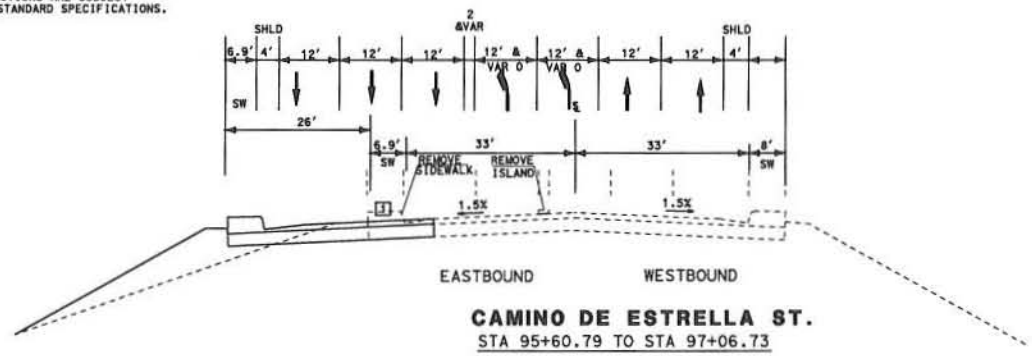
CU 00000 EA 000000

LAST REVISION 00-00-00 DATE PLOTTED => 12-DEC-2007 TIME PLOTTED => 10:28

ATTACHMENT – B
PRELIMINARY PLAN SHEETS

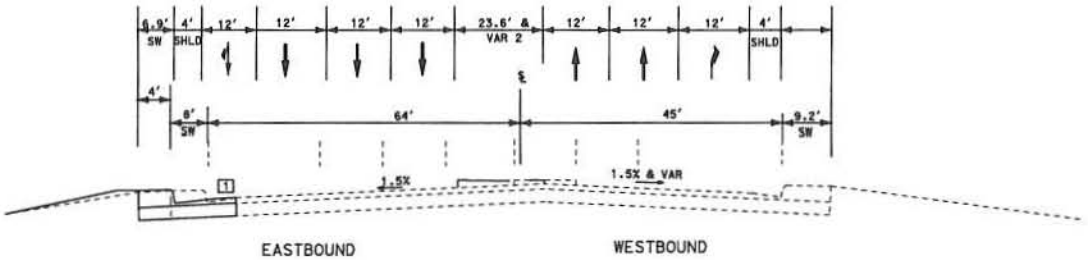
NOTES:

1. DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



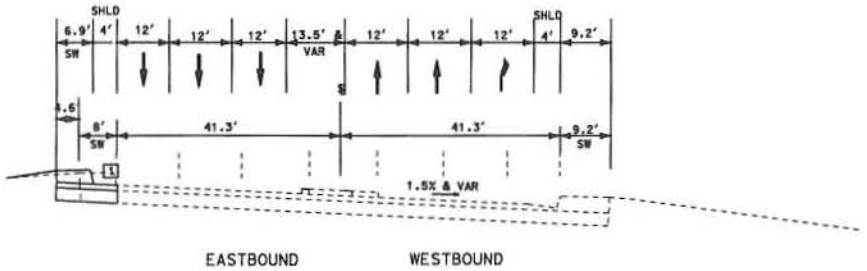
CAMINO DE ESTRELLA ST.

STA 95+60.79 TO STA 97+06.73



CAMINO DE ESTRELLA ST.

STA 93+06.76 TO STA 95+60.79



CAMINO DE ESTRELLA ST.

STA 88+58.00 TO STA 93+06.76

LEGEND:

[1] - PAVEMENT STRUCTURE: 0.60 FT AC (Type A) / 2.25 FT Class 2 AB

[2] - PAVEMENT STRUCTURE: 0.70 FT AC (Type A) / 2.65 FT Class 2 AB

[3] - PAVEMENT STRUCTURE: 0.80 FT JPCP / 0.40 FT LCB / 0.60 FT CLASS 2 AS

PRELIMINARY DESIGN

TYPICAL CROSS SECTIONS

NO SCALE

X-1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To get to the Caltrans web site, go to: http://www.dot.ca.gov

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY

CHECKED BY

PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

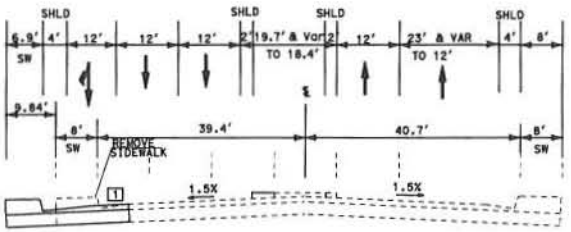
USERNAME => tc|lee
DGN FILE => cross_section english station.dgn

CU 00000

EA 000000

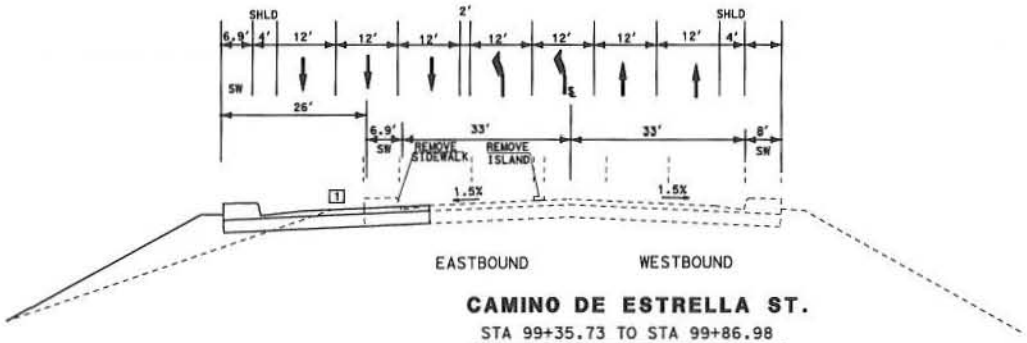
LAST REVISION 00-00-00

DATE PLOTTED => 12-DEC-2001
TIME PLOTTED => 10:24



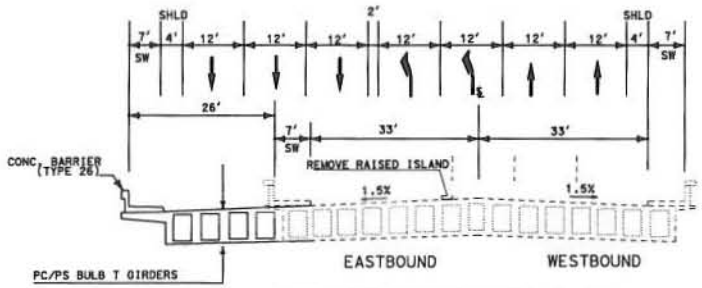
CAMINO DE ESTRELLA ST.

STA 99+86.98 TO STA 102+11.40



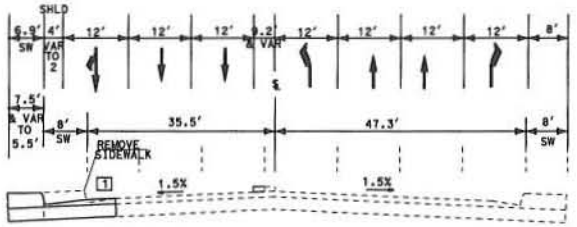
CAMINO DE ESTRELLA ST.

STA 99+35.73 TO STA 99+86.98



CAMINO DE ESTRELLA ST.

STA 97+06.73 TO STA 99+35.73



CAMINO DE ESTRELLA ST.

STA 102+11.40 TO STA 104+33.10

PRELIMINARY DESIGN

TYPICAL CROSS SECTIONS

NO SCALE

X-2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To get to the Caltrans web site, go to: http://www.dot.ca.gov

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

PROJECT ENGINEER

CALCULATED/ DESIGNED BY

CHECKED BY

DATE	REVISED BY	DATE REVISED

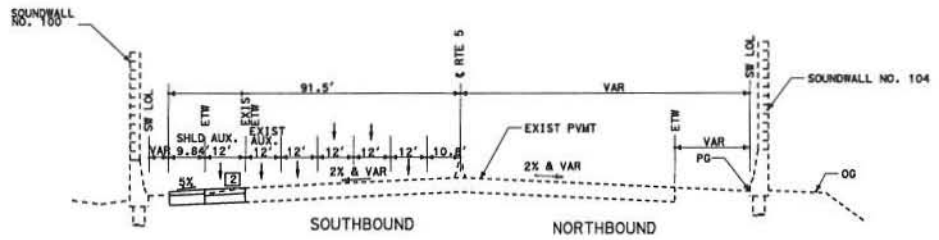
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => tcllee
DGN FILE => cross_section english station.dgn

CU 00000

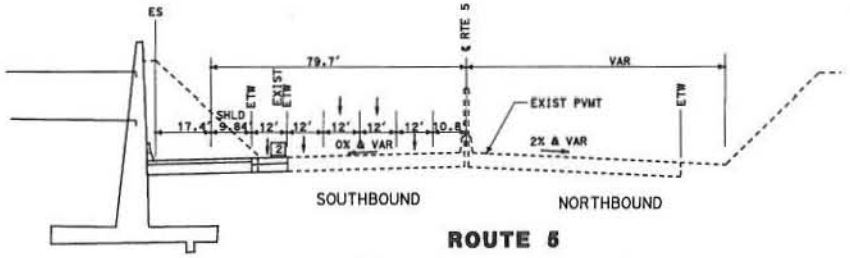
EA 000000

LAST REVISION 00-00-00 DATE PLOTTED => 16-JAN-2008 TIME PLOTTED => 08:37



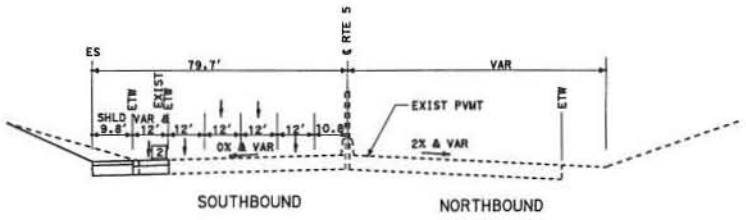
ROUTE 5

STA 317+53.80 TO STA 345+56.00



ROUTE 5

STA 316+48.80 TO STA 317+53.80



ROUTE 5

STA 312+12.00 TO STA 316+48.80

PRELIMINARY DESIGN

TYPICAL CROSS SECTIONS

NO SCALE

X-3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

To get to the Caltrans web site, go to: http://www.dot.ca.gov

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

PROJECT ENGINEER

CALCULATED/ DESIGNED BY

CHECKED BY

DATE	REVISED BY	DATE REVISED

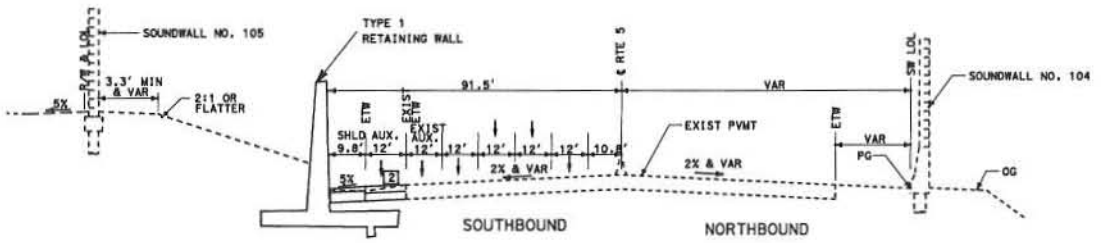
LAST REVISION 00-00-00 | DATE PLOTTED => 15-DEC-2007 | TIME PLOTTED => 10:25

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => tclee
DGN FILE => cross_section english station.dgn

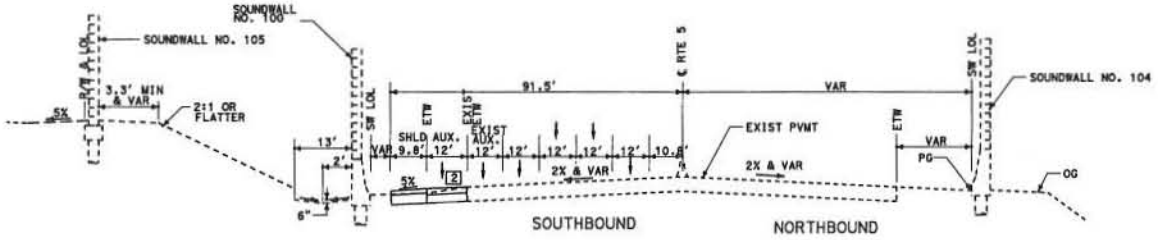
CU 00000

EA 000000



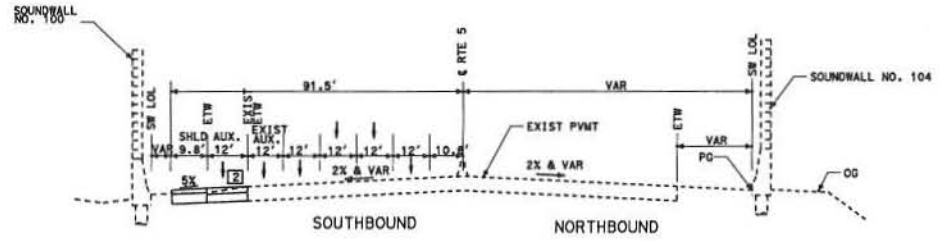
ROUTE 5

STA 347+00.00 TO STA 357+61.15



ROUTE 5

STA 345+56.00 TO STA 347+00.00



ROUTE 5

STA 330+07.00 TO STA 345+56.00

PRELIMINARY DESIGN

TYPICAL CROSS SECTIONS

NO SCALE

X-4

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To get to the Caltrans web site, go to: http://www.dot.ca.gov

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

PROJECT ENGINEER

CALCULATED/ DESIGNED BY

CHECKED BY

DATE | REVISED BY | DATE REVISED

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

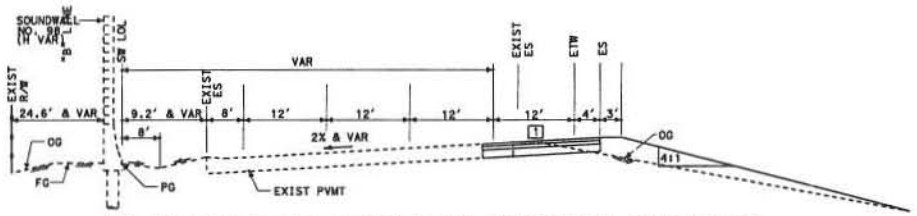
USERNAME => tcllee
DGN FILE => cross_section english station.dgn

CU 00000

EA 000000

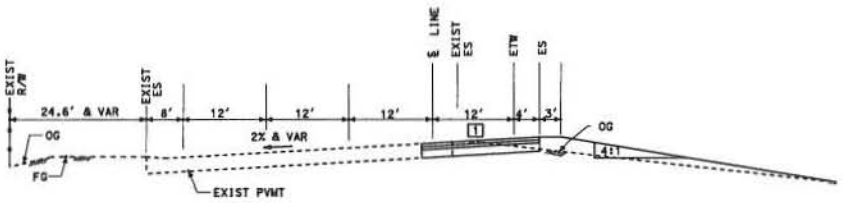
LAST REVISION 00-00-00

DATE PLOTTED => 13-DEC-2007
TIME PLOTTED => 10:26



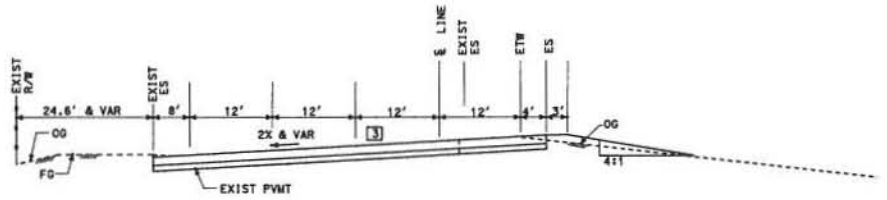
SB ROUTE 5 TO CAMINO DE ESTRELLA OFF-RAMP

STA 320+75.86 TO STA 328+36.00



SB ROUTE 5 TO CAMINO DE ESTRELLA OFF-RAMP

STA 319+49.64 TO STA 320+75.86



SB ROUTE 5 TO CAMINO DE ESTRELLA OFF-RAMP

(RAMP TERMINI SECTION)
STA 317+73.45 TO STA 319+49.64

PRELIMINARY DESIGN

TYPICAL CROSS SECTIONS

NO SCALE

X-5

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To get to the Caltrans web site, go to: http://www.dot.ca.gov

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY

CHECKED BY

PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

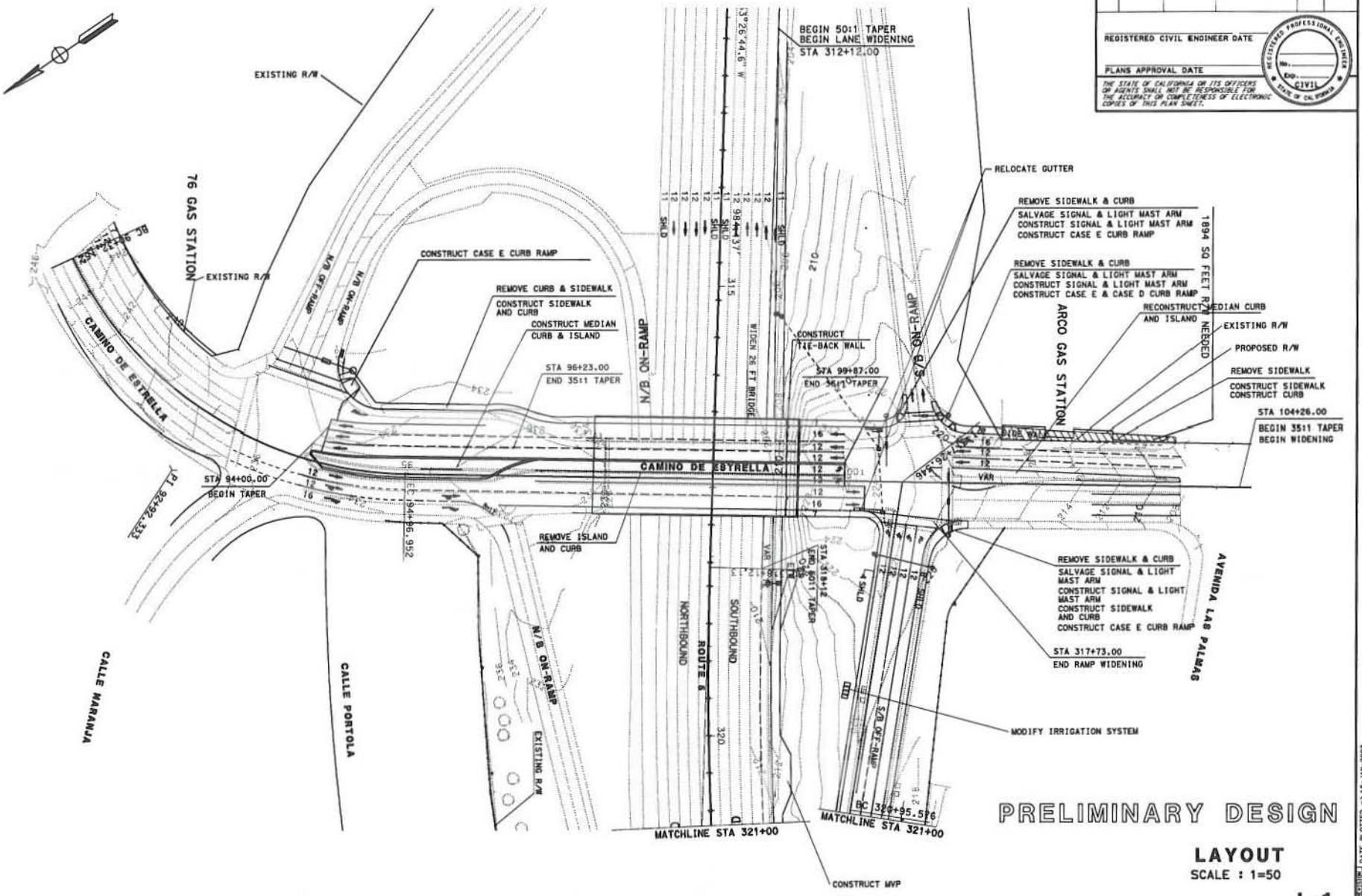
USERNAME => tc|lee
DGN FILE => cross_section english station.dgn

CU 00000

EA 000000

LAST REVISION 00-00-00

DATE PLOTTED => 12-DEC-2007
TIME PLOTTED => 10:26



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY | SUPERVISING ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 00-00-00 | DATE PLOTTED => 19-JAN-2006 | TIME PLOTTED => 09:36

BORDER LAST REVISED 11/1/2006 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => tc/lee | DGN FILE => 11.dgn | CU 00000 | EA 000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA — Exp.:

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

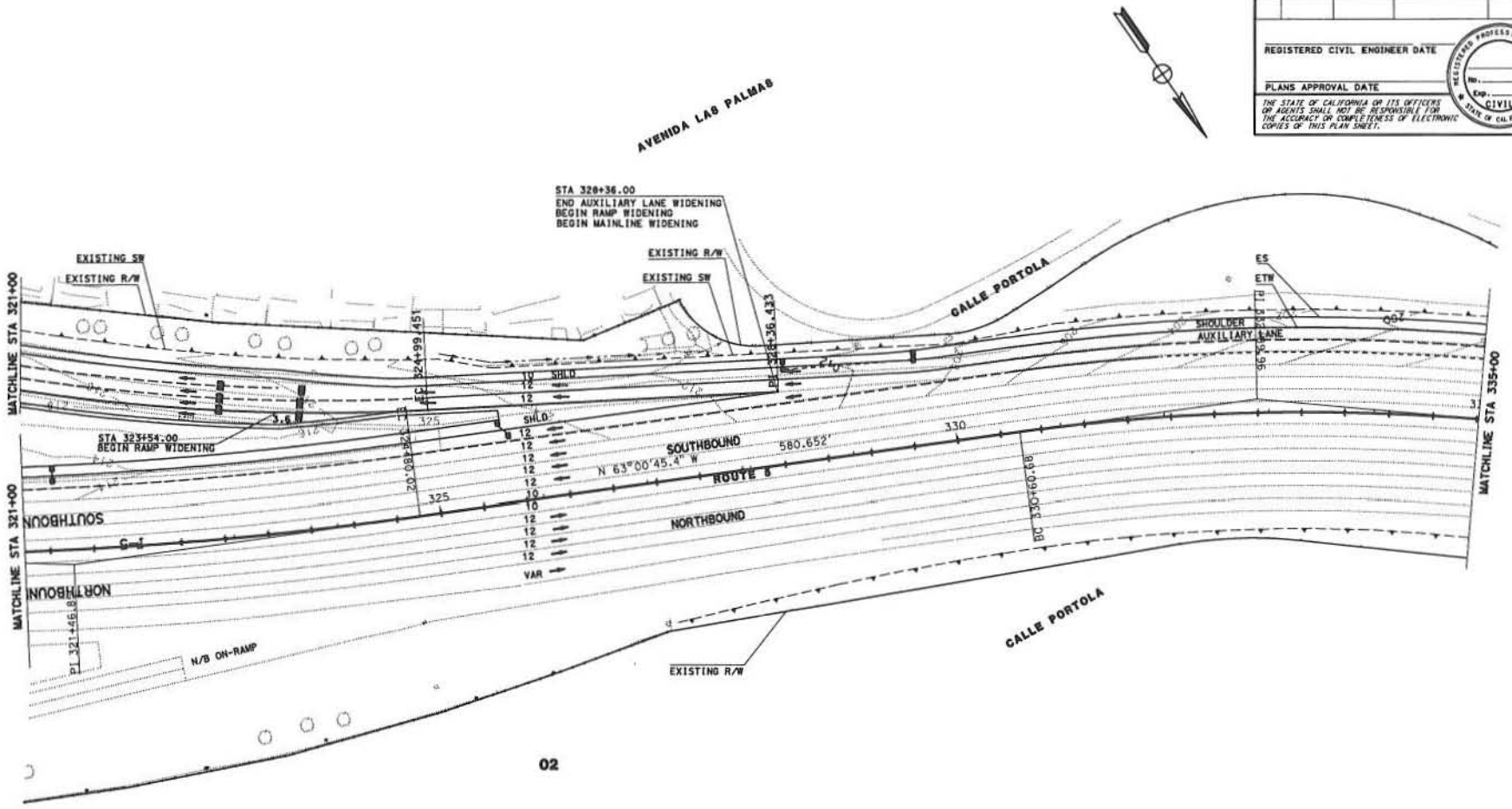
REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

SUPERVISING ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans



PRELIMINARY DESIGN

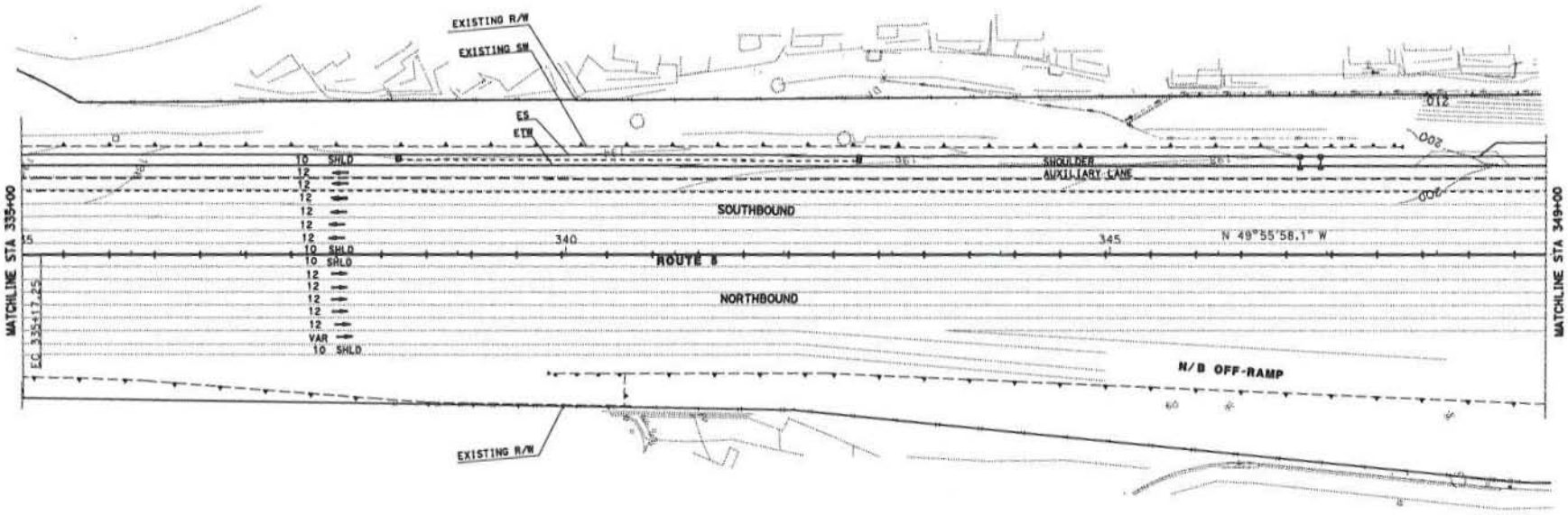
LAYOUT

SCALE : 1=50

L-2

LAST REVISION 00-00-00 | DATE PLOTTED => 12-DEC-2007 TIME PLOTTED => 10:05

BORDER LAST REVISED 11/1/2006 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => tcjlee DGN FILE => 12.dgn | CU 00000 | EA 000000



PRELIMINARY DESIGN

LAYOUT

SCALE : 1:50

L-3

03

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — No. — EXP. — CIVIL — STATE OF CALIFORNIA

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

SUPERVISING ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

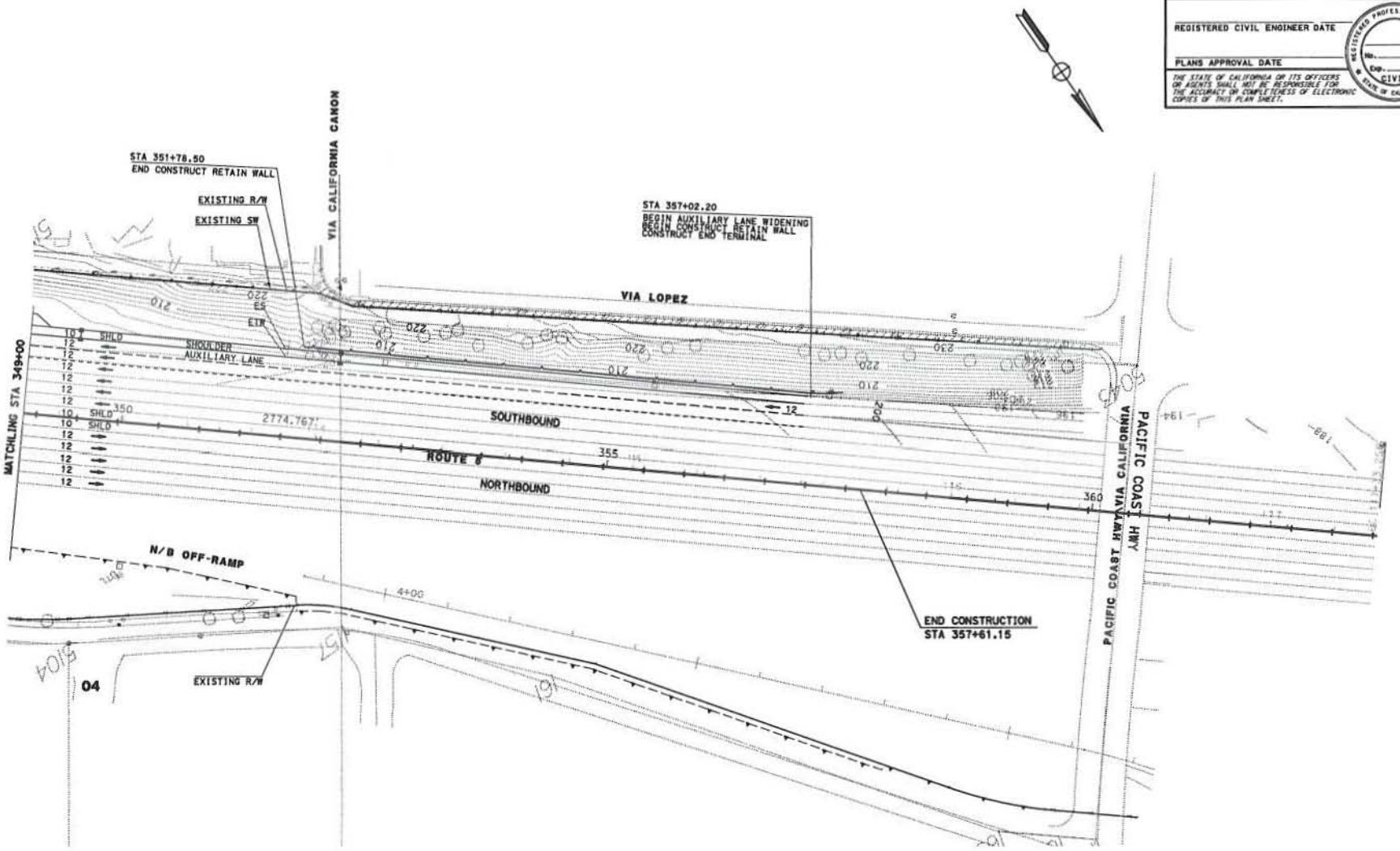
BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => tcline
DGN FILE => 13.dgn

CU 00000

EA 000000



PRELIMINARY DESIGN

LAYOUT

SCALE : 1=50

L-4

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY

CHECKED BY

SUPERVISING ENGINEER

STATE OF CALIFORNIA — DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION DATE PLOTTED => 12-DEC-2007
TIME PLOTTED => 10:01
00-00-00

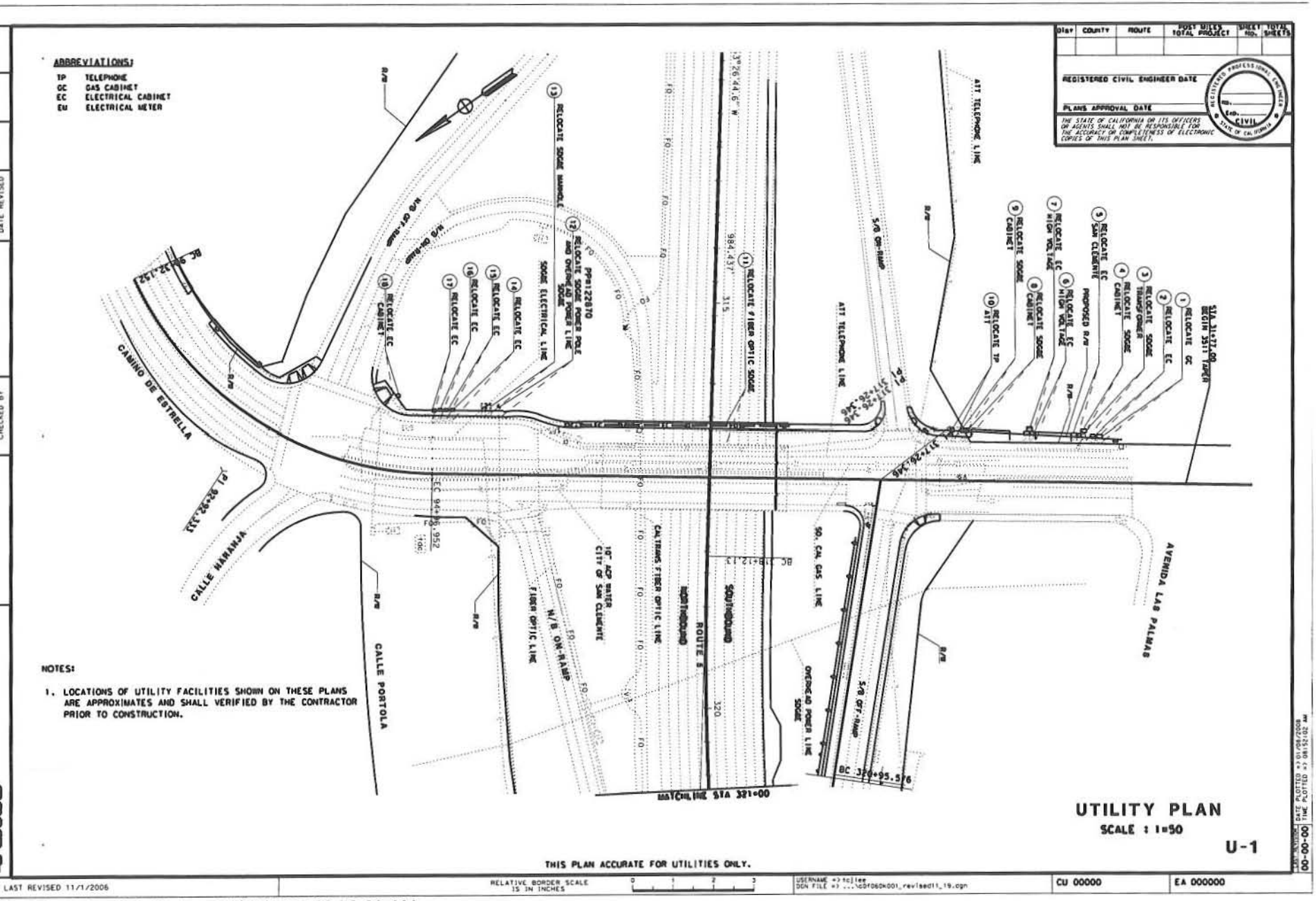
BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

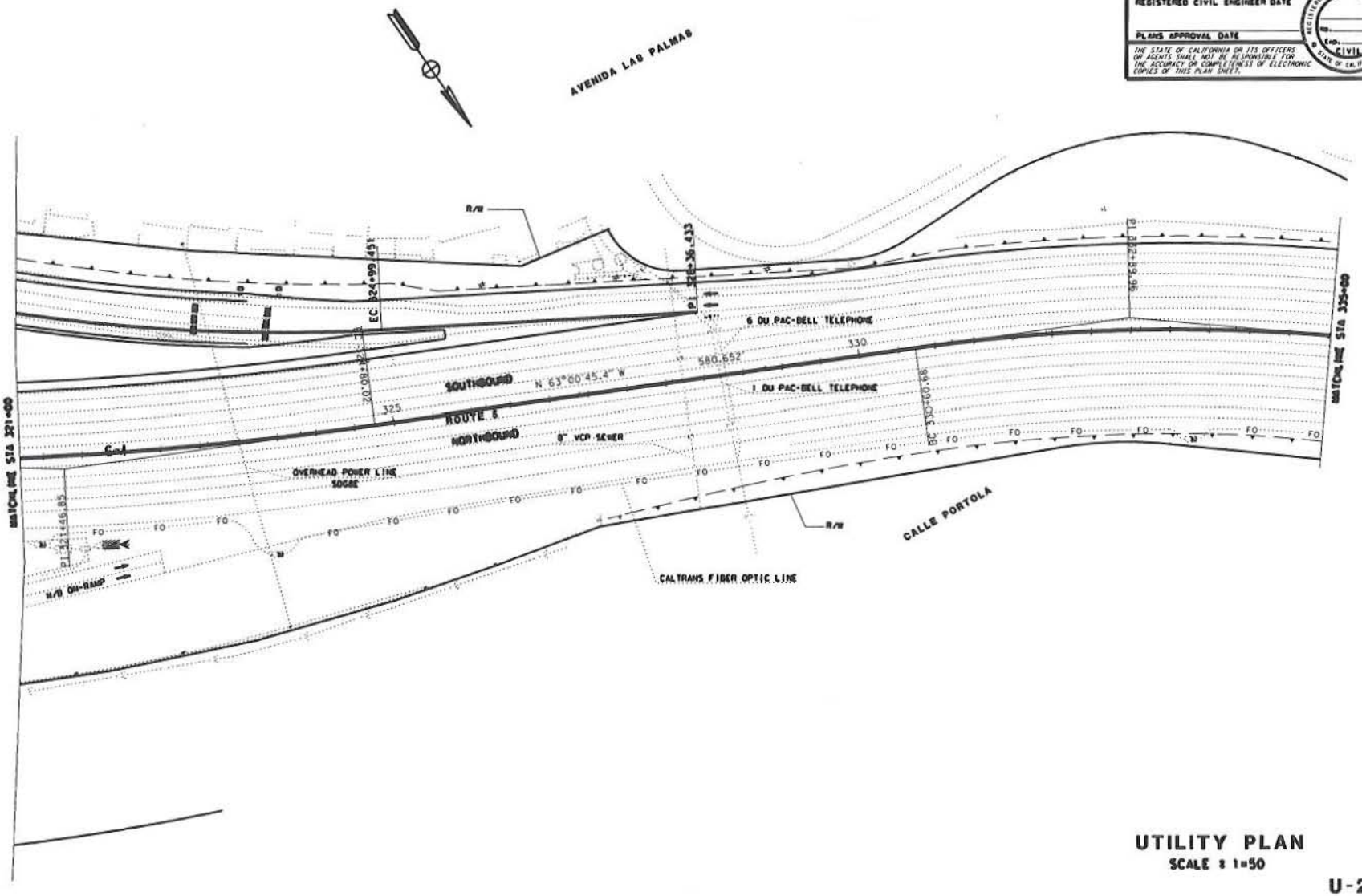
USERNAME => tcllee
DGN FILE => l4.dgn

CU 00000

EA 000000



...\c0f060k001_revised11_19.dgn 01/08/2008 08:52:02 AM



UTILITY PLAN

SCALE 1=50

U-2

THIS PLAN ACCURATE FOR UTILITY ONLY

DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA • Department of Transportation

SUPERVISING ENGINEER

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

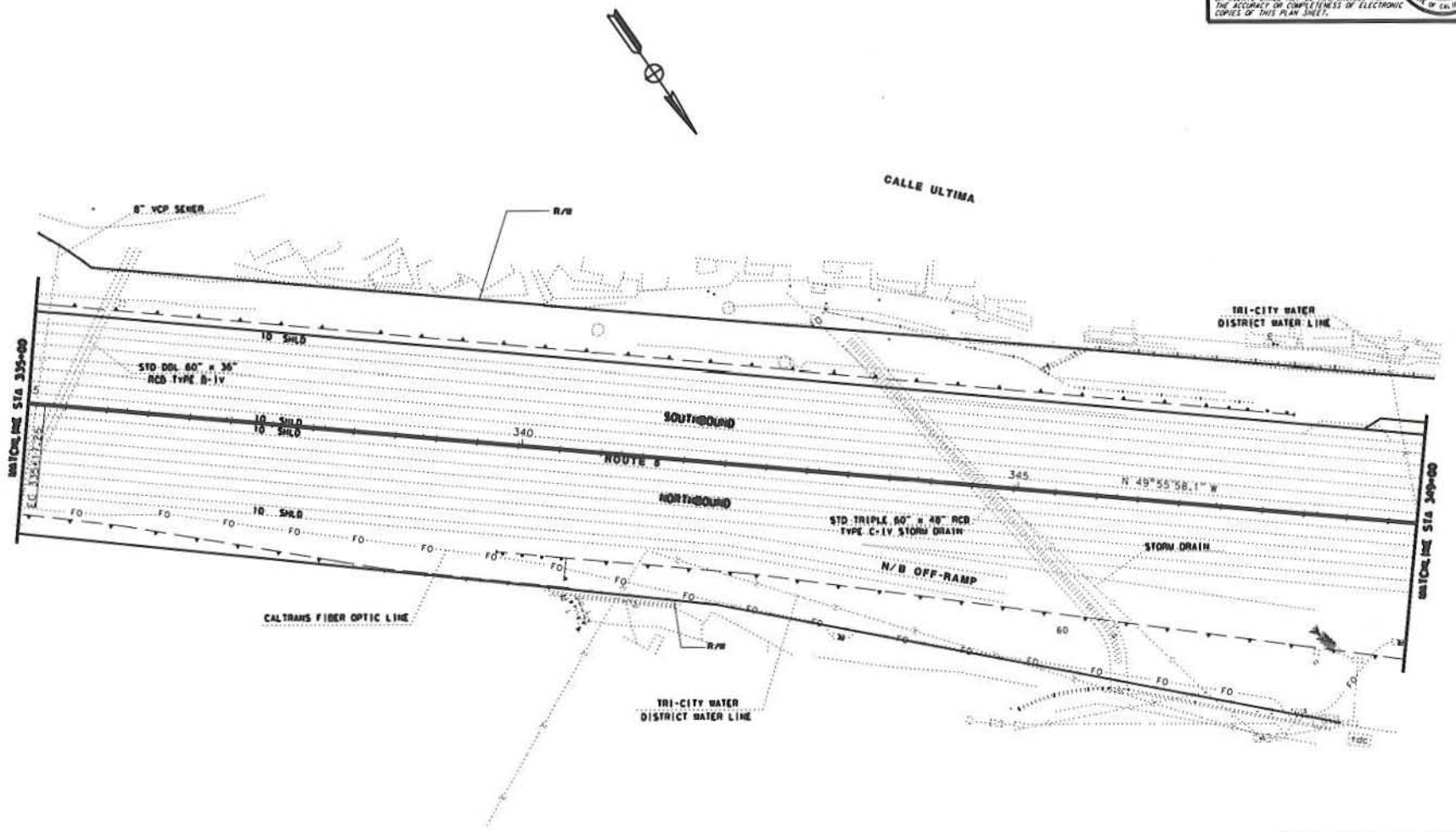
USERNAME => tcjlee
DGN FILE => ...\c0f060k002_revised11_5.dgn

CU 00000

EA 000000

DATE PLOTTED => 01/08/2008
TIME PLOTTED => 08:54:48 AM

00-00-00



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SUPERVISING ENGINEER

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

UTILITY PLAN

SCALE : 1=50

U-3

THIS PLAN ACCURATE FOR UTILITY ONLY

BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => tclee
DGN FILE => ...\c0f060k003_revised11_5.dgn

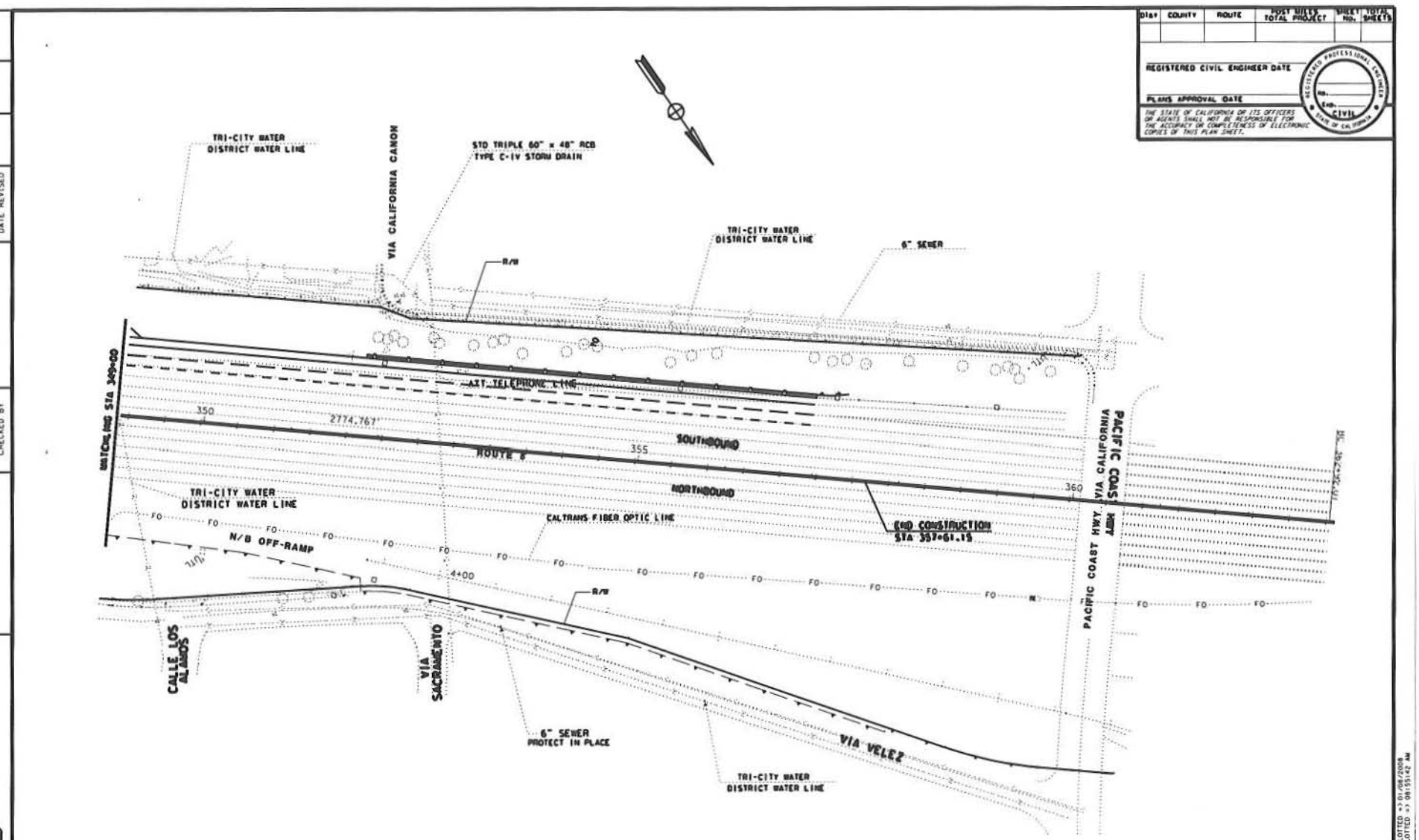
CU 00000

EA 000000

DATE PLOTTED => 01/08/2008
TIME PLOTTED => 08:55:18 AM

00-00-00

...\c0f060k003_revised11_5.dgn 01/08/2008 08:55:18 AM



UTILITY PLAN

SCALE : 1=50

U-4

THIS PLAN ACCURATE FOR UTILITY ONLY

BORDER LAST REVISED 11/1/2006

RELATIVE BORDER SCALE TO IN INCHES 0 1 2 3

USERNAME =>hcline
DGN FILE => ...\c0f060k004_revised11_5.dgn

CU 00000

EA 000000

DATE PLOTTED => 01/08/2008
TIME PLOTTED => 08:55:42 AM

...\c0f060k004_revised11_5.dgn 01/08/2008 08:55:42 AM

ATTACHMENT – C
RIGHT OF WAY DATA SHEETS

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
RIGHT OF WAY DATA SHEET
(Form #)

REVISED

EA: 0F0600
4-EX-1 (REV 3/2004)

To: Mili Lim-Stamation, Chief
Design Branch A
Attention: Joseph Lee
Project Engineer

Date October 2, 2007
Dist 12 Co ORA Rte 005 PM 5.6-6.6
EA 0F0600
Project Description: Widen S/B off-ramp and OC bridge at Camino De Estrella

Subject: Right of Way Data Sheet

Alternate No.: 2 – Preferred

This Alternate meets the criteria for a Design/Build project: Yes ☐ No ☒

1. **Right of Way Cost Estimate:** To be entered into PMCS COST RW1-5 Screens.

		Current Value Future Use	Escalation Rate	Escalated Value
A.	**Total Acquisition Cost:** Acquisition, including Excess Lands, Damages, and Goodwill.	$ 790,000.00	5 %	$ 875,000.00
	Project Permit Fees.	$ 0	%	$ 0
B.	**Utility Relocation** (State Share)	$ 400,000.00	10 %	$ 484,000.00
C.	**Relocation Assistance**	$ 0	%	$ 0
D.	**Clearance/Demolition**	$ 0	%	$ 0
E.	**Title and Escrow**	$ 10,000.00	0 %	$ 10,000.00
F.	**Total Estimated Cost**	$ 1,200,000.00		$ 1,369,000.00
G.	**Construction Contract Work**			

2. **Current Date of Right of Way Certification** 10/01/09T

3. **Parcel Data:** To be entered into PMCS EVNT RW Screen.

Type		Dual/Appr	Utilities	
X			U4-1	
A			-2	
B	2		-3	
C			-4	4
D			U5-7	
E	XXXX		-8	
F	XXXX		-9	4

Total 2

RR Involvements	
None	X
C&M Agrmt	0
Svc Contract	0
Lic/RE/Clauses/ OE Clearance	0

Misc. R/W Work	
RAP Displ	N/A
Clear/Demo	N/A
Const Permits	N/A
Condemnation	2
Excess	0

Areas: R/W N/A No. Excess Parcels 0
Entered PMCS Screens _____ by Baker
Entered AGRE Screen (Railroad data only) ___/___/___ By _____

4. Are there any major items of construction contract work? Yes ☐ No ☒ (If "Yes," explain.)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc...)
No right of way required. ☐

Project fee and Temporary Construction Easements (TCE) impact (1) one gas-filling station and (1) one commercial property. It is anticipated that customer access to gas pumps or service bays will not be severely impacted by Caltrans' construction. This right-of-way data sheet includes costs for condemnation and any potential costs associated with the nearby shopping center.

6. Is there an effect on assessed valuation? Yes ☐ Not Significant ☐ No ☒ (If "Yes," explain.)

7. Are utility facilities or rights of way affected?
Yes ☒ No ☐ (If "Yes," attach Utility Information Sheet, Exhibit 4-EX-5.)
The following checked items may seriously impact lead time for utility relocation:
☐ Longitudinal policy conflict(s)
☐ Environmental concerns impacting acquisition of potential easements
☐ Power lines operating in excess of 50 KV and substations
(See attached Exhibit 4-EX-5 for explanation.)

8. Are Railroad facilities or rights of way affected?
Yes ☐ No ☒ (If "Yes," attach Railroad Information Sheet, Exhibit 4-EX-6.)

9. Were any previously unidentified sites with hazardous waste and/or material found?
Yes ☐ None Evident ☒ (If "Yes," attach memorandum per R/W Manual, Chapter 4, Section 4.01.10.00.)

10. Are RAP displacements required? Yes ☐ No ☒ (If "Yes," provide the following information.)

No. of single family _____ No. of business/nonprofit _____

No. of multi-family _____ No. of farms _____

Based on Draft/Final Relocation Impact Statement/Study dated ____N/A_____, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there Material Borrow and/or Disposal Sites required? Yes ☐ No ☒ (If "Yes," explain.)

12. Are there potential relinquishments and/or abandonments? Yes ☐ No ☒ (If "Yes," explain.)

13. Are there any existing and/or potential airspace sites? Yes ☐ No ☒ (If "Yes," explain.)

14. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if district proposes less than PMCS lead-time and/or if significant pressures for project advancement are anticipated.)

Based on the R/W requirements on Page 1 of this Data Sheet, R/W will require a lead-time of 14 months from the date regular appraisals can begin to project certification.

In any event, RW Maps will require 18 months from Final Maps to project certification.

15. Is it anticipated that Caltrans staff will perform all Right of Way work? Yes ☒ No ☐ (If "No," discuss.)

Evaluation Prepared By:

Right of Way: Name Hany Pantoja Date 10.2.07

Railroad: Name K Mullen for M Smith Date 10-2-07

Utilities: Name Nora Coleman Date 10/2/07

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper subject to the limiting conditions set forth, and I find this Data Sheet complete and current.

KATHY J. ANDERSON, Chief
R/W Project Coordination, Local
Programs and Project Control
Irvine Office
Southern Right of Way Region

10-2-07
Date

UTILITY INFORMATION SHEET

1. Name of utility companies involved in project:

   AT&T
   Southern California Gas (SCG)
   San Diego Gas & Electric (SDG&E)
   City of San Clemente - Water, Electrical, Sewer
   City of Dana Point - Water, Electrical, Sewer

2. Types of facilities and agreements required:

   AT&T – communications – telephone box relocations; telephone manhole cover adjustments
   SCG – gas – gas lines and cabinets relocations; manhole/valve cover adjustments
   SDGE – electrical – cabinet relocations, overhead power lines and pole relocation, fiber optic lines, and transformer relocations.
   City of San Clemente/City of Dana Point – relocate water pipes, electrical cabinets including high voltage cabinets, electrical meter

   Utility Agreements required.

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? Explain.

   N/A

   Disposition of longitudinal encroachment(s):
   ☐ Relocation required.
   ☐ Exception to policy needed.
   ☐ Other. Explain.

4. Additional information concerning utility involvements on this project, i.e., long lead-time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).

5. PMCS Input Information
   Total estimated cost of State's obligation for utility relocation on this project:
   $ 484,000.00

   Note: Total estimated cost to include any Department obligation to relocate longitudinal encroachments in access controlled right of way and acquire any necessary utility easements.

Utility Involvements

U4		U5	
-1	0	-7	0
-2	0	-8	0
-3	0	-9	4
-4	4		

Prepared By:

Rosei Coleman

Right of Way Utility Estimator

ATTACHMENT – D
ENVIRONMENTAL DOCUMENT

CATEGORICAL EXEMPTION/ CATEGORICAL EXCLUSION DETERMINATION FORM

Revised September 6, 2007

12-ORA-5	PM 5.7/6.6	0F060	
Dist.-Co.-Rte. (or Local Agency)	P.M/P.M.	E.A. (State project)	Federal-Aid Project No. (Local project)/ Proj. No.

PROJECT DESCRIPTION: (Briefly describe project, purpose, location, limits, right-of-way requirements, and activities

The proposed project includes constructing an auxiliary lane along southbound I-5 to the off-ramp at Camino De Estrella, and widening the off-ramp from a single lane to a two-lane exit. Local street improvements include widening the over-crossing structure from five lanes to seven lanes, adding an additional westbound Camino De Estrella left turn lane to the southbound I-5 on-ramp, and adding an additional eastbound Camino De Estrella through lane.

CEQA COMPLIANCE *(for State Projects only)*

Based on an examination of this proposal, supporting information, and the following statements (See 14 CCR 15300 et seq.):

- If this project falls within exempt class 3, 4, 5, 6 or 11, it does not impact an environmental resource of hazardous or critical concern where designated, precisely mapped and officially adopted pursuant to law.
- There will not be a significant cumulative effect by this project and successive projects of the same type in the same place, over time.
- There is not a reasonable possibility that the project will have a significant effect on the environment due to unusual circumstances.
- This project does not damage a scenic resource within an officially designated state scenic highway.
- This project is not located on a site included on any list compiled pursuant to Govt. Code § 65962.5 ("Cortese List").
- This project does not cause a substantial adverse change in the significance of a historical resource.

CALTRANS CEQA DETERMINATION

☐ **Exempt by Statute.** (PRC 21080[b]; 14 CCR 15260 et seq.)

Based on an examination of this proposal, supporting information, and the above statements, the project is:

☒ **Categorically Exempt. Class** 1, Section 15301 (c). (PRC 21084; 14 CCR 15300 et seq.)

☐ **Categorically Exempt. General Rule exemption.** [This project does not fall within an exempt class, but it can be seen with certainty that there is no possibility that the activity may have a significant effect on the environment (CCR 15061[b][3])

Smita Deshpande	Jan 11, 2008	Ahmed Abu-Abdo	1/11/08
Signature: Environmental Branch Chief	Date	Signature: Project Manager	Date

NEPA COMPLIANCE

In accordance with 23 CFR 771.117, and based on an examination of this proposal and supporting information, the State has determined that this project:

- does not individually or cumulatively have a significant impact on the environment as defined by NEPA and is excluded from the requirements to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS), and
- has considered unusual circumstances pursuant to 23 CFR 771.117(b) (http://www.fhwa.dot.gov/hep/23cfr771.htm - sec.771.117).

In non-attainment or maintenance areas for Federal air quality standards, the project is either exempt from all conformity requirements, or conformity analysis has been completed pursuant to 42 USC 7506(c) and 40 CFR 93.

CALTRANS NEPA DETERMINATION

☒ **Section 6004:** The State has been assigned, and hereby certifies that it has carried out, the responsibility to make this determination pursuant to Chapter 3 of Title 23, United States Code, Section 326 and a Memorandum of Understanding (MOU) dated June 7, 2007, executed between the FHWA and the State. The State has determined that the project is a Categorical Exclusion under:

- 23 CFR 771 activity (c)(___)
- 23 CFR 771 activity (d)(1)
- Activity ___ listed in the MOU between FHWA and the State

☐ **Section 6005:** Based on an examination of this proposal and supporting information, the State has determined that the project is a CE under Section 6005 of 23 U.S.C. 327.

Smita Deshpande	Jan 11, 2008	Ahmed Abu-Abdo	1/11/08
Signature: Environmental Branch Chief	Date	Signature: Project Manager/DLA Engineer	Date

Briefly list environmental commitments on continuation sheet. Reference additional information, as appropriate (e.g., air quality studies, documentation of conformity exemption, FHWA conformity determination if Section 6005 project; §106 commitments; § 4(f); § 7 results; Wetlands Finding; Floodplain Finding; additional studies; and design conditions). **Revised September 6, 2007**

CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM
Continuation Sheet

12-ORA-5	PM 5.7/6.6	0F060	
Dist.-Co.-Rte. (or Local Agency)	P.M/P.M.	E.A. (State project)	Federal-Aid Project No. (Local project)/ Proj. No.

No Significant environmental consequences are anticipated with the proposed project. In addition to the measures related to construction noise, air pollution, water pollution control, erosion, and as given in the Caltrans Standard Specifications, the following conditions are required:

1. The proposed project footprint will be sampled where soil may be disturbed during construction for Aerially Deposited Lead (ADL) according to Caltrans ADL Testing guidelines. If found contaminated, the project will adhere to Caltrans requirements for handling ADL.
2. A qualified biologist must conduct nesting bird surveys prior to any vegetation removal that occurs during the bird-nesting season (February 15th to September 1st).

ATTACHMENT – E
PROJECT ESTIMATE

PRELIMINARY COST ESTIMATE - ALTERNATIVE 2

12-ORA-05
KP 9.2/10.6
(PM 5.6/6.6)
SB Camino De Estrella Off-Ramp & Bridge Widening
EA #12-0F0601

Program Code: 20.10.201.310

PROJECT DESCRIPTION:

Project Location
Proposed Improvement (Scope)

I-5 SB Camino De Estrella Off-Ramp & Bridge Widening
Construct an additional auxiliary lane and convert existing auxiliary lane to optional exit, add one additional left turn lane on southbound Camino De Estrella offramp and widen Camino De Estrella OC.

ROADWAY ITEMS	**$7,141,000**
STRUCTURE ITEMS	**$2,272,000**
SUBTOTAL CONSTRUCTION	**$9,413,000**
RIGHT OF WAY (Escalated Value)	**$1,369,000**
TOTAL PROJECT COST	**$10,782,000**
CALL	**$11,000,000**

Reviewed by
Branch Chief

Signature _____ Date 1/16/08
Mili Lim-Stamation

Reviewed by
District Program Advisor

Signature _____ Date 1/16/08
Raouf Moussa

Approved by
Project Manager

Signature _____ Date 1/14/08
Ahmed Abou-Abdou

ALTERNATIVE 2

I. ROADWAY ITEMS

SECTION 1 Earthwork

Item No	Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
153214	Remove Curb & Gutter/ AC Dike	1,100	FT	$15	$16,500	
160101	Clearing and Grubbing	1	LS	$45,000	$45,000	
150769	Remove Asphalt Concrete	92,550	FT3	$2	$185,100	
153218	Remove Concrete Sidewalk	1,100	FT	$7	$7,700	
153239	Remove Concrete (Curb, Gutter & Sidewalk)	2,800	FT3	$5	$14,000	
190101	Roadway Excavation	367,500	FT3	$1	$367,500	
66516	Sawcut Existing Joint	6	LS	$3,000	$18,000	
	Imported Borrow (re-grade the slope to 1:2)	38,800	FT3	$2	$58,200	
				Total Earthwork		**$712,000**

SECTION 2 Structural Section

Item No	Structural Section	Quantity	Unit	Unit Price	Item Cost	Section Cost
260201	Class 2 Aggregate Base	435600	FT3	$2	$871,200	
390103	Asphalt Concrete (type A)	8,400	ton	$120	$1,008,000	
401066	Concrete Pavement (Ramp Termini)	315	CY	$220	$69,300	
280000	LCB	157	CY	$200	$31,400	
731505	Minor Concrete (Curb & Sidewalk)	8400	FT3	$22	$184,800	
197010	Place & Compact Embankment	50000	FT3	$2	$100,000	
394001	Place Asphalt Concrete Dike	820	FT	$13	$10,660	
394002	Place Asphalt Concrete (Misc Area)	5800	FT2	$4	$23,200	
394046	Place Asphalt Concrete Dike (Type D)	860	FT	$11	$9,460	
				Total Structural Items		**$2,308,020**

SECTION 3 Drainage

Item No	Drainage	Quantity	Unit	Unit Price	Item Cost	Section Cost
155003	Cap Inlet	3	EA	$1,000	$3,000	
150206	Abandon Culvert	1	EA	$665	$665	
	Install 24 inch APC	1,100	FT	$125	$137,500	
150806	Remove Pipe	810	FT	$19	$15,390	
707050	Install Inlets	17	EA	$5,000	$85,000	
150820	Remove Inlet	13	EA	$1,000	$13,000	
				Total Drainage		**$254,555**

SECTION 4 Specialty Items

Item No	Specialty	Quantity	Unit	Unit Price	Item Cost	Section Cost
129000	Temporary Railing (Type K)	6,500	FT	$23	$149,500	
200001	Highway Planting	1	LS	$60,000	$60,000	
204099	Plant Establishment	1	LS	$10,000	$10,000	
208000	Irrigation System	10	EA	$2,800	$28,000	
160120	Remove Tree	5	EA	$2,800	$14,000	
150608	Remove Chain Link Fence	400	FT	$11	$4,400	
151540	Reconstruct Chain Link Fence	500	FT	$22	$11,000	
074019	Prepare Storm Water Pollution Prevention	1	LS	$6,000	$6,000	
074016	Construction Site Management	1	LS	$135,000	$135,000	
	Treatment BMPs	1	LS	$120,000	$120,000	
160101	Environmental Mitigation	1	LS	$45,000	$45,000	
203002	Erosion Control	1	LS	$4,000	$4,000	
048961	Install Concrete Barrier (Type 60D)	130	FT	$120	$15,600	
066860	Maintain Existing Electrical System	1	LS	$15,000	$15,000	
991061	Electrical Work - Freeway Lighting	1	LS	$48,000	$48,000	
860253	Signal & Lighting	1	LS	$410,000	$410,000	
	TMS	1	LS	$42,000	$42,000	
	Ramp Metering	1	LS	$30,000	$30,000	
	Lead Investigation	1	LS	$10,000	$10,000	
209801	Maintenance Vehicle Pullouts	2	LS	$20,000	$40,000	

					Total Specialy Items		**$1,197,500**

SECTION 5 Traffic Items

Item No	Traffic	Quantity	Unit		Unit Price	Item Cost	Section Cost
120100	Traffic Control Systems	1	LS		$42,000	$42,000	
120090	Construction Area Sign	1	LS		$12,000	$12,000	
128650	Portable Changeable Message Sign	1	LS		$12,000	$12,000	
120149	Temporary Pavement Marking	430	FT2		$5.00	$2,150	
120300	Temporary Pavement Marker	400	EA		$15.00	$6,000	
129100	Temporary Crash Cushion Module (Sand Fill)	42	EA		$450.00	$18,900	
150704	Remove Yellow Thermoplastic Traffic Stripe	820	Ft	$	1.50	$1,230	
150714	Remove Thermoplastic Traffic Stripe	8,870	Ft	$	0.75	$6,653	
150715	Remove Thermoplastic Pavement Marking	1,084.0	Ft²	$	3.30	$3,577	
150722	Remove Pavement Marker	892	EA	$	1.30	$1,160	
150760	Remove OH Sign Structure	2	EA	$	6,000.00	$12,000	
150742	Remove Roadside Sign	7	EA	$	150.00	$1,050	
152386	Relocate Roadside Sign - One Post	2	EA	$	350.00	$700	
152387	Relocate Roadside Sign - Two Post	2	EA	$	600.00	$1,200	
566011	Roadside Sign - One Post	3	EA	$	350.00	$1,050	
566012	Roadside Sign - Two Post	3	EA	$	600.00	$1,800	
560213	OH Sign Structure (Light weight)	1	EA	$	67,024.00	$67,024	
560218	OH Sign Structure (Truss-1Post)	2	EA	$	124,950.00	$249,900	
568023	Roadside Sign (Laminated wood box post)	2	EA	$	6,000.00	$12,000	
840515	Thermoplastic Pavement Marking	1,141	Ft²	$	4.00	$4,564	
840519	Thermoplastic Crosswalk & Pavement Marking	316.0	Ft²	$	4.00	$1,264	
840504	4" Thermoplastic Traffic Stripe	9,290	Ft	$	0.40	$3,716	
840506	8" Thermoplastic Traffic Stripe	2132	Ft	$	0.90	$1,919	
840508	8" Thermoplastic Traffic Stripe (Broken 12-3)	2437	Ft	$	0.90	$2,193	
840526	4" Thermoplastic Traffic Stripe (Broken 17-7)	4085	Ft	$	0.40	$1,634	
850101	Pavement Marker (Non-Reflective)	660	EA	$	2.00	$1,320	
850110	Pavement Marker Type C-Retroreflective	164	EA	$	4.50	$738	
850111	Pavement Marker (Retroreflective)	36	EA	$	4.50	$162	
850112	Pavement Marker Type G-Retroreflective	312	EA	$	4.50	$1,404	
850113	Pavement Marker Type H-Retroreflective	35	EA	$	4.50	$158	
	30" CIDH Pile Sign Foundation	30	Ft	$	670.00	$19,778	
	5' CIDH Pile Sign Foundation	50	Ft	$	900.00	$45,000	
	Contractor Furnished Sign Panels	1	LS	$	18,500.00	$18,500	
832003	Metal Bean Guard Rail	300	LF		$50.00	$15,000	
839559	Terminal System (Type ET)	3	EA		$4,400.00	$13,200	
839604	Crash Cushion (React 9CBB)	2	EA		$15,000.00	$30,000	
					Total Traffic Items		**$612,943**

SUBTOTAL SECTIONS 1 to 5 **$5,085,018**

SECTION 6 Minor Item

Subtotal Sections 1 to 5	$5,085,018	x	5% =	$254,251
			Total Minor Items	**$254,251**

SECTION 7 Roadway Mobilization

Subtotal Sections 1 to 5	$5,085,018			
Minor Items	$254,251			
Sum	$5,339,269	x	5% =	$266,963
			Total Roadway Mobilization	**$266,963**

SECTION 8 Roadway Additions

Supplemental

Subtotal Sections 1 to 5	$5,085,018			
Minor Items	$254,251			
Sum	$5,339,269	x	10% =	$533,927

Contingencies

Subtotal Sections 1 to 5	$5,085,018			
Minor Items	$254,251			
Sum	$5,339,269	x	15% =	$800,890

Suplemetal Work

066060A	Traffic Control Officer	1	LS	$20,000
66063	Traffic Management Plan (TMP)	1	LS	$75,000
66105	RE Office	1	LS	$35,000
66596	Additional Water Pollution Control	1	LS	$29,000
66595	Water Pollution Maintenance Sharing	1	LS	$11,000
66062	COZEEP	1	LS	$30,000

Total Roadway Additions **$1,534,817**

TOTAL ROADWAY ITEMS **$7,141,000**
(Sections 1 to 8)

II. STRUCTURE ITEMS

STRUCTURES ITEMS

	STRUCTURE No. 1	No. 2	No. 3
Bridge Name		55-0224	
Structure Type	Tieback Ret. Wall	2 Type 1 Ret. Walls	
Width Ft. (out to out)			
Span Lengths Ft.			
Total Area Sq. Ft.			
Footing Type (Pile/Spread)			$400/ft
Cost Per cubic meter (include 10% mobilization and 25% contingency)			
Total Cost for Structure	455,000 *	1,517,000 *	300,000

*See Attached Advanced Planning Estimate

SUBTOTAL STRUCTURES ITEMS $2,272,000

Estimate Prepared By Joseph Lee (Print Name) Phone # 949-724-2144 Date 01/03/08

(If appropriate, attach additional pages and backup)

III. RIGHT OF WAY

	Current Values	Escalation Rates	Escalated Values
Acquisition, including excess Lands, damages reminder (s)	$790,000.00	5%	$875,000
Utility Relocation (State share)	$400,000.00	10%	$484,000
RAP			
Title and Escrow Fees	$10,000.00	0%	$10,000

TOTAL RIGHT OF WAY (CURRENT VALUE)** $1,369,000

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated) _____

Construction Contract Work

Brief Description of Work S/B I-5 between Via California/Pacific Coast Highway 1 and SB on-ramp Camino de Estrella in the Cities of Dana Point and San Clemente. This project proposes to add an auxiliary lane on SB I-5 between the two interchanges; to widen Camino de Estrella OC bridge #55-224 by 26 feet on the south side; add a second auxiliary lane (with thru movement) and south side overcrossing widening alternative.

Right of Way Branch Cost Estimate for Work*
*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Anticipated Date of Right of Way Certification

Estimate Approved By _____ : _____ Phone # _____ Date _____
Print Name

(If appropriate, attach additional pages and backup)

COMMENTS:

Estimate Prepared By Harry Pantoja Phone 949-724-2388 Date 10/02/07
(Print Name)

(If appropriate, attach additional pages and backup)

[ ] GENERAL PLAN ESTIMATE [X] ADVANCE PLANNING ESTIMATE

ALTERNATIVE #2

RCVD BY: JTY

IN EST: 2/1/2007
OUT EST: 2/5/2007

BRIDGE:	CAMINO DE ESTRELLA OVERCROSSING (WIDENING)	BR. No.:	55-0224	DISTRICT:	12
TYPE:	PC/PS BULB T GIRDER			RTE:	5
CU:	12-000			CO:	ORA
EA:	0F060K			KP:	9.30

LENGTH: 67.31 WIDTH: 8.05 AREA (SQ. M)= 542

DESIGN SECTION:	TLE
# OF STRUCTURES IN PROJECT :	01
PRICES BY :	Pga
QUANTITIES BY:	Pga
QUANTITIES CHECKED BY:	

EST. NO. 3
COST INDEX: 423
DATE: 6/21/2004
DATE:

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	BRIDGE REMOVAL PORTION (CHAIN LINK RAILING)		m	77	$100.00	$7,700.00
2	BRIDGE REMOVAL PORTION (TYPE 26 BARRIER)		m	77	$175.00	$13,475.00
3	BRIDGE REMOVAL PORTION (OVERHANG/WW)		m3	25	$1,600.00	$40,000.00
4	STRUCTURE EXCAVATION, BRIDGE		m3	120	$200.00	$24,000.00
5	STRUCTURE BACKFILL, BRIDGE		m3	80	$200.00	$16,000.00
6	STRUCTURAL CONCRETE,BRIDGE FOOTING		m3	30	$900.00	$27,000.00
7	STRUCTURAL CONCRETE,BRIDGE		m3	200	$1,600.00	$320,000.00
8	FURNISH PC/PS BULB T GIRDER	L = 30 m	EA	4	$45,000.00	$180,000.00
9	FURNISH PC/PS BULB T GIRDER	L = 37 m	EA	4	$50,000.00	$200,000.00
10	ERECT PC/PS BULB T GIRDER		EA	8	$10,000.00	$80,000.00
11	REFINISH BRIDGE DECK		m2	100	$225.00	$22,500.00
12	BAR REINFORCING STEEL, BRIDGE		kg	30,000	$3.25	$97,500.00
13	SLOPE PAVING (MASONRY BLOCK)		m2	30	$350.00	$10,500.00
14	CHAIN LINK RAILING	7	m	77	$200.00	$15,400.00
15	CONCRETE BARRIER	26	m	77	$500.00	$38,500.00

SUBTOTAL	$1,092,575
MOBILIZATION (@ 10 %)	$121,397
SUBTOTAL BRIDGE ITEMS	$1,213,972
CONTINGENCIES (@ 25%)	$303,493
BRIDGE TOTAL COST	$1,517,465
COST PER SQ. METER	$2,800.55
BRIDGE REMOVAL (CONTINGENCIES INCL.)	
WORK BY RAILROAD OR UTILITY FORCES	
GRAND TOTAL	$1,517,465
FOR BUDGET PURPOSES - SAY	$1,517,000

ROUTING
1. DES SECTION
2. DES A SUPV
3. DES B SUPV
4. DES C SUPV
5. PROJECT MANAGEMENT
6. COST ESTIMATES (LAST)

Caltrans Metric

COMMENTS: District to cover all traffic and utility related issues.

[ ] GENERAL PLAN ESTIMATE [X] ADVANCE PLANNING ESTIMATE

RCVD BY: JTY

IN EST: 2/1/2007
OUT EST: 2/5/2007

BRIDGE:	CAMINO DE ESTRELLA OVERCROSSING	**BR. No.:**	55-0224	**DISTRICT:**	12
TYPE:	TIEBACK RETAINING WALL			RTE:	5
CU:	12-000			CO:	ORA
EA:	0F060K			KP:	9.30
		LENGTH:	WIDTH:	AREA (SQ. M)=	84

DESIGN SECTION:	TLE		
# OF STRUCTURES IN PROJECT :	01	EST. NO.	3
PRICES BY :	Pga	COST INDEX:	423
QUANTITIES BY:	MD	DATE:	6/8/2004
QUANTITIES CHECKED BY:		DATE:	

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION, TIEBACK WALL		m3	68	$150.00	$10,200.00
2	STRUCTURE BACKFILL, TIEBACK WALL		m3	4	$500.00	$2,000.00
3	TIEBACK ANCHOR		EA	44	$4,000.00	$176,000.00
4	STRUCTURAL CONCRETE, RETAINING WALL		m3	21	$1,500.00	$31,500.00
5	ARCHITECTUAL TREATMENT		m2	84	$200.00	$16,800.00
6	BAR REINFORCING STEEL		kg	6,000	$5.00	$30,000.00
7	SHOTCRETE		m3	30	$1,300.00	$39,000.00
8	MINOR CONCRETE (GUTTER)		m	42	$200.00	$8,400.00
9	CABLE RAILING		m	42	$100.00	$4,200.00
10	CONCRETE BARRIER	60D	m	42	$230.00	$9,660.00

SUBTOTAL	$327,760
MOBILIZATION (@ 10 %)	$36,418
SUBTOTAL BRIDGE ITEMS	$364,178
CONTINGENCIES (@ 25%)	$91,044
BRIDGE TOTAL COST	$455,222
COST PER SQ. METER	$5,419.31
BRIDGE REMOVAL (CONTINGENCIES INCL.)	
WORK BY RAILROAD OR UTILITY FORCES	
GRAND TOTAL	$455,222
FOR BUDGET PURPOSES - SAY	$455,000

ROUTING
1. DES SECTION
2. DES A SUPV
3. DES B SUPV
4. DES C SUPV
5. PROJECT MANAGEMENT
6. COST ESTIMATES (LAST)

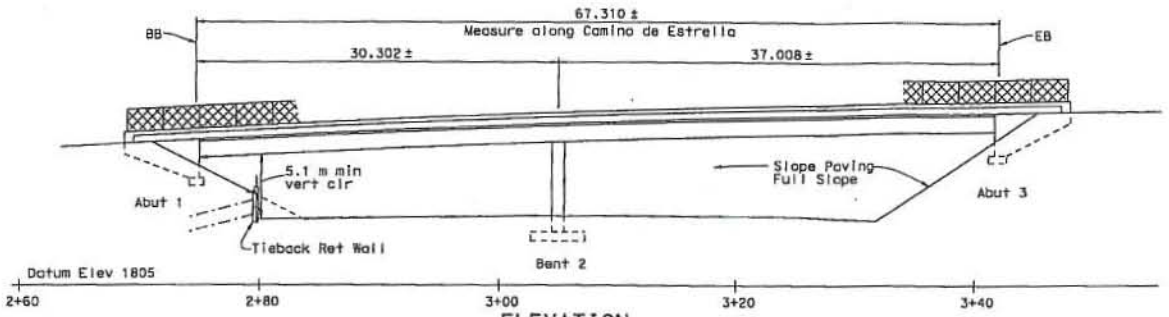
Caltrans Metric

COMMENTS: District to cover all traffic and utility related issues.

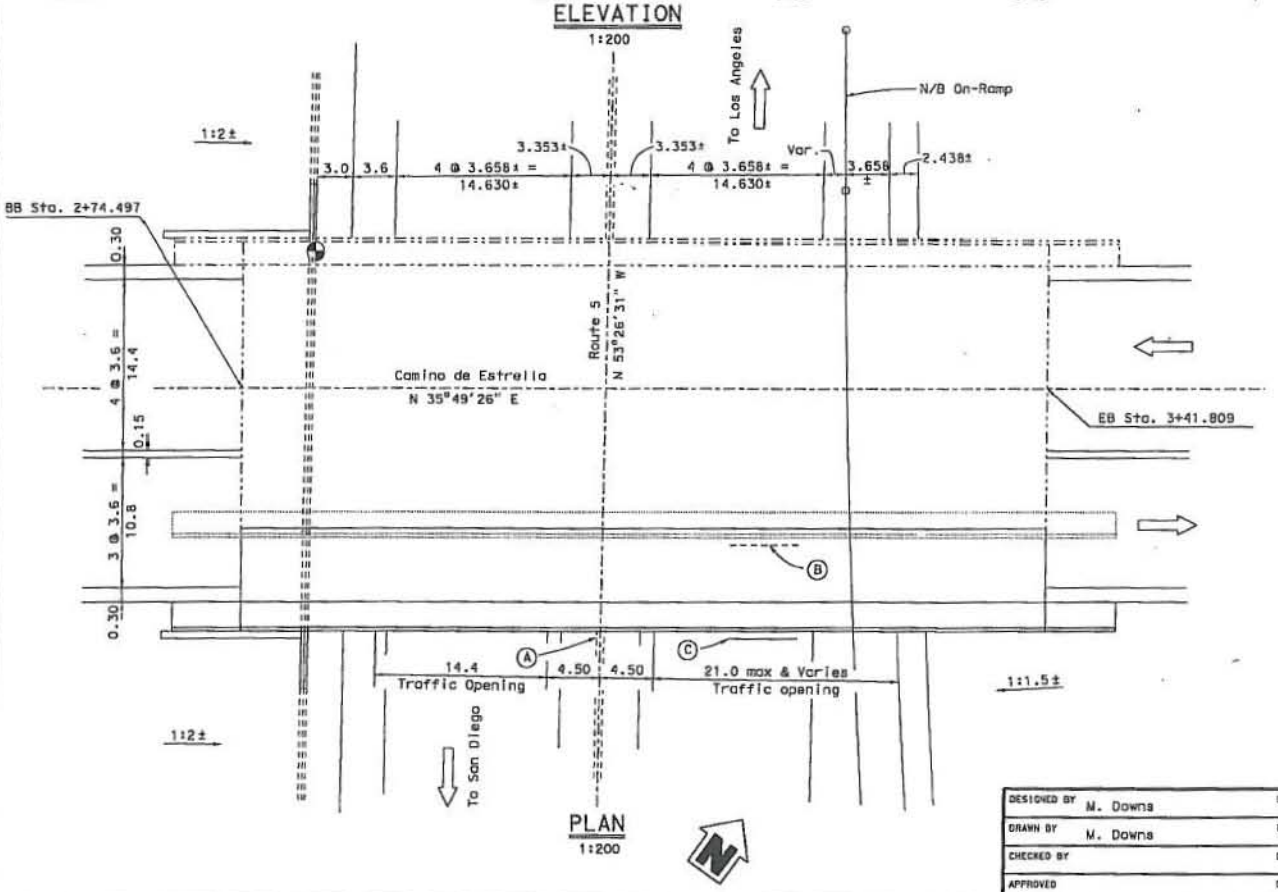
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF STRUCTURES

DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT
12	Ora	5	9.3

Caltrans Metric



ELEVATION
1:200



PLAN
1:200

Notes/Assumptions:

1. Traffic will pass through construction site. Intermittent lane closures will be required on Route 5 and Camino de Estrella during day time construction operations.
2. Traffic openings will be required on Route 5 and on Camino de Estrella.
3. Route 5 detours and partial Camino de Estrella closures will be required during construction operations.
4. Stage construction will be required. (Stage 1 widening, Stage 2 tieback ret wall)
5. Spread footing foundations assumed.
6. Seismic retrofit of existing structure is not required.
7. Stations shown are as-built English to Metric conversions.
8. Alternative 1 "Elevation" shown, Alternative 2 "Elevation" similar.
9. For "Alternative 1 Typical Section" and cost data, see page 2 of 4.
10. For "Alternative 2 Typical Section" and cost data, see page 3 of 4.
11. For tieback retaining wall "Elevation", "Typical Section" and cost data, see page 4 of 4.

(A) Removal and reconstruction of median concrete barrier by District
(B) Remove existing bridge mounted sign by District.
(C) New bridge mounted sign by District

Legend:

——— Denotes new construction
- - - - - Denotes existing structure
Indicates Point of Minimum Vert Clr

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY	M. Downs	DATE	5/04
DRAWN BY	M. Downs	DATE	5/04
CHECKED BY		DATE	
APPROVED		DATE	

STRUCTURE DESIGN SECTION

PLANNING STUDY

Camino de Estrella OC (Widen)

BRIDGE NO.	55-0224	CU	12
SCALE:	As Noted	EA	0F060K

USERNAME => mdowns DATE PLOTTED => 28-JUN-2004 TIME PLOTTED => 10:08

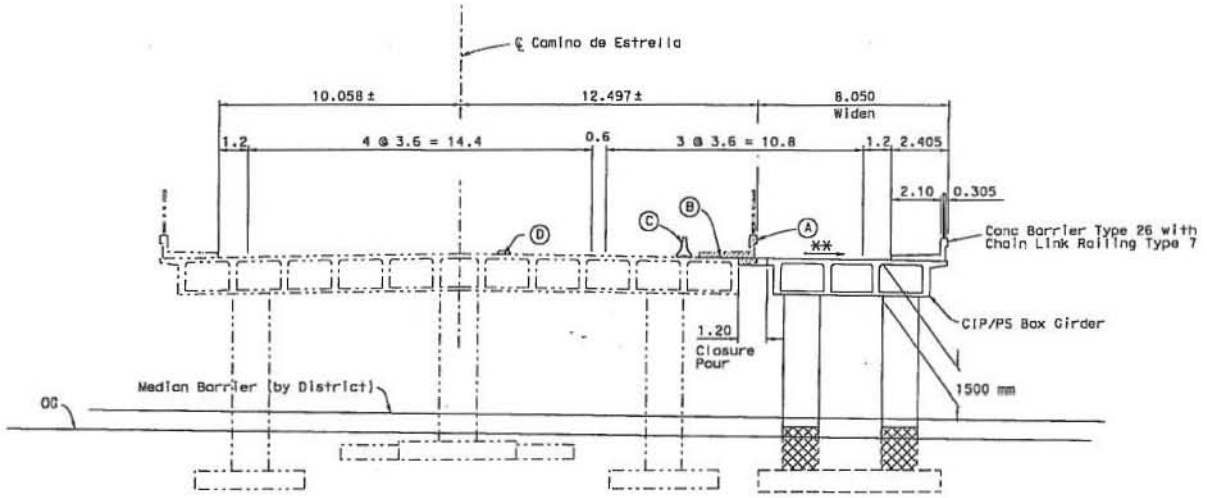
STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (METRIC) (REV. 3/1/98)

FILE => Camino_de_estrella.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF STRUCTURES

Caltrans Metric

DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT
12	Ora	5	9.3



ALTERNATIVE 1
TYPICAL SECTION
1:80

Notes/Assumptions:

1. Falsework will be required over Route 5 traffic. (4.6m minimum vertical clearance required over falsework).
2. Superstructure to be cast high and lowered to final grade after prestressing operation is completed.
3. Route 5 detour will be required during falsework erection, removal and during superstructure lowering operations.
4. Spread footing foundations assumed.
5. Seismic retrofit of existing structure is not required.

(A) Remove existing overhang, concrete barrier and chain link railing
(B) Refinish portion of existing bridge deck.
(C) Temporary Railing Type K by District
(D) Remove existing curb and refinish bridge deck. Night work will be required. Traffic handling by District.

Legend:

——— Denotes new construction
– – – – Denotes existing structure

ALTERNATIVE 1 (2/5/07 PGA)

DATE OF ESTIMATE	= ~~6-24-04~~	PGA
BRIDGE REMOVAL	= NA	
STRUCTURE DEPTH	= 1500 mm	
LENGTH	= 67.310 m	
WIDTH	= 8.050 m	
AREA	= 541.846 m2	
COST/ □ m INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= ~~$2560~~ $2909	
TOTAL COST	= ~~$1,387,000~~ ~~$1,238,000~~ $1,576,000	

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY M. Downs	DATE 5/04	STRUCTURE DESIGN SECTION	PLANNING STUDY
DRAWN BY M. Downs	DATE 5/04		Camino de Estrella OC (Widen)
CHECKED BY	DATE		BRIDGE NO. 55-0224 / CU 12
APPROVED	DATE		SCALE: As Noted / EA 0F060K

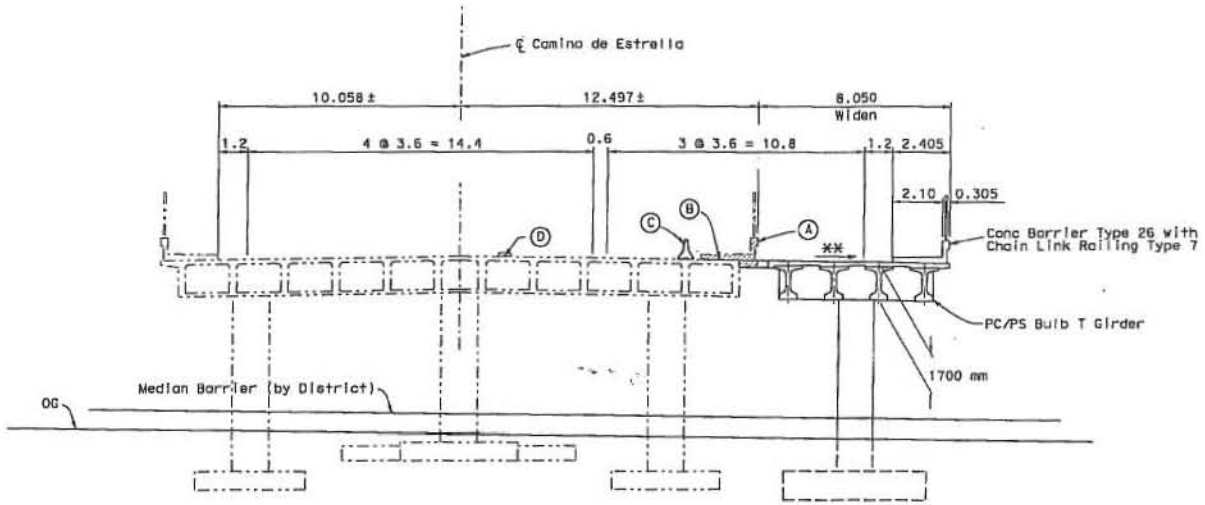
DESIGNAGE => mdowns DATE PLOTTED => 28-JUN-2004 TIME PLOTTED => 10:13

FILE => Camino_de_estrella.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF STRUCTURES

Caltrans Metric

DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT
12	Ora	5	9.3



** Match existing cross slope

ALTERNATIVE 2
TYPICAL SECTION
1:80

Notes/Assumptions:

1. Large staging area will be required for precast girders.
2. Route 5 detour will be required during precast girder erection.
3. Spread footing foundations assumed.
4. Seismic retrofit of existing structure is not required.

(A) Remove existing overhang, concrete barrier and chain link railing

(B) Refinish portion of existing bridge deck.

(C) Temporary Railing Type K by District

(D) Remove existing curb and refinish bridge deck. Night work will be required. Traffic handling by District.

Legend:

——— Denotes new construction

– – – – Denotes existing structure

ALTERNATIVE 2 (2/5/07-PGA)

DATE OF ESTIMATE	= ~~9-22-05~~ ~~6-24-04~~	PGA
BRIDGE REMOVAL	= NA	
STRUCTURE DEPTH	= 1700 mm	
LENGTH	= 67.310 m	
WIDTH	= 8.050 m	
AREA	= 541.846 m2	
COST/ □ m INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= ~~$2426~~ ~~$2317.04~~	$2800
		~~$1,315,000~~
TOTAL COST	= ~~$1,255,000~~	$1,517,000

Pg 3 of 4

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY	M. Downs	DATE	5/04
DRAWN BY	M. Downs	DATE	5/04
CHECKED BY		DATE	
APPROVED		DATE	

STRUCTURE DESIGN SECTION

PLANNING STUDY

Camino de Estrella OC (Widen)

BRIDGE NO.	55-0224	cu	12
SCALE:	As Noted	EA	0F060K

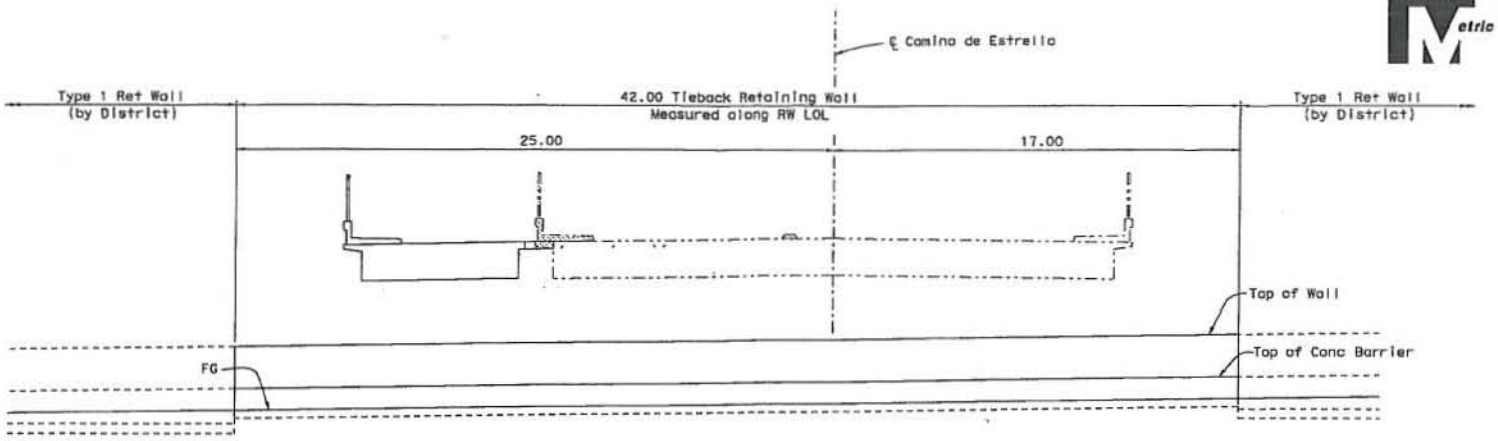
DATE PLOTTED => 28-JUN-2004 TIME PLOTTED => 10:13

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (METRIC) REV. 5/1/04

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF STRUCTURES

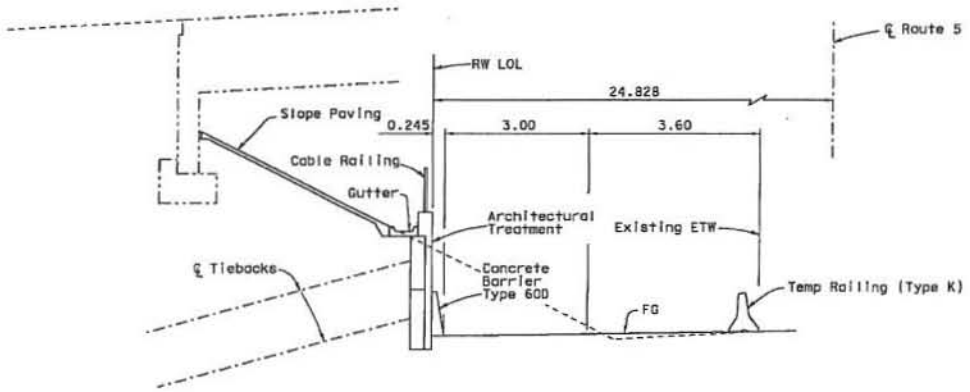
Caltrans Metric

DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT
12	Ora	5	9.3



Note:
- Cable Railing not shown.
- Arch. Treatment not shown

RETAINING WALL ELEVATION
1:200



RETAINING WALL TYPICAL SECTION
1:80

Notes/Assumptions:
1. Retaining wall to be completed during Stage 2 construction.
2. Traffic will pass through construction site.

Legend:
——— Denotes new construction
—·—·— Denotes existing structure

TIEBACK RET WALL

DATE OF ESTIMATE ~~9-22-05~~ (2/5/07-PGA) ~~6-24-04~~ PGA

TOTAL COST = ~~$429,000~~ ~~$445,000~~ $455,000

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY M. Downs	DATE 5/04	STRUCTURE DESIGN SECTION	PLANNING STUDY
DRAWN BY M. Downs	DATE 5/04		Camino de Estrella OC (Widen)
CHECKED BY	DATE		BRIDGE NO. 55-0224 CU 12
APPROVED	DATE		SCALE: As Noted EA 0F060K

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (METRIC) (REV. 3/1/99)

FILE =) Camino_de_estrella.dgn

USERNAME =) mdowns DATE PLOTTED =) 28-JUN-2004 TIME PLOTTED =) 10:13

[ ] GENERAL PLAN ESTIMATE [X] ADVANCE PLANNING ESTIMATE

ALTERNATIVE #1

RCVD BY: JTY

IN EST: 2/1/2007
OUT EST: 2/5/2007

BRIDGE:	CAMINO DE ESTRELLA OVERCROSSING (WIDENING)	BR. No.:	55-0224
TYPE:	CIP/PS BOX GIRDER		
CU:	12-000		
EA:	0F060K		

DISTRICT: 12
RTE: 5
CO: ORA
KP: 9.30

LENGTH: 67.31 WIDTH: 8.05 AREA (SQ. M)= 542

DESIGN SECTION:	TLE
# OF STRUCTURES IN PROJECT :	01
PRICES BY :	Pga
QUANTITIES BY:	Pga
QUANTITIES CHECKED BY:	

EST. NO. 3
COST INDEX: 423
DATE: 6/21/2004
DATE:

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	BRIDGE REMOVAL PORTION (CHAIN LINK RAILING)		m	77	$100.00	$7,700.00
2	BRIDGE REMOVAL PORTION (TYPE 26 BARRIER)		m	77	$175.00	$13,475.00
3	BRIDGE REMOVAL PORTION (OVERHANG/WW)		m3	25	$1,600.00	$40,000.00
4	JACKING SUPERSTRUCTURE/ TEMPORARY SUPPORT		m2	542	$325.00	$176,150.00
5	STRUCTURE EXCAVATION, BRIDGE		m3	120	$200.00	$24,000.00
6	STRUCTURE BACKFILL, BRIDGE		m3	80	$200.00	$16,000.00
7	PRESTRESSING CAST-IN-PLACE CONCRETE		kg	9,500	$5.00	$47,500.00
8	STRUCTURAL CONCRETE,BRIDGE FOOTING		m3	60	$800.00	$48,000.00
9	STRUCTURAL CONCRETE,BRIDGE		m3	350	$1,500.00	$525,000.00
10	REFINISH BRIDGE DECK		m2	100	$225.00	$22,500.00
11	BAR REINFORCING STEEL, BRIDGE		kg	50,000	$3.00	$150,000.00
12	SLOPE PAVING (MASONRY BLOCK)		m2	30	$350.00	$10,500.00
13	CHAIN LINK RAILING	7	m	77	$200.00	$15,400.00
14	CONCRETE BARRIER	26	m	77	$500.00	$38,500.00

SUBTOTAL	$1,134,725
MOBILIZATION (@ 10 %)	$126,081
SUBTOTAL BRIDGE ITEMS	$1,260,806
CONTINGENCIES (@ 25%)	$315,201
BRIDGE TOTAL COST	$1,576,007
COST PER SQ. METER	$2,908.59
BRIDGE REMOVAL (CONTINGENCIES INCL.)	
WORK BY RAILROAD OR UTILITY FORCES	
GRAND TOTAL	$1,576,007
FOR BUDGET PURPOSES - SAY	$1,576,000

ROUTING
1. DES SECTION
2. DES A SUPV
3. DES B SUPV
4. DES C SUPV
5. PROJECT MANAGEMENT
6. COST ESTIMATES (LAST)

COMMENTS: District to cover all traffic and utility related issues.

Caltrans Metric

ATTACHMENT – F
TASAS Table B

California Department of Transportation
Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	No. of Accidents / Significance Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark	Pers Kld Inj	ADT Main X-St	Total MV+ or MVM	Actual Fat	Actual F+I	Average Tot	Average Fat	Average F+I	Average Tot
12 ORA 005 005.600 - 12 ORA 005 006.599 **1.000 MI**	H	127	1	43	44	115	5	29	1	109.2	119.59	0.008	.37	1.06	0.005	.32	1.03
0001-0001 2004-04-01 2007-03-31 *36 mo.* SOUTH	U								93								
12 ORA 005 005.970 005/SB OFF TO CAMINO ESTREL	R 10	8	0	4	4	7	0	3	0	12.5	13.67 +	0.000	.29	.59	0.005	.61	1.50
0001-0002 2004-04-01 2007-03-31 *36 mo.*	U								4	.0							
12 ORA 005 005.587 005/SB ON FR CAMINO ESTRELL	R 12	2	0	2	2	1	0	0	0	6.8	7.42 +	0.000	.27	.27	0.002	.32	.80
0001-0003 2004-04-01 2007-03-31 *36 mo.*	U								2	.0							

Accident Rates expressed as: **# of accidents / Million vehicle miles**

+ denotes that **Million Vehicles** (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)