12 - ORA - 005 - PM 0.0/3.4
11 - SD - 005 - PM R71.0/R72.4
EA 0P550K – 1215000141 – 2863J
Program Code 20.10.400.100 – Locally Generated Funded
February 2019

Project Study Report-Project Development Support (PSR-PDS)

To

Request Approval to Proceed to the Project Approval and Environmental Document Phase Funded By Others

On Route Interstate 5

Between Avenida Pico Undercrossing

And San Diego County Line

APPROVAL RECOMMENDED:

Gregory Nord, Orange County Transportation Authority
Accepts risks identified in this PSR-PDS and attached risk register

APPROVAL RECOMMENDED:

Lan Zhou, District Division Chief, Planning

APPROVAL RECOMMENDED:

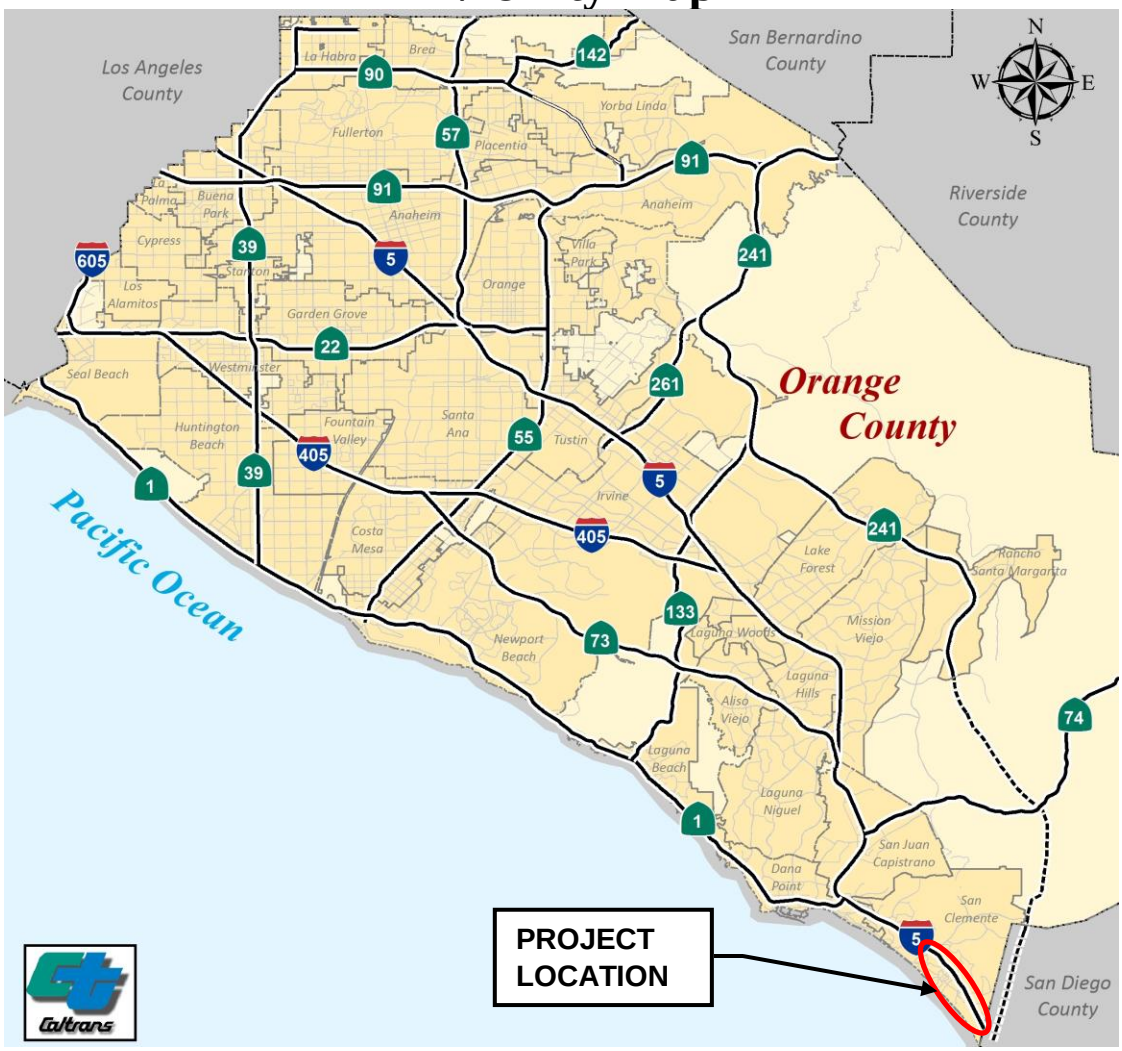
Barbara McGahey, Caltrans Project Manager

APPROVED:

Ryan Chamberlain, District Director
(or delegated authority)

Date

Vicinity Map



This Project Study Report-Project Development Support has been prepared under the direction of the following registered 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.

Christina Diaz 2/25/19

Christina Diaz, P.E. *DATE*
Registered Civil Engineer
T.Y. Lin International

Table of Contents

1. INTRODUCTION

Project Description:

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12 and District 11, the City of San Clemente, Transportation Corridor Agencies (TCA), and the San Diego Association of Governments (SANDAG), propose to reduce traffic congestion and delay along Interstate 5 (I-5) between the San Diego County/Orange County Line and the I-5/Avenida Pico Interchange. The mainline currently experiences delay during peak periods. Additionally, the project will provide inter-county connectivity between Orange County and San Diego County.

The project proposes to add a general-purpose or a managed lane in each direction on I-5, reestablish existing auxiliary lanes, widen existing undercrossings and replace existing overcrossings to accommodate the I-5 widening. See Table 1 for more details.

Table 1: Summary of the PSR-PDS Key Information

Project Limits	11-SD-5, 12-ORA-5 PM R71.0/R72.4, 0.0/3.4
Number of Alternatives	3 Build Alternatives (Alternative 2: Add One General Purpose Lane, Alternative 3A: Add One HOV Lane, and Alternative 3B: Add One Price Managed Lane) and No Build
Current Capital Outlay Support Estimate for PA&ED	$4.5M
Current Capital Outlay Construction Cost Range	Alternative 2: $175M - $197M Alternative 3A: $175M-$197M Alternative 3B: $183M - $205M
Current Capital Outlay Right-of-Way Cost Range	Alternative 2: $0.23M - $0.27M Alternative 3A: $0.23M - $0.27M Alternative 3B: $0.64M - $0.74M
Funding Source	To be determined in subsequent phase
Type of Facility	Freeway
Number of Structures	8
Anticipated Environmental Determination or Document	Initial Study/Mitigated Negative Declaration (IS/MND) and NEPA Routine Environmental Assessment with anticipated Finding of No Significant Impact (EA/FONSI)
Legal Description	In San Diego and Orange Counties in and near San Clemente from 1.4 mile south of county line to Avenida Pico Undercrossing
Project Development Category	3

The remaining capital outlay support, design, right-of-way, and construction components of the project are preliminary estimates and are not suitable for programming purposes. A Project Report will serve as approval of the selected alternative.

OCTA and Caltrans have an executed cooperative agreement dated 5/31/2016 to complete a PSR-PDS. Subsequent cooperative agreements will need to be developed for future phases of the project, including: Project Approval and Environmental Document (PA&ED), Plans, Specifications & Estimate (PS&E) and Construction. The PA&ED is anticipated to be completed in spring 2023 and the funding year for construction will be determined in a subsequent phase.

2. BACKGROUND

I-5 is the major north-south route that is used for inter-regional, interstate, and international travel and goods movement. It connects Orange County with San Diego County to the south and to Los Angeles County to the north. The I-5 corridor is also the main route to beaches and tourist attractions in the City of San Clemente, San Onofre State Beach, and U.S. Marine Corps Base Camp Pendleton.

The project limits are from the Avenida Pico Interchange to 1.4 mile south of the San Diego County/Orange County Line. It is located within the City of San Clemente in Orange County and U.S. Marine Corps Base Camp Pendleton in the unincorporated area of San Diego County as shown in the Vicinity Map in Attachment A. The existing freeway corridor within the project limits consists of four general-purpose lanes in each direction and auxiliary lanes between most of the interchanges. Throughout the project limits, the I-5 freeway is oriented in a southeast/northwest alignment; seven arterials and one pedestrian overcrossing cross the freeway. Two local streets closely parallel the freeway: El Camino Real to the east and Avenida Del Presidente to the west.

Improvements to this portion of the I-5 corridor were identified as part of the financially-constrained projects in OCTA's Long Range Transportation Plan (LRTP) for likely implementation within the LRTP's 2040 horizon. It was advanced to the Southern California Association of Governments (SCAG) for inclusion in the broader 2016 Regional Transportation Plan. Although the OC Go (formerly Measure M2) funding program included improvements on I-5 between Pacific Coast Highway (PCH) and Avenida Pico, it did not include the limits of this project. This study segment was also included in the South Orange County Major Investment Study (SOCMIS) Locally Preferred Strategy (LPS). The key feature identified for I-5 in this segment was to add one high occupancy vehicle (HOV) lane in each direction on I-5 from the San Diego County Line to Pacific Coast Highway.

OCTA is the project sponsor leading the development of this PSR-PDS, and the supporting studies have been developed collaboratively with the City of San Clemente, Caltrans District 12, TCA and SANDAG, who have consistently

participated in the Project Development Team (PDT) meetings, the development of the project's purpose and need, and the alternatives development process.

3. PURPOSE AND NEED

Purpose:

Consistent with the Caltrans Mission, the primary purpose of the project is to maximize efficiency of the freeway mainline by increasing person and vehicle throughput, while reducing current and projected traffic congestion and delay on the I-5 corridor from Avenida Pico to the San Diego County/Orange County Line.

This I-5 corridor improvement project is intended to achieve the following purposes:

- Increase person and vehicle throughput;
- Promote regional managed lane system connectivity, and provide inter-county lane continuity;
- Reduce current and projected traffic congestion and delay on the freeway mainline;
- Promote travel time reliability;
- Provide improvements to accommodate projected regional growth;
- Improve multimodal efficiency and accommodate advanced technology for current and future transportation conditions; and
- To provide Americans with Disabilities Act (ADA) compliant features at the interchanges ramp terminals, where feasible.

Need:

Current deficiencies of I-5 within the project limits are summarized below:

- There is a lack of managed lane continuity from Avenida Pico to the San Diego County/Orange County Line.
- Existing aging facility lacks advanced technology to meet current and future transportation demands.
- Existing interchange ramp terminals within the project area are non-ADA compliant (e.g., pedestrian features and discontinuous bicycle facilities).

High-Occupancy Vehicle (HOV) lane and operational improvements have been made on I-5 throughout Orange County north of the project limits. These prior improvements begin at the northern Orange County limit and end just south of Avenida Pico in San Clemente. The Measure M2 Project C immediately north of the project study area, recently extended HOV lanes from their previous terminus through to the Avenida Pico interchange vicinity.

Immediately south of the project study area in San Diego County, SANDAG's Regional Transportation Plan calls for the addition of four toll lanes between the City of Oceanside and the San Diego County/Orange County Line by 2050.
At interchange ramp terminals in the project area, there are non-ADA compliant pedestrian features and discontinuous bicycle facilities. Addressing these needs will promote multimodal travel options in the local community.

4. TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT

A Traffic Engineering Performance Assessment (TEPA) report was prepared (bound separately) to evaluate existing and future traffic conditions within the project limits, and identified operating conditions with and without the proposed improvements in the future.

Existing Traffic Volumes

Traffic volume data were assembled using Caltrans Performance Measurement System (PeMS) for I-5 from just north of the Avenida Pico interchange to south of the Cristianitos Road interchange. Data was collected per below:

- Obtained PeMS freeway mainline and ramp volume data between February 24 and March 24, 2017 for Tuesdays, Wednesdays, and Thursdays for non-holiday weeks
- Developed peak hour volumes for each day and averaged to develop the overall weekday peak hour AM and PM volumes

This was done for the weekday AM and PM peak hour data. Caltrans also provided additional mainline data from 2014/2015 north of Avenida Pico, which was used as a northern check point for the estimated volumes at the northern end of the study segment. The final data reported is generally consistent with the check point data provided by Caltrans.

Forecasted Traffic Volumes

The Orange County Transportation Analysis Model (OCTAM) was utilized to develop traffic volumes for the future year conditions. The base year for the OCTAM is 2012 with a future horizon year of 2040. The 2040 OCTAM Network is based off the 2014 Long Range Transportation Plan constrained projects. This network provided mainline freeway volumes, HOV volumes, as well as ramp volumes at each interchange within the project limits. The base year for OCTAM is 2012 with a future horizon year of 2040, which is consistent with the OCTA LRTP and SCAG's RTP. Since Caltrans requires the horizon year of the project to be 20 years after the anticipated opening date, further extrapolation of the traffic forecast was performed to bring the traffic to a horizon year of 2050. Based on consensus with the PDT, the

horizon year of 2050 was used to account for 20 years after opening year[1]. The 2050 traffic forecasts were developed through extrapolation, using a calculated localized annual growth rate from 2040 to 2050, which was then applied to model projected 2040 volumes. This growth rate averaged 2 percent over the 10-year period between 2040 and 2050.

Traffic Analysis and Operation Methodology

The mainline basic freeway segment, weaving, and merge/diverge analyses were assessed using the Highway Capacity Manual 2010 (HCM 2010) methodology. This methodology correlates measured density for the four types of freeway facilities to a standard level of service (LOS) measure. The intersection analyses were assessed using the HCM 2010 methodology for signalized and unsignalized intersections. This methodology estimates the average delay per vehicle that occurs at the intersection and correlates the delay to a standard LOS measure.

Freeway Segment Analysis

Basic freeway segment analysis was conducted for the existing condition, No Build Alternative, and the Build Alternatives. Traffic volumes are expected to increase, which will contribute to worsening LOS. For the purposes of this study, LOS D was determined to be the minimal acceptable level of operations per Caltrans and City of San Clemente criteria.

The existing freeway segments analysis is shown in Table 2. Based on the HCM analysis, the following freeway segment currently operate at unsatisfactory LOS (LOS E/F):

- Southbound (SB) Weaving Segment: between the Avenida Pico on-ramp and the Avenida Palizada off-ramp (PM – LOS F)

[1] Opening year of 2030 as an assumption for the forecast year determination based on the 20-year after opening date requirement.

Table 2: Existing Freeway Analysis

Segment Location	Segment Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
Northbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	19.5	C	16.3	B
Avenida Palizada On-Ramp & Avenida Pico Off-Ramp	Weave	20.2	C	17.1	B
Avenida Presidio On-Ramp & Avenida Palizada On-Ramp	Basic	19.8	C	16.8	B
Avenida Presidio On-Ramp	Merge	12.3	B	11.4	B
Avenida Presidio Off-Ramp & On-Ramp	Basic	17.3	B	15.5	B
El Camino Real On-Ramp & Avenida Presidio Off-Ramp	Weave	16.7	B	14.9	B
El Camino Real Off-Ramp & On-Ramp	Basic	15.2	B	14.9	B
Avenida Mendocino On-Ramp & El Camino Real Off-Ramp	Weave	13.6	B	13.6	B
Avenida Mendocino Off- Ramp & On-Ramp	Basic	14.6	B	14.1	B
Avenida Mendocino Off-Ramp	Diverge	17.8	B	15.7	B
Cristianitos Rd On-Ramp & Avenida Mendocino Off-Ramp	Basic	15.7	B	14.6	B
Cristianitos Rd On-Ramp	Merge	17.4	B	16.2	B
Cristianitos Rd Off-Ramp	Diverge	21.8	C	15.4	B
South of Cristianitos Road Off-Ramp	Basic	15.5	B	14.2	B
Southbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	15.6	B	21.6	C
Avenida Pico On-Ramp & Avenida Palizada Off-Ramp	Weave	16.9	B	-	**F**
Avenida Palizada Off-Ramp & Avenida Presidio On-Ramp	Basic	12.6	B	16.4	B
Avenida Presidio On-Ramp & El Camino Real Off-Ramp	Weave	14.5	B	19.1	B
El Camino Real On-Ramp & Off-Ramp	Basic	14.6	B	18.2	C
El Camino Real On-Ramp & Avenida Calafia Off-Ramp	Weave	13.2	B	16.9	B
Avenida Calafia On-Ramp & Off-Ramp	Basic	14.1	B	17.2	B
Avenida Calafia Off-Ramp	Merge	9.3	A	10.7	B
Avenida Calafia Off-Ramp & Cristianitos Road On-Ramp	Basic	14.4	B	17.5	B
Cristianitos Road Off-Ramp	Diverge	15.8	B	19.1	B
Cristianitos Road On-Ramp	Merge	15.2	B	18.6	B
South of Cristianitos Road On-Ramp	Basic	14.1	B	17.6	B

Shaded = Unsatisfactory LOS

The results of the 2050 No Build Alternative freeway segments analysis are shown in Table 3. Based on the HCM analysis, the following freeway segments are projected to operate at unsatisfactory LOS (LOS E/F):

- SB Weaving Segment: between the Avenida Pico on-ramp and the Avenida Palizada off-ramp (PM – LOS F)

Table 3: 2050 No Build Alternative Freeway Segment Analysis

Segment Location	Segment Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
Northbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	18.7	C	16.6	B
Avenida Palizada On-Ramp & Avenida Pico Off-Ramp	Weave	22.9	C	19.7	B
Avenida Presidio On-Ramp & Avenida Palizada On-Ramp	Basic	22.7	C	19.5	C
Avenida Presidio On-Ramp	Merge	24.5	C	20.9	C
Avenida Presidio Off-Ramp & On-Ramp	Basic	19.9	C	18.1	C
El Camino Real On-Ramp & Avenida Presidio Off-Ramp	Weave	19.1	B	17.4	B
El Camino Real Off-Ramp & On-Ramp	Basic	17.5	B	17.5	B
Avenida Mendocino On-Ramp & El Camino Real Off-Ramp	Weave	16.1	B	16.6	B
Avenida Mendocino Off- Ramp & On-Ramp	Basic	17.0	B	16.7	B
Avenida Mendocino Off-Ramp	Diverge	20.2	C	18.3	B
Cristianitos Rd On-Ramp & Avenida Mendocino Off-Ramp	Basic	18.1	C	17.1	B
Cristianitos Rd On-Ramp	Merge	19.5	B	18.4	B
Cristianitos Rd Off-Ramp	Diverge	24.3	C	18.1	B
South of Cristianitos Road Off-Ramp	Basic	17.8	B	16.7	B
Southbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	18.8	C	28.5	D
Avenida Pico On-Ramp & Avenida Palizada Off-Ramp	Weave	21.0	C	-	**F**
Avenida Palizada Off-Ramp & Avenida Presidio On-Ramp	Basic	15.7	B	21.4	C
Avenida Presidio On-Ramp & El Camino Real Off-Ramp	Weave	18.2	B	25.1	C
El Camino Real On-Ramp & Off-Ramp	Basic	17.7	B	25	C
El Camino Real On-Ramp & Avenida Calafia Off-Ramp	Weave	16.2	B	25.8	C
Avenida Calafia On-Ramp & Off-Ramp	Basic	17.9	B	25	C
Avenida Calafia Off-Ramp	Merge	18.4	B	22.6	C
Avenida Calafia Off-Ramp & Cristianitos Road On-Ramp	Basic	18.1	B	23.6	C
Cristianitos Road Off-Ramp	Diverge	19.9	B	24.9	C
Cristianitos Road On-Ramp	Merge	18.5	B	23.4	C
South of Cristianitos Road On-Ramp	Basic	17.9	B	23.7	C

Shaded = Unsatisfactory LOS

The results of the 2050 Alternative 2 freeway segments analysis are shown in Table 4. Based on the HCM analysis, the following freeway segments are projected to operate at unsatisfactory LOS (LOS E/F):

- SB Weaving Segment: between the Avenida Pico on-ramp and the Avenida Palizada off-ramp (PM – LOS F)

Table 4: 2050 Alternative 2 Freeway Segment Analysis

Segment Location	Segment Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
Northbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	18.6	C	16.6	B
Avenida Palizada On-Ramp & Avenida Pico Off-Ramp	Weave	18.8	B	16.3	B
Avenida Presidio On-Ramp & Avenida Palizada On-Ramp	Basic	17.8	B	15.6	B
Avenida Presidio On-Ramp	Merge	20.4	C	17.5	B
Avenida Presidio Off-Ramp & On-Ramp	Basic	15.8	B	14.4	B
El Camino Real On-Ramp & Avenida Presidio Off-Ramp	Weave	15.9	B	14.6	B
El Camino Real Off-Ramp & On-Ramp	Basic	14.2	B	14.3	B
Avenida Mendocino On-Ramp & El Camino Real Off-Ramp	Weave	13.3	B	13.6	B
Avenida Mendocino Off- Ramp & On-Ramp	Basic	13.6	B	13.3	B
Avenida Mendocino Off-Ramp	Diverge	18.3	B	16.5	B
Cristianitos Rd On-Ramp & Avenida Mendocino Off-Ramp	Basic	14.5	B	13.7	B
Cristianitos Rd On-Ramp	Merge	16.3	B	15.3	B
Cristianitos Rd Off-Ramp	Diverge	22.4	C	16.3	B
South of Cristianitos Road Off-Ramp	Basic	14.3	B	13.4	B
Southbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	18.9	C	28.5	D
Avenida Pico On-Ramp & Avenida Palizada Off-Ramp	Weave	17.4	B	--	**F**
Avenida Palizada Off-Ramp & Avenida Presidio On-Ramp	Basic	15.7	B	21.4	C
Avenida Presidio On-Ramp & El Camino Real Off-Ramp	Weave	15.0	B	20.6	C
El Camino Real On-Ramp & Off-Ramp	Basic	14.8	B	19.3	C
El Camino Real On-Ramp & Avenida Calafia Off-Ramp	Weave	13.9	B	18.7	B
Avenida Calafia On-Ramp & Off-Ramp	Basic	14.3	B	18.1	C
Avenida Calafia Off-Ramp	Merge	15.0	B	17.8	B
Avenida Calafia Off-Ramp & Cristianitos Road On-Ramp	Basic	14.5	B	18.2	C
Cristianitos Road Off-Ramp	Diverge	18.0	B	21.1	C
Cristianitos Road On-Ramp	Merge	15.2	B	18.7	B
South of Cristianitos Road On-Ramp	Basic	14.3	B	18.3	C

Shaded = Unsatisfactory LOS

The results of the 2050 Alternative 3A/3B freeway segments analysis are shown in Table 5. Based on the HCM analysis, the following freeway segments are projected to operate at unsatisfactory LOS (LOS E/F):

- SB Weaving Segment: between the Avenida Pico on-ramp and the Avenida Palizada off-ramp (PM – LOS F)

Table 5: 2050 Alternative 3A/3B Freeway Segment Analysis

Segment Location	Segment Type	AM Peak Hour		PM Peak Hour	
		Density	LOS	Density	LOS
Northbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	18.7	C	16.7	B
Avenida Palizada On-Ramp & Avenida Pico Off-Ramp	Weave	20.0	C	17.7	B
Avenida Presidio On-Ramp & Avenida Palizada On-Ramp	Basic	18.1	C	15.7	B
Avenida Presidio On-Ramp	Merge	20.9	C	17.7	B
Avenida Presidio Off-Ramp & On-Ramp	Basic	15.6	B	14.3	B
El Camino Real On-Ramp & Avenida Presidio Off-Ramp	Weave	15.8	B	14.4	B
El Camino Real Off-Ramp & On-Ramp	Basic	14.1	B	14.3	B
Avenida Mendocino On-Ramp & El Camino Real Off-Ramp	Weave	12.4	B	12.8	B
Avenida Mendocino Off- Ramp & On-Ramp	Basic	13.0	B	12.6	B
Avenida Mendocino Off-Ramp	Diverge	16.6	B	14.5	B
Cristianitos Rd On-Ramp & Avenida Mendocino Off-Ramp	Basic	14.6	B	13.4	B
Cristianitos Rd On-Ramp	Merge	16.5	B	15.2	B
Cristianitos Rd Off-Ramp	Diverge	24.3	C	18.1	B
South of Cristianitos Road Off-Ramp	Basic	17.8	B	16.7	B
Southbound					
Avenida Pico Off-Ramp & On-Ramp	Basic	17.1	B	24.3	C
Avenida Pico On-Ramp & Avenida Palizada Off-Ramp	Weave	19.4	B	--	**F**
Avenida Palizada Off-Ramp & Avenida Presidio On-Ramp	Basic	16.1	B	21.4	C
Avenida Presidio On-Ramp & El Camino Real Off-Ramp	Weave	15.0	B	20.3	C
El Camino Real On-Ramp & Off-Ramp	Basic	14.9	B	19.8	C
El Camino Real On-Ramp & Avenida Calafia Off-Ramp	Weave	13.5	B	18.4	B
Avenida Calafia On-Ramp & Off-Ramp	Basic	14.6	B	18.4	C
Avenida Calafia Off-Ramp	Merge	15.5	B	18.8	B
Avenida Calafia Off-Ramp & Cristianitos Road On-Ramp	Basic	14.8	B	18.6	C
Cristianitos Road Off-Ramp	Diverge	16.3	B	20.3	C
Cristianitos Road On-Ramp	Merge	18.5	B	23.2	C
South of Cristianitos Road On-Ramp	Basic	17.8	B	23.3	C

Shaded = Unsatisfactory LOS

Intersection Analysis

Intersection LOS analysis was performed for the weekday AM and PM peak hours for the existing turning movement volumes. The intersection analysis were assessed using the HCM 2010 methodology for signalized and unsignalized intersections. This methodology estimates the average delay per vehicle that occurs at the intersection and correlates these delays to a standard LOS measure. For the purposes of this study, LOS D was determined to be the minimal acceptable level of operations per Caltrans and City of San Clemente criteria.

The existing intersection analysis is shown in Table 6. Based on the HCM analysis, the following intersections currently operate at unsatisfactory LOS (LOS E/F):

- I-5 northbound (NB) ramps at Avenida Pico (AM – LOS F, PM – LOS F)

Table 6: Existing Intersection Analysis

No.	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Calle De Industrias/Ave Pico	Signalized	35.0	D	28.8	C
2	I-5 SB Ramps/Ave Pico	Signalized	35.9	D	27.9	C
3	I-5 NB Ramps/Ave Pico	Signalized	**148.7**	**F**	**139.8**	**F**
4	SC High School West Dwy/Ave Pico	Signalized	7.1	A	3.2	A
5	Ave De La Estrella/Ave Palizada	Signalized	19.0	B	16.8	B
6	I-5 SB Off-Ramp/Ave Palizada	Signalized	10.2	B	0.6	A
7	I-5 NB On-Ramp/Ave Palizada	TWSC	6.5	A	6.3	A
8	Ave Caballeros/Ave Palizada	AWSC	14.2	B	8.4	A
9	El Camino Real/Ave Presidio	Signalized	33.8	C	25.1	C
10	I-5 SB On-Ramp – Ave Estrella/Ave Presidio	TWSC	13.3	B	14.9	B
11	I-5 NB Ramps/Ave Presidio	Signalized	52.7	D	25.3	C
12	La Esperanza/Ave Presidio	TWSC	13.3	B	11.2	B
13	I-5 SB Off-Ramp – Ave Valencia/El Camino Real	Signalized	13.0	B	13.8	B
14	I-5 SB On-Ramp/El Camino Real	TWSC	0.5	A	0.3	A
15	I-5 NB On-Ramp/El Camino Real	TWSC	6.2	A	2.6	A
16	I-5 NB Off-Ramp/El Camino Real	Signalized	5.4	A	8.1	A
17	Ave San Juan/El Camino Real*	Signalized	16.6	B	18.1	B
18	El Camino Real South/I-5 NB Ramps*	Signalized	9.2	A	7.3	A
19	El Camino Real/Ave Mendocino	Signalized	14.0	B	18.3	B
20	Ave Del Presidente/Ave Mendocino	AWSC	11.9	B	8.6	A
21	El Camino Real/I-5 SB Ramps – Ave Calafia	AWSC	10.2	B	10.8	B
22	I-5 SB Ramps/Cristianitos Road	TWSC	11.4	B	13.6	B
23	I-5 NB Ramps/Cristianitos Road	TWSC	11.3	B	11.2	B

AWSC – All-way stop control.
TWSC – Two-way stop control. The delay is reported for the worst movement.
Shaded = Unsatisfactory LOS

The results of the 2050 No Build alternative intersection analysis are shown in Table 7. Based on the HCM analysis, the following intersections are projected to operate at unsatisfactory LOS (LOS E/F):

- Avenida De La Estrella at Avenida Palizada (AM – LOS F)
- Avenida Caballeros at Avenida Palizada (AM – LOS E)

Table 7: 2050 No Build Alternative Intersection Analysis

No.	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Calle De Industrias/Ave Pico	Signalized	41.1	D	25.8	C
2	I-5 SB Ramps/Ave Pico	Signalized	51.4	D	41.5	D
3	I-5 NB Ramps/Ave Pico	Signalized	28.4	C	21.7	C
4	SC High School West Dwy/Ave Pico	Signalized	8.0	A	2.8	A
5	Ave De La Estrella/Ave Palizada	Signalized	**94.7**	**F**	26.4	C
6	I-5 SB Off-Ramp/Ave Palizada	Signalized	14.0	B	0.5	A
7	I-5 NB On-Ramp/Ave Palizada	TWSC	6.4	A	5.7	A
8	Ave Caballeros/Ave Palizada	AWSC	**47.6**	**E**	11.7	B
9	El Camino Real/Ave Presidio	Signalized	38.3	D	29.8	C
10	I-5 SB On-Ramp – Ave Estrella/Ave Presidio	TWSC	16.1	C	30.4	D
11	I-5 NB Ramps/Ave Presidio	Signalized	24.6	C	25.5	C
12	La Esperanza/Ave Presidio	TWSC	21.3	C	15.2	C
13	I-5 SB Off-Ramp – Ave Valencia/El Camino Real	Signalized	12.6	B	16.8	B
14	I-5 SB On-Ramp/El Camino Real	TWSC	0.6	A	0.5	A
15	I-5 NB On-Ramp/El Camino Real	TWSC	6.8	A	2.9	A
16	I-5 NB Off-Ramp/El Camino Real	Signalized	6.4	A	9.8	A
17	Ave San Juan/El Camino Real*	Signalized	16.2	B	17.5	B
18	El Camino Real South/I-5 NB Ramps*	Signalized	8.7	A	7.6	A
19	El Camino Real/Ave Mendocino	Signalized	16.5	B	23.4	C
20	Ave Del Presidente/Ave Mendocino	AWSC	18.3	C	9.7	A
21	El Camino Real/I-5 SB Ramps – Ave Calafia	AWSC	15.0	B	13.9	B
22	I-5 SB Ramps/Cristianitos Road	TWSC	12.5	B	17.3	C
23	I-5 NB Ramps/Cristianitos Road	TWSC	12.3	B	12.3	B

AWSC – All-way stop control.
TWSC – Two-way stop control. The delay is reported for the worst movement.
Shaded = Unsatisfactory LOS

The results of the 2050 Alternative 2 intersection analysis are shown in Table 8. Based on the HCM analysis, the following intersections are projected to operate at unsatisfactory LOS (LOS E/F):

- I-5 SB ramps at Avenida Pico (AM – LOS E)
- Avenida De La Estrella at Avenida Palizada (AM – LOS F)

Table 8: 2050 Alternative 2 Intersection Analysis

No.	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Calle De Industrias/Ave Pico	Signalized	36.9	D	26.1	C
2	I-5 SB Ramps/Ave Pico	Signalized	**55.0**	**E**	41.5	D
3	I-5 NB Ramps/Ave Pico	Signalized	26.6	C	35.8	D
4	SC High School West Dwy/Ave Pico	Signalized	7.8	A	2.9	A
5	Ave De La Estrella/Ave Palizada	Signalized	**98.5**	**F**	35.7	D
6	I-5 SB Off-Ramp/Ave Palizada	Signalized	14.1	B	0.5	A
7	I-5 NB On-Ramp/Ave Palizada	TWSC	6.2	A	5.8	A
8	Ave Caballeros/Ave Palizada	AWSC	34.7	D	10.6	B
9	El Camino Real/Ave Presidio	Signalized	37.9	D	29.0	C
10	I-5 SB On-Ramp – Ave Estrella/Ave Presidio	TWSC	17.6	C	23.7	C
11	I-5 NB Ramps/Ave Presidio	Signalized	26.6	C	27.5	C
12	La Esperanza/Ave Presidio	TWSC	28.4	D	15.9	C
13	I-5 SB Off-Ramp – Ave Valencia/El Camino Real	Signalized	12.8	B	16.9	B
14	I-5 SB On-Ramp/El Camino Real	TWSC	0.6	A	0.5	A
15	I-5 NB On-Ramp/El Camino Real	TWSC	6.3	A	2.6	A
16	I-5 NB Off-Ramp/El Camino Real	Signalized	5.3	A	8.9	A
17	Ave San Juan/El Camino Real*	Signalized	19.3	B	17.4	B
18	El Camino Real South/I-5 NB Ramps*	Signalized	8.7	A	7.6	A
19	El Camino Real/Ave Mendocino	Signalized	16.6	B	28.2	C
20	Ave Del Presidente/Ave Mendocino	AWSC	16.2	C	11.1	B
21	El Camino Real/I-5 SB Ramps – Ave Calafia	AWSC	14.3	B	16.7	C
22	I-5 SB Ramps/Cristianitos Road	TWSC	13.4	B	18.1	C
23	I-5 NB Ramps/Cristianitos Road	TWSC	13.2	B	12.7	B

AWSC – All-way stop control.
TWSC – Two-way stop control. The delay is reported for the worst movement.
Shaded = Unsatisfactory LOS

The results of the 2050 Alternative 3A/3B intersection analysis are shown in Table 9. Based on the HCM analysis, the following intersections are projected to operate at unsatisfactory LOS (LOS E/F):

- I-5 SB ramps at Avenida Pico (AM – LOS E)
- Avenida De La Estrella at Avenida Palizada (AM – LOS F)

Table 9: 2050 Alternative 3A/3B Intersection Analysis

No.	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Calle De Industrias/Ave Pico	Signalized	36.9	D	26.1	C
2	I-5 SB Ramps/Ave Pico	Signalized	**55.0**	**E**	41.5	D
3	I-5 NB Ramps/Ave Pico	Signalized	26.6	C	35.8	D
4	SC High School West Dwy/Ave Pico	Signalized	7.8	A	2.9	A
5	Ave De La Estrella/Ave Palizada	Signalized	**98.5**	**F**	35.7	D
6	I-5 SB Off-Ramp/Ave Palizada	Signalized	14.1	B	0.5	A
7	I-5 NB On-Ramp/Ave Palizada	TWSC	6.2	A	5.8	A
8	Ave Caballeros/Ave Palizada	AWSC	34.7	D	10.6	B
9	El Camino Real/Ave Presidio	Signalized	37.9	D	29.0	C
10	I-5 SB On-Ramp – Ave Estrella/Ave Presidio	TWSC	17.6	C	23.7	C
11	I-5 NB Ramps/Ave Presidio	Signalized	26.6	C	27.5	C
12	La Esperanza/Ave Presidio	TWSC	28.4	D	15.9	C
13	I-5 SB Off-Ramp – Ave Valencia/El Camino Real	Signalized	12.8	B	16.9	B
14	I-5 SB On-Ramp/El Camino Real	TWSC	0.6	A	0.5	A
15	I-5 NB On-Ramp/El Camino Real	TWSC	6.3	A	2.6	A
16	I-5 NB Off-Ramp/El Camino Real	Signalized	5.3	A	8.9	A
17	Ave San Juan/El Camino Real*	Signalized	19.3	B	17.4	B
18	El Camino Real South/I-5 NB Ramps*	Signalized	8.7	A	7.6	A
19	El Camino Real/Ave Mendocino	Signalized	16.6	B	28.2	C
20	Ave Del Presidente/Ave Mendocino	AWSC	16.2	C	11.1	B
21	El Camino Real/I-5 SB Ramps – Ave Calafia	AWSC	14.3	B	16.7	C
22	I-5 SB Ramps/Cristianitos Road	TWSC	13.4	B	18.1	C
23	I-5 NB Ramps/Cristianitos Road	TWSC	13.2	B	12.7	B

AWSC – All-way stop control.
TWSC – Two-way stop control. The delay is reported for the worst movement.
Shaded = Unsatisfactory LOS

Comparative Analysis and Key Findings

The build alternatives are expected to improve the overall traffic operations in the study area compared to the No Build Alternative. The addition of a general-purpose lane or managed lane in each direction of travel will increase freeway mainline capacity and reduce congestion. Additionally, build Alternatives 3A and 3B will close the gap in the managed lane network between Orange County and San Diego County.

All study freeway segments operate at LOS C or better in the existing conditions, except for the SB weaving segment between the Avenida Pico on-ramp and the Avenida Palizada off-ramp. During the weekday PM peak hour, this freeway segment operates at LOS F. Under the 2050 No Build Alternative and the build alternatives, all study freeway segments operate at LOS D or better, except for the SB weaving segment between Avenida Pico on-ramp and the Avenida Palizada off-ramp, which will continue to operate at LOS F during the PM peak hour. The build alternatives improve the delay compared to the No Build alternative.

All study intersections are projected to operate with LOS D or better in the existing conditions, except for the NB ramps at Avenida Pico during the weekday AM and PM peak hours. Under the 2050 No Build Alternative, all study intersections operate at LOS D or better, except for the following intersections:

- Avenida De La Estrella at Avenida Palizada (AM – LOS F)
- Avenida Caballeros at Avenida Palizada (AM – LOS E)

The 2050 build alternatives will improve the AM and PM peak hour delay over the No Build Alternative. All study intersections will operate at LOS D or better, except for the following intersections:

- I-5 SB ramps at Avenida Pico (AM – LOS E)
- Avenida De La Estrella at Avenida Palizada (AM – LOS F)

Improvements to the I-5 NB ramps at Avenida Pico are currently under construction with the Avenida Pico Undercrossing project (EA 12-0F96A4). Avenida De La Estrella at Avenida Palizada could be improved with signal timing modifications. Avenida Caballeros at Avenida Palizada is unsignalized and would likely not meet the traffic signal warrants. This intersection could be improved with the addition of a turn pocket on eastbound Avenida Palizada or NB Avenida Caballeros.

Scope of Future Traffic Engineering Studies, Activities and Tasks

The following studies, activities and tasks are expected to be completed during the PA&ED phase:

- Forecasting
  - Additional data collection including either through PeMS or traffic counts
  - Traffic forecasts using updated available modeling tools, extrapolated to future years as necessary

- Operational/Capacity Analysis and Evaluation
  - Traffic analysis to support the environmental document
  - Traffic Impact Analysis/Circulation Study
  - Intersection Control Evaluation
  - Detailed analysis techniques, including microsimulation analysis of the SB freeway segment between Avenida Pico and Avenida Palizada

- Safety Analysis and Evaluation
  - Accident analysis using the latest Traffic Accident Surveillance and Analysis System (TASAS) report data
  - Safety analysis/study, coordinating with the District Safety Engineer

It is recommended that studies would acknowledge the potential future use of autonomous vehicles and their potential impacts to the project in order to be aligned with the City of San Clemente's future transportation outlooks. Future studies would also consider sound absorbing sound walls through the project corridor as needed.

A Transportation Planning Scoping Information Sheet is included in Attachment B.

5. DEFICIENCIES

Currently under construction, the Avenida Pico Undercrossing project (EA 12-0F96A4) will extend the HOV lane facility to just south of the interchange. Within San Diego County, the I-5 corridor is currently under construction to increase capacity, including the addition of four managed lanes between the City of Oceanside and Vandergrift Boulevard (point-of-entry to U.S. Marine Corps Base Camp Pendleton), which is approximately 16 miles south of the San Diego County/Orange County line. By 2050, SANDAG plans to continue two or four managed lanes to the San Diego County/Orange County Line. As a result, there will be a gap in the managed lane network through the project corridor.

Auxiliary lanes are present between all entrance and exit ramps except between the NB Cristianitos Road on-ramp and the Avenida Magdalena off-ramp, and SB Avenida Calafia on-ramp and the Cristianitos Road off-ramp. Existing geometric deficiencies include nonstandard weaving lengths and interchange spacing at some locations. The SB weaving segment between the Avenida Palizada off-ramp and the Avenida Pico on-ramp in particular experiences an unacceptable LOS in the existing conditions and future forecasted conditions. This location will be further analyzed and modeled during the PA&ED phase to determine appropriate mitigations, which may include a two-lane exit ramp or ramp closures.

In the existing conditions, this segment of the I-5 experiences congestion during some weekends due to the nature of recreational activities in the vicinity and volume of weekend trips south of Orange County. In general, the peak hour demand for Saturdays and Sundays are higher than weekday peak hour demands.

As previously discussed, the base year for OCTAM is 2012 with a future horizon year of 2040, which is consistent with the OCTA LRTP and SCAG's RTP. Since Caltrans requires the horizon year of the project to be 20 years after the anticipated opening date, further extrapolation of the traffic forecast was performed to bring the traffic to a horizon year of 2050.

The study area generally experiences higher demand during recreational travel outside of standard weekday morning and evening commute week hours. Therefore, Caltrans requested a supplemental weekend conditions analysis be conducted for the project (see Attachment K).

Additional freeway mainline traffic count data was collected from PeMS on the I-5 segment between Avenida Califia and Cristianitos Road. The data was collected using the following methodology to determine weekend conditions and trends:

- Collect PeMS freeway mainline traffic count data for the month of weekday data (March), one month to represent summer conditions (July), and one month to represent fall conditions (October)
- Collect traffic count data for Fridays, Saturdays, Sundays, and Mondays for non-holiday weekends
- Determine peak hour volumes per direction for each day (Friday – Monday) and average to develop the overall weekend peak hour volume

Given that recreational weekend traffic could carry over to Fridays and Mondays (e.g. weeks with Friday or Monday holidays), initial traffic count data collection was conducted for the full Friday to Monday period. A review of the collected data for the AM and PM peak hours on Fridays and Mondays generally showed a higher demand for Monday volumes during the AM peak hour as compared to the typical weekday AM peak hour, and higher demand for the PM peak hour for Friday as compared to the typical weekday PM peak hour. Overall, the peak hour demand for Saturdays and Sundays were higher than those for Fridays and Mondays; therefore, the analysis was focused on the Saturday and Sunday data set.

A V/C analysis was conducted to gauge the performance for the study mainline segments for weekend conditions. A lane capacity of 1,950 passenger cars per hour per lane was applied for general purpose (mixed-flow) lanes and the HOV lanes consistent with previous studies for Caltrans. A V/C ratio is a comparison of an amount of traffic on a road with the capacity of that road. As values approach 1.00, congestion becomes more severe, with values more than 1.00 indicating severe congestion.

Table 10 and Table 11 present the results of the V/C analysis for the study segment (Avenida Califia and Cristianitos Road). As shown, the weekend peak hour volumes (on average) are between 20% and 34% higher than weekday peak hour volumes. The volumes for both northbound and southbound are also similar between the three seasons with March having the highest northbound volume and July the highest southbound volume. The V/C analysis results are approximately 0.16 and 0.17 higher for weekend conditions as compared to weekday conditions; however, the study segment (Avenida Pico to the County line) is operating under capacity during weekends (i.e., V/C ratio of less than 1.0) for all three seasons.

Table 10: Existing Freeway Weekend Peak Hour V/C Analysis - Northbound

NB-11: Between Cristianitos Road On-Ramp and Avenida Mendicino Off-Ramp						
Month[1]	Weekend Peak Hour[2]	Weekend Peak Hour Volume	Weekday Peak Hour Volume[3]	% Difference Weekend vs Weekday	Weekend Peak Hour V/C[4]	Weekday Peak Hour V/C[4]
March	11 AM	5,396	4,023	34%	0.69	0.52
July	10 AM	5,275		31%	0.68	
October	10 AM	5,308		32%	0.68	

Notes:
1: Data collected for non-holiday Saturday and Sunday for each representative season
2: Weekend peak hour (Saturday and Sunday average)
3: Weekday AM Peak Hour has the highest volume between AM/PM peak hours. Data only available for March weekday conditions.
4: Capacity of 1,950 vehicles per hour per lane

Table 11: Existing Freeway Weekend Peak Hour V/C Analysis - Southbound

SB-10: Between Cristianitos Road On-Ramp and Avenida Califia Off-Ramp						
Month[1]	Weekend Peak Hour[2]	Weekend Peak Hour Volume	Weekday Peak Hour Volume[3]	% Difference Weekend vs Weekday	Weekend Peak Hour V/C[4]	Weekday Peak Hour V/C[4]
March	11 AM	5,576	4,463	25%	0.71	0.57
July	10 AM	5,696		28%	0.73	
October	11 AM	5,372		20%	0.69	

Notes:
1: Data collected for non-holiday Saturday and Sunday for each representative season
2: Weekend peak hour (Saturday and Sunday average)
3: Weekday PM Peak Hour has the highest volume between AM/PM peak hours. Data only available for March Weekday conditions.
4: Capacity of 1,950 vehicles per hour per lane

A supplemental analysis was also conducted to determine the frequency of congestion on I-5 (i.e. speeds less than 35 miles per hour[1]) during Weekend Conditions. Hourly speeds were derived from PeMS, between Avenida Califia and Cristianitos Road, for non-holidays Fridays, Saturdays, Sundays, and Mondays for July 2016, March 2017, and October 2017. Speeds below 35 MPH were identified and compared to the total number of weekend hours. Initial analysis shows that speeds are below 35 MPH approximately 6% of weekend hours, only in the northbound direction. Typical congested time of day for the northbound direction was Sunday afternoons. The southbound direction did not show congested speeds below 35 mph for the weekend.

Delays in the Project study area along I-5 that occur on peak traffic weekends are caused by chokepoints located primarily outside of the study area. This issue was quantified by OCTA in the 2007/08 I-5 Weekend Highway Capacity Study (Weekend Study) using FreQ[2], a traffic simulation modeling software tool. The analysis evaluated weekend traffic conditions and queuing along the I-5 and identified hotspots and chokepoints contributing to traffic congestion. The analysis included data collection efforts for travel times and volumes along I-5 from SR-55 to the San Diego County Line. FreQ models were developed and calibrated for Saturday southbound and Sunday northbound time periods and directions.

The study confirmed peak travel weekend delays in South Orange County along I-5 and identified the causes of those delays. For instance, heavy congestion was seen in the southbound direction between Junipero Serra Road and Camino De Estrella. The model showed that this congestion was likely caused by a chokepoint south of Camino De Estrella, near the termination of HOV lanes and where the auxiliary lane from the Pacific Coast Highway interchange terminates. In the northbound direction, congestion was likely caused by operational issues at a chokepoint near Camino Capistrano where the northbound HOV lane begins and an auxiliary lane is dropped. This may result in queuing that extends past the San Diego County Line. Based on the Weekend Study, extension of the HOV lanes to Avenida Pico was expected to relieve both the southbound and northbound peak travel weekend congestion between Avenida Pico and the San Diego County Line. OCTA has recently constructed the I-5 South County Improvements Project that added an additional HOV lane in each direction between San Juan Creek Road and Avenida Pico.

Additionally, based on the 2040 mainline segment analysis results provided in the I-5 HOV Lane Extension Project Approval/Environmental Document (PA/ED) Traffic Study (May 2010), operations improve north of the Project study area, with the additional HOV lane, at the northbound and southbound chokepoints identified above. These improvements are reported for weekday peak hour conditions; however, similar improvements in operations would also be expected for weekend conditions with the implementation of the I-5 HOV Lane Extension project.

[1] Congested speeds defined as below 35 MPH is consistent with what is calculated in OCTAM.

[2] FreQ is an HCM-based tool that permits efficient analysis of freeway corridors, including hotspots, chokepoints, and geometric features.

To check the validity of the findings from the Weekend Study to today, peak hour volumes on I-5 at the Cristianitos Road interchange from the I-5 Avenida Pico PSR were compared to the I-5 Weekend Highway Capacity Study, as shown in Table 12.

Table 12: Existing Freeway Weekend Peak Hour V/C Analysis - Southbound

	July Peak Volumes at Cristianitos
2007 I-5 Weekend Highway Capacity Study	
Saturday Southbound	6,236
Sunday Northbound	5,612
2017 I-5 PSR	
Saturday Southbound	5,275
Sunday Northbound	5,696

Based on the comparisons, peak volumes at the Cristianitos Road interchange were higher for the Weekend Study in the southbound direction compared to the I-5 Avenida Pico PSR. For the northbound direction, the peak volumes are similar. Therefore, the 2007 Weekend Study findings would remain applicable today as the Project volumes are either higher or similar.

Future conditions analysis for weekend conditions was not conducted as future weekend peak hour freeway, ramp and intersection data is not available. In particular, OCTAM does not currently project future weekend conditions. In order to accurately determine future projections for weekend volumes, OCTA would need to collect extensive survey data to determine demand and create a new model to forecast future volumes. The travel functions for weekend conditions are different from weekday conditions, which are based on work commute, and would require significant effort to determine recreational travel patterns. In addition, the specific demand on managed lanes (for Alternative 3) would also differ from weekday conditions, which would require additional refinement and information gathering to correctly account for in the model (e.g. in the mode choice component). However, even without future projections, the addition of a single lane in each direction will result in a minimum of 20% more traffic demand accommodated along the facility.

The objective of a PSR/PDS is to provide a key opportunity for Caltrans and OCTA (local agencies sponsoring project) to achieve consensus on the purpose-and-need, scope, and schedule of a project. Preliminary weekend (Saturday) analysis has been conducted for this PSR/PDS phase. Subsequent analysis will be conducted once additional data is available to accurately reflect the current conditions of the Project study area.

It is important to note that one of the considerations of this Project is to provide HOV system completion to the just constructed HOV lane improvements on the I-5 from PCH to Avenida Pico, where OCTA sponsored and Caltrans led the construction phase. This project was completed in March 2018, which also included the reconstruction of the Avenida Pico Interchange. This 5.7-mile project, a partnership

between OCTA and Caltrans, extended the carpool lane in each direction of I-5 from San Juan Capistrano to San Clemente. Furthermore, HOV utilization during weekends along the I-5 corridor generally between the El Toro "Y" and Avenida Pico tend to be higher as compared to weekday travel. Therefore, if HOV lanes were implemented in the Project study area, which lacks HOV lanes, it is anticipated the utilization rate would be similar to the north where HOV lanes currently exist.

To further assess the weekend traffic pattern for the Project study area since completion of the I-5 HOV project, additional PeMS data has been collected between Avenida Pico and Cristianitos. This analysis assesses the Saturday peak period traffic conditions from 7 a.m. to 1 p.m. in both directions, as this is representative of a typically congested period along this stretch of the I-5 corridor. The objective of the additional data is to determine the traffic conditions with the completion of the I-5 HOV improvements project. The data includes the peak period (7 a.m. to 1 p.m.), and speed for the Project study area. The data can be found in Attachment M.

Given the unique nature of the I-5 corridor, with travel patterns differing between the weekdays (commuter trips) versus the weekends (leisure travel), Caltrans and OCTA will need to revisit this aspect of the traffic methodology and analysis during the PA/ED phase to determine the appropriate path forward to address deficiencies for the corridor. Since traffic data was obtained for this PSR/PDS prior to and during the construction phase of the I-5 improvements between PCH and Avenida Pico, analysis at the PA/ED phase for this Project will reveal the level of improvements for the Project study area.

Accident data for I-5 within the project limits was requested from Caltrans for the most recent three-year period. Caltrans provided accident data between January 2012 and December 2014 from the TASAS. Table 13 summarizes the existing accident rates. In general, the NB mainline within the study segment has a higher accident rate than the statewide averages. In addition, multiple on-ramps and off-ramps also have higher accident rates than the statewide averages. The proposed improvements will better accommodate traffic demands, which may reduce accident rates.

Table 13: Summary of Accident Rates

Location	Actual Accident Rates			Average Accident Rates		
	Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury	Total
I-5 Northbound (PM 0.00 to 3.65)	0.000	**0.460**	**1.050**	0.003	0.240	0.780
I-5 Southbound (PM 0.00 to 3.65)	0.003	0.130	0.380	0.003	0.240	0.780
SB On from Avenida Calafia	0.000	0.000	**0.760**	0.001	0.130	0.460
SB Off to Avenida Calafia	0.000	**0.300**	0.760	0.003	0.240	0.840
NB Off to El Camino Real/ Avenida Mendocino	0.000	0.000	**0.910**	0.003	0.240	0.840
NB On from El CaminoReal/ Avenida Mendocino	0.000	0.000	0.000	0.002	0.220	0.630
SB On from El Camino Real	0.000	0.000	0.000	0.002	0.220	0.630
NB Off to El Camino Real	0.000	**2.810**	**4.210**	0.003	0.350	1.010
NB On from El Camino Real	0.000	**0.900**	**1.800**	0.002	0.220	0.630
SB Off to El Camino Real	0.000	**0.480**	0.760	0.003	0.350	1.010
SB On Avenida Presidio	0.000	0.000	0.000	0.002	0.220	0.630
NB Off to Avenida Presidio	0.000	0.330	0.980	0.003	0.350	1.010
NB On from Avenida Presidio	0.000	**0.260**	0.260	0.002	0.220	0.630
NB On from Avenida Palizada	0.000	0.000	0.160	0.002	0.220	0.630
SB Off to Avenida Palizada	0.000	0.110	0.380	0.003	0.350	1.010
SB On from Avenida Pico	0.000	0.090	**0.840**	0.002	0.220	0.630
NB Off to Avenida Pico	0.000	**0.440**	**1.650**	0.003	0.350	1.010
NB On from Avenida Pico	0.000	**0.300**	**1.010**	0.002	0.220	0.630
SB Off to Avenida Pico	0.000	**0.360**	0.720	0.003	0.350	1.010

Data is from the most recent three-year period: January 2012-December 2014.
Accident rates are per million vehicle miles for mainline segments, and million vehicles for ramps.
Bold text: Accident rates exceeds the statewide average accident rate for similar facilities.
Source: Caltrans TASAS Table B

NB Mainline

A total of 335 collisions were reviewed as part of the investigation. The TSAR printout indicates that 14% were sideswipe type of collisions, 72.8% were rear end type of collisions, 0.6% were broadside type of collisions, 11% were hit object type of collisions, and 1.2% were overturn type of collisions. 3% of collisions were caused by drivers under the influence of alcohol, 0.9% of collisions were caused by following too close, 13.1% of collisions were caused by improper turn, 68.7% of collisions were caused by speeding, 11.6% were caused by other violations, 0.3% were caused by improper driving and 2.4% were caused by other than the driver. 76.9% of collisions occurred in day light, 3.0% of collisions occurred in dusk/dawn, 8.1% of collisions occurred in the dark with street lighting, 11.7% of collisions occurred in the dark with no street lighting and 0.3% of collisions occurred in the dark with non-operational lighting. 94.6% of collisions occurred on dry pavement surface and 5.4% of collisions occurred on wet pavement surface. 0.3% of collisions involved an obstruction on the road, 0.6% of collisions involved construction/repair zone, 0.3% of collisions involved reduced roadway width, and 98.8% of collisions involved no unusual roadway conditions.

SB Mainline

A total of 122 collisions were reviewed as part of the investigation. The TSAR printout indicates that 31.1% were sideswipe type of collisions, 27.9% were rear end type of collisions, 2.5% were broadside type of collisions, 36.9% were hit object type of collisions, 0.8% were overturn type of collisions and 0.8% were other type of collisions. 6.6% of collisions were caused by drivers under the influence of alcohol, 30.3% of collisions were caused by improper turn, 25.4% of collisions were caused by speeding, 30.3% were caused by other violations, and 7.4% were caused by other than the driver. 62.3% of collisions occurred in day light, 7.4% of collisions occurred in dusk/dawn, 13.1% of collisions occurred in the dark with street lighting and17.2% of collisions occurred in the dark with no street lighting. 86.1% of collisions occurred on dry pavement surface and 13.9% of collisions occurred on wet pavement surface. 2.5% of collisions involved an obstruction on the road, 1.7% of collisions involved construction/repair zone and 95.9% of collisions involved no unusual roadway conditions.

SB On-Ramp from Avenida Calafia

No accidents were reported at this ramp based on the TSAR printout.

SB Off-Ramp to Avenida Calafia

A total of five collisions were reviewed as part of the investigation. The TSAR printout indicates that 20% were rear-end type of collisions and 80% were hit object type of collisions. 60% of collisions were caused by drivers under the influence of alcohol, 20% of collisions were caused by improper turn and 20% of collisions were caused by speeding. 80% of collisions occurred in day light and 20% of collisions occurred in the dark with street lighting. 40% of collisions occurred on wet pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

NB Off-Ramp to El Camino Real/Avenida Mendocino
A total of two collisions were reviewed as part of the investigation. The TSAR printout indicates that 100% were hit object type of collisions. 50% of collisions were caused by improper turn and 50% of collisions were caused by speeding. 50% of collisions occurred in day light and 50% of collisions occurred in the dark with street lighting. All collisions occurred on dry pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

NB On-Ramp from El Camino Real/Avenida Mendocino
No accidents were reported at this ramp based on the TSAR printout.

SB On-Ramp from El Camino Real
No accidents were reported at this ramp based on the TSAR printout.

NB Off-Ramp to El Camino Real
A total of six collisions were reviewed as part of the investigation. The TSAR printout indicates that 16.7% were head-on collisions, 33.3% were rear-end collisions, 16.7% were broadside collisions, 16.67% were hit object collisions and 16.7% were overturn type of collisions. 33.3% were caused by drivers under the influence of alcohol, 16.7% were failure to yield, 16.7% were improper turn, 16.7% were speeding, and 16.7% were other violations. 83.3% of collisions occurred in day light and 16.7% of collisions occurred in the dark with street lighting. 16.7% of collisions occurred on wet pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

NB On-Ramp from El Camino Real
A total of 14 collisions were reviewed as part of the investigation. The TSAR printout indicates that 28.6% were head-on collisions, 57.1% were broadside collisions, and 14.3% were hit object collisions. 71.4% were failure to yield, 14.3% were improper turn, 7.1% were other violations and 7.1% were unknown. 64.3% of collisions occurred in day light, 7.1% of collisions occurred at dusk/dawn, and 7.1% of collisions occurred in the dark with street lighting. All collisions occurred on dry pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

SB Off-Ramp to El Camino Real
A total of eight collisions were reviewed as part of the investigation. The TSAR printout indicates that 25% were rear-end, 12.5% were broadside collisions, 37.5% were hit object collisions, and 25% were pedestrian type collisions. 12.5% were caused by drivers under the influence of alcohol, 12.5% were failure to yield, 12.5% were improper turn, 25% were speeding, and 37.5% were other violations. 50% of collisions occurred in day light and 50% of collisions occurred in the dark with street lighting. All collisions occurred on dry pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

SB On-Ramp Avenida Presidio
No accidents were reported at this ramp based on the TSAR printout.

NB Off-Ramp to Avenida Presidio
A total of three collisions were reviewed as part of the investigation. The TSAR printout indicates that 33.3% were rear-end and 66.7 % were hit object collisions. 33.3% were improper turn, 33.3% were speeding, and 33.3% were other violations. 67.7% of collisions occurred in day light and 33.3% of collisions occurred at dusk/dawn. 33.3% of collisions occurred on wet pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

NB On-Ramp from Avenida Presidio
A total of two collisions were reviewed as part of the investigation. The TSAR printout indicates that all were rear-end collisions. 50% were following too close and 50% were speeding. All collisions occurred in day light and all collisions occurred on dry pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

NB On-Ramp from Avenida Palizada
A total of two collisions were reviewed as part of the investigation. The TSAR printout indicates that 50% were sideswipe and 50% were hit object. 50% were improper turn and 50% were other violations. 50% of collisions occurred in day light and 50% of collisions occurred in the dark with street lighting. 50% of collisions occurred on wet pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

SB Off-Ramp to Avenida Palizada
A total of seven collisions were reviewed as part of the investigation. The TSAR printout indicates that 42.9% were sideswipe, 42.9% were rear-end, and 14.3% were broadside. 14.3% were improper turn, 42.9% were speeding, 28.6% were other violations, and 14.3% were unknown. 57.1% of collisions occurred in day light, 14.3% of collisions occurred at dusk/dawn, 14.3% of collisions occurred in the dark with street lighting, and 14.3% of collisions occurred in dark with no street lighting. All collisions occurred on dry pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

SB On-Ramp from Avenida Pico
A total of nine collisions were reviewed as part of the investigation. The TSAR printout indicates that 44.4% were sideswipe, 22.2% were rear-end, 22.2 % were broadside and 11.1% were hit object. 22.2% were improper turn, 11.1% were speeding, 22.2% were other violations, and 44.4% were unknown. 44.4% of collisions occurred in day light, 22.2% of collisions occurred at dusk/dawn and 33.3% of collisions occurred in dark with street lighting. All collisions occurred on dry pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

NB Off-Ramp to Avenida Pico

A total of 15 collisions were reviewed as part of the investigation. The TSAR printout indicates that 20% were sideswipe, 33.3% were rear-end, 26.7% were broadside, and 6.7% were pedestrian type of collisions. 13.3% were caused by drivers under the influence of alcohol, 6.7% were failure to yield, 40% were speeding, 26.7% were other violations, and 13.3% were unknown. 66.7% of collisions occurred in day light, 6.7% of collisions occurred at dusk/dawn and 26.7% of collisions occurred in dark with street lighting. All collisions occurred on dry pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

NB On-Ramp from Avenida Pico

A total of 17 collisions were reviewed as part of the investigation. The TSAR printout indicates that 5.9% were head on, 5.9% were sideswipe, 41.2% were rear-end, 23.5% were broadside, and 23.5% were hit object. 11.8% were caused by drivers under the influence of alcohol, 11.8% were improper turn, 29.4% were speeding, 23.5% were other violations, 23.5% were other than driver, and 5.9% were unknown. 58.8% of collisions occurred in day light, 29.4% of collisions occurred in dark with street lighting, and 11.8% of collisions occurred in dark with no street lighting. 11.8% of collisions occurred on wet pavement surface. According to the TSAR printout, all collisions involved no unusual roadway conditions.

SB Off-Ramp to Avenida Pico

A total of 12 collisions were reviewed as part of the investigation. The TSAR printout indicates that 25% were sideswipe, 50% were rear-end, 8.3% were hit object, and 16.7% were overturn. 8.3% were following too close, 8.3% were improper turn, 50% were speeding, 16.7% were other violations, and 16.7% were unknown. 91.7% of collisions occurred in day light and 8.3% of collisions occurred in dark with street lighting. All collisions occurred on dry pavement surface. According to the TSAR printout, 91.7% of collisions involved no unusual roadway conditions and 8.3% involved holes and/or ruts that could be a result of construction at the interchange.

Travel demand within the I-5 freeway corridor in the study area, including adjacent intersections, is expected to increase, leading to worsening of the conditions within the study area. The proposed project would increase freeway capacity, reduce congestion and close the gap in the managed lane network as indicated in the purpose and need.

6. CORRIDOR AND SYSTEM COORDINATION

The primary purpose of the project is to maximize efficiency of the freeway mainline by increasing person and vehicle throughput, while reducing current and projected traffic congestion and delay on the project corridor. I-5 is included in the National Network and the National Highway System; however, this portion of I-5 is not part of the Extra Legal Load Network. FHWA approvals are required for any changes during the PA&ED phase. In future project development phases, coordination with the following studies/projects will be required:

SOCMIS

Completed in 2008 by OCTA, this study evaluated projected conditions to 2030, and focused on major roadway improvements. Recommendations from SOCMIS would need to be evaluated in light of changes in models since the study was completed. Key features for the I-5 in this segment identified in the LPS include the addition of one HOV lane in each direction from the San Diego County/Orange County Line to Pacific Coast Highway.

I-5 Improvements from Avenida Pico Interchange to El Toro Road Interchange

The following seven projects, either in design or construction, will add HOV and other lanes to I-5 north of the project.

- I-5 (Avenida Pico to San Juan Creek Road) – Construction Phase
- I-5/SR 74 Ortega Interchange - Completed
- I-5 (SR 73 to El Toro Road) – Design Phase
- I-5 (SR 57 to SR 55) – Construction Phase
- I-5 (I-405 to SR 55) – Environmental Phase
- I-5/El Toro Road Interchange – Environmental Phase
- I-5/Camino Capistrano Project - Completed

Construction of these improvements is anticipated to be completed by approximately 2022. The Avenida Pico Undercrossing Project (EA 12-0F96A4) is immediately north of the project limits, which will add a HOV in each direction to just south of the Avenida Pico Interchange. This project is expected to be completed in 2018.

I-5 North Coast Corridor Improvements (SANDAG)

Approved in 2014, it is expected that by 2040, the I-5 North Coast Corridor project will add two express lanes in each direction from San Diego to Oceanside. In addition, the SANDAG Regional Transportation Plan (RTP) calls for the addition of two toll lanes in each direction between the City of Oceanside and the San Diego County/Orange County Line by 2050.

South County Traffic Relief Effort (TCA)

Studies are underway to consider transportation investments in south Orange County that can be implemented by TCA. A Draft PSR-PDS is expected to be available in 2018.

City of San Clemente

The City completed an Arterial and Mobility Study in March 2018 to compare baseline traffic conditions with and without the possible SR 241 toll road extension, develop potential roadway improvement alternatives, and analyze and compare the alternatives to the possible SR 241 extension. The City's findings support completing OC Go and Master Plan of Arterial Highway (MPAH) improvements as a more effective strategy for regional mobility and at much lower cost than an extension of the SR 241 toll road.

Complete Streets

The proposed improvements for all build alternatives do not hinder or adversely impact existing transit, bicycle or pedestrian facilities. The local transit provider within the project limits is OCTA. There are existing bus stops near the Avenida Mendocino Interchange and the El Camino Real Interchange. No changes to the bus stops or bus routes are expected. At the various interchanges through the project limits, existing bicycle facilities consist of shared path bikeways (no bikeway designation). Existing pedestrian facilities are continuous and generally ADA-compliant. See Section 7 for proposed improvements to pedestrian facilities for each alternative.

7. ALTERNATIVES

The following alternatives include a No Build alternative, as well as build alternatives, that have been developed to fit in the context of the surrounding area and maximize operational benefits along the study corridor while limiting impacts on the right-of-way. Schematic lane addition figures for the No Build and each Build Alternative are included in Attachment A.

Alternative 1 – No Build

No additional lanes or improvements would be provided to the project corridor. This alternative assumes the completion of the I-5/Avenida Pico interchange improvements immediately north of the project location, and the I-5/El Camino Real interchange improvements, which are both currently under construction. No other improvements would be made within the project area.

Alternative 2 – Add One General Purpose Lane in each direction

One additional general-purpose lane would be added in each direction of I-5, to provide a total of five general-purpose lanes in each direction through the project corridor. The additional NB lane would begin immediately north of the San Diego County/Orange County Line and end just south of the Avenida Pico Undercrossing. The additional SB lane would begin just north of the Avenue Presidio Undercrossing and become an auxiliary lane, ending at the SB Cristianitos Road exit ramp.

The existing mainline would be widened to the outside to accommodate the additional lane. Bridge undercrossing widening will occur at several locations, and new retaining walls would be constructed at bridge overcrossings within the corridor. Due to column conflicts, replacement of the Concordia Pedestrian Overcrossing will be required. To minimize local impacts along Avenida Del Presidente, the centerline of I-5 will be shifted easterly approximately 8 feet to 10 feet between Cristianitos Road and Avenida San Luis Rey. Additionally, the centerline of I-5 will be shifted westerly at the El Camino Real interchange to minimize right-of-way impacts to the east of the interchange. The existing sound wall on the west side of I-5 at El Camino Real would be impacted with this alternative. The need for sound walls, their locations, and heights would be evaluated in the PA&ED phase.

Ramp improvements will be provided where necessary due to the outside widening, and existing auxiliary lanes will be restored with the project. Local improvements, including signal timing and ADA-compliant pedestrian facilities, would be provided at several ramp intersections. Existing curb ramps within the project limits meet ADA requirements, with the exception of the Cristianitos Road Interchange curb ramps. Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. The curb ramps at the NB on-ramp from El Camino Real would be replaced due to on-ramp reconfiguration. The remainder of the curb ramps within the project limits would be protected in place.

Structures – Alternative 2

One additional general-purpose lane would be added in each direction of the I-5. The improvements proposed for this alternative result in three bridge widenings, two bridge replacements, and a ground anchor wall. The following is a summary of the impacted structures.

Avenida Palizada UC (Bridge No. 55-0205)
The existing structure is a three span cast in place (CIP) reinforced concrete (RC) T-Beam Bridge. It is approximately 162’-6” long by 152’-0” wide. The proposed improvements require widening the easterly side of the bridge at NB I-5 by 16’-6” to 19’-6”. A CIP RC T-Beam, matching the existing structure, and a Precast Prestressed (PC/PS) T- beam are considered for this widening. The proposed spans are assumed to match the existing spans. For the CIP alternative, the structure depth will be 5’-0”, resulting in minimum vertical clearance of approximately 14’-10” over the traffic on Avenida Palizada, which is less than the required minimum of 15’-0”. Therefore, this alternative does not meet the required standard. The required structures depth for the PC/PS T Beam alternative is 4’-6”, resulting in minimum vertical clearance of approximately 15’-5”, which is greater than the minimum required vertical clearance of 15’-0”. Therefore, PC/PS T-Beam alternative for the widening meets the standard. A seismic retrofit contingency has been added for this structure.

Avenida Presidio UC (Bridge No. 55-0204)
The existing structure is a three span CIP/RC T-Beam. It is approximately 143’-1” long by 152’-0” wide. The proposed improvements require widening the easterly side of the bridge at NB I-5 by 12’-0” to 12’-6”. A CIP RC T-Beam, matching the existing structure, and a PC/PS T- beam are considered for this widening. The proposed spans are assumed to match the existing spans. For the CIP alternative, the structure depth will be 4’-6”, and the resulting minimum vertical clearance is approximately 15’-5” over the traffic on Avenida Presidio, which is greater than the minimum required 15’-0”. However, falsework is required for the CIP alternative, with a minimum temporary vertical clearance of 14’-0”. That only leaves about 1’-5” for falsework depth, which is less than the standard falsework depth. Therefore, this alternative does not meet the required standard. The required structures depth for the PC/PS T-Beam alternative is 4’-3”, resulting in minimum vertical clearance of

approximately 15’-8”, which is greater than the minimum required vertical clearance of 15’-0”. Therefore, PC/PS T-Beam alternative for the widening meets standard. A seismic retrofit contingency has been added for this structure.

El Camino Real UC (Bridge No. 55-0203)
The existing structure is a three span, approximately 285’-7” long by 159’-2” wide steel plate girder bridge. The proposed improvements require widening the westerly side of the bridge, at SB I-5, by approximately 25’-0”. Two superstructure types are considered for this widening: Welded Steel Plate Girder or PC/PS Wide Flange Girder. The proposed spans are assumed to match the existing spans. Vertical clearance is not an issue at this location, so both structure types are feasible. However, Welded Steel Plate Girder is the recommended alternative for the widening as it matches the existing structure type, minimizing compatibility issues between the existing and the proposed structures. No seismic retrofit contingency has been added for this structure, due to strengthening of the structure in 2009.

Avenida Mendocino OC (Bridge No. 55-0463)
The existing structure is a two span, CIP/PS Concrete box girder bridge, approximately 235’-3” long by 44’-0” wide. The proposed improvements do not affect the bridge, but Subhorizontal Ground Anchor walls will need to be constructed in front of both abutments to accommodate the proposed widening of NB and SB I-5.

Avenida San Luis Rey OC (Bridge No. 55-0151)
The existing structure is a two span CIP/PS concrete box girder bridge. It is approximately 177’-4” long by 44’-0” wide. The proposed improvements on NB I-5 encroach into the existing bridge easterly abutment. Therefore, the bridge will need to be replaced. A CIP/PS box girder, matching the existing structure, and a PC/PS wide flange girder are considered for this widening. The proposed spans are assumed to match the existing spans. For the CIP alternative, the structure depth will be 3’-9”, resulting in minimum vertical clearance of approximately 16’-9”over the traffic on I-5, which is greater than the required minimum of 16’-6” over freeways. However, falsework is required for the CIP alternative, with a minimum temporary vertical clearance of 15’-0” over freeways. That only leaves about 1’-9” for falsework depth, which is less than the standard falsework depth required. Therefore, this alternative does not meet the required standard. The required structures depth for the PC/PS wide flange girder alternative is 3’-9”, resulting in minimum vertical clearance of approximately 16’-9”, which is greater than the minimum required vertical clearance of 15’-0”. Therefore, PC/ PS wide flange girder alternative for bridge replacement meets the required standard.

Concordia School Pedestrian OC (Bridge No. 55-0513)
The existing pedestrian bridge is a CIP/ PS concrete box girder, approximately 612’-1” long by 10’-0” wide. The bridge will need to be replaced to accommodate the proposed improvements on NB and SB I-5. The proposed structure consists of four spans, in addition to a ramp along Avenida Del Presidente. The proposed total bridge length is 440’-0” by 15’-0” wide. Two superstructure types are considered for the

replacement. CIP/PS concrete box girder or PC/PS Wide Flange Girder. The vertical clearance is not a constraint at this location, and based on the required depth to span ratio, the proposed structure depth for both alternatives is less than the existing depth. Even though both proposed superstructure alternatives are feasible, CIP/PS concrete box girder is recommended, as it is more cost effective and most common structure type in California with superior seismic performance.

Local Streets – Alternative 2

The following local streets will require improvements due to freeway mainline widening:

- Reconstruction of cul-de-sac at Avenida San Gabriel on the NB side of I-5.
- Shift and reconstruct of Calle Alcazar adjacent to the NB El Camino Real on-ramp.

Stage Construction – Alternative 2

Construction along the freeway mainline would be completed with minimal traffic impacts. Construction of the outside widening would require shifting traffic lanes towards the median and reducing shoulder widths. Reconstruction of the median would require shifting traffic lanes towards the outside and reducing shoulder widths. Local street temporary impacts due to freeway mainline widening include:

- Alternating (non-consecutive) temporary lane and full closures of on/off ramps through project corridor.
- Temporary lane and/or bike lane closures along El Camino Real and Avenida Del Presidente between Cristianitos Road and El Camino Real Undercrossing.
- Temporary lane closures on Calle Alcazar adjacent to the NB El Camino Real on-ramp.
- Temporary lane and/or full closure of El Camino Real, Avenida Presidio and Avenida Palizada at the freeway undercrossings.
- Temporary pedestrian and bicycle detour routes.

Storm Water – Alternative 2

This project lies within the San Diego Regional Water Quality Control Board's (RWQCB) jurisdiction. The project area topography is mostly rolling hills along the freeway corridor. This project discharges to the Segunda Deshecha Creek within the Aliso Creek-Frontal Gulf of Santa Catalina watershed. The receiving water body is on the 2014-2016 Clean Water Act 303(d) list of Water Quality Limited Segments Requiring TMDLs for phosphorus, toxicity, turbidity, indicator bacteria, selenium, nitrogen, malathion and benthic community effects. In addition, the project is located in and subject to the Project I - Revised Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek) (Indicator Bacteria) Total Maximum Daily Load

(TMDL) as identified in Attachment IV of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ as amended in Order WQ 2014-0077-DWQ).

A Storm Water Data Report (SWDR) has been prepared for the project, and the cover page is included as Attachment F. There would be an increase in impervious area of approximately 4.5 acres due to the implementation of Alternative 2.

Consideration of Treatment BMPs is required and will be further analyzed during the next phase of the project, when more detailed design information is available, including Right-of-Way needs.

Construction Cost

The preliminary Project Planning Cost Estimate for Alternative 2 is included in Attachment G.

Alternative 3A – Add One HOV Lane in each direction

An HOV lane would be added in each direction of I-5, under this alternative. The NB HOV lane would begin immediately north of the San Diego County/Orange County Line and connect to the HOV facility being added by the I-5/Avenida Pico interchange project. However, the project limits may extend further south to accommodate new advance overhead and roadside HOV signage. In the SB direction, the existing inside general-purpose lane would be converted to an HOV lane from just south of the Avenida Pico Undercrossing to the Avenida Presidio Undercrossing, with outside widening south of Avenida Presidio. At the San Diego County/Orange County Line, the SB HOV lane would become the inside general-purpose lane, with the outside general-purpose lane converting to an auxiliary lane and ending at the SB Cristianitos Road exit ramp.

The existing mainline would be widened to the outside to accommodate the HOV lanes. Bridge undercrossing widening will occur at several locations, and new retaining walls would be constructed at bridge overcrossings within the corridor. Due to column conflicts, replacement of the Concordia Pedestrian Overcrossing will be required. To minimize local impacts along Avenida Del Presidente, the centerline of I-5 will be shifted easterly approximately 8 feet to 10 feet between Cristianitos Road and Avenida San Luis Rey. Additionally, the centerline of I-5 will be shifted westerly at the El Camino Real interchange to minimize right-of-way impacts to the east of the interchange. The existing sound wall on the west side of I-5 at El Camino Real would be impacted with this alternative. The need for sound walls, their locations, and heights would be evaluated in the PA&ED phase.

Ramp improvements will be provided where necessary due to the outside widening, and existing auxiliary lanes will be restored with the project. Local improvements, including signal timing and ADA-compliant pedestrian facilities, would be provided at several ramp intersections. Existing curb ramps within the project limits meet ADA requirements, with the exception of the Cristianitos Road Interchange curb ramps.

Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. The curb ramps at the NB on-ramp from El Camino Real would be replaced due to on-ramp reconfiguration. The remainder of the curb ramps within the project limits would be protected in place.

Structures – Alternative 3A

One additional HOV lane would be added in each direction of the I-5. The improvements proposed for this alternative are the same as Alternative 2, which will result in three bridge widenings, two bridge replacements and a ground anchor wall. See Alternative 2 for summary of the structures work.

Local Streets – Alternative 3A

The following local streets will require improvements due to freeway mainline widening:

- Reconstruction of cul-de-sac at Avenida San Gabriel on the NB side of I-5.
- Shift and reconstruct of Calle Alcazar adjacent to the NB El Camino Real on-ramp.

Stage Construction – Alternative 3A

The improvements proposed for this alternative are similar to Alternative 2, which would result in minimal impacts to traffic. See Alternative 2 for description of stage construction plan.

Storm Water – Alternative 3A

This project lies within the San Diego Regional Water Quality Control Board's (RWQCB) jurisdiction. The project area topography is mostly rolling hills along the freeway corridor. This project discharges to the Segunda Deshecha Creek within the Aliso Creek-Frontal Gulf of Santa Catalina watershed. The receiving water body is on the 2014-2016 Clean Water Act 303(d) list of Water Quality Limited Segments Requiring TMDLs for phosphorus, toxicity, turbidity, indicator bacteria, selenium, nitrogen, malathion and benthic community effects. In addition, the project is located in and subject to the Project I - Revised Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek) (Indicator Bacteria) Total Maximum Daily Load (TMDL) as identified in Attachment IV of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ as amended in Order WQ 2014-0077-DWQ).

There would be an increase in impervious area of approximately 4.5 acres due to the implementation of Alternative 3A. Consideration of Treatment BMPs is required and will be further analyzed during the next phase of the project, when more detailed design information is available, including Right-of-Way needs.

Construction Cost

The preliminary Project Planning Cost Estimate for Alternative 3A is included in Attachment G.

Alternative 3B – Add One Price Managed Lane in each direction

One Price Managed lane, which includes a 4-foot separation from the general-purpose lanes, would be added in each direction of I-5. The NB managed lane would begin immediately north of the San Diego County/Orange County Line and connect to the HOV facility being added by the I-5/Avenida Pico interchange project. However, the project limits may extend further south to accommodate new advance overhead and roadside managed lane signage. In the SB direction, the existing inside general-purpose lane would be converted to a managed lane from just south of the Avenida Pico Undercrossing to the Avenida Presidio Undercrossing, with outside widening south of Avenida Presidio. At the San Diego County/Orange County Line, the SB price managed lane would become the inside general-purpose lane, with the outside general-purpose lane converting to an auxiliary lane and ending at the SB Cristianitos Road exit ramp.

The existing mainline would be widened to the outside to accommodate the price managed lanes. Bridge undercrossing widening will occur at several locations, and new retaining walls would be constructed at bridge overcrossings within the corridor. Due to column conflicts, replacement of the Concordia Pedestrian Overcrossing will be required. To minimize local impacts along Avenida Del Presidente, the centerline of I-5 will be shifted easterly approximately 12 feet between Cristianitos Road and Avenida San Luis Rey. Additionally, the centerline of I-5 will be shifted westerly at the El Camino Real interchange to minimize right-of-way impacts to the east of the interchange. The existing sound wall on the west side of I-5 at El Camino Real would be impacted with this alternative. The need for sound walls, their locations, and heights would be evaluated in the PA&ED phase.

Ramp improvements will be provided where necessary due to the outside widening, and existing auxiliary lanes will be restored with the project. Local improvements, including signal timing and ADA-compliant pedestrian facilities, would be provided at several ramp intersections. Existing curb ramps within the project limits meet ADA requirements, with the exception of the Cristianitos Road Interchange curb ramps. Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. The following curb ramps would be replaced due to freeway ramp reconfiguration: NB off-ramp to Avenida Magdalena, NB on-ramp from El Camino Real, NB off-ramp to El Camino Real and NB off-ramp to Avenida Presidio. The remainder of the curb ramps within the project limits would be protected in place.

Structures – Alternative 3B

One additional managed lane would be added in each direction of the I-5. The improvements proposed for this alternative result in three bridge widening, two bridge replacements, and a ground anchor wall. The following is a summary of the impacted structures.

Avenida Palizada UC (Bridge No. 55-0205)
The proposed improvements require widening the easterly bridge side at NB I-5 by 15'-6" to 18'-6". A CIP RC T-Beam, matching the existing structure and a PC/PS T-Beam are considered for this widening. The proposed spans are assumed to match the existing spans. For the CIP alternative, the structure depth will be 5'-0", resulting in a minimum vertical clearance of approximately 14'-8" over the traffic on Avenida Palizada, which is less than the required minimum of 15'-0". Therefore, this alternative does not meet the standard. The required structures depth for the PC/PS T-Beam alternative is 4'-6", resulting in a minimum vertical clearance of approximately 15'-4". Therefore, PC/PS T Beam meets the standard. A seismic retrofit contingency has been added for this structure.

Avenida Presidio UC (Bridge No. 55-0204)
The proposed improvements require widening both sides of the bridge at NB and SB I-5. The NB widening is 17'-6" while the SB widening is 5'-0". A CIP RC T-Beam, matching the existing structure and a PC/PS T- Beam are considered for this widening. The proposed spans are assumed to match the existing spans. For the CIP alternative, the structure depth will be 4'-6", resulting in a minimum vertical clearance of approximately 15'-4" over the traffic on Avenida Presidio, which is greater than the required minimum of 15'-0". Similar to the discussion in for Alternatives 2 and 3A, the minimum temporary vertical clearance cannot be achieved with a CIP option, so this alternative is not recommended. The minimum vertical clearance for the PC/PS T- Beam alternative is approximately 15'-8", which is greater than the minimum required vertical clearance of 15'-0". Therefore, PC/PS T Beam alternative for the widening meets the standard. A seismic retrofit contingency has been added for this structure.

El Camino Real UC (Bridge No. 55-0203)
The proposed improvements require widening the westerly side of the bridge, at SB I-5, by approximately 34'. Two superstructure types are considered for this widening. Welded Steel Plate Girder or PC/PS Wide Flange Girder. The proposed spans are assumed to match the existing spans. As discussed in Alternative 2 and 3A, vertical clearance is not an issue at this location, so both structure types are feasible. However, Welded Steel Plate Girder is the recommended alternative for the widening as it matches the existing structure type, minimizing compatibility issues between the existing and the proposed structures. No seismic retrofit contingency has been added for this structure, due to strengthening of the structure in 2009.

Avenida Mendocino OC (Bridge No. 55-0463)

For this alternative, Subhorizontal Ground Anchor walls will need to be constructed in front of both abutments to accommodate the proposed widening of NB and SB I-5.

Avenida San Luis Rey OC (Bridge No. 55-0151)
The proposed improvements on NB I-5 encroach into the existing bridge easterly abutment. Therefore, the bridge will need to be replaced. The configuration of the replacement bridge is the same as that described in Alternative 2 and 3A. A PC/PS wide flange girder alternative for the bridge replacement meets the standard.

Concordia School Pedestrian OC (Bridge No. 55-0513)
The proposed improvements require replacement of the existing bridge. The proposed structure is same as that considered for Alternative 2 and 3A. A CIP/PS concrete box girder may be the more cost effective and most common structure type in California with superior seismic performance.

Local Streets – Alternative 3B

The following local streets will require improvements due to freeway mainline widening:

- Reconstruction of cul-de-sac at Avenida San Gabriel on the NB side of I-5.
- Shift and reconstruct of Calle Alcazar adjacent to the NB El Camino Real on-ramp.

Stage Construction – Alternative 3B

The improvements proposed for this alternative are similar to Alternative 2 and Alternative 3A, which would result in minimal impacts to traffic. See Alternative 2 for description of the stage construction plan.

Storm Water – Alternative 3B

This project lies within the San Diego Regional Water Quality Control Board's (RWQCB) jurisdiction. The project area topography is mostly rolling hills along the freeway corridor. This project discharges to the Segunda Deshecha Creek within the Aliso Creek-Frontal Gulf of Santa Catalina watershed. The receiving water body is on the 2014-2016 Clean Water Act 303(d) list of Water Quality Limited Segments Requiring TMDLs for phosphorus, toxicity, turbidity, indicator bacteria, selenium, nitrogen, malathion and benthic community effects. In addition, the project is located in and subject to the Project I - Revised Twenty Beaches and Creeks in the San Diego Region (including Tecolote Creek) (Indicator Bacteria) Total Maximum Daily Load (TMDL) as identified in Attachment IV of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ as amended in Order WQ 2014-0077-DWQ).

There would be an increase in impervious area of approximately 7.9 acres due to the implementation of Alternative 3B. Consideration of Treatment BMPs is required and

will be further analyzed during the next phase of the project, when more detailed design information is available, including Right-of-Way needs.

Construction Cost

The preliminary Project Planning Cost Estimate for Alternative 3B is included in Attachment G.

Non-Standard Features

Table 14 summarizes the non-standard features of all the alternatives as follows:

- Alternative 1 – No Build
- Alternative 2 – Add One General-Purpose Lane in each direction
- Alternative 3A – Add One HOV Lane in each direction
- Alternative 3B – Add One Price Managed Lane in each direction

Further non-standard/design exception analysis will be performed in the PA&ED phase, and will require Caltrans' approval for exceptions to.

The locations of design exceptions are indicated on Attachment E.

Table 14: Design Standards Risk Assessment

Alternative	Design Standard from Highway Design Manual Tables 82.1A & 82.1B	Probability of Design Exception Approval (None, Low, Medium, High,)	Justification for Probability Rating
1, 2, 3A & 3B	201.1 Stopping Sight Distance	Medium	Proposed improvements maintain the existing condition.
1, 2, 3A & 3B	202.2 Standards for Superelevation	Medium	Proposed improvements maintain the existing condition.
1, 2, 3A & 3B	203.2 Standards for Curvature	Medium	Proposed improvements maintain the existing condition.
1, 2, 3A & 3B	302.1 Shoulder Width	High	Proposed layout provides standard outside shoulders and reduced shoulders at overcrossing median columns. Providing wider shoulders would require substantial ROW acquisition.
1, 2, 3A & 3B	309.1(3)(b) Minimum Clearances	High	Proposed layout provides standard outside shoulders and reduced shoulders at overcrossing median columns. Providing wider shoulders would require substantial ROW acquisition.
1, 2, 3A & 3B	310.2 Outer Separation	Medium	Providing standard outer separation would require substantial ROW acquisition.

Alternative	Design Standard from Highway Design Manual Tables 82.1A & 82.1B	Probability of Design Exception Approval (None, Low, Medium, High,)	Justification for Probability Rating
1, 2, 3A & 3B	501.3 Interchange Spacing	High	Proposed improvements maintain the existing condition. .
1, 2, 3A & 3B	502.2 Local Street Interchanges	High	Proposed improvements maintain the existing condition.
1, 2, 3A & 3B	504.2(2) Freeway Entrances and Exits Standard Designs	Medium	Providing standard deceleration length would substantially reduce the weaving length.
1, 2, 3A & 3B	504.3(3) Ramps (Location and Design of Ramp Intersections on the Crossroads)	Medium	Proposed improvements maintain the existing condition.
2	504.6 Mainline Lane Reduction at Interchanges	Medium	The impacts to the operation of the roadway resulting from the nonstandard feature cannot be evaluated at the location with the current project information.
1, 2, 3A & 3B	504.7 Weaving Sections	Medium	Proposed improvements maintain the existing condition.
1, 2, 3A & 3B	504.8 Access Control	Medium	Proposed improvements maintain the existing condition

If Alternative 3A or Alternative 3B is selected, the project limits will need to be extended to include the installation of advance overhead and/or roadside signs for a HOV or Price Managed Lane. If limits extend into San Diego County the sign placement, construction and maintenance will need to be coordained with Caltrans District 11. Per the current California Manual on Uniform Traffic Control Devices (CA MUTCD) standards, the guide signs would begin approximately one to three miles in advance of the HOV or Price Managed Lane.

Alternatives Considered but Rejected

The following alternatives were reviewed but ultimately eliminated from further consideration:

- Alternative 4 - Add Reversible Lanes: This alternative would add either reversible flow lanes through a barrier-separated facility, or one additional contraflow lane for use by vehicles traveling in the peak direction. Per Assembly Bill 2542, this type of facility is to be considered for any capacity-increasing project. Within the project corridor, the directional split of traffic along I-5 does not meet the threshold for reversible lanes.

- Alternative 5 - Add Two Price Managed Lanes in each direction: This alternative would add two price managed lanes in each direction of I-5, creating a four-lane managed lane facility within the project corridor. The

projected traffic volumes do not warrant adding a four-lane price managed lane facility to this project corridor.

- Alternative 6 - Transportation Systems Management/Transportation Demand Management (TSM/TDM) Improvements: This alternative would implement ramp improvements and auxiliary lanes throughout the corridor. The few minor ramp improvements that are warranted have been integrated into the other build alternatives. Additionally, there are already auxiliary lanes in place within the corridor.

8. RIGHT-OF-WAY

New right of way, including partial acquisitions, would be needed for construction of the proposed project. The build alternatives provide a standard typical section for the freeway, which results in the need for additional right-of-way. Temporary construction easements would likely be required under all three build alternatives.

The land uses adjacent to the freeway are commercial and residential; including San Clemente High School, Concordia Elementary School and San Clemente State Park; through the projects limits. In the NB direction from the Cristianitos Road on-ramp to the Avenida Magdalena off-ramp, El Camino Real is adjacent to the freeway. In the SB direction from the El Camino Real on-ramp to the Cristianitos Road off-ramp, Avenida Del Presidente is adjacent to the freeway.

Both Alternative 2 and Alternative 3A could result in partial acquisitions in four parcels, which consist of three residential properties and one commercial business, and temporary construction easements in seven parcels. Build Alternative 2 and Alternative 3A are estimated to require approximately 956 square feet of additional right-of-way and 8,795 square feet of temporary construction easement.

Build Alternative 3B could result in partial acquisitions in nine parcels, which consist of eight residential properties and one commercial business, and temporary construction easements in nine parcels. Build Alternative 3B is estimated to require approximately 4,015 square feet of additional right-of-way and 10,997 square feet of temporary construction easement.

Current right of way impacts and cost estimates are preliminary. The exact locations and areas of the acquisitions and temporary construction easements will be known with a degree of certainty once more detailed design information including the installation/modification of advance guidance overhead signs and permanent treatment BMPs becomes available during the PA&ED phase.

Further design development of treatment BMPs devices including locations within the project will be need in the PA&ED and PS&E phases of the project to accurately identify any proposed right of way impacts and cost estimates.

See Attachment H for Right-of-Way Conceptual Estimates for each build alternative.

Utilities:

Within the project limits, Table 15 shows the utilities known to exist based on a search of available record plans and field review.

Further investigation of the utilities' depth and location within the project will be needed in the PA&ED and PS&E phases of the project to accurately identify any proposed conflicts.

In general, the numerous utility lines crossing the I-5 within the project corridor can be protected in place during construction. A 12-inch SCG gas line, which is a high priority utility, is located in El Camino Real, and is expected to be protected in place. There are approximately twelve sewer line crossing I-5 throughout the project corridor, which are owned by the City of San Clemente. All sewer crossings are expected to be protected in place. There is an AT&T line in the existing Avenida San Luis Rey Overcrossing that will be impacted, due to replacement of the overcrossing.

The Build Alternatives are expected to impact surface facilities such as streetlights, pull boxes and manholes.

Table 15: Utility Summary

Utility Owner	Type of Facility
AT&T	Telecommunications
Centurylink (Quest)	Telecommunications
Cox Communications	Telecommunications
City of San Clemente	Sewer/Water
San Diego Gas & Electric (SDG&E)	Electric/Natural Gas
Southern California Gas (SCG)	Natural Gas
South Coast Water District	Water
Verizon	Telecommunications

Railroad:

The proposed project does not cross or interfere with a railroad right of way.

9. STAKEHOLDER INVOLVEMENT

In addition to Caltrans, stakeholders include OCTA, City of San Clemente, TCA and SANDAG. All stakeholders have been involved throughout the development of this study through participation in the PDT meetings.

10. ENVIRONMENTAL COMPLIANCE

The anticipated document for compliance with CEQA and NEPA is a CEQA Initial Study/Mitigated Negative Declaration (IS/MND) and NEPA Routine Environmental Assessment with proposed Finding of No Significant Impact (EA/FONSI) for the project.

Caltrans will act as the CEQA and NEPA Lead Agency for this project.
The final determination regarding the applicable CEQA and NEPA compliance documentation will be made by Caltrans in conjunction with completion of the required technical studies as determined during the PDT process (see Attachment A, PEAR Environmental Studies Checklist).

Based on the findings of the PEAR, key issues to be addressed will include Coastal Development Permit (CDP) approval, Community Impacts, and Noise, which carry a medium risk.

- A portion of the project occurs within the Coastal Zone Boundary as mapped in the City of San Clemente's Local Coastal Program (south of the S. El Camino Real Undercrossing); therefore, a CDP from the City of San Clemente will be required.
- Community Impacts, including community character and cohesion, environmental justice, land use, and growth, will be investigated in a Community Impact Assessment (CIA). Although there are various Section 4(f) resources in the project vicinity, no temporary use, constructive use, or direct use of these resources are anticipated for the project. Therefore, compliance with Section 4(f) will be covered in the CIA rather than a separate stand-alone Section 4(f) Evaluation or *De Minimis Determination*.
- Noise and Vibration will be studied further in a Noise Study Report and in a Noise Abatement Decision Report. The Noise Study Report or Project Report may include a discussion of sound wall construction materials approved for use on Caltrans facilities.

All other environmental study categories appearing on the PEAR Environmental Studies Checklist are evaluated at a low risk; however, a Visual Impact Assessment Memo, Archaeological Survey Report, Historic Property Survey Report, Section 106/PRC 5024 & 5024.5, Native American coordination, Water Quality Scoping Questionnaire, Water Quality Assessment Report, Geotechnical Report, Paleontological Evaluation Report, Initial Site Assessment, Air Quality Study Report, and Natural Environment Study (Minimal Impact) will be prepared.

Based on the findings of the PEAR, implementation of the project would have either no or less than significant impacts on agriculture and mineral resources. Therefore, no further detailed environmental analysis related to these environmental areas is required as part of future environmental documentation.

Due to the avoidance of the Segunda Deshecha Canada Storm Channel, other regulatory permits beyond a CDP are not anticipated to be required for the project.

Applicable construction windows, the need for biological or Native American monitoring, or compensatory mitigation will be determined during completion of the pertinent technical studies. An Environmental Commitments Record will be required to ensure implementation of all Avoidance, Minimization, and/or Mitigation Measures required to address impacts resulting from the proposed project.

The IS/MND timeline could require approximately 30 months, from the start of the environmental studies to approval of the environmental document.

This project must conform to all applicable water quality regulations and/or permit requirements of the State Water Resources Control Board (SWRCB), and the San Diego Regional Water Quality Control Board (RWQCB), which include, but are not limited to, the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003 as amended in Order WQ 2014-0077-DWQ), the Statewide General Permit for Storm Water Discharge Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ, NPDES No. CAS000002), the Caltrans Storm Water Management Plan (SWMP) and any subsequent revisions and/or additional requirements at the time of construction.

The estimated Disturbed Soil Area (DSA) for this project varies from 2.43-28.6 acres, which will require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) to comply with the National Pollutant Discharge Elimination System (NPDES) Statewide Construction General Permit (CGP). The SWPPP will identify and implement temporary Best Management Practices (BMPs) during construction to address the temporary impacts to water quality.

The project discharges to Segunda Deshecha Creek within the Aliso Creek-Frontal Gulf of Santa Catalina watershed. The receiving water body is on the 2014-2016 Clean Water Act 303 (d) list of Water Quality Limited Segments Requiring TMDLs for phosphorus, toxicity, and turbidity, Selenium, Nitrogen, Malathion, indicator bacteria, and Benthic Community Effects.

Since this project discharges to a water body with an established TMDL as identified in Attachment IV of the Caltrans NPDES permit, any runoff treated in excess of the new impervious area created by the project may be claimed as a Compliance Unit (CU) to meet Caltrans NPDES permit requirements for achieving the TMDL compliance strategy. The attached Storm Water Data Report (SWDR) will evaluate and document compliance with the TMDL within the project limits.

Should dewatering be required, dewatering must comply with San Diego Regional Water Quality Control Board Order R9-20J5-0013, NPDES No. CAG919003.

11. FUNDING

Capital Outlay Project Estimate

The level of detail available to develop these capital outlay project estimates is only accurate to within the ranges shown in Table 16 and is useful for long-range planning purposes only. The capital outlay project estimates should not be used to program or commit State-programmed capital outlay funds; cost may go up in the future.

This project is not included in the OC Go freeway program; nor is there available funding at this time. OC Go, formally known as Measure M2, renewed the half-cent sales tax for Orange County freeways and street improvements in November 2006 for another 30 years. In 2017, Measure M2 was rebranded as OC Go. However, by conducting this PSR-PDS study effort and documenting the findings in the report, the project will be ready for advancement to subsequent project development phases should state or federal funding become available.

Federal law requires that all Federal aid projects on the National Highway System with a total project cost (Construction, Right of Way, Utility and Support) of $50 million or more must have a Value Analysis study for the subsequent project development phases, and the alternative advanced to the final design phase. A Value Analysis study may become a requirement when the project reaches the final design and construction phase. To minimize the risk of losing potential future federal funding, it is recommended that the Value Analysis study be conducted during the PA&ED phase. The Value Analysis study must contain a pavement Life Cycle Cost Analysis (LCCA) done in accordance with the requirements found in the Life Cycle Cost Analysis Procedures Manual, in order to meet the LCCA requirement that is being deferred to the PA&ED phase per Pavement Policy Bulletin PPB 10-04.

Table 16: Capital Outlay Estimate for Recommended Build Alternative

Alternative	Range of Estimate	
	Capital Construction	Right-of-Way Cost
Alternative 1	$0	$0
Alternative 2	$175M - $197M	$0.23M - $0.27M
Alternative 3A	$175M - $197M	$0.23M - $0.27M
Alternative 3B	$183M - $205M	$0.64M - $0.74M

Capital Outlay Support Estimate

Capital outlay support estimate for programming PA&ED for this project is estimated at $4.5 million.

12. DELIVERY SCHEDULE

The following tentative milestone schedule has been identified for the next phase of the project development. As noted in Section 11, available funding has not yet been identified at the time this report was prepared. Therefore, the tentative milestones shown below under Table 17 are used to indicate relative timeframes for planning purposes only.

Table 17: Delivery Schedule of Major Milestones for PA&ED Phase

Project Milestones		Scheduled Delivery Date
PROGRAM PROJECT	M015	Winter 2019
BEGIN ENVIRONMENTAL	M020	Spring 2020
CIRCULATE DPR & DED EXTERNALLY	M120	Spring 2021
PA & ED	M200	Spring 2023

It is recommended the alternatives identified in Section 7 be advanced to the PA&ED phase for further studies when state and/or federal funding becomes available. Alternatives may be added or revised during the PA&ED phase as more information becomes available.

13. RISKS

The project Risk Register was developed with the PDT and is included as Attachment J. At this time, the main anticipated risks are shown in Table 18.

Due to the limited resources at this phase, there might be a risk that would impact the project cost and/or schedule. An updated Initial Site Assessment (ISA) and Preliminary Site Investigation (PSI) will be conducted during the PA/ED phase.

The PDT will monitor and update the project risks as the project proceeds through the subsequent stages of the project development process.

Table 18: Risk Items Summary

Category	Title	Priority Rating
PM	Changes to purpose and need	Low
PM	PSR-PDS phase deliverables scope creep	Moderate
PM	Project improvements scope creep	Moderate
PM	Funding Changes	Low
Design	SR 241 Extension	Moderate
Design	Unexpected geotechnical or groundwater issues	Low
Design	Poor planning decisions	Low
Design	Incomplete topographical mapping	Low
Design	New or revised design standard	Moderate
Design	Changes in traffic volumes	High
Environmental	Missing/lack of availability of project data	Very Low
Environmental	Unforeseen CEQA/NEPA requirements	Moderate
Environmental	Unanticipated noise impacts	Moderate
Environmental	Local communities pose objections	Moderate
Environmental	Political support changes	Moderate
Environmental	Water quality regulation changes	Low
Environmental	Number of alternatives	Low
Organizational	Reviewers not available/overloaded	High
Environmental	Coastal zone impacts require long lead time reviews and/or permits.	High
Design	Weekend volumes differ from weekday volumes.	Moderate
Design	Improvements in San Diego County add 2 lanes in each direction prior to OC improving this freeway segment would create a gap in the managed lane network.	Very Low

14. EXTERNAL AGENCY COORDINATION

Federal Highway Administration (FHWA)

As part of the FHWA and Caltrans Joint Stewardship and Oversight Agreement, a comprehensive risk based approach will be used to manage the Federal Aid Highway Program. Projects are separated into two categories: Assigned Projects and High Profile Projects. There are a number of criteria to determine if a project is High Profile, which are provided in the Stewardship Agreement. When projects are identified as High Profile, Caltrans and FHWA will negotiate which specific approval actions are delegated to Caltrans. Caltrans shall work with FHWA to determine the appropriate category based on the alternative that is selected in the PA&ED phase.

15. PROJECT REVIEWS

A field review was conducted by the PDT members as a group in October 2016.

The project was reviewed by Christopher Le, District Design Liaison, in May 2018.

The PSR-PDS was reviewed by Caltrans District 11 and Caltrans District 12 staff in June-August 2018.

16. PROJECT PERSONNEL

Ahmed Abou-Abdou Project Manager, Caltrans District 12	(657) 328-6296
Barbara McGahey Project Manager, Caltrans District 12	(657) 328-6296
Grace Tell Branch Chief, Planning, Caltrans District 12	(949) 279-8798
Kim Robinson Planning, Caltrans District 12	(657) 328-6289
Steve Sowers Traffic Operations, Caltrans District 12	(657) 328-6432
Charlie Larwood Transportation Planning Manager, OCTA	(714) 560-5683
Dan Phu Project Manager, OCTA	(714) 560-5907
Anup Kulkarni Senior Traffic Engineer, OCTA	(949) 560-5867
Tom Bonigut Public Works Director, City of San Clemente	(949) 361-6187
Tom Frank Project Manager, City of San Clemente	(949) 361-6127
Karen Chapman Project Manager, T.Y. Lin International	(949) 398-4951
Ryan Lau Technical Manager, T.Y. Lin International	(949) 398-4960
Christina Diaz Roadway Design, T.Y. Lin International	(949) 398-4953
Tim Erney TEPA Lead, Kittelson & Associates, Inc.	(714) 468-1181
Sean Noonan PEAR Lead, VCS Environmental	(949) 489-2700
Djan Chandra Preliminary Materials Report Lead, Leighton Consulting, Inc.	(949) 681-4267

17. ATTACHMENTS

Attachment A: Vicinity Map & Project Schematics (4)

Attachment B: Transportation Planning Scoping Information Sheet (8)

Attachment C: Typical Cross Sections (3)

Attachment D: Project Alternative Plans (15)

Attachment E: Design Standards Risk Assessment Matrix (2)

Attachment F: Storm Water Data Report-Signed Cover Sheet (1)

Attachment G: Project Planning Cost Estimate (9)

Attachment H: Conceptual Cost Estimate – Right Of Way Component (9)

Attachment I: Preliminary Environmental Analysis Report (31)

Attachment J: Risk Register (1)

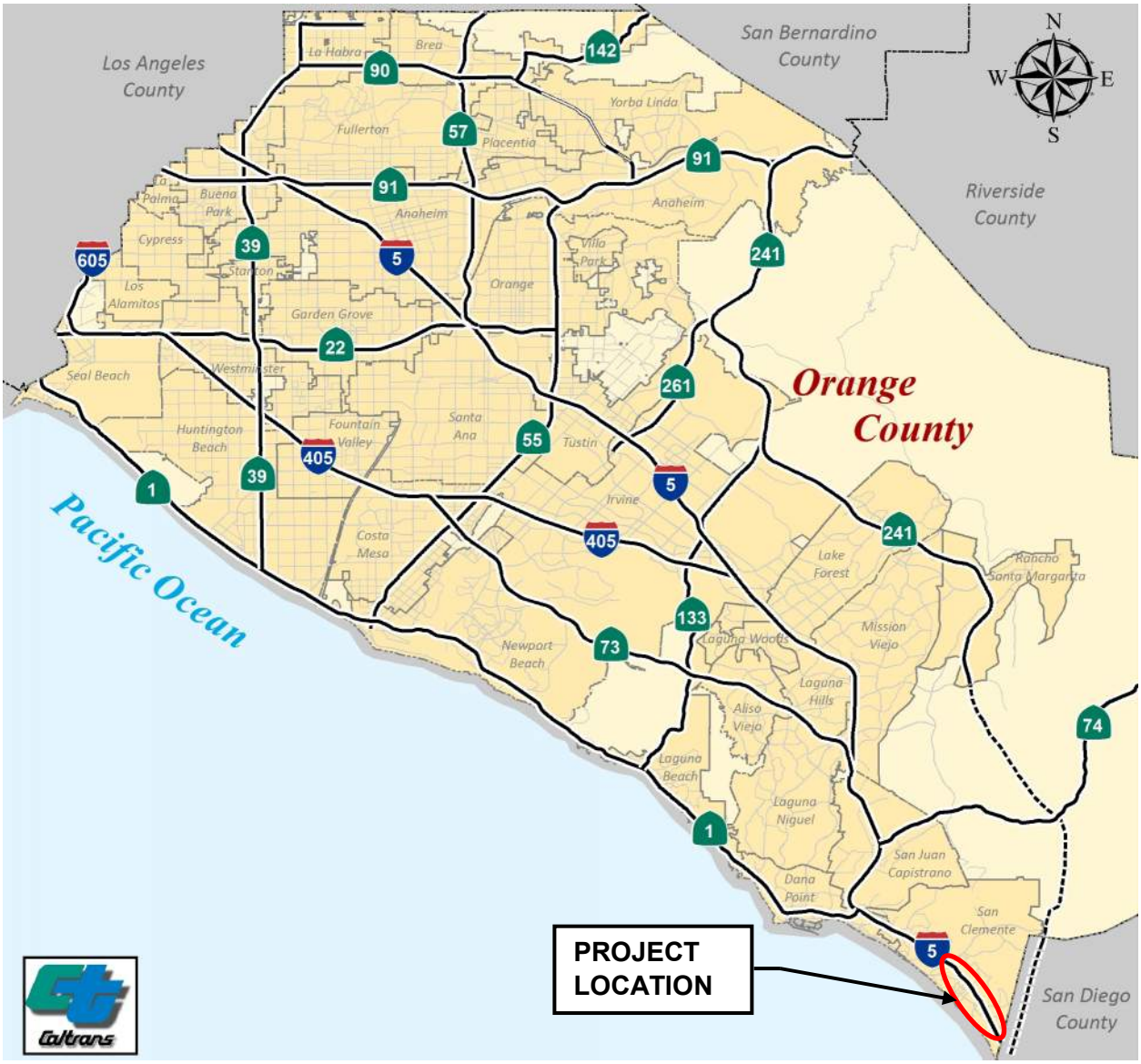
Attachment K: Weekend Data Review Memorandum (4)

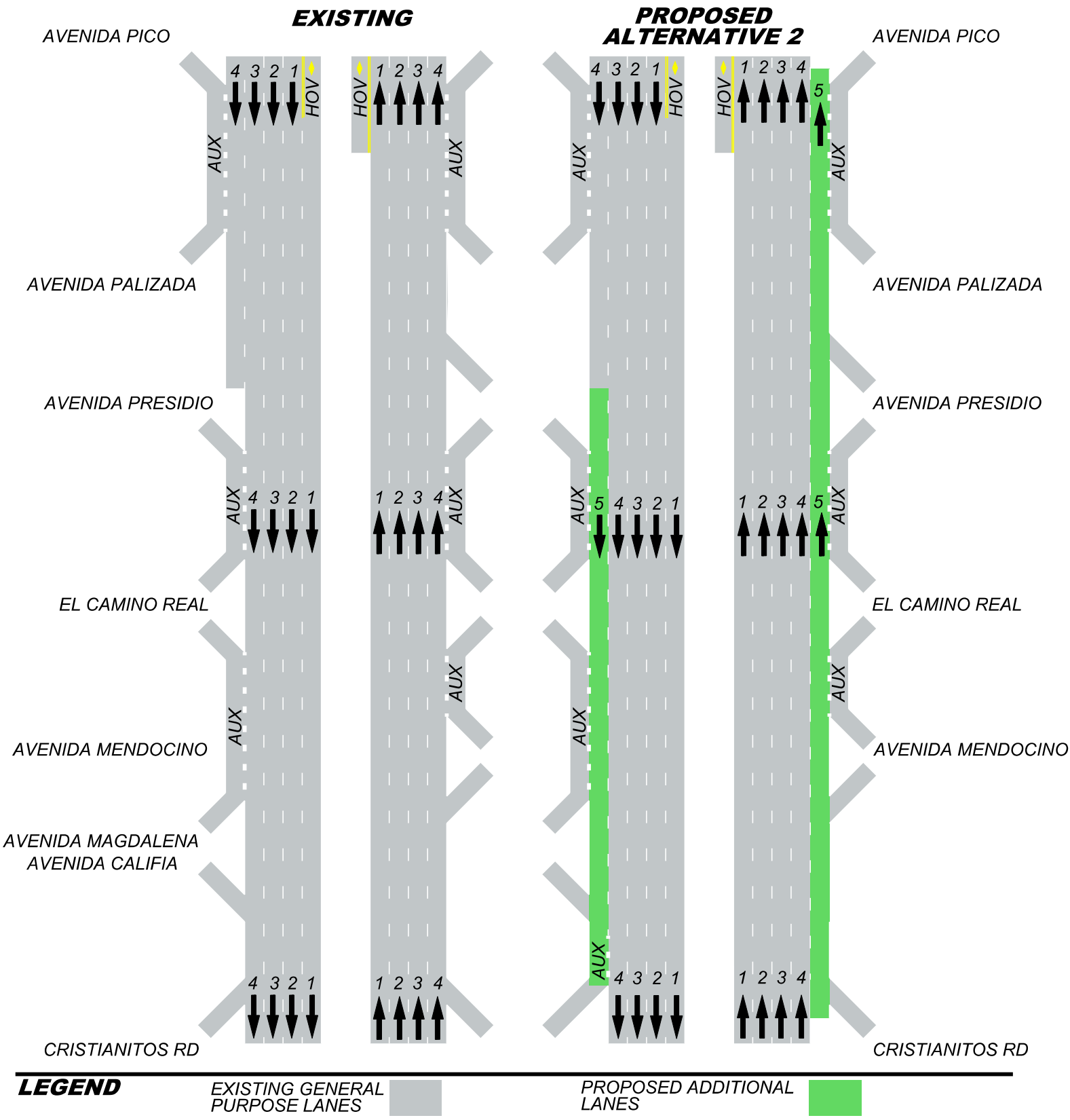
Attachment L: OCTA Complete Streets Checklist (4)

Attachment M: Supplemental PeMS Data for Project Study Area

ATTACHMENT A
LOCATION MAP

Vicinity Map

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PROPOSED ALTERNATIVE 2
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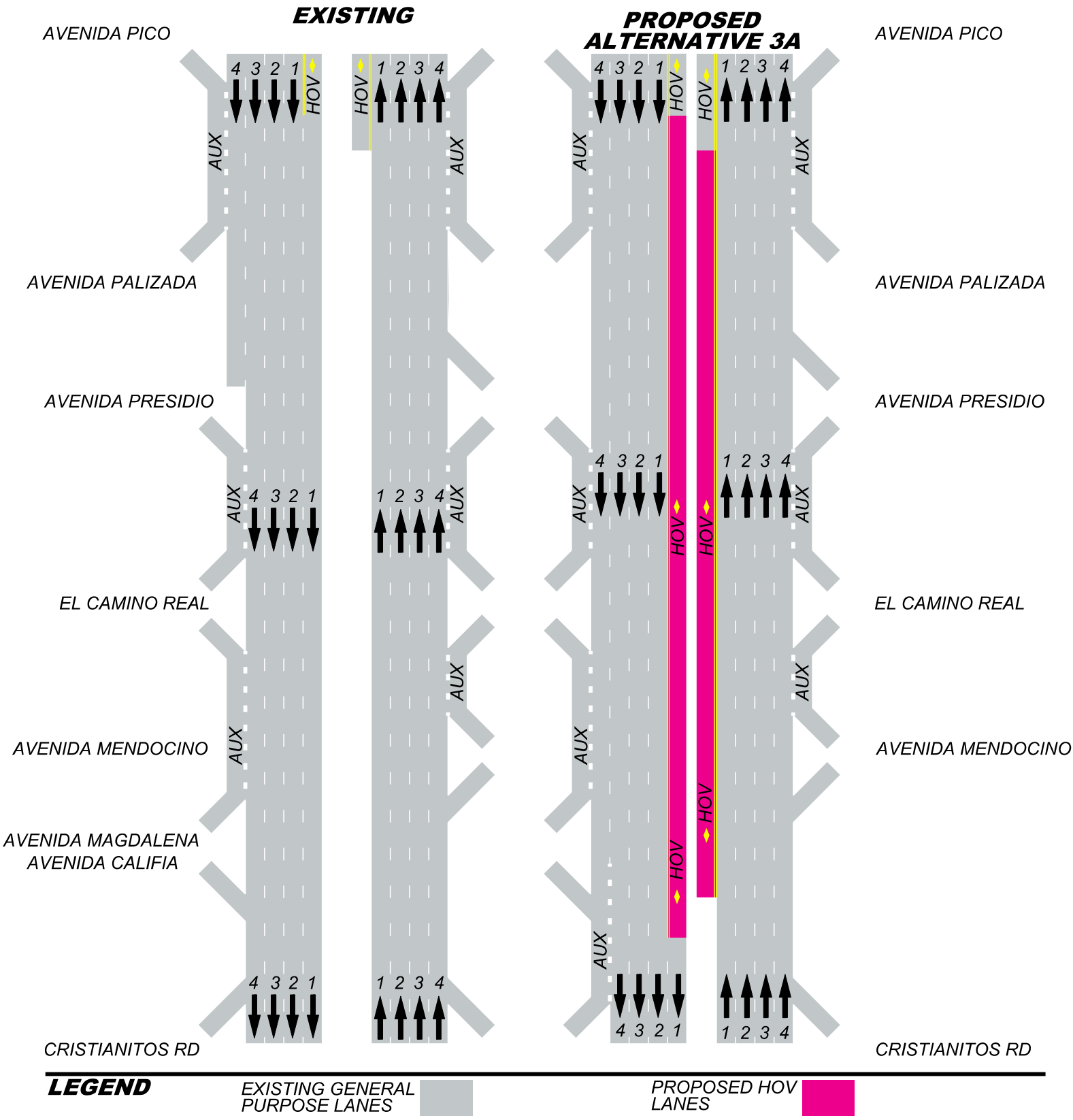
AVENIDA PALIZADA
AVENIDA PRESIDIO
EL CAMINO REAL
AVENIDA MENDOCINO
AVENIDA MAGDALENA
AVENIDA CALIFIA
CRISTIANITOS RD
AUX
HOV
4 3 2 1
1 2 3 4
5
LEGEND
EXISTING GENERAL PURPOSE LANES
PROPOSED ADDITIONAL LANES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PROPOSED ALTERNATIVE 3A
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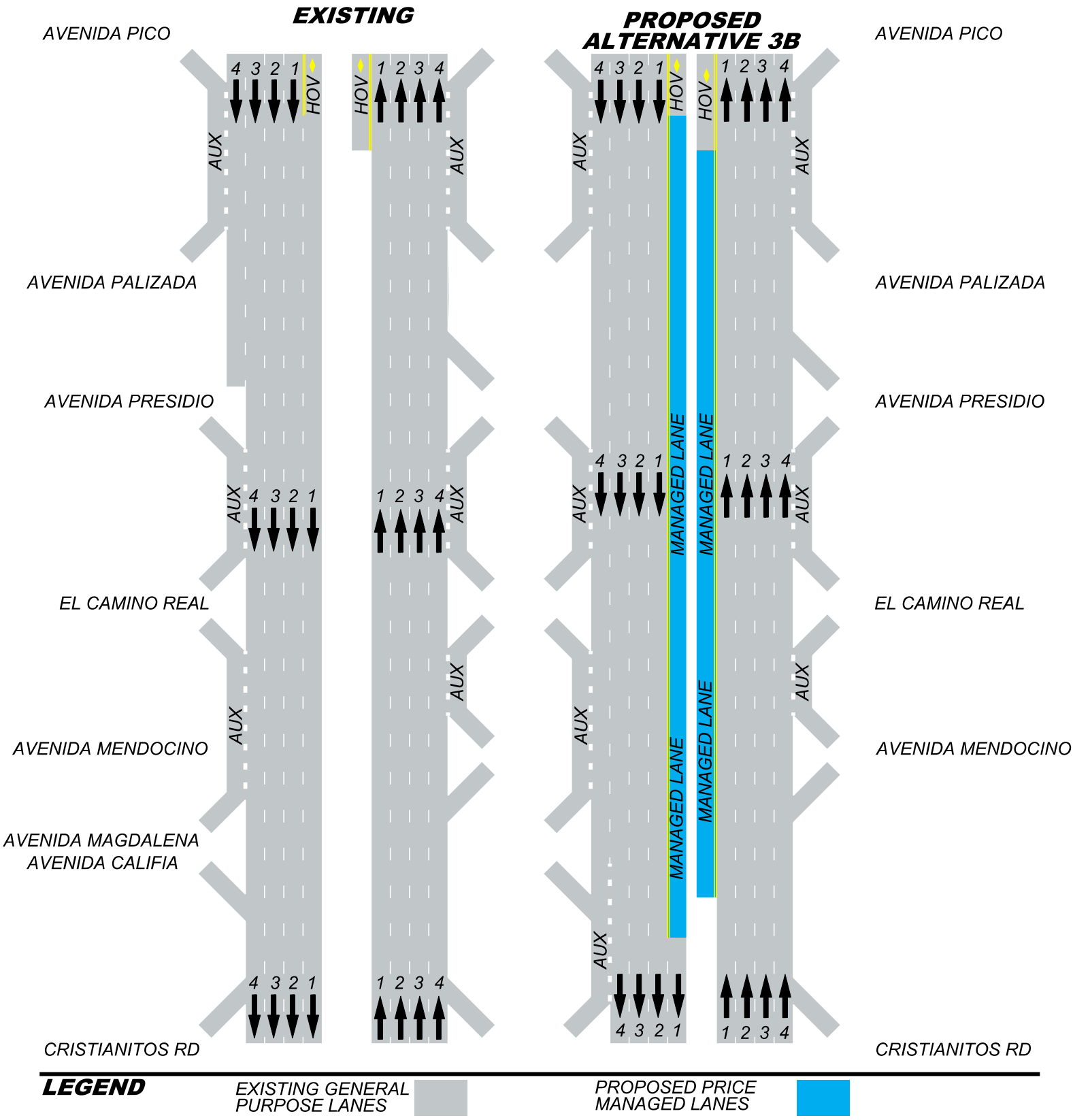
AVENIDA PALIZADA
AVENIDA PRESIDIO
EL CAMINO REAL
AVENIDA MENDOCINO
AVENIDA MAGDALENA
AVENIDA CALIFIA
CRISTIANITOS RD
AUX
HOV
4 3 2 1
1 2 3 4
LEGEND
EXISTING GENERAL PURPOSE LANES
PROPOSED HOV LANES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AVENIDA PRESIDIO
EL CAMINO REAL
AVENIDA MENDOCINO
AVENIDA MAGDALENA
AVENIDA CALIFIA
CRISTIANITOS RD
AUX
HOV
MANAGED LANE
4 3 2 1
1 2 3 4
LEGEND
EXISTING GENERAL PURPOSE LANES
PROPOSED PRICE MANAGED LANES

ATTACHMENT B
TRANSPORTATION PLANNING SCOPING INFORMATION SHEET

ARTICLE 4 Transportation Planning Scoping Information Sheet

PROJECT INFORMATION

District	County	Route	Post Miles	Project ID No/ Expenditure Authorization No.
11,12	SD, ORA	5	R71.0/R72.4, 0.0/3.4	1215000141 / 12-0P550
Project Name and Description : I-5 PSR-PDS from Avenida Pico to San Diego County Line, reduce traffic congestion and delay along Interstate 5 (I-5) between the I-5/Avenida Pico Interchange and the San Diego County Line and provide inter-county connectivity and continuity for the managed lane system through Orange County.				

Prepared by:

District Information Sheet Point of Contact*:	Name: Karen Chapman, P.E.	Functional Unit:	Consultant

* The District Information Sheet Point of Contact is responsible for completing Project Information, PDT Team and Stakeholder Information, and coordinating the completion of project-related information with the Transportation Planning Stakeholders. Upon completion, provides the Transportation Planning PDT Representative and Project Manager with a copy of the Information Sheet.

Project Development Team (PDT) Information		
Title	**Name**	**Phone Number**
Project Manager	Carolyn Mamaradlo – OCTA Project Manager Karen Chapman, P.E. – Consultant Project Manager	(714) 560-5874 (949) 398-4951
Transportation Planning PDT Representative**		

Transportation Planning Stakeholder Information		
Title	**Name**	**Phone Number**
Regional Planner		
System Planner		
Local Development-Intergovernmental Review (LD-IGR) Planner		
Community Planner		
Goods Movement Planner		
Transit Planner		
Bicycle and Pedestrian Coordinator		
Park and Ride Coordinator		
Native American Liaison		
Other Coordinators:		

Project Purpose and Need –**
Purpose:
Consistent with the Caltrans Mission, the primary purpose of the project is to maximize efficiency of the freeway mainline by increasing person and vehicle throughput, while reducing current and projected traffic congestion and delay on the Interstate 5 (I-5) corridor from Avenida Pico to the San Diego County Line.

This I-5 corridor improvement project is intended to achieve the following purposes:

- Increase person and vehicle throughput;
- Promote regional managed lane system connectivity, and provide inter-county lane continuity;
- Reduce current and projected traffic congestion and delay on the freeway mainline;
- Promote travel time reliability;
- Provide improvements to accommodate projected regional growth;
- Improve multimodal efficiency and accommodate advanced technology for current and future transportation conditions; and
- To provide Americans with Disabilities Act (ADA) compliant features at the interchanges ramp terminals, where feasible.

Need:

Current deficiencies of Interstate 5 (I-5) within the project limits are summarized below:

- There is a lack of managed lane continuity from Avenida Pico to the San Diego County Line.
- Existing aging facility lacks advanced technology to meet current and future transportation demands.
- Existing interchange ramp terminals within the project area are non-ADA compliant eg pedestrian features and discontinuous bicycle facilities.

High-Occupancy Vehicle (HOV) lane and operational improvements have been made on I-5 throughout Orange County north of the project limits. These prior improvements begin at the northern Orange County limit and end just south of Avenida Pico in San Clemente. The Measure M2 Project C immediately north of the project study area, recently extended HOV lanes from their previous terminus through to the Avenida Pico interchange vicinity.

Immediately south of the project study area in San Diego County, the San Diego Association of Governments' Regional Transportation Plan calls for the addition of 4 toll lanes between Oceanside and the Orange County Line by 2050.

At interchange ramp terminals in the project area, there are non-ADA compliant pedestrian features and discontinuous bicycle facilities. Addressing these needs will promote multimodal travel options in the local community.

** The Transportation Planning PDT Representative is responsible for providing the PDT with the system-wide and corridor level deficiencies identified by Transportation Planning. The PDT uses the information provided by Transportation Planning to develop the purpose and need with contributions from other Caltrans functional units and external stakeholders at the initiation of the PID and is refined throughout the PID process. As the project moves past the project initiation stage and more data becomes available, the purpose and need is refined. For additional information on purpose and need see: www.dot.ca.gov/hq/env/emo/purpose_need.htm

1. Project Funding:

a	List all known and potential funding sources and percent splits: (ie. State Transportation Improvement Program (STIP)/State Highway Operations and Protection Program (SHOPP)/Transportation Enhancement (TE)/Environmental Enhancement and Mitigation (EEM)/Safe Routes to School (SR2S)/etc.).
	Local Funds
b	Is this a measure project? Yes__/No_√_. If yes, name and describe the measure.

2. Regional Planning:

a	Name of and contact information for Metropolitan Planning Organization (MPO) or Regional Transportation Planning Agency (RTPA).
	Southern California Association of Governments (MPO) Orange County Transportation Authority (RTPA) - Carolyn Mamaradlo (714) 560-5874
b	Name of and contact information for local jurisdiction (City or County)

	Tom Bonigut, City of San Clemente (949) 361-6187 Tom Frank, City of San Clemente (949) 361-6127
c	Provide the page number and project description as identified in the Regional Transportation Plan (RTP) and the date of adoption, or provide an explanation if not in RTP.
	Advanced as part of the financially constrained OCTA's Long Range Transportation Plan (LRTP) for likely implementation with the LRTP's 2040 horizon.
d	Provide nexus between the RTP objectives and the project to establish the basis for the project purpose and need.
	TBD
e	Is the project located in an area susceptible to sea-level rise?
	No
f	Name of Air Quality Management District (AQMD)
	SCAQMD (South Coast Air Quality Management District)
g	If the project is located in a federal non-attainment or attainment-maintenance area is the project:
	• Regionally Significant? (per 40 (Code of Federal Regulations (CFR) 93.101) Y__/N__√
	• Exempt from conformity? (per 40 CFR 93.126 and 93.128) Y__/N_√_
	• Exempt from regional analysis? (per 40 CFR 93.127) Y__/N_√_
	• Not exempt from conformity (must meet all requirements)? Y__/N_√_

3. Native American Consultation and Coordination:

a	If project is within or near an Indian Reservation or Rancheria? If so, provide the name of Tribe.
	No
b	Has/have the Tribal Government(s) been consulted? Y___/N_√_. If no, why not?
	See 3a.
c	If the project requires Caltrans to use right-of-way on trust or allotted lands, this information needs to be included as soon as possible as a key topic in the consultation with the Tribe(s). Has the Tribe been consulted on this topic? Y___/N_√_. If no, why not?
	See 3a.
d	Has the Bureau of Indian Affairs (BIA) been notified? Y__/N_√_
	See 3a.
e	Have all applicable Tribal laws, ordinances and regulations [Tribal Employment Rights Ordinances (TERO), etc.] been reviewed for required contract language and coordination?
	See 3a.
f	If the Tribe has a TERO, is there a related Memorandum of Understanding between the District and the Tribe?
	See 3a.
g	Has the area surrounding the project been checked for prehistoric, archeological, cultural, spiritual, or ceremonial sites, or areas of potentially high sensitivity? If such areas exist, has the Tribe, Native American Heritage Commission or other applicable persons or entities been consulted?
	See 3a.
h	If a Native American monitor is required for this project, will this cost be reflected in cost estimates?
	See 3a.
i	In the event of project redesign, will the changes impact a Native American community as described above in d, e, or h?
	See 3a.

4. System Planning:

a	Is the project consistent with the DSMP? Y__/N_√_. If yes document approval date. If no, explain.

	Project is not listed in November 2014 District 12 DSMP
b	Is the project identified in the TSDP? Y__/N_√_ If yes, document approval date____. If no, explain.
	Not available, District 12 TSDP unavailable
c	Is the project identified in the TCR/RCR or CSMP? Y__/N_√_. If yes, document approval date___. If no, explain. Is the project consistent with the future route concept? Y__/N_√_. If no, explain.
	The RCR calls for eight-lane facility which is consistent with the existing facility. The purpose of this project is to develop alternatives that increase capacity and reduce congestion.
d	Provide the Concept Level of Service (LOS) through project area.
	LOS F
e	Provide the Concept Facility – include the number of lanes. Does the Concept Facility include High Occupancy Vehicle lanes? Y__/N_√_.
	Freeway, eight-lane facility per RCR
f	Provide the Ultimate Transportation Corridor (UTC) – include the number of lanes. Does the UTC include High Occupancy Vehicle Lanes? Y_√_/N__.
	Not applicable
g	Describe the physical characteristics of the corridor through the project area (i.e. flat, rolling or mountainous terrain...).
	Rolling
h	Is the highway in an urban or rural area? Urban_√_/Rural__. Provide Functional Classification.
	Urbanized
i	Is facility a freeway, expressway or conventional highway?
	Freeway
j	Provide Route Designations: (i.e. Interregional Transportation Strategic Plan (ITSP) High Emphasis or Focus Route, Surface Transportation Assistance Act (STAA) Route, Scenic Route…).
	Surface Transportation Assistance Act (STAA) Route
k	Describe the land uses adjacent to project limits (i.e. agricultural, industrial…).
	Retail/Commercial, Residential
l	Describe any park and ride facility needs identified in the TCR/CSMP, local plans, and RTP.
	None identified
m	Describe the Forecasted 10 and 20-year Vehicle Miles Traveled (VMT), Annual Average Daily Traffic (AADT), and Peak Hour truck data in the TCR. Include the source and year of Forecast, and names and types of traffic and travel demand analysis tools used.
	TBD, TCR requested from Caltrans
n	Has analysis on Daily Vehicle Hours of Delay (DVHD) from the Highway Congestion Monitoring Program (HICOMP) been completed and included? Y__/N_√_.
	Not applicable

5. Local Development – Intergovernmental Review (LD-IGR):

List LD-IGR projects that may directly or indirectly impact the proposed Caltrans project or that the proposed Caltrans project may impact. (Attach additional project information if needed.)

LD-IGR Project Information		**Project**
a	County-Route-Postmile & Distance to Development.	TBD
b	Development name, type, and size.	TBD
c	Local agency and/or private sponsor, and contact information.	TBD
d	California Environmental Quality Act (CEQA) status and Implementation Date.	TBD
e	If project includes federal funding, National Environmental Policy Act (NEPA) status.	TBD

f	All vehicular and non-vehicular unmitigated impacts and planned mitigation measures including Transportation Demand Management (TDM) and Transportation System Management (TSM) that would affect Caltrans facilities.	TBD
g	Approved mitigation measures and implementing party.	TBD
h	Value of constructed mitigation and/or amount of funds provided.	TBD
i	Encroachment Permit, Transportation Permit, Traffic Management Plan, or California Transportation Commission (CTC) Access approvals needed.	TBD
j	Describe relationship to Regional Blueprint, General Plans, or County Congestion Management Plans.	TBD
k	Inclusion in a Regional Transportation Plan Sustainable Community Strategy or Alternative Planning Strategy?	TBD
l	Regional or local mitigation fee program in place?	TBD

6. Community Planning:

	INITIAL PID INFORMATION
a	Has lead agency staff worked with any neighborhood/community groups in the area of the proposed improvements? Y__/N_√__. If yes, summarize the process and its results including any commitments made to the community. If no, why not?
	TBD
b	Are any active/completed/proposed Environmental Justice (EJ) or Community-Based Transportation (CBTP) Planning Grants in the project area? Y__/N_√__. If yes, summarize the project, its location, and whether/how it may interact with the proposed project.
	None identified
c	Describe any community participation plans for this PID including how recommendations will be incorporated and/or addressed. Has a context sensitive solutions (CSS) approach been applied? Y__/N_√__
	TBD
	FINAL PID INFORMATION
d	How will the proposed transportation improvements impact the local community? Is the project likely to create or exacerbate existing environmental or other issues, including public health and safety, air quality, water quality, noise, environmental justice or social equity? Y__/N_√__. Describe issues, concerns, and recommendations (from sources including neighborhood/community groups) and what measures will be taken to reduce existing or potential negative effects.
	The project will improve traffic circulation but is not expected to have adverse effects on the elements listed.
e	Does this highway serve as a main street? Y__/N_√__. If yes, what main street functions and features need to be protected or preserved?

7. Freight Planning:

	INITIAL PID INFORMATION
a	Identify all modal and intermodal facilities that may affect or be affected by the project.
	I-5
	FINAL PID INFORMATION
b	Describe how the design of this project could facilitate or impede Goods Movement and relieve choke points both locally and statewide through grade separations, lane separations, or other measures (e.g., special features to accommodate truck traffic and at-grade railroad crossings).
	Proposed improvements will improve corridor operations facilitating Goods Movement and relieving choke points.
c	Describe how the project integrates and interconnects with other modes (rail, maritime, air, etc.). Do possibilities exist for an intermodal facility or other features to improve long-distance hauling, farm-to-market transportation and/or accessibility between warehouses, storage facilities, and terminals?
	I-5 is a major freight route used to move freight interregional, interstate and international with most major state and local routes in the county intersecting the I-5.
d	Is the project located in a high priority goods movement area, included in the Goods Movement Action Plan (GMAP) or on a Global Gateways Development Program (GGDP) route? Y_√_/N___. If yes, describe.
	I-5 is shown as a Major International Trade Highway Route on the "Priority Regions and Corridors in California" map.
e	Is the project on a current and/or projected high truck volume route [e.g., Average Annual Daily Truck Traffic (AADTT) of 5 axle trucks is greater than 3000]? Yes_√_/N__. If yes, describe how the project addresses this demand.
	Being designed as an STAA route, and improving corridor operations to facilitate thoughput.
f	If the project is located near an airport, seaport, or railroad depot, describe how circulation (including truck parking) needs are addressed.
	Not applicable
g	Describe any other freight issues.
	Not applicable

8. Transit (bus, light rail, commuter rail, intercity rail, high speed rail):

	INITIAL PID INFORMATION
a	List all local transit providers that operate within the corridor.
	OCTA (bus)
b	Have transit agencies been contacted for possible project coordination? Y__/N_√__. If no, why not?
	No changes to bus routes.
c	Describe existing transit services and transit features (bus stops, train crossings, and transit lines) within the corridor.
	Bus stops near the project vicinity.
d	Describe transit facility needs identified in short- and long-range transit plans and RTP. Describe how these future plans affect the corridor.
	Not applicable
	FINAL PID INFORMATION
e	Describe how the proposed project integrates transit and addresses impacts to transit services and transit facilities.
	Not applicable
f	Have transit alternatives and improvement features been considered in this project? Y__/N_√__ If yes, describe. If no, why not?
	Not applicable

9. Bicycle:

	INITIAL PID INFORMATION
a	Does the facility provide for bicyclist safety and mobility needs? If no, please explain.
	Existing striped bike lanes exist near the project vicinity.
b	Are any improvements for bicyclist safety and mobility proposed for this facility by any local agencies or included in bicycle master plans? If yes, describe (including location, time frame, funding, etc.).
	No improvements are proposed for the bicycle facilities.
c	Are there any external bicycle advocacy groups and bicycle advisory committees that should be included in the project stakeholder list? If so, provide contact information.
	TBD
	FINAL PID INFORMATION
d	Will bicycle travel deficiencies be corrected? How or why not?
	See 9b.
e	How will this project affect local agency plans for bicycle safety and mobility improvements?
	Will not impact bicycles
f	If the project is the construction of a new freeway or modification to an existing freeway, will it sever or destroy existing provisions for bicycle travel? If yes, describe how bicycle travel provisions will be included in this project.
	Preserve existing bicycle travel

10. Pedestrian including Americans with Disabilities Act (ADA):

	INITIAL PID INFORMATION
a	Does this facility provide for pedestrian safety and mobility needs? If so, describe pedestrian facilities. Do continuous and well-maintained sidewalks exist? Are pedestrians forced to walk in the roadway at any locations due to lack of adequate pedestrian facilities? Please explain.
	Yes, safe and continuous sidewalks exist in project vicinity.
b	Are pedestrian crossings located at reasonable intervals?
	Yes
c	Are all pedestrian facilities within the corridor ADA accessible and in compliance with Federal and State ADA laws and regulations?
	Yes
	FINAL PID INFORMATION
d	Will pedestrian travel deficiencies be corrected? How or why not?
	No identified pedestrian travel deficiencies.
e	How will this project affect local agency plans for pedestrian safety and mobility improvements?
	Not applicable
f	If the project is the construction of a new freeway or modification to an existing freeway, will it sever or destroy existing provisions for pedestrian travel? If yes, describe how pedestrian travel provisions will be included in this project.
	Not applicable
g	Are there any external pedestrian advocacy groups and advisory committees that should be included in the project stakeholder list? If so, provide contact information.
	Not applicable
h	Have ADA barriers as noted in the District's ADA Transition Plan been identified within the project limits? If not included in the project, provide justification and indicate whether District Design coordinator approval was obtained.
	No barriers identified.

11. Equestrian:

	INITIAL PID INFORMATION
a	If this corridor accommodates equestrian traffic, describe any project features that are being considered to improve safety for equestrian and vehicular traffic?
	Not applicable
	FINAL PID INFORMATION
b	Have features that accommodate equestrian traffic been identified? If so, are they included a part of this project? Describe. If no, why not?
	Not applicable

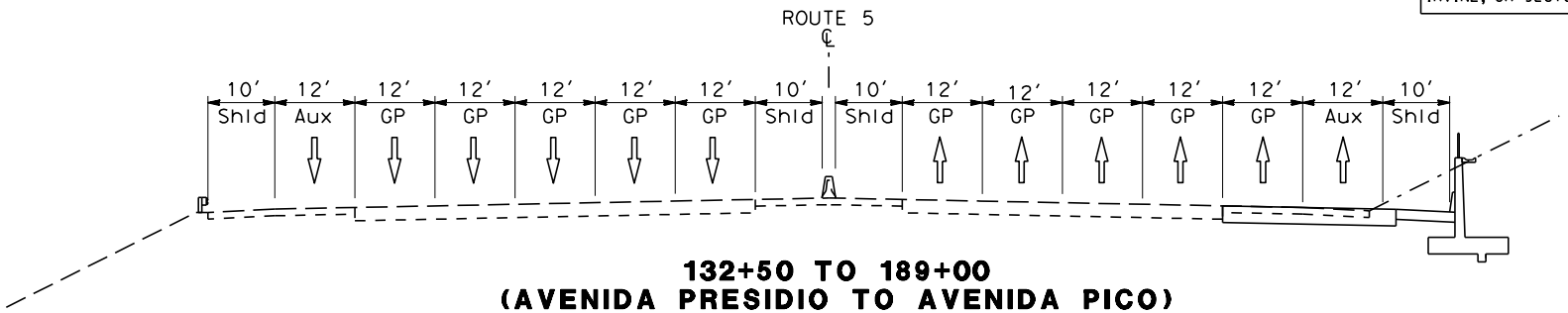
12. Intelligent Transportation Systems (ITS):

	INITIAL PID INFORMATION
a	Have ITS features such as closed-circuit television cameras, signal timing, multi-jurisdictional or multimodal system coordination been considered in the project? Y__/N__. If yes, describe. If no, explain.
	Modification to signal timing is considered as part of each build alternative.
	FINAL PID INFORMATION
b	Have ITS features been identified? If so, are they included a part of this project? Describe. If no, why not?
	See 12a.

ATTACHMENT C
TYPICAL CROSS SECTIONS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R72.2/R72.3, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868



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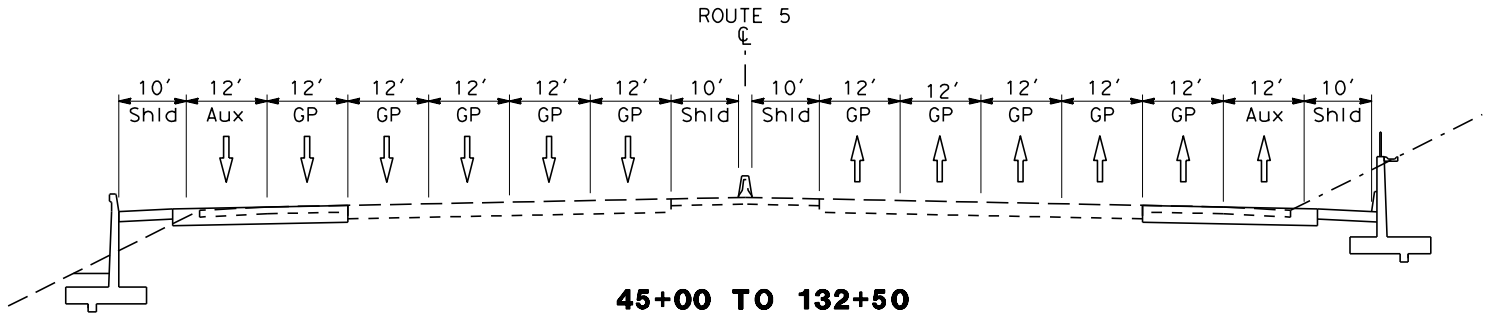
(AVENIDA PRESIDIO TO AVENIDA PICO)



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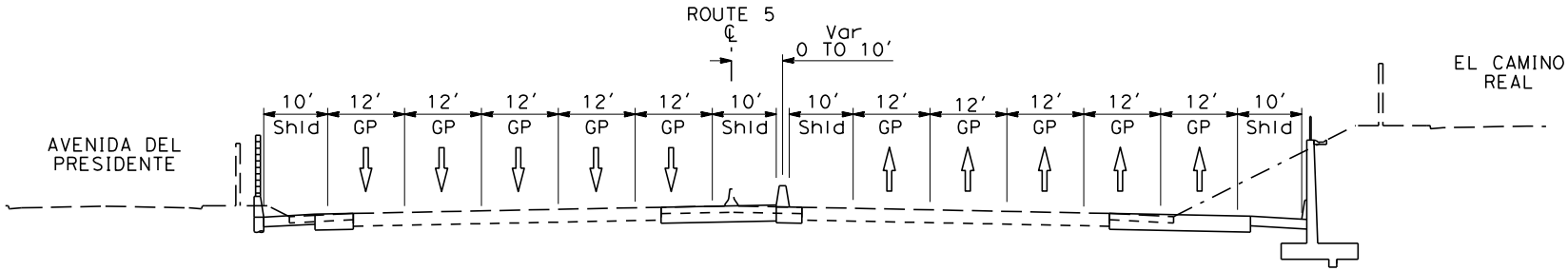
(AVENIDA SAN LUIS REY TO AVENIDA PRESIDIO)



1+00 TO 45+00
(CRISTIANITOS Rd TO AVENIDA SAN LUIS REY)

TYPICAL CROSS SECTIONS
ALTERNATIVE 2

NO SCALE

X-1

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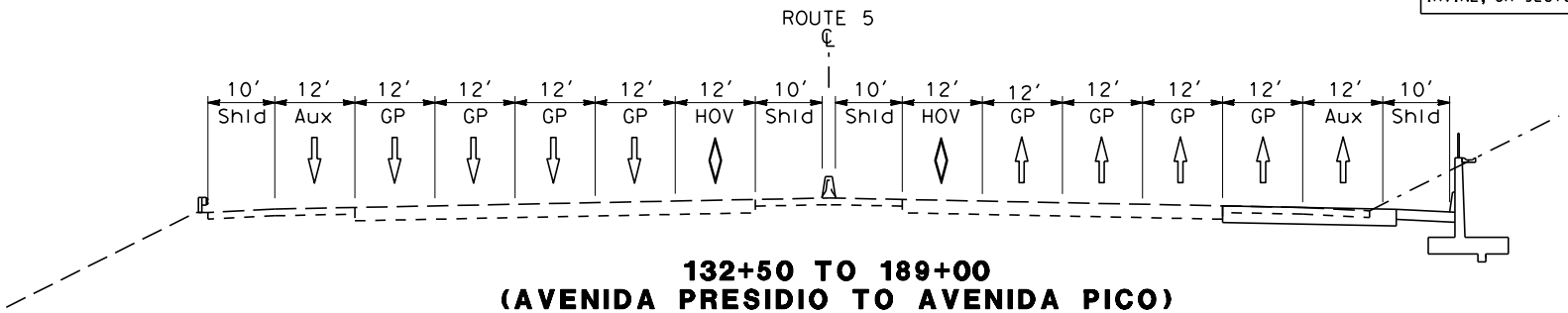
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R72.2/R72.3, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868



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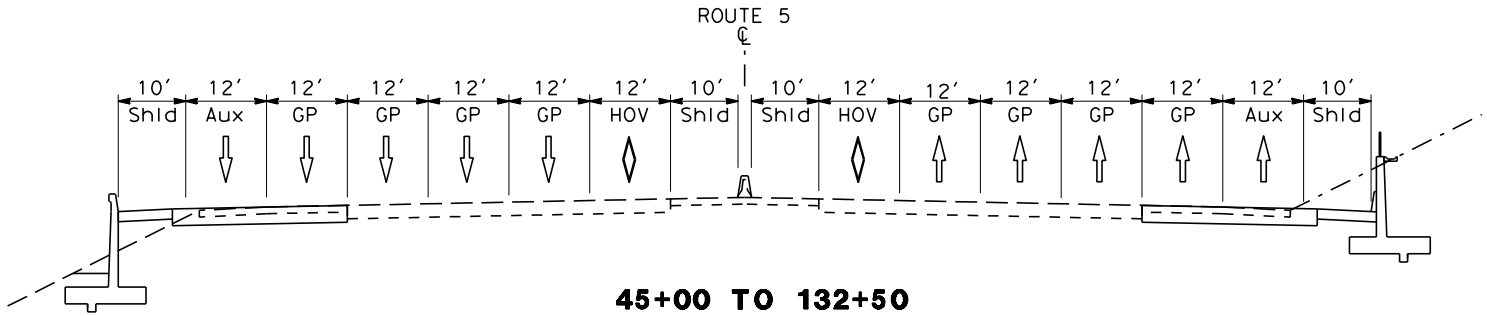

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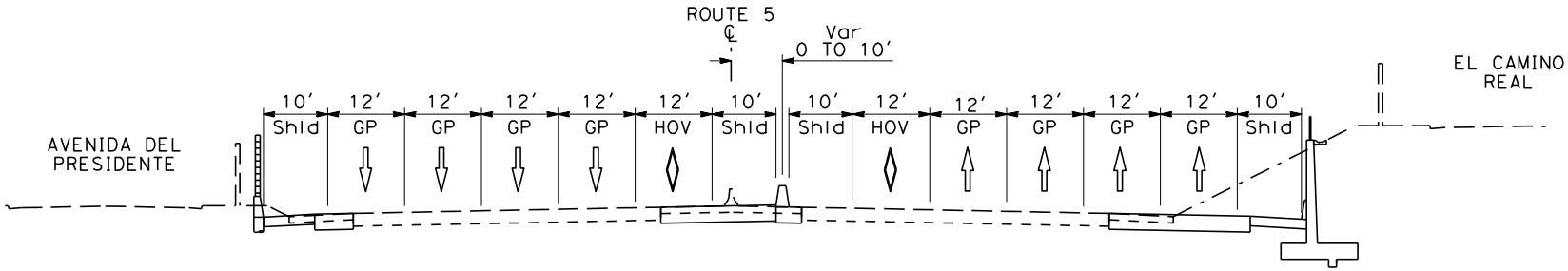

1+00 TO 45+00
(CRISTIANITOS Rd TO AVENIDA SAN LUIS REY)

TYPICAL CROSS SECTIONS
ALTERNATIVE 3A

NO SCALE

X-1

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R72.2/R72.3, 0.0/3.4		

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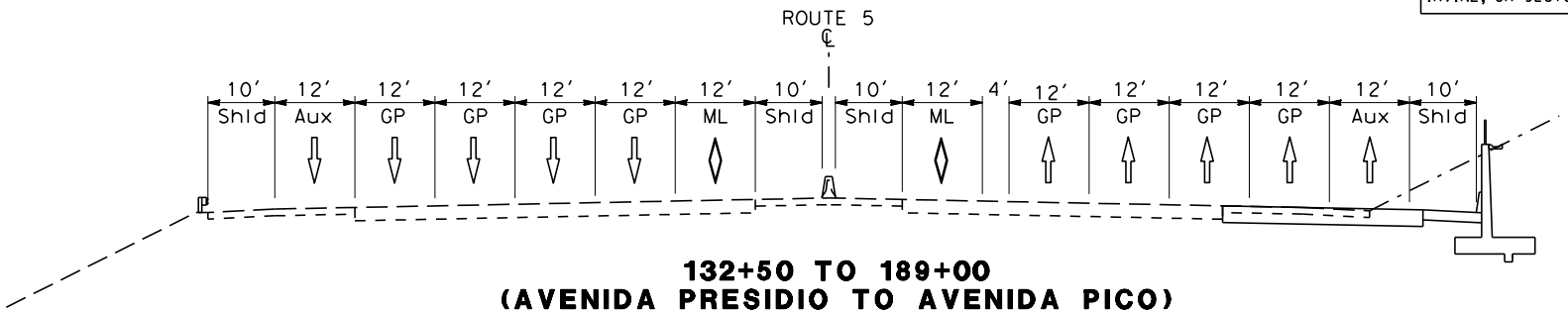

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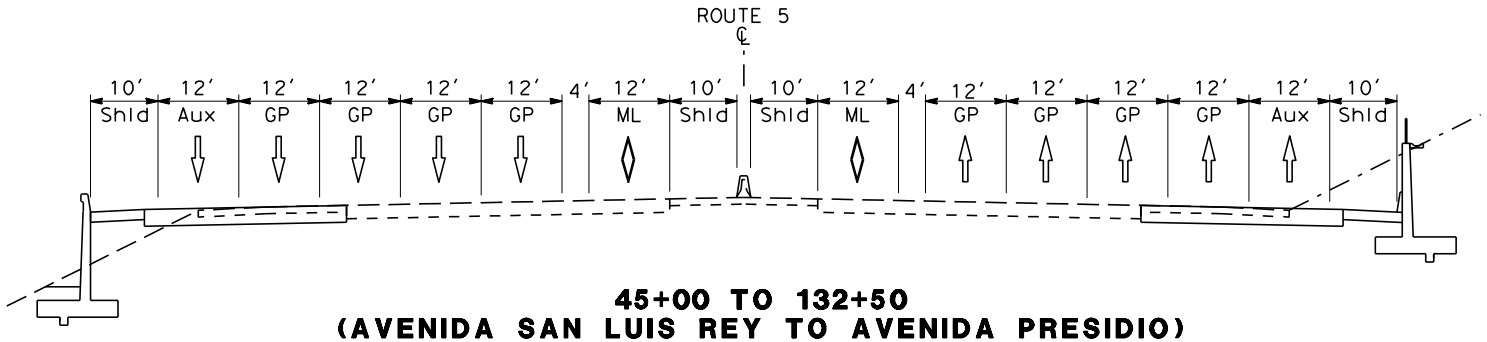

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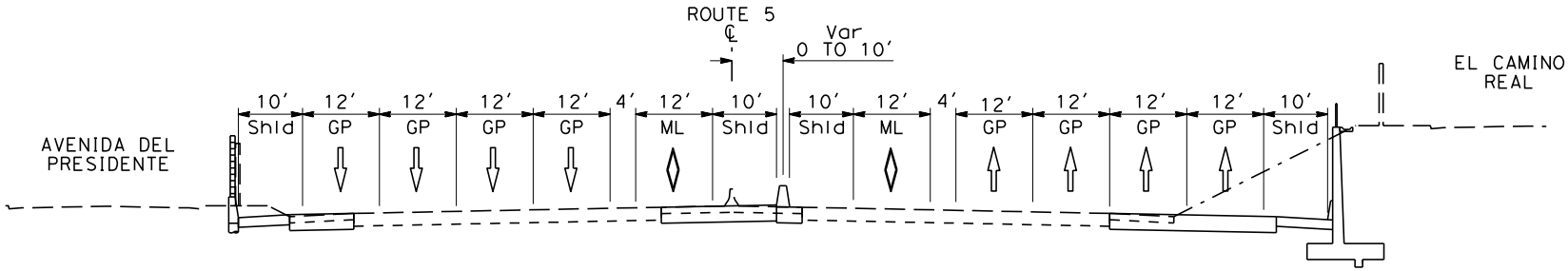
(AVENIDA SAN LUIS REY TO AVENIDA PRESIDIO)



1+00 TO 45+00
(CRISTIANITOS Rd TO AVENIDA SAN LUIS REY)

TYPICAL CROSS SECTIONS
ALTERNATIVE 3B

NO SCALE

X-1

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ATTACHMENT D
PROJECT ALTERNATIVE PLANS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

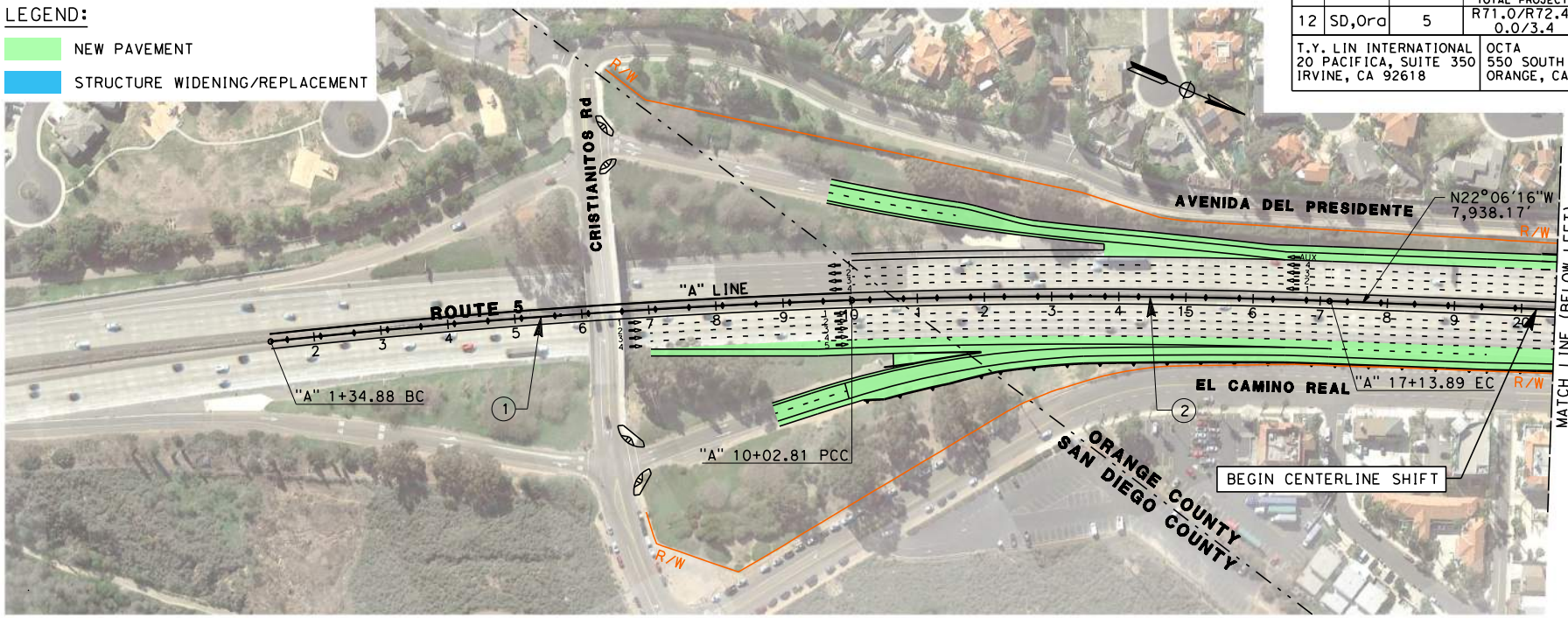
T.Y. LIN INTERNATIONAL
20 PACIFICA, SUITE 350
IRVINE, CA 92618

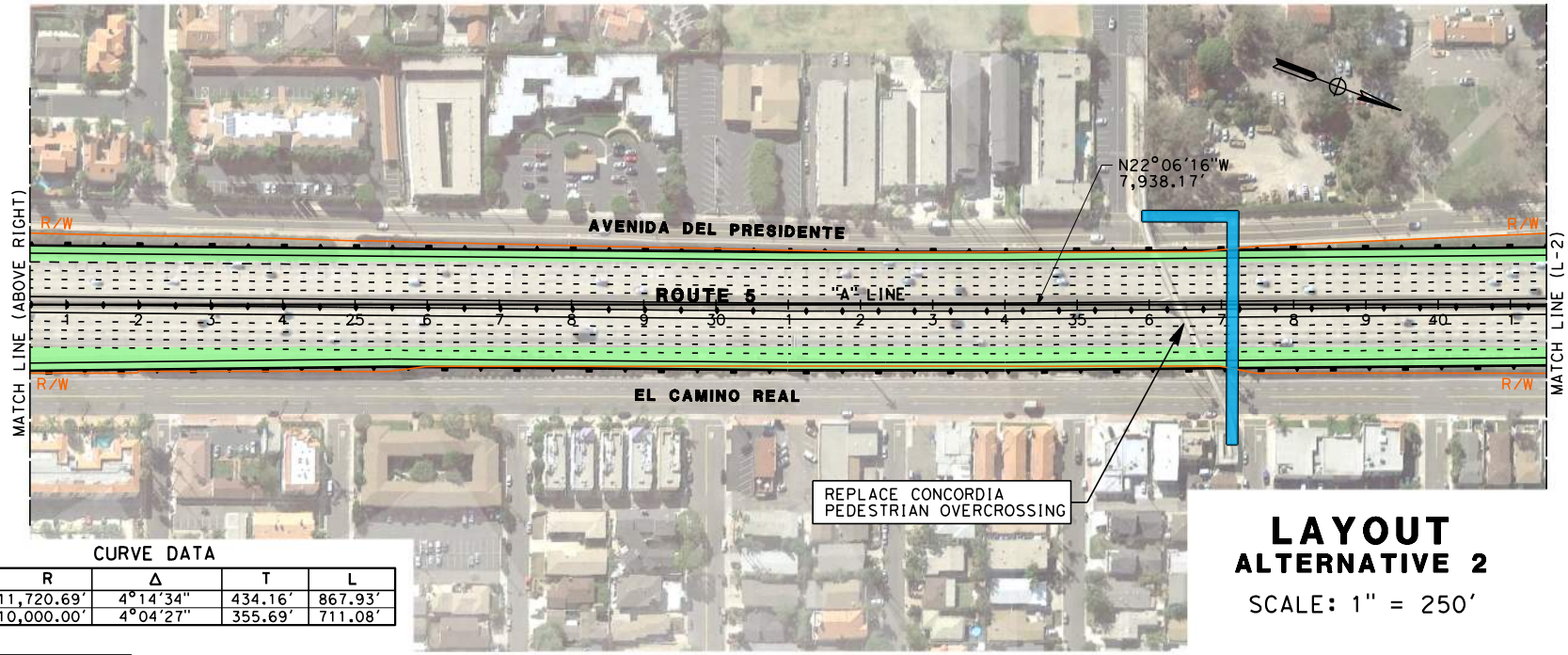
OCTA
550 SOUTH MAIN STREET
ORANGE, CA 92868

LEGEND:

NEW PAVEMENT

STRUCTURE WIDENING/REPLACEMENT





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LAYOUT
ALTERNATIVE 2

SCALE: 1" = 250'

L-1

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PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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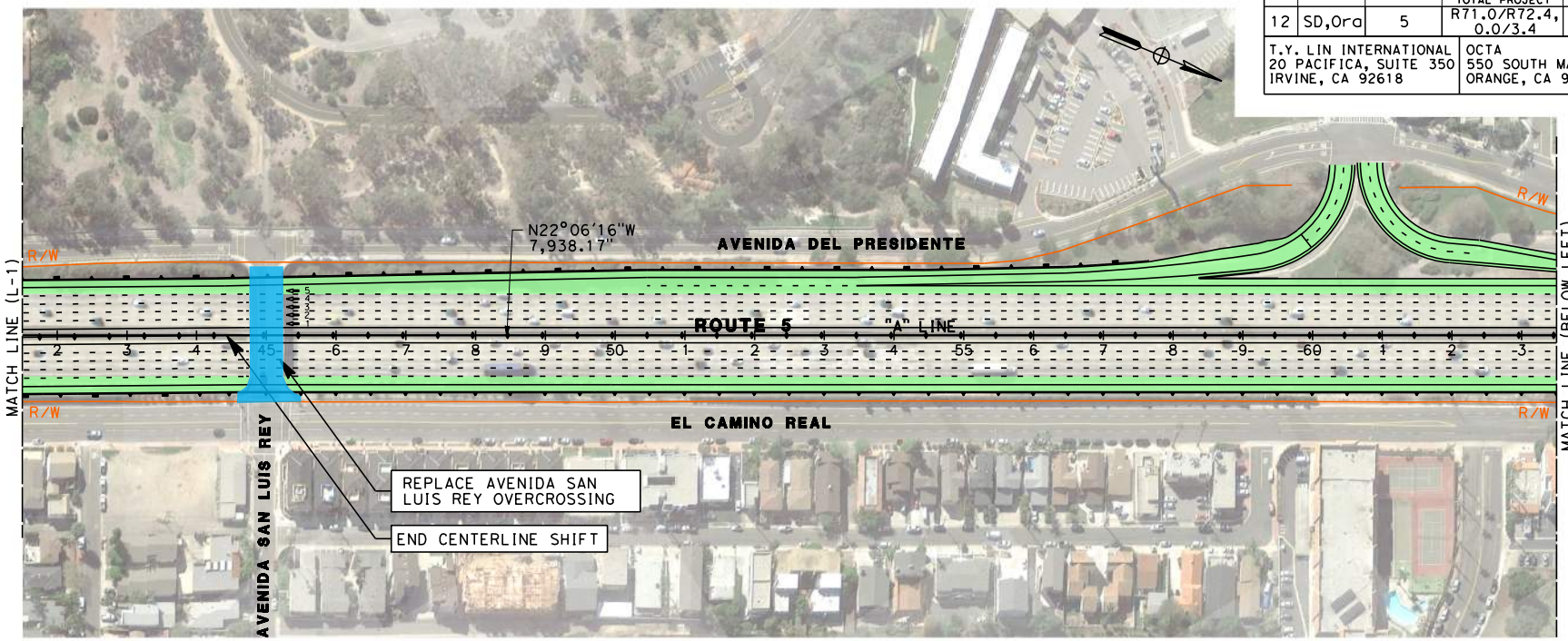
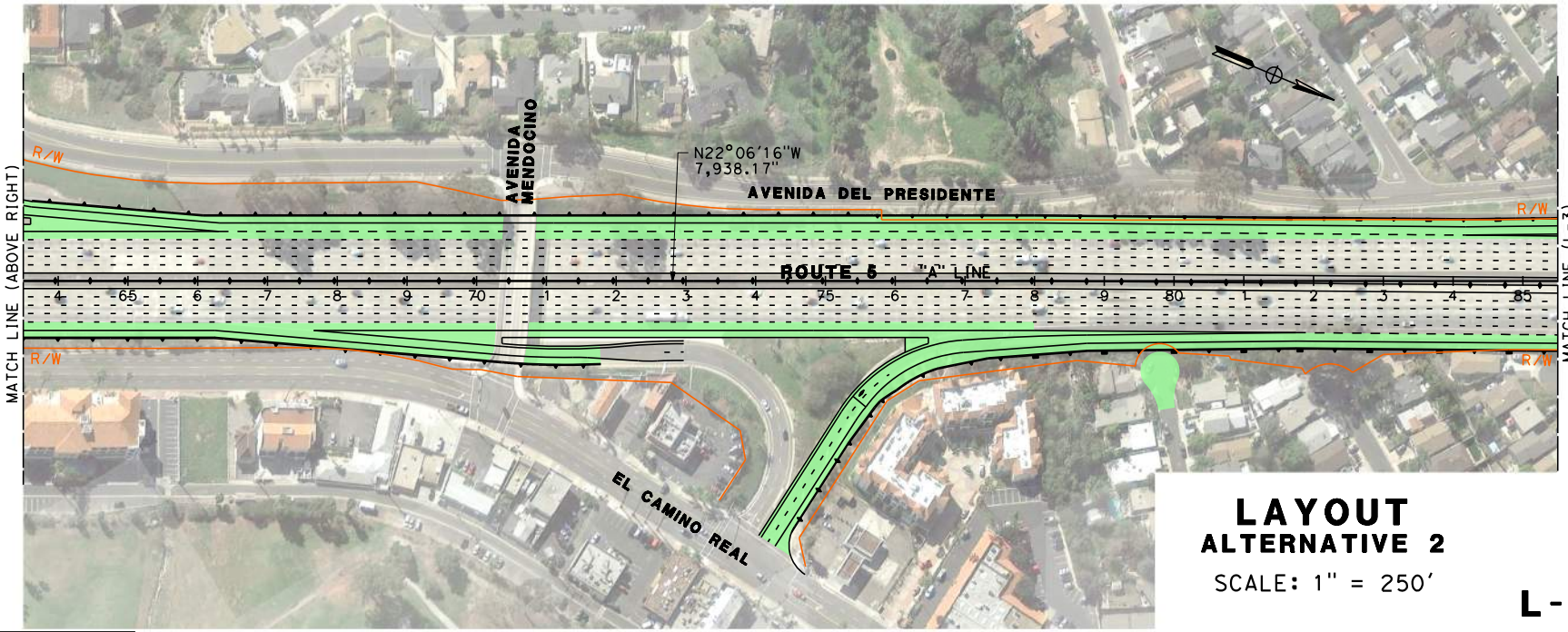
T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868





LAYOUT
ALTERNATIVE 2

SCALE: 1" = 250'

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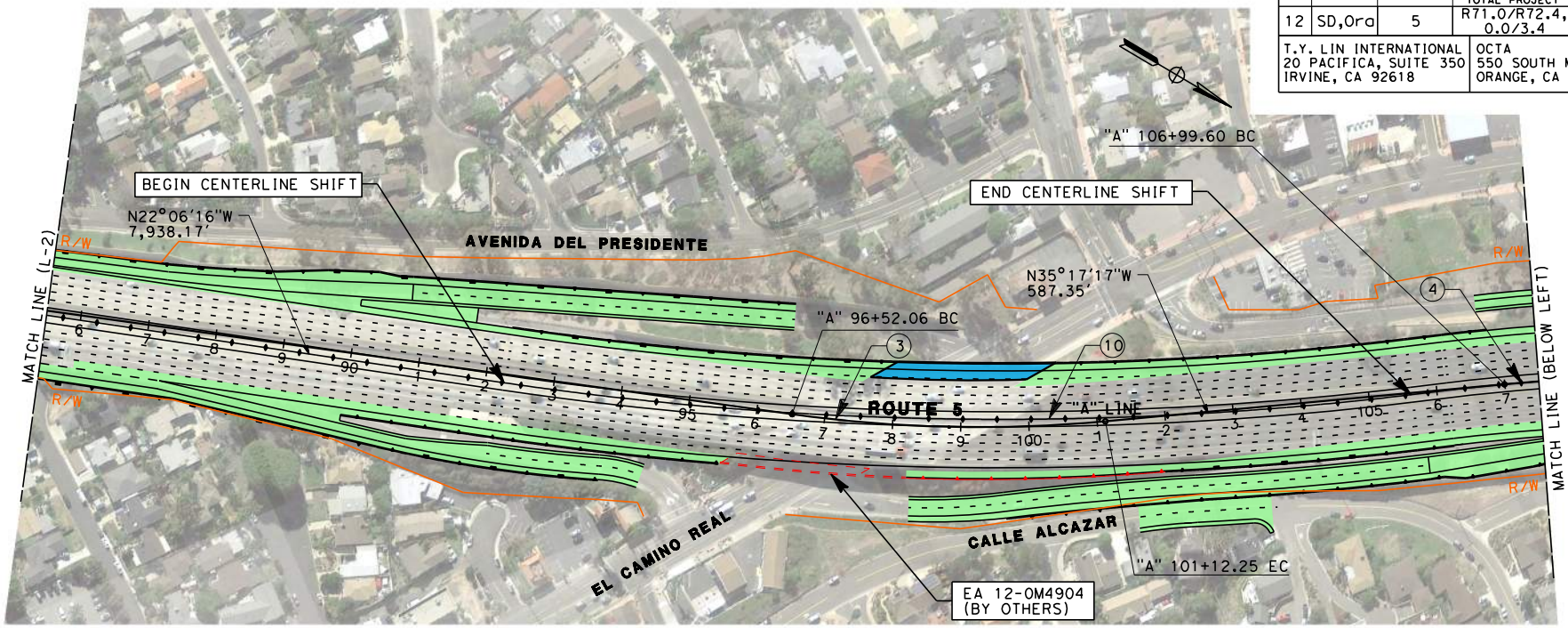
PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868



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10	5,000.00'	15°16'29"	670.46'	1,332.96'

LAYOUT
ALTERNATIVE 2

SCALE: 1" = 250'

L-3

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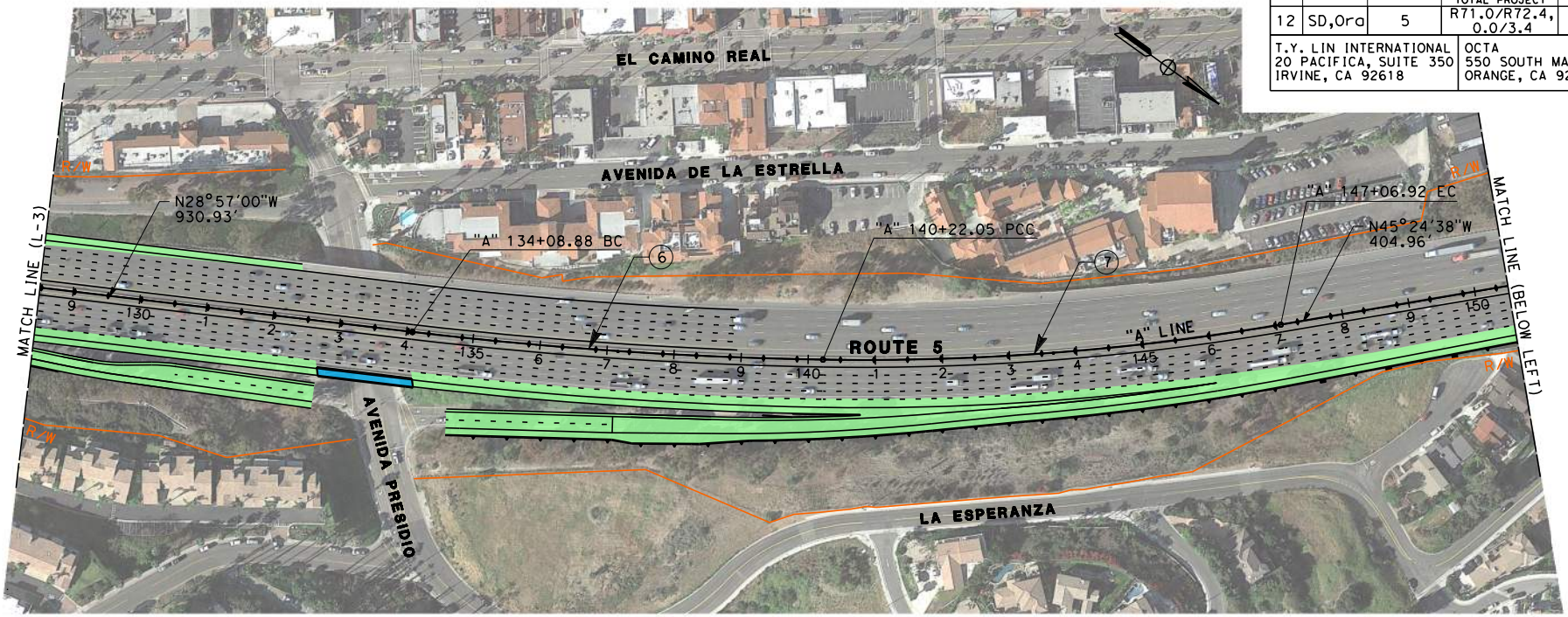
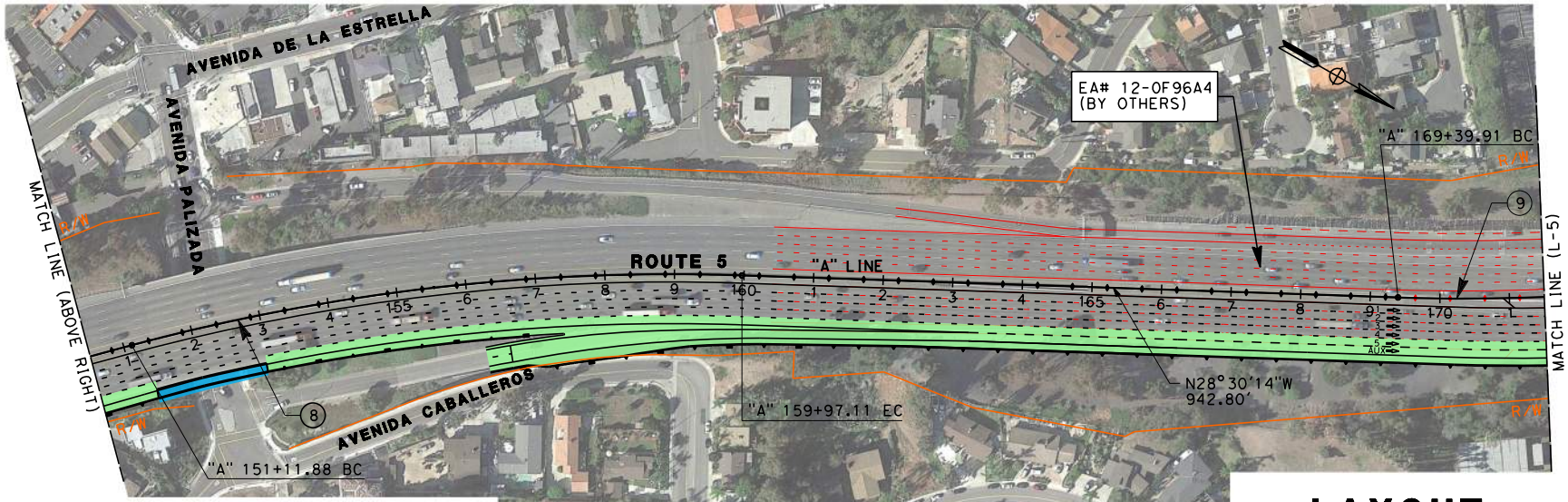
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868





CURVE DATA

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LAYOUT
ALTERNATIVE 2

SCALE: 1" = 250'

L-4

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PROJECT NUMBER & PHASE 00000000001

LAST REVISION 00-00-00

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TIME PLOTTED => $TIME

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

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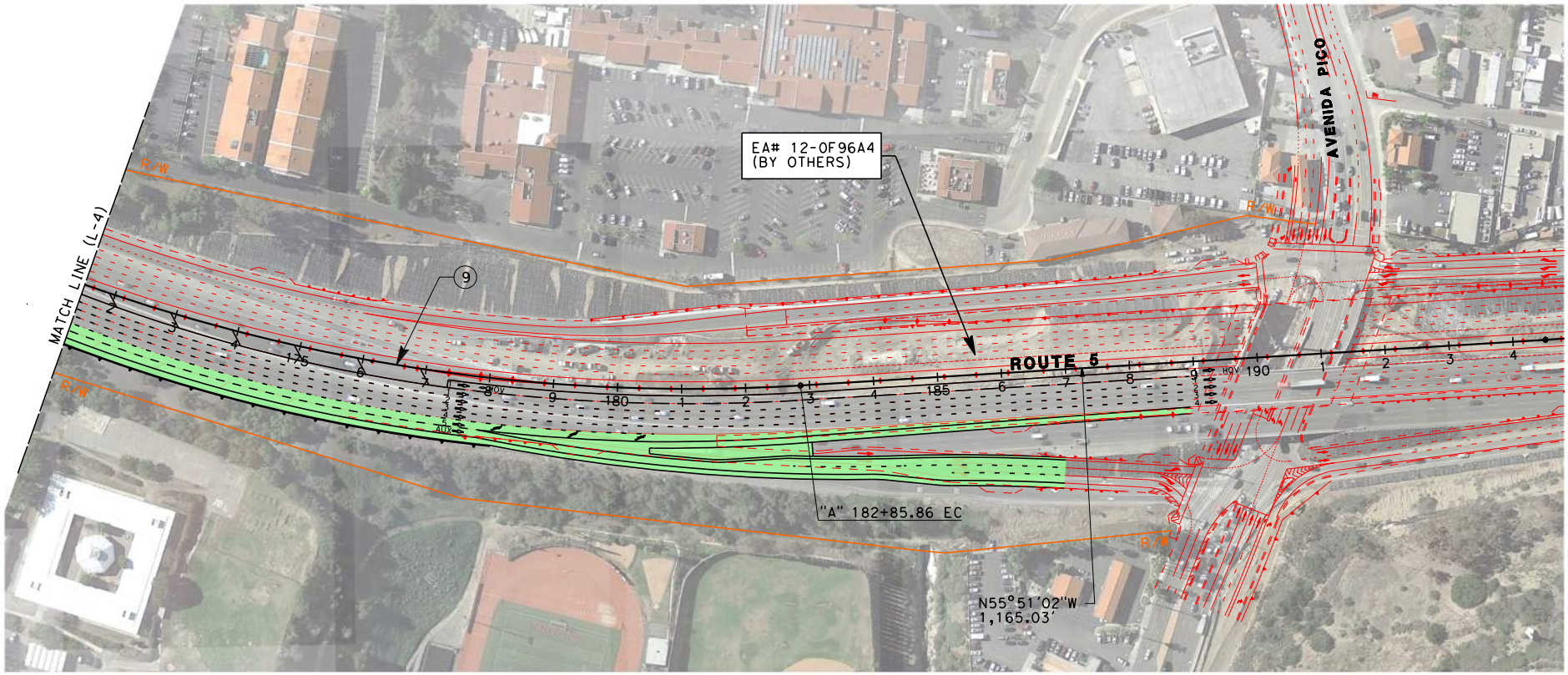

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LAYOUT
ALTERNATIVE 2

SCALE: 1" = 250'

L-5

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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

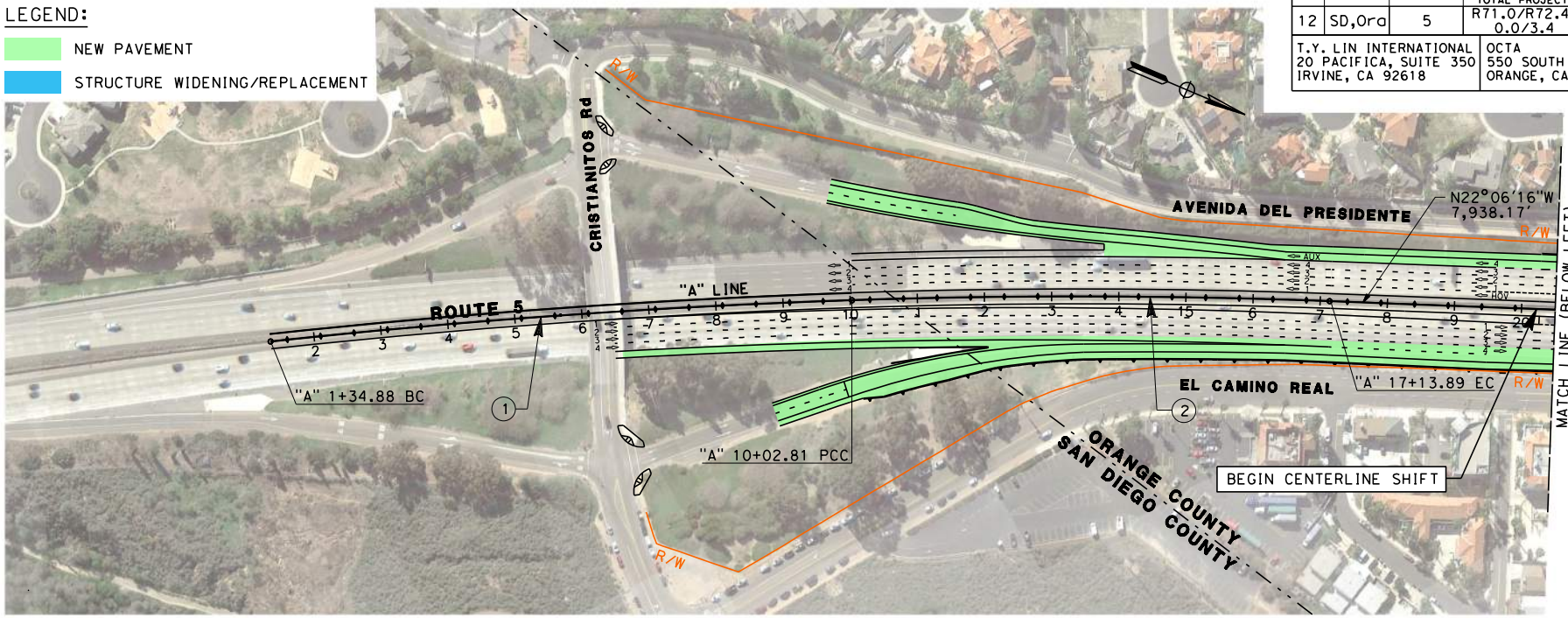
T.Y. LIN INTERNATIONAL
20 PACIFICA, SUITE 350
IRVINE, CA 92618

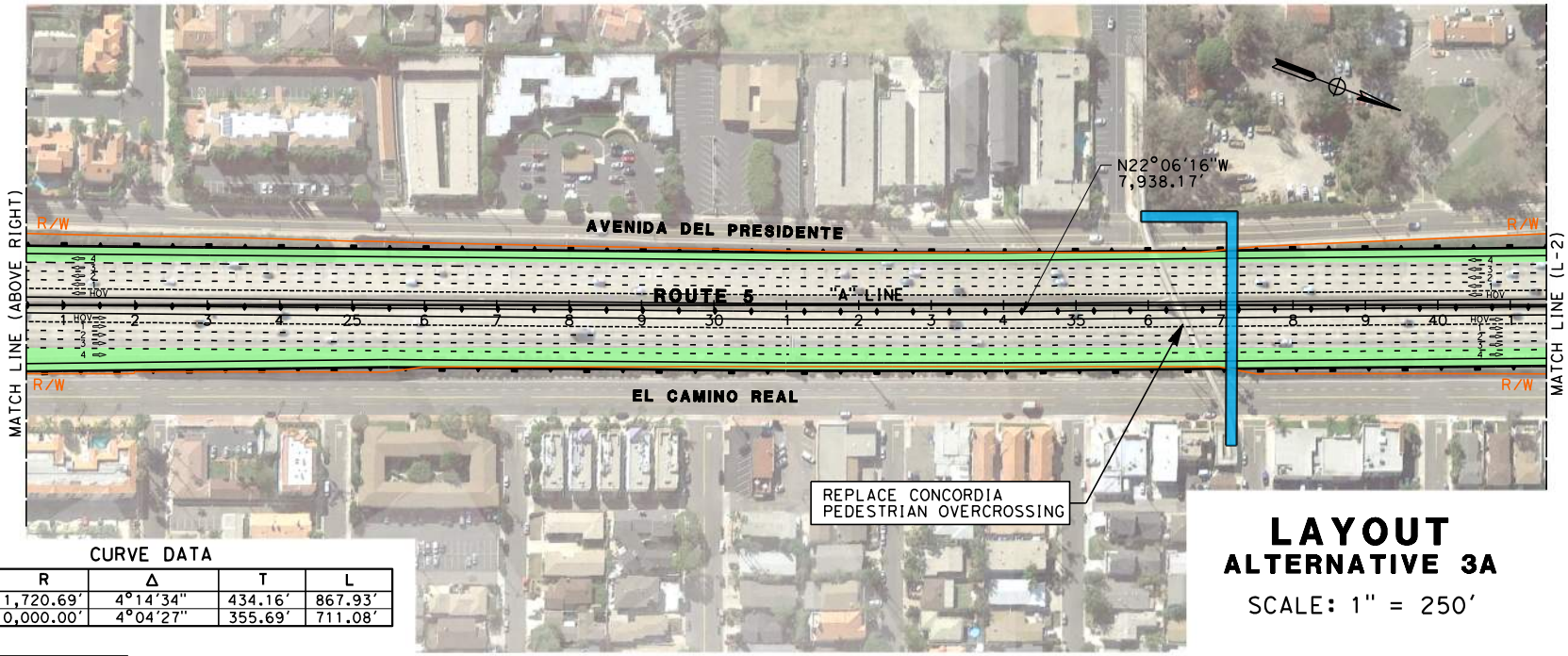
OCTA
550 SOUTH MAIN STREET
ORANGE, CA 92868

LEGEND:

NEW PAVEMENT

STRUCTURE WIDENING/REPLACEMENT





CURVE DATA

No. ⊕	R	Δ	T	L
1	11,720.69'	4°14'34"	434.16'	867.93'
2	10,000.00'	4°04'27"	355.69'	711.08'

LAYOUT
ALTERNATIVE 3A

SCALE: 1" = 250'

L-1

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BORDER LAST REVISED 7/2/2010

USERNAME => $USER
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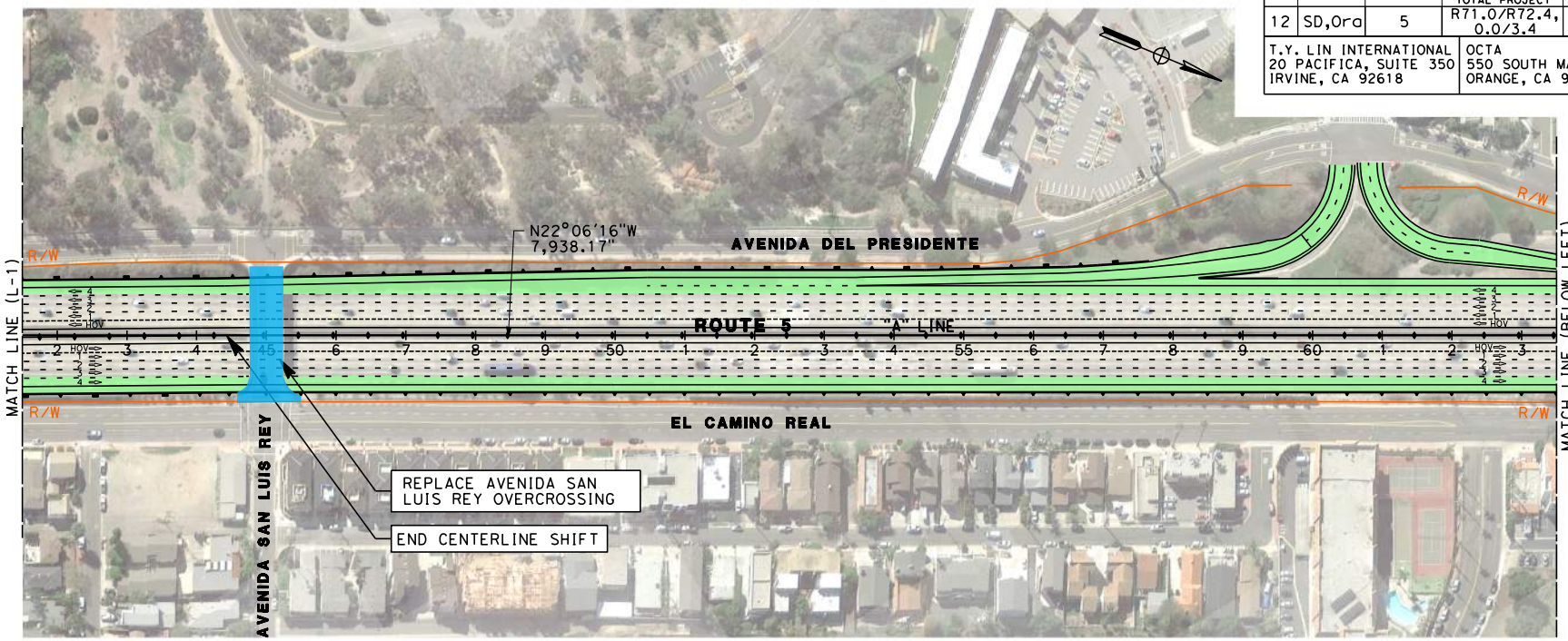
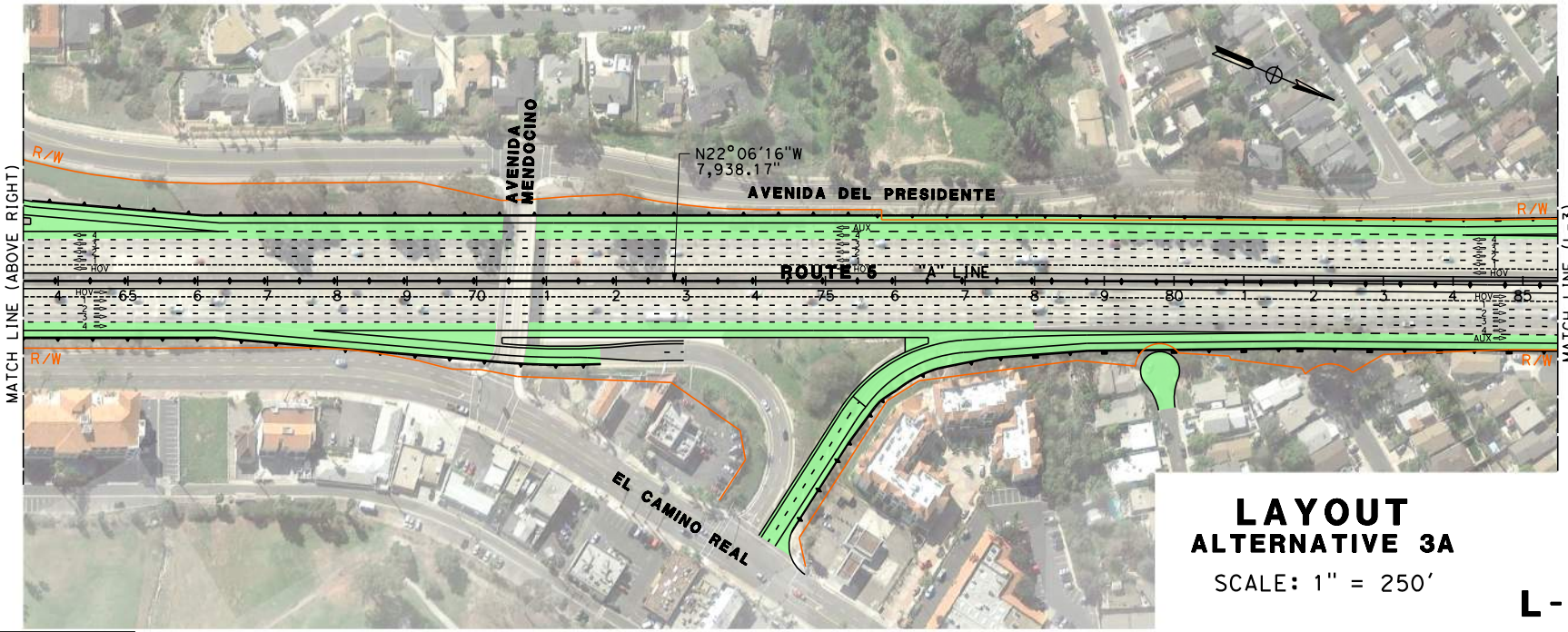
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868





LAYOUT
ALTERNATIVE 3A

SCALE: 1" = 250'

L-2

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DATE REVISED

LAST REVISION 00-00-00

DATE PLOTTED => $DATE

TIME PLOTTED => $TIME

BORDER LAST REVISED 7/2/2010

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DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

PROJECT NUMBER & PHASE 00000000001

PN: 701264.00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL
20 PACIFICA, SUITE 350
IRVINE, CA 92618

OCTA
550 SOUTH MAIN STREET
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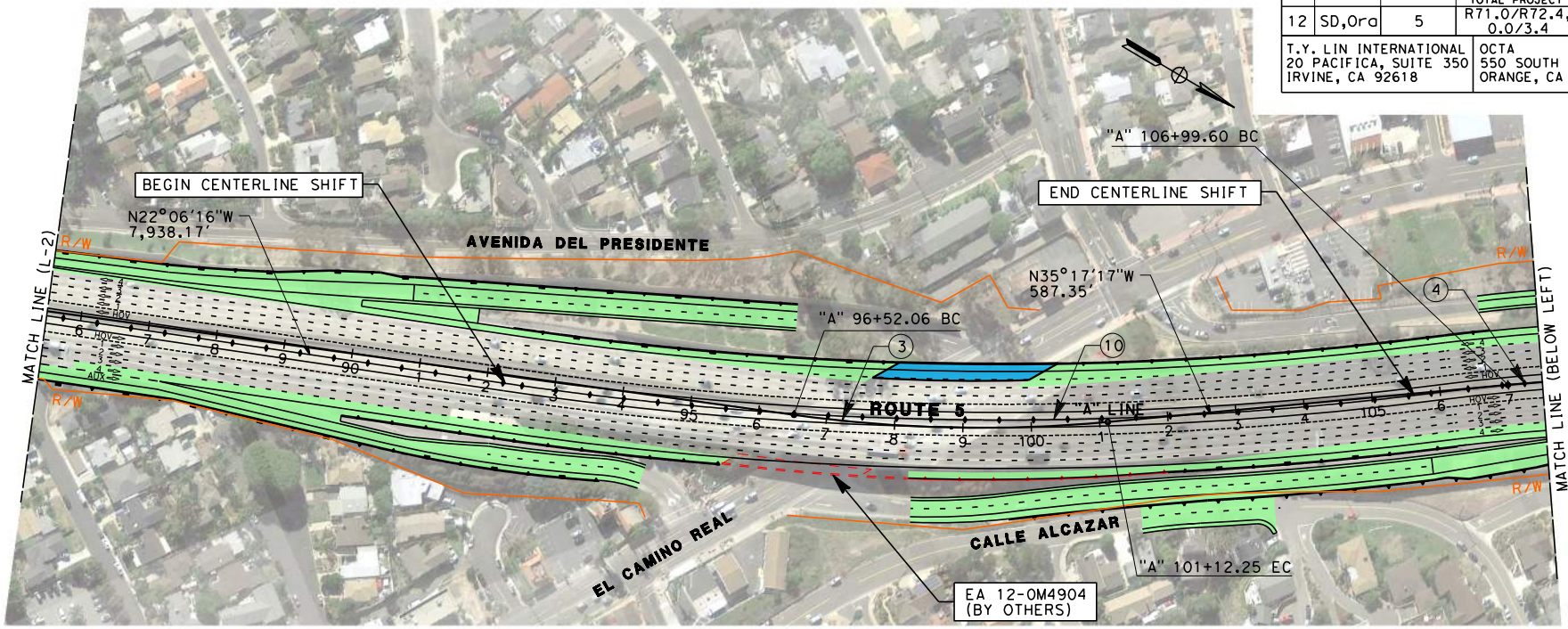

CURVE DATA

No. ⑧	R	Δ	T	L
3	2,000.00'	13°11'01"	231.12'	460.19'
4	2,988.00'	14°23'17"	377.16'	750.35'
5	4,012.00'	08°03'00"	282.31'	563.69'
10	5,000.00'	15°16'29"	670.46'	1,332.96'

LAYOUT
ALTERNATIVE 3A

SCALE: 1" = 250'

L-3

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL
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IRVINE, CA 92618

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550 SOUTH MAIN STREET
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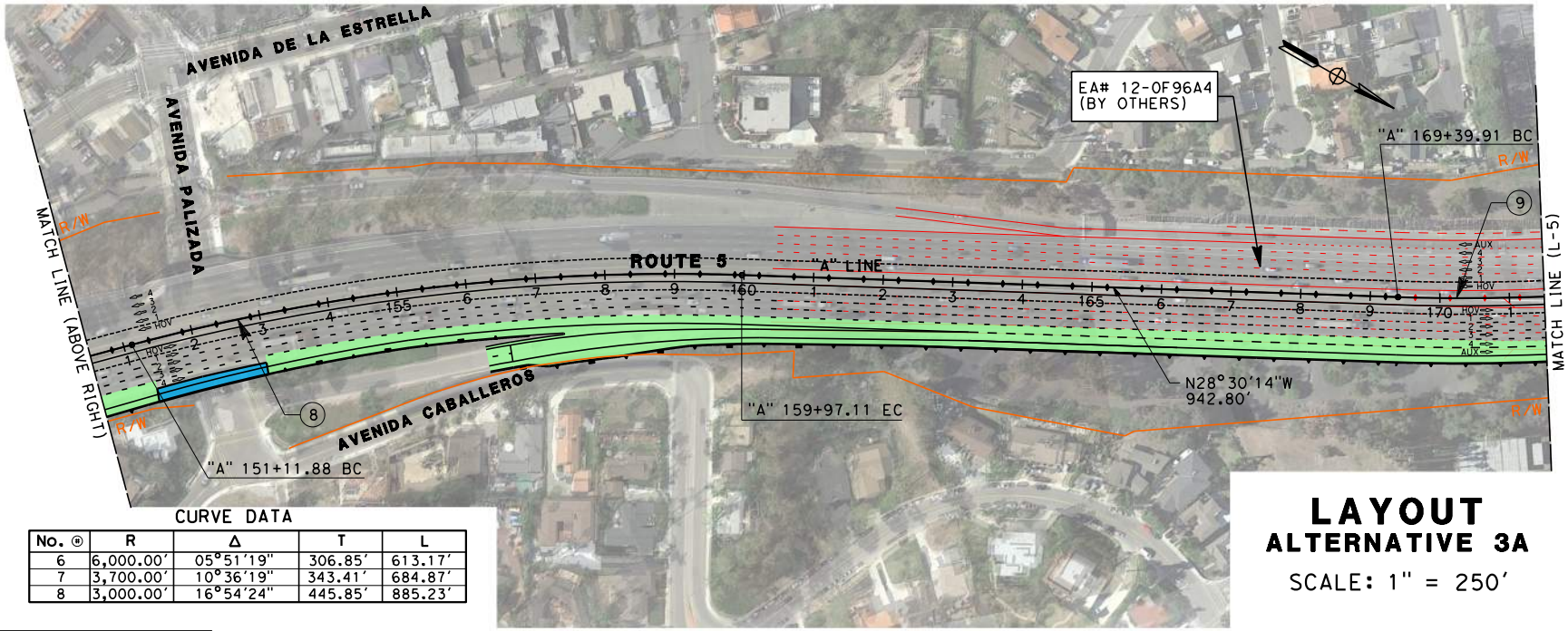

CURVE DATA

No. ⑧	R	Δ	T	L
6	6,000.00'	05°51'19"	306.85'	613.17'
7	3,700.00'	10°36'19"	343.41'	684.87'
8	3,000.00'	16°54'24"	445.85'	885.23'

LAYOUT
ALTERNATIVE 3A

SCALE: 1" = 250'

L-4

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DATE REVISED

LAST REVISION 00-00-00
DATE PLOTTED => $DATE
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BORDER LAST REVISED 7/2/2010
USERNAME => $USER
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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868

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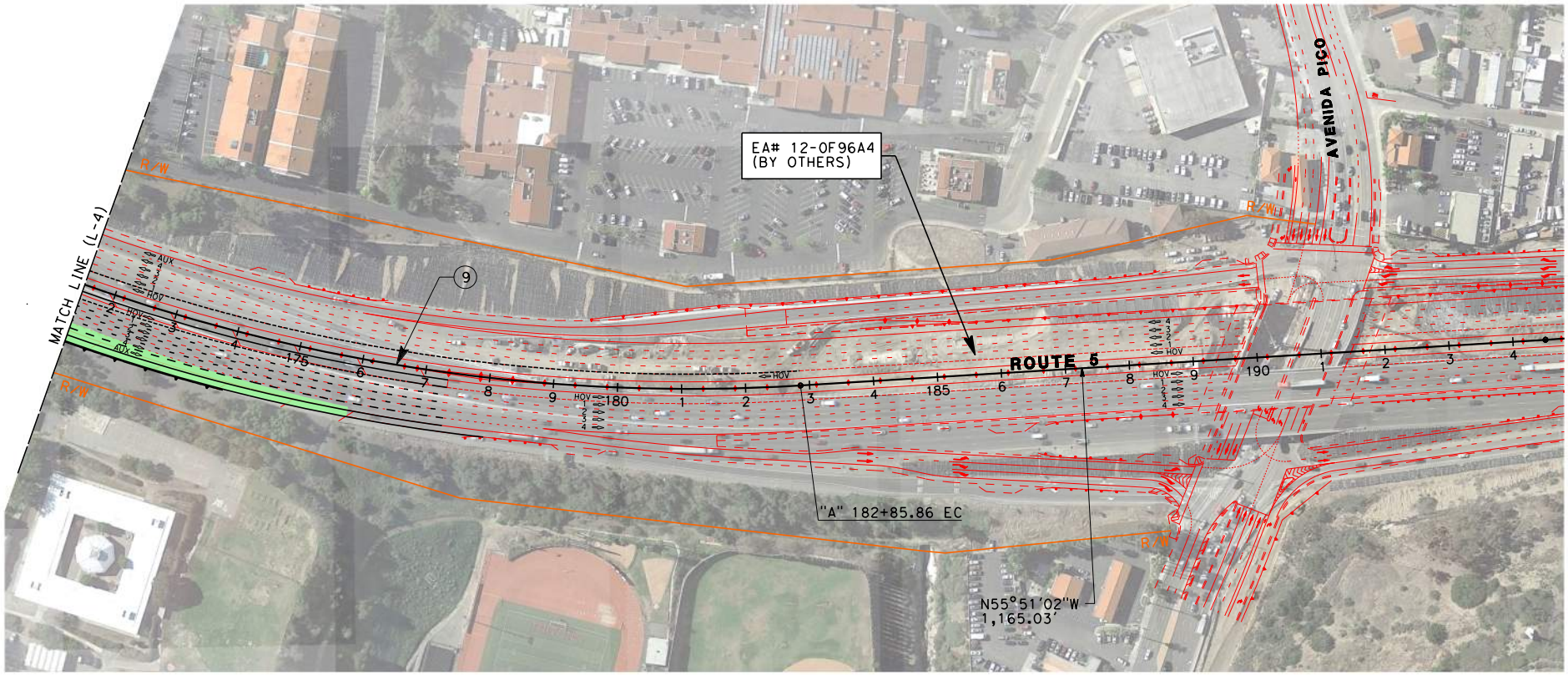

CURVE DATA

No. ⊛	R	Δ	T	L
9	2,820.00'	27°20'48"	686.05'	1,345.95'

LAYOUT
ALTERNATIVE 3A

SCALE: 1" = 250'

L-5

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BORDER LAST REVISED 7/2/2010

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DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

PROJECT NUMBER & PHASE 00000000001

LAST REVISION 00-00-00 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

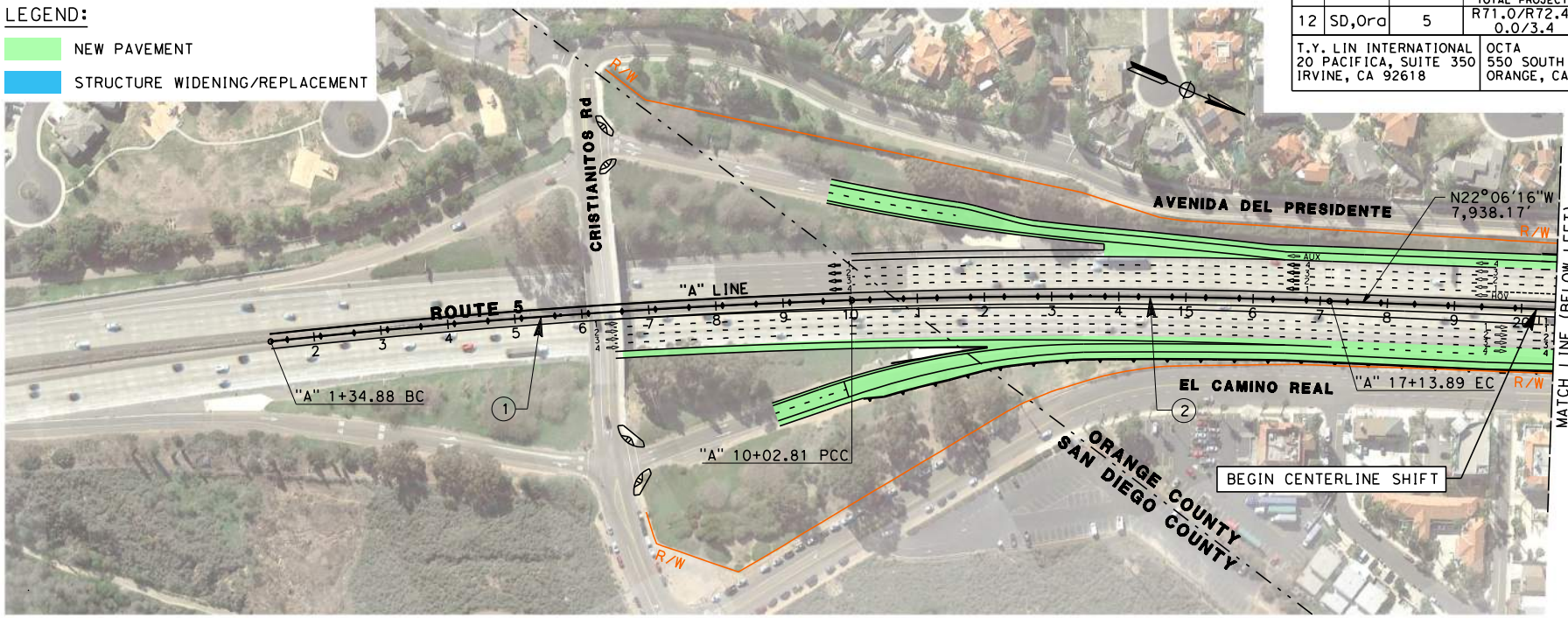
T.Y. LIN INTERNATIONAL
20 PACIFICA, SUITE 350
IRVINE, CA 92618

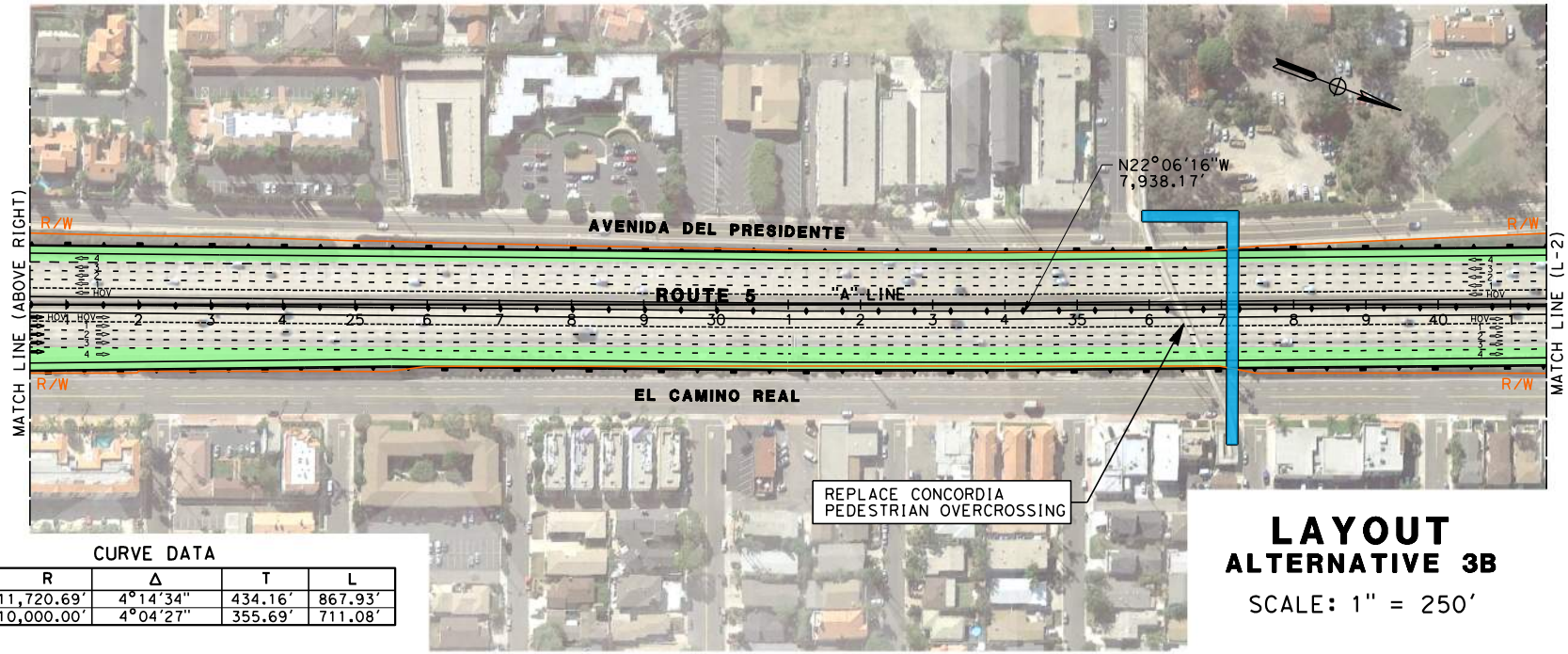
OCTA
550 SOUTH MAIN STREET
ORANGE, CA 92868

LEGEND:

NEW PAVEMENT

STRUCTURE WIDENING/REPLACEMENT





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2	10,000.00'	4°04'27"	355.69'	711.08'

LAYOUT
ALTERNATIVE 3B

SCALE: 1" = 250'

L-1

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TIME PLOTTED => $TIME

BORDER LAST REVISED 7/2/2010

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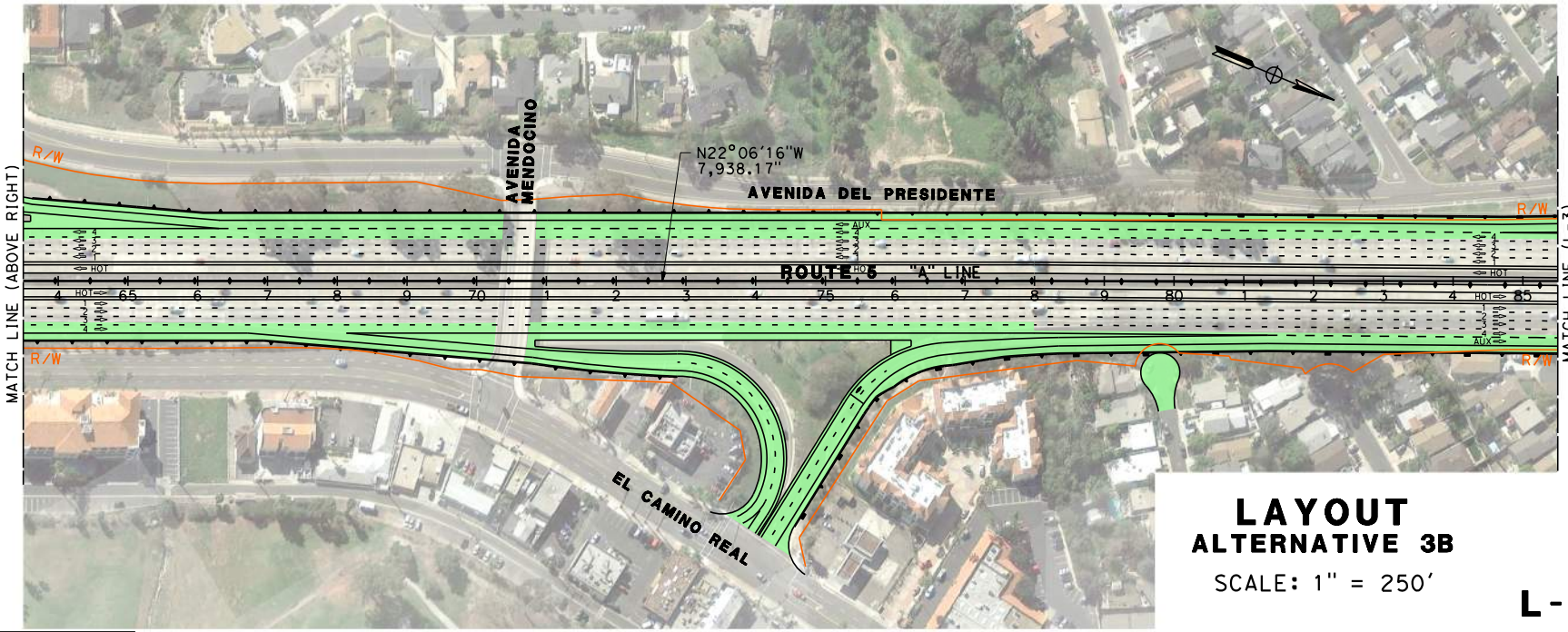
PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868



LAYOUT
ALTERNATIVE 3B

SCALE: 1" = 250'

L-2

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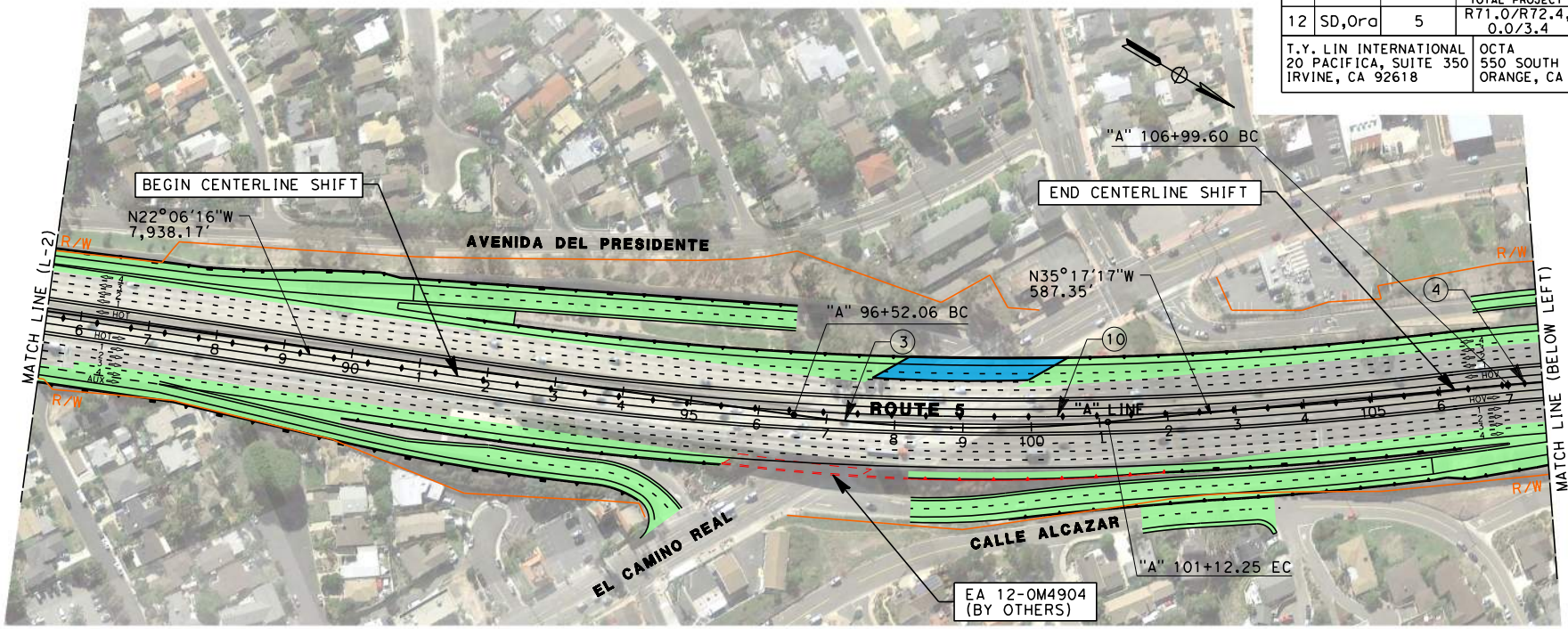

CURVE DATA

No. ⑧	R	Δ	T	L
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LAYOUT
ALTERNATIVE 3B

SCALE: 1" = 250'

L-3

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LAST REVISION 00-00-00
DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

BORDER LAST REVISED 7/2/2010
USERNAME => $USER
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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

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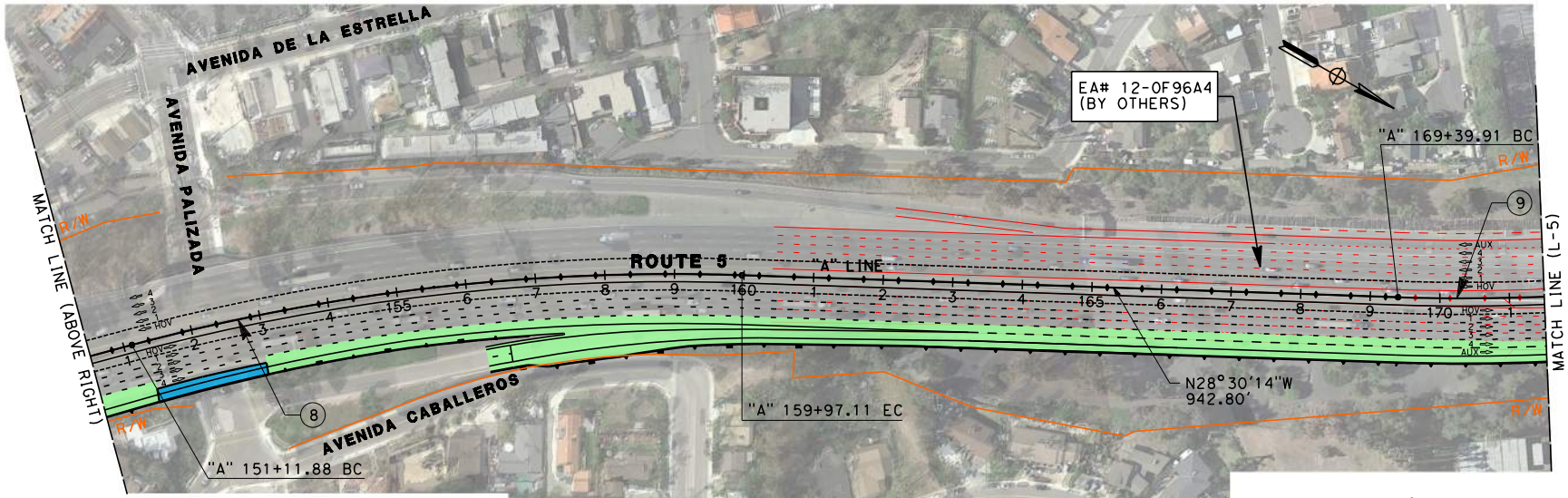

CURVE DATA

No. ⑥	R	Δ	T	L
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8	3,000.00'	16°54'24"	445.85'	885.23'

LAYOUT
ALTERNATIVE 3B

SCALE: 1" = 250'

L-4

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LAST REVISION 00-00-00
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TIME PLOTTED => $TIME

BORDER LAST REVISED 7/2/2010
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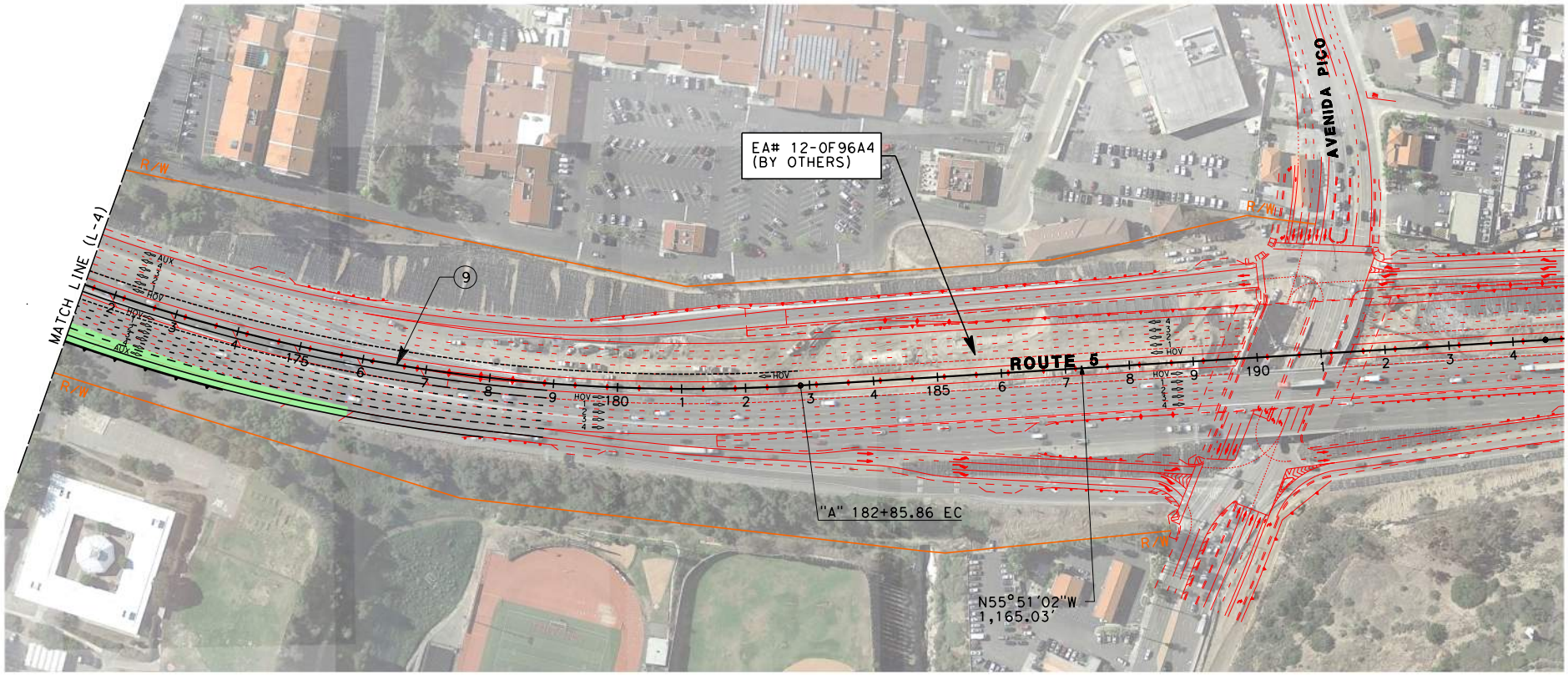
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
PROJECT NUMBER & PHASE 00000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12	SD,Ora	5	R71.0/R72.4, 0.0/3.4		

T.Y. LIN INTERNATIONAL 20 PACIFICA, SUITE 350 IRVINE, CA 92618	OCTA 550 SOUTH MAIN STREET ORANGE, CA 92868



CURVE DATA

No. ⊛	R	Δ	T	L
9	2,820.00'	27°20'48"	686.05'	1,345.95'

LAYOUT
ALTERNATIVE 3B

SCALE: 1" = 250'

L-5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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USERNAME => $USER
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PROJECT NUMBER & PHASE 00000000001

LAST REVISION 00-00-00

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME

ATTACHMENT E
DESIGN STANDARDS RISK ASSESSMENT MATRIX

I-5 Improvement Project (Between Avenida Pico and Orange/San Diego County Line)
List of Potential Design Exceptions

HDM Index	HDM Index Heading	Mandatory or Advisory	Design Standard	No.	Alt No.	Existing Condition Exception	Proposed Exception (Alt 3B)	Location Description	Probability of Approval
201.1	Stopping Sight Distance Standards	Mandatory	Table 201.1 shows the minimum standards for stopping sight distance related to design speed for motorists. (Std 750 feet, 70 mph)	M1.1	All	620 feet (62.5 mph)	620 feet (62.5 mph)	SB Route 5 Sta "A" 106+99.63 to 114+50.00 (inside)	
				M1.2	All	718 feet (68.2 mph)	718 feet (68.2 mph)	NB Route 5 Sta "A" 119+14.33 to 124+77.91 (inside)	
				M1.3	All	690 feet (66.7 mph)	690 feet (66.7 mph)	NB Route 5 Sta "A" 140+23.44 to 147+07.63 (inside)	
				M1.4	All	622 feet (62.6 mph)	622 feet (62.6 mph)	SB Route 5 Sta "A" 151+12.11 to 159+97.34 (inside)	
				M1.5	All	603 feet (61.4 mph)	603 feet (61.4 mph)	NB Route 5 Sta "A" 169+48.92 - 182+94.85 (inside)	
				M1.6	All	614 feet (62.1mph)	613 feet (62 mph)	NB Route 5 at Avenida Palizada UC (outside)	
202.2	Standards for Superelevation	Mandatory	Roadways described below, (a) through (e), shall be designed with the e_{max} indicated…Based on the above e_{max}, superelevation rates from Tables 202.A through 202.2E shall be used with the minimum curve radii and design speed (V_d). If less than standard superelevation rates are approved (see Index 82.1), Figure 202.2 shall be used to determine superelevation based on the curve radius and maximum comfortable speed. (a) Use e_{max}=12% for ramps, connectors, 2-lane conventional highways, and frontage roads. See Index 202.7 for frontage roads under other jurisdictions. (b) Use e_{max}=10% for freeways, expressways, and multilane conventional highways. (c) Use e_{max}=8% when snow and ice conditions prevail (usually over3,000 feet elevation). (d) Use e_{max}=6% for urban roads with design speeds 35 to 45 miles per hour. (e) Use e_{max}=4% for urban roads with design speeds less than 35 miles per hour.	M2.1	All	R=2988';v=70mph; e=4%	R=2988';v=70mph; e=4% (Std=6.8%)	NB & SB Route 5 Sta "A" 106+99.63 to 114+50.00	
				M2.2	All	R=4012';v=70mph; e=3%	R=4012';v=70mph; e=3% (Std=5.2%)	NB & SB Route 5 Sta "A" 119+14.33 to 124+77.91	
				M2.3	All	R=3700';v=70mph; e=3%	R=3700';v=70mph; e=3% (Std=5.6%)	NB & SB Route 5 Sta "A" 140+23.44 to 147+07.63	
				M2.4	All	R=3000';v=70mph; e=3%	R=3000';v=70mph; e=3% (Std=6.8%)	NB & SB Route 5 Sta "A" 151+12.11 to 159+97.34	
				M2.5	All	R=2820';v=70mph; e=4%	R=2820';v=70mph; e=4% (Std=7.2%)	NB & SB Route 5 Sta "A" 169+48.92 to 182+94.85	
203.2	Standard for Curvature	Mandatory	Tables 202.2A through 202.2E shall be the minimum radius of curve for superelevation rates and design speeds on highways.	M3.1	All	R=2988' (Std=5270')	R=2988' (Std=5270')	NB & SB Route 5 Sta "A" 106+99.63 to 114+50.00	
				M3.2	All	R=4012' (Std=7140')	R=4012' (Std=7140')	NB & SB Route 5 Sta "A" 119+14.33 to 124+77.91	
				M3.3	All	R=3700' (Std=7140')	R=3700' (Std=7140')	NB & SB Route 5 Sta "A" 134+08.83 to 147+07.63	
				M3.4	All	R=3000' (Std=7140')	R=3000' (Std=7140')	NB & SB Route 5 Sta "A" 151+12.11 to 159+97.34	
				M3.5	All	R=2820' (Std=5270')	R=2820' (Std=5270')	NB & SB Route 5 Sta "A" 169+48.92 to 182+94.85	
302.1	Shoulder Width	Mandatory	The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder on highways.	M4.1	All	9' & varies	7.5 & varies	At Overcrossing median columns (Inside shoulders)	
309.1(3)(b)	Minimum Clearances	Mandatory	The minimum horizontal clearance to walls, such as abutment walls, retaining walls in cut locations, and noise barriers on all facilities, including auxiliary lanes, ramps and collector-distributor roads shall not be less than 10 feet per Table 302.1.	M11.1	All	9' & varies	7.5 & varies	At Overcrossing median columns (Inside shoulders)	
310.2	Outer Separation	Advisory	In urban areas and in mountainous terrain, the width of the outer separation should be a minimum of 26 feet from edge of traveled way to edge of traveled way.	A2.1	All	23'	19.8'	SB Route 5 and Avenida Del Presidente	
				A2.2	All	18.5'	18.5'	NB Route 5 and S El Camino Real	
				A2.3	All	18.9'	9.6'	NB El Camino Real On-ramp & Calle Alcazar	
501.3	Interchange Spacing	Mandatory	The minimum interchange spacing shall be one mile in urban areas, two miles outside of rural areas, and two miles between freeway-to-freeway interchanges and other interchanges. The minimum interchange spacing on Interstates outside of urban areas shall be three miles.	M5.1	All	2745 feet	2745 feet	Between Avenida Calafia & El Camino Real	
				M5.2	All	3535 feet	3535 feet	Between El Camino Real & Avenida Presidio	
				M5.3	All	1892 feet	1892 feet	Between Avenida Presidio & Avenida Palizada	
				M5.4	All	3826 feet	3826 feet	Between Avenida Palizada & Avenida Pico	
502.2	Local Street Interchanges	Mandatory	Isolated off-ramps or partial interchanges shall not be used because of the potential for wrong-way movements.	M6.1	All	1/2 tight diamond	1/2 tight diamond	Avenida Califia on SB Route 5	
				M6.2	All	1/2 tight diamond	1/2 tight diamond	Avenida Mendocino on NB Route 5	
				M6.3	All	3/4 tight diamond	3/4 tight diamond	Avenida Presidio	
				M6.4	All	1/2 tight diamond	1/2 tight diamond	Avenida Palizada	

I-5 Improvement Project (Between Avenida Pico and Orange/San Diego County Line)
List of Potential Design Exceptions

HDM Index	HDM Index Heading	Mandatory or Advisory	Design Standard	No.	Alt No.	Existing Condition Exception	Proposed Exception (Alt 3B)	Location Description	Probability of Approval
504.2(2)	Freeway Entrances and Exits Standard Designs	Mandatory	The minimum deceleration length shown on Figure 504.2B shall be provided prior to the first curve beyond the exit nose to assure adequate distance for vehicles to decelerate before entering the curve. (Std 570')	M7.1	All	560' (R=140')	437.2' (R=140')	Avenida Califia SB Hook Off-ramp	
504.3(3)	Ramps (Location and Design of Ramp Intersections on the Crossroads)	Mandatory	The minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.	M8.1	All	258'	258'	Avenida Magdalena NB Off-ramp & Avenida Mendocino	
504.6	Mainline Lane Reduction at Interchanges	Advisory	The basic number of mainline lanes should not be dropped through a local service interchange.	A3.1	2	4 lanes to 4 lanes	5 lanes to 4 lanes	NB Route 5 between Avenida Pico NB Off-Ramp and Avenida Pico Undercrossing	
				A3.2	2	4 lanes to 4 lanes	5 lanes to 4 lanes	SB Route 5 at Cristianitos Road Interchange (Mainline lane dropped at Cristianitos Road SB off-ramp)	
504.7	Weaving Sections	Mandatory	The minimum weaving length, measured as shown on figures 504.2A and 504.2B shall be 2,000 feet in urban areas, 5,000 feet outside urban areas, and 5,000 feet between freeway-to-freeway interchanges and other interchanges.	M9.1	All	1419'	1419'	SB Route 5 - Avenida Pico to Avenida Palizada	
				M9.2	All	1914'	1889'	NB Route 5 - Avenida Palizada to Avenida Pico	
				M9.3	All	694'	679'	SB Route 5 - Avenida Presidio to El Camino Real	
				M9.4	All	1450	1608'	NB Route 5 - El Camino Real to Avenida Presidio	
				M9.5	All	806'	892'	NB Route 5 - Avenida Mendocino to El Camino Real	
504.8	Access Control	Mandatory	Access rights shall be acquired along interchange ramps to their junctions with the nearest public road. Access control shall extend at least 50 feet beyond the end of the curb return, ramp radius, or taper. For new construction or major reconstruction, access rights shall be acquired on the opposite side of the local road from ramp terminals to preclude driveways or local roads within the ramp intersection.	M10.1	All	42'	42'	El Camino Real NB Off-ramp and adjacent driveway	
				M10.2	All	Driveway opposite ramp termini	Driveway opposite ramp termini	El Camino Real NB Hook On-Ramp and driveway opposite ramp termini	
				M10.3	All	0'	0'	El Camino Real NB Hook On-Ramp and adjacent gas station driveway	
				M10.4	All	Avenida Califia opposite ramp termini	Avenida Califia opposite ramp termini	Opposite Avenida Califia SB Ramp Termini	

All - Refers to No Build Alternative 1 and Build Alternatives 2, 3A and 3B

ATTACHMENT F
STORM WATER DATA REPORT
SIGNED COVER SHEET

Dist-County-Route: 12-ORA-5, 11-SD-5
Post Mile Limits: SD R71.0/R72.4, ORA 0.0/3.4
Type of Work: Widening
Project ID (EA): 1215000141 (0P550K)
Program Identification:
Phase: ☒ PID (PIR)

Regional Water Quality Control Board(s): San Diego (Region 9)
Total DSA: Alt 2: 24.3, Alt 3a: 24.3ac
Alt 3b: 28.6 ac
PCTA: Alt 2: 18ac, Alt 3a: 18ac
Alt 3b: 21.9ac

Estimated Const. Start Date: 1-01-2030 Estimated Const. Completion Date: 1-01-2033

Is the Project within a TMDL watershed? Yes ☒ No ☐

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E only.

Rodrigo Gonzalez, Registered Project Engineer — 2-25-19 Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

[Stamp Required at PS&E only]

Grace Piña-Garrett, District/Regional Design SW Coordinator or Designee — *Date*

ATTACHMENT G
PROJECT PLANNING COST ESTIMATE

Project Study Report – Project Development Support
Capital Outlay Project Estimate

Dist - Co – Rte 11-SD-5, 12-ORA-5

PM R71.0/72.4, 0.0/3.4

Program Code 20.10.400.100

Project Number 1215000141

Month/Year August 2018

PROJECT DESCRIPTION:

Limits On Interstate 5 (I-5) from 0.1 mile south of Cristianitos Road Overcrossing to Avenida Pico Undercrossing

Proposed Improvement (Scope) The project proposes to increase capacity with the addition of a general-purpose or managed lane in each direction on I-5, reestablish existing auxiliary lanes, widen existing undercrossings and replace existing overcrossings to accommodate the I-5 widening.

Alternate 2 Add One General Purpose Lane in each direction

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 159M - 181M
TOTAL STRUCTURE ITEMS	$ 16M
TOTAL ENVIRONMENTAL MITIGATION ITEMS	$ 0.11M
SUBTOTAL CONSTRUCTION COSTS	$ 175M – 197M
TOTAL RIGHT-OF-WAY ITEMS	$ 0.23M – 0.267M
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 176M – 198M

I. ROADWAY ITEMS

	Average Cost per Lane Mile		Number of Lane Miles		Total Cost
Total Cost	$29M - $33M	X	5.5	=	$159M - $181M

Explanation:

The Average Cost per Lane Mile includes all roadway related construction items such as earthwork, retaining walls assumed to be Type 1, pavement structural section, traffic items, drainage, planting and irrigation items, roadside management and safety items, minor items, mobilization, supplemental work and contingencies.

TOTAL ROADWAY ITEMS	$159M-$181M

II. STRUCTURES ITEMS

	Structure (1)	Structure (2)	Structure (3)
Bridge Name	Avenida Palizada UC (Widen)	Avenida Presidio UC (Widen)	El Camino Real UC (Widen)
Total Cost for Structure	$2.5M	$1.9M	$4.0M

	Structure (4)	Structure (5)	Structure (6)
Bridge Name	Avenida Mendocino OC (Walls)	Avenida San Luis Rey OC (Replace)	Pedestrian OC (Replace)
Total Cost for Structure	$0.87M	$3.2M	$3.0M

Explanation:

The Walls for Mendocino OC are assumed to be Subhorizontal Ground Anchor wall on each side of the bridge abutment. Total cost for structures includes mobilization and contingencies.

TOTAL STRUCTURE ITEMS	$ 16M

III. ENVIRONMENTAL MITIGATION

	Quantity	Unit		Unit Price		Item Cost
Environmental Mitigation	1	LS	X	$0.11M	=	$0.11M

Explanation:
Environmental Mitigation includes paleontology monitoring, bird survey, etc.

TOTAL ENVIRONMENTAL MITIGATION ITEMS $ 0.11M

IV. RIGHT-OF-WAY ITEMS

	Escalated Value
A. Acquisition, including excess lands, damages to remainder(s) and Goodwill	$0.135M-0.157M
B. Utility Relocation (State share)	$ 0.095M-0.11M

Anticipated Date of Right-of-Way Certification TBD
(Date to which values are escalated)

Explanation:
All parcels impacted by Alternative 2 are residential except for one commercial/retail business. Four parcels will have partial right of way takes, which the total area is 956 SQFT. Seven parcels will have temporary construction easements, which the total area is 8,795 SQFT. There is an AT&T line in the existing Avenida San Luis Rey Overcrossing that will be impacted, due to replacement of the overcrossing. Other utility impacts include relocation and adjustment of surface utility appurtenances such as fire hydrants, manholes and light poles.

TOTAL RIGHT-OF-WAY ITEMS $0.23M-0.267M

Project Study Report – Project Development Support
Capital Outlay Project Estimate

Dist - Co – Rte 11-SD-5, 12-ORA-5

PM R71.0/72.4, 0.0/3.4

Program Code 20.10.400.100

Project Number 1215000141

Month/Year August 2018

PROJECT DESCRIPTION:

Limits On Interstate 5 (I-5) from 0.1 mile south of Cristianitos Road Overcrossing to Avenida Pico Undercrossing

Proposed Improvement (Scope) The project proposes to increase capacity with the addition of a general-purpose or managed lane in each direction on I-5, reestablish existing auxiliary lanes, widen existing undercrossings and replace existing overcrossings to accommodate the I-5 widening.

Alternate 3A Add One HOV Lane in each direction

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 159M - 181M
TOTAL STRUCTURE ITEMS	$ 16M
TOTAL ENVIRONMENTAL MITIGATION ITEMS	$ 0.11M
SUBTOTAL CONSTRUCTION COSTS	$ 175M – 197M
TOTAL RIGHT-OF-WAY ITEMS	$ 0.23M – 0.267M
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 176M – 198M

I. ROADWAY ITEMS

	Average Cost per Lane Mile		Number of Lane Miles		Total Cost
Total Cost	$29M - $33M	X	5.5	=	$159M - $181M

Explanation:

The Average Cost per Lane Mile includes all roadway related construction items such as earthwork, retaining walls assumed to be Type 1, pavement structural section, traffic items, drainage, planting and irrigation items, roadside management and safety items, minor items, mobilization, supplemental work and contingencies.

TOTAL ROADWAY ITEMS	$159M-$181M

II. STRUCTURES ITEMS

	Structure (1)	Structure (2)	Structure (3)
Bridge Name	Avenida Palizada UC (Widen)	Avenida Presidio UC (Widen)	El Camino Real UC (Widen)
Total Cost for Structure	$2.4M	$2.6M	$5.5M

	Structure (4)	Structure (5)	Structure (6)
Bridge Name	Avenida Mendocino OC (Walls)	Avenida San Luis Rey OC (Replace)	Pedestrian OC (Replace)
Total Cost for Structure	$1.1M	$3.2M	$3.0M

Explanation:

The Walls for Mendocino OC are assumed to be Subhorizontal Ground Anchor wall on each side of the bridge abutment. Total cost for structures includes mobilization and contingencies.

TOTAL STRUCTURE ITEMS	$ 16M

III. ENVIRONMENTAL MITIGATION

	Quantity	Unit		Unit Price		Item Cost
Environmental Mitigation	1	LS	X	$0.11M	=	$0.11M

Explanation:
Environmental Mitigation includes paleontology monitoring, bird survey, etc.

TOTAL ENVIRONMENTAL MITIGATION ITEMS $ 0.11M

IV. RIGHT-OF-WAY ITEMS

	Escalated Value
A. Acquisition, including excess lands, damages to remainder(s) and Goodwill	$0.135M-0.157M
B. Utility Relocation (State share)	$ 0.095M-0.11M

Anticipated Date of Right-of-Way Certification TBD
(Date to which values are escalated)

Explanation:
All parcels impacted by Alternative 3A are residential except for one commercial/retail business. Four parcels will have partial right of way takes, which the total area is 956 SQFT. Seven parcels will have temporary construction easements, which the total area is 8,795 SQFT. There is an AT&T line in the existing Avenida San Luis Rey Overcrossing that will be impacted, due to replacement of the overcrossing. Other utility impacts include relocation and adjustment of surface utility appurtenances such as fire hydrants, manholes and light poles.

TOTAL RIGHT-OF-WAY ITEMS $0.23M-0.267M

Project Study Report – Project Development Support
Capital Outlay Project Estimate

Dist - Co – Rte 11-SD-5, 12-ORA-5

PM R71.0/72.4, 0.0/3.4

Program Code 20.10.400.100

Project Number 1215000141

Month/Year August 2018

PROJECT DESCRIPTION:

Limits On Interstate 5 (I-5) from 0.1 mile south of Cristianitos Road Overcrossing to Avenida Pico Undercrossing

Proposed Improvement (Scope) The project proposes to increase capacity with the addition of a general-purpose or managed lane in each direction on I-5, reestablish existing auxiliary lanes, widen existing undercrossings and replace existing overcrossings to accommodate the I-5 widening.

Alternate 3B Add One Price Managed Lane in each direction

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 165M - 187M
TOTAL STRUCTURE ITEMS	$ 18M
TOTAL ENVIRONMENTAL MITIGATION ITEMS	$ 0.11M
SUBTOTAL CONSTRUCTION COSTS	$ 183M – 205M
TOTAL RIGHT-OF-WAY ITEMS	$ 0.639M – 0.74M
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 184M – 206M

I. ROADWAY ITEMS

	Average Cost per Lane Mile		Number of Lane Miles		Total Cost
Total Cost	$30M - $34M	X	5.5	=	$165M - $187M

Explanation:

The Average Cost per Lane Mile includes all roadway related construction items such as earthwork, retaining walls assumed to be Type 1, pavement structural section, traffic items, drainage, planting and irrigation items, roadside management and safety items, minor items, mobilization, supplemental work and contingencies.

TOTAL ROADWAY ITEMS $165M-$187M

II. STRUCTURES ITEMS

	Structure (1)	Structure (2)	Structure (3)
Bridge Name	Avenida Palizada UC (Widen)	Avenida Presidio UC (Widen)	El Camino Real UC (Widen)
Total Cost for Structure	$2.4M	$2.6M	$5.5M

	Structure (4)	Structure (5)	Structure (6)
Bridge Name	Avenida Mendocino OC (Walls)	Avenida San Luis Rey OC (Replace)	Pedestrian OC (Replace)
Total Cost for Structure	$1.1M	$3.2M	$3.0M

Explanation:

The Walls for Mendocino OC are assumed to be Subhorizontal Ground Anchor wall on each side of the bridge abutment. Total cost for structures includes mobilization and contingencies.

TOTAL STRUCTURE ITEMS $ 18M

III. ENVIRONMENTAL MITIGATION

	Quantity	Unit		Unit Price		Item Cost
Environmental Mitigation	1	LS	X	$0.11M	=	$0.11M

Explanation:
Environmental Mitigation includes paleontology monitoring, bird survey, etc.

TOTAL ENVIRONMENTAL MITIGATION ITEMS $ 0.11M

IV. RIGHT-OF-WAY ITEMS

	Escalated Value
A. Acquisition, including excess lands, damages to remainder(s) and Goodwill	$0.543M-0.629M
B. Utility Relocation (State share)	$ 0.095M-0.11M

Anticipated Date of Right-of-Way Certification TBD
(Date to which values are escalated)

Explanation:
All parcels impacted by Alternative 3B are residential except for one commercial/retail business. Nine parcels will have partial right of way takes, which the total area is 4,015 SQFT. Nine parcels will have temporary construction easements, which the total area is 10,997 SQFT. There is an AT&T line in the existing Avenida San Luis Rey Overcrossing that will be impacted, due to replacement of the overcrossing. Other utility impacts include relocation and adjustment of surface utility appurtenances such as fire hydrants, manholes and light poles.

TOTAL RIGHT-OF-WAY ITEMS $0.639M-0.74M

ATTACHMENT H
CONCEPTUAL COST ESTIMATE
RIGHT WAY COMPONENT

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (PSR-PDS)

Alternative 2 - Add One General Purpose Lane in each direction

NOT VALID FOR PROGRAMMING PURPOSES

To: Ahmed Abou-Abdou
Project Manager
Caltrans District 12

Date: 2/28/18

Dist-Co-Rte-PM: 11-SD-5,12-ORA-5-R72.2/R72.3, 0.0/3.4
Project ID: 1215000141
EA: 12-0P550

From: Christina Diaz
Right of Way Estimator
T.Y. Lin International

Karen Chapman
Project Manager
T.Y. Lin International

A field review for this estimate: ☐ Was Requested ☐ Was Not Required ☒ Was Performed ☐ Was Not Performed

Scope of the Right of Way

Description of Required Right of Way: Partial Acquisitions and Temporary Construction Easements
Right of Way Required: ☒ Yes ☐ No
Number of Total Parcels: ☒ 1-10 ☐ 11-25 ☐ 26-50 ☐ 51-100 ☐ >100
Project Setting: ☒ Urban ☐ Rural Current Land Use: Residential and commercial/retail
Right of Way Requirements
Number of Fee Parcels 4 Total Additional Fee Area 956 SQFT
Number of Permanent Easements N/A Total Permanent Easement Area
Number of Temporary Easements 7 Total Temporary Easement Area 8,795 SQFT
Length of Term Required for Temporary Easements TBD
Number of Excess Parcels/Other N/A
Displaced Persons/Businesses: ☐ Yes ☒ No
Demolition/Clearance Required: ☒ Yes ☐ No
Railroad Involvement: ☐ Yes ☒ No
Utility Involvement: ☒ Yes ☐ No Number of Utilities in Area 8

Cost Estimates

Capital Costs
☐ $0-$100,000
☒ $100,001-$500,000
☐ $500,001-$1,000,000
☐ $1,000,001-$5,000,000
☐ $5,000,001-$15,000,000
☐ $15,000,001-$50,000,000
☐ $50,000,001-$100,000,000
☐ >$100,000,000

Support Costs
☒ $0-$25,000
☐ $25,001-$100,000
☐ $100,001-$250,000
☐ $250,001-$500,000
☐ $500,001-$1,000,000
☐ $1,000,001-$5,000,000
☐ $5,000,001-$10,000,000
☐ >$10,000,000

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (Cont.)

(Form #)

Schedule

Right of Way will require a minimum of 18 months to deliver a Right of Way Certification once final right of way requirements and mapping have been received, necessary environmental clearances have been obtained, and required freeway agreements have been approved. This schedule is based on a Right of Way Certification #1 with an anticipated cert date of Summer 2020.

Areas of Concern

Potential areas of concern are noted below:

There are six homes directly adjacent to the northbound side of I-5 between Avenida Magdalena off-ramp and El Camino Real on-ramp, that may have to be fully acquired depending on the severity of impact based on the final project footprint.

Assumptions and Limiting Conditions

This estimate is based on the following assumptions and limiting conditions: Right-of-way and parcel lines were obtained through GIS data. Impacts were analyzed using aerial photographs and require further verification as design progresses.

This Conceptual Cost Estimate is intended for planning purposes only - Right of Way should not be programmed until a Right of Way Data Sheet has been completed and approved.

The Scope of the Right of Way analysis includes applicable:

- Acquisition Costs (including any Excess Lands, Damages, Mitigation, etc.)
- Utility Relocation
- Railroad Involvement
- Relocation Assistance
- Clearance/Demolition
- Permits
- Title and Escrow Fees
- Construction Contract Work

Capital Costs are based on eminent domain estimating and appraisal methodologies and current market information. Support Costs are based on district workload estimating tools and historical data from previous similar projects.

Escalation and Contingency Rates were applied based on the proposed project schedule and previous district experience to account for changes in market conditions and other unanticipated project-related costs.

Check as applicable:

☐ A field review was not requested and therefore was not performed as part of this estimate.

☒ Mapping received did not provide sufficient detail to determine the limits of the right of way requirements and/or to determine damages to the remainder parcels impacted by the project.

☒ Additional right of way requirements may be anticipated but are not defined due to the preliminary nature of the early design requirements.

☐ We have determined that there are no right of way functional involvements in the proposed project at this time as currently designed.

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (Cont.)
(Form #)

Contact
For further information regarding this estimate, please contact the estimator below:

R/W Estimator: Christina Diaz
Phone Number: (949) 398-4953

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (PSR-PDS)

Alternative 3A - Add One HOV Lane in each direction

NOT VALID FOR PROGRAMMING PURPOSES

To: Ahmed Abou-Abdou
Project Manager
Caltrans District 12

Date: 2/28/18

Dist-Co-Rte-PM: 11,12-SD,ORA-5-R72.2/R72.3, 0.0/3.4
Project ID: 1215000141
EA: 12-0P550

From: Christina Diaz
Right of Way Estimator
T.Y. Lin International

Karen Chapman
Project Manager
T.Y. Lin International

A field review for this estimate:
☐ Was Requested ☐ Was Not Required
☒ Was Performed ☐ Was Not Performed

Scope of the Right of Way

Description of Required Right of Way: Partial Acquisitions and Temporary Construction Easements
Right of Way Required: ☒ Yes ☐ No
Number of Total Parcels: ☒ 1-10 ☐ 11-25 ☐ 26-50 ☐ 51-100 ☐ >100
Project Setting: ☒ Urban ☐ Rural Current Land Use: Residential and commercial/retail
Right of Way Requirements

Number of Fee Parcels 4 Total Additional Fee Area 956 SQFT
Number of Permanent Easements N/A Total Permanent Easement Area
Number of Temporary Easements 7 Total Temporary Easement Area 8,795 SQFT
Length of Term Required for Temporary Easements TBD
Number of Excess Parcels/Other N/A

Displaced Persons/Businesses: ☐ Yes ☒ No
Demolition/Clearance Required: ☒ Yes ☐ No
Railroad Involvement: ☐ Yes ☒ No
Utility Involvement: ☒ Yes ☐ No Number of Utilities in Area 8

Cost Estimates

Capital Costs
☐ $0-$100,000
☒ $100,001-$500,000
☐ $500,001-$1,000,000
☐ $1,000,001-$5,000,000
☐ $5,000,001-$15,000,000
☐ $15,000,001-$50,000,000
☐ $50,000,001-$100,000,000
☐ >$100,000,000

Support Costs
☒ $0-$25,000
☐ $25,001-$100,000
☐ $100,001-$250,000
☐ $250,001-$500,000
☐ $500,001-$1,000,000
☐ $1,000,001-$5,000,000
☐ $5,000,001-$10,000,000
☐ >$10,000,000

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (Cont.)

(Form #)

Schedule

Right of Way will require a minimum of 18 months to deliver a Right of Way Certification once final right of way requirements and mapping have been received, necessary environmental clearances have been obtained, and required freeway agreements have been approved. This schedule is based on a Right of Way Certification #1 with an anticipated cert date of Summer 2020.

Areas of Concern

Potential areas of concern are noted below:

There are six homes directly adjacent to the northbound side of I-5 between Avenida Magdalena off-ramp and El Camino Real on-ramp, that may have to be fully acquired depending on the severity of impact based on the final project footprint.

Assumptions and Limiting Conditions

This estimate is based on the following assumptions and limiting conditions: Right-of-way and parcel lines were obtained through GIS data. Impacts were analyzed using aerial photographs and require further verification as design progresses.

This Conceptual Cost Estimate is intended for planning purposes only - Right of Way should not be programmed until a Right of Way Data Sheet has been completed and approved.

The Scope of the Right of Way analysis includes applicable:

- Acquisition Costs (including any Excess Lands, Damages, Mitigation, etc.)
- Utility Relocation
- Railroad Involvement
- Relocation Assistance
- Clearance/Demolition
- Permits
- Title and Escrow Fees
- Construction Contract Work

Capital Costs are based on eminent domain estimating and appraisal methodologies and current market information. Support Costs are based on district workload estimating tools and historical data from previous similar projects.

Escalation and Contingency Rates were applied based on the proposed project schedule and previous district experience to account for changes in market conditions and other unanticipated project-related costs.

Check as applicable:

☐ A field review was not requested and therefore was not performed as part of this estimate.

☒ Mapping received did not provide sufficient detail to determine the limits of the right of way requirements and/or to determine damages to the remainder parcels impacted by the project.

☒ Additional right of way requirements may be anticipated but are not defined due to the preliminary nature of the early design requirements.

☐ We have determined that there are no right of way functional involvements in the proposed project at this time as currently designed.

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (Cont.)
(Form #)

Contact
For further information regarding this estimate, please contact the estimator below:

R/W Estimator: Christina Diaz
Phone Number: (949) 398-4953

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY
(PSR-PDS)
Alternative 3B - Add One Price Managed Lane in each direction
NOT VALID FOR PROGRAMMING PURPOSES

To: Ahmed Abou-Abdou
Project Manager
Caltrans District 12

Date: 2/28/18

Dist-Co-Rte-PM: 11,12-SD,ORA-5-R72.2/R72.3, 0.0/3.4
Project ID: 1215000141
EA: 12-0P550

From: Christina Diaz
Right of Way Estimator
T.Y. Lin International

Karen Chapman
Project Manager
T.Y. Lin International

A field review for this estimate: ☐ Was Requested ☐ Was Not Required ☒ Was Performed ☐ Was Not Performed

Scope of the Right of Way

Description of Required Right of Way: Partial Acquisitions and Temporary Construction Easements
Right of Way Required: ☒ Yes ☐ No
Number of Total Parcels: ☒ 1-10 ☐ 11-25 ☐ 26-50 ☐ 51-100 ☐ >100
Project Setting: ☒ Urban ☐ Rural Current Land Use: Residential and commercial/retail
Right of Way Requirements
Number of Fee Parcels 9 Total Additional Fee Area 4,015 SQFT
Number of Permanent Easements N/A Total Permanent Easement Area
Number of Temporary Easements 9 Total Temporary Easement Area 10,997 SQFT
Length of Term Required for Temporary Easements TBD
Number of Excess Parcels/Other N/A
Displaced Persons/Businesses: ☐ Yes ☒ No
Demolition/Clearance Required: ☒ Yes ☐ No
Railroad Involvement: ☐ Yes ☒ No
Utility Involvement: ☒ Yes ☐ No Number of Utilities in Area 8

Cost Estimates

Capital Costs
☐ $0-$100,000
☒ $100,001-$500,000
☐ $500,001-$1,000,000
☐ $1,000,001-$5,000,000
☐ $5,000,001-$15,000,000
☐ $15,000,001-$50,000,000
☐ $50,000,001-$100,000,000
☐ >$100,000,000

Support Costs
☒ $0-$25,000
☐ $25,001-$100,000
☐ $100,001-$250,000
☐ $250,001-$500,000
☐ $500,001-$1,000,000
☐ $1,000,001-$5,000,000
☐ $5,000,001-$10,000,000
☐ >$10,000,000

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (Cont.)

(Form #)

Schedule

Right of Way will require a minimum of 18 months to deliver a Right of Way Certification once final right of way requirements and mapping have been received, necessary environmental clearances have been obtained, and required freeway agreements have been approved. This schedule is based on a Right of Way Certification #1 with an anticipated cert date of Summer 2020.

Areas of Concern

Potential areas of concern are noted below:

There are six homes directly adjacent to the northbound side of I-5 between Avenida Magdalena off-ramp and El Camino Real on-ramp, that may have to be fully acquired depending on the severity of impact based on the final project footprint.

Assumptions and Limiting Conditions

This estimate is based on the following assumptions and limiting conditions: Right-of-way and parcel lines were obtained through GIS data. Impacts were analyzed using aerial photographs and require further verification as design progresses.

This Conceptual Cost Estimate is intended for planning purposes only - Right of Way should not be programmed until a Right of Way Data Sheet has been completed and approved.

The Scope of the Right of Way analysis includes applicable:

- Acquisition Costs (including any Excess Lands, Damages, Mitigation, etc.)
- Utility Relocation
- Railroad Involvement
- Relocation Assistance
- Clearance/Demolition
- Permits
- Title and Escrow Fees
- Construction Contract Work

Capital Costs are based on eminent domain estimating and appraisal methodologies and current market information. Support Costs are based on district workload estimating tools and historical data from previous similar projects.

Escalation and Contingency Rates were applied based on the proposed project schedule and previous district experience to account for changes in market conditions and other unanticipated project-related costs.

Check as applicable:

☐ A field review was not requested and therefore was not performed as part of this estimate.

☒ Mapping received did not provide sufficient detail to determine the limits of the right of way requirements and/or to determine damages to the remainder parcels impacted by the project.

☒ Additional right of way requirements may be anticipated but are not defined due to the preliminary nature of the early design requirements.

☐ We have determined that there are no right of way functional involvements in the proposed project at this time as currently designed.

CONCEPTUAL COST ESTIMATE FORM - RIGHT OF WAY (Cont.)
(Form #)

Contact
For further information regarding this estimate, please contact the estimator below:

R/W Estimator: Christina Diaz
Phone Number: (949) 398-4953

ATTACHMENT I
PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT

PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT

1. Project Information

District 12	County Orange/San Diego	Route I-5	PM 0.0/3.4, R71.0/R72.4	EA 0P550
Project Title: I-5 PSR-PDS from Avenida Pico to San Diego County Line				
Project Manager Ahmed Abou-Abdou			Phone # 657-328-6296	
Project Engineer Kim Robinson			Phone # 657-328-6289	
Environmental Office Chief/Manager Smita Deshpande			Phone # 657-328-6151	
PEAR Preparer Sean Noonan (VCS Environmental)			Phone # 949-234-6072	

2. Project Description

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans) District 12, the City of San Clemente, Transportation Corridor Agencies (TCA), and the San Diego Association of Governments (SANDAG), is proposing to reduce traffic congestion and delay along Interstate 5 (I-5) between the San Diego County Line and the I-5/Avenida Pico Interchange.

Purpose and Need

Purpose:
Consistent with the Caltrans Mission, the primary purpose of the project is to maximize efficiency of the freeway mainline by increasing person and vehicle throughput, while reducing current and projected traffic congestion and delay on the I-5 corridor from Avenida Pico to the San Diego County Line.

This I-5 corridor improvement project is intended to achieve the following purposes:

- Increase person and vehicle throughput;
- Promote regional managed lane system connectivity, and provide inter-county lane continuity;
- Reduce current and projected traffic congestion and delay on the freeway mainline;
- Promote travel time reliability;

- Provide improvements to accommodate projected regional growth;
- Improve multimodal efficiency and accommodate advanced technology for current and future transportation conditions; and
- To provide Americans with Disabilities (ADA) compliant features at the interchange ramp terminals, where feasible.

Need:
Current deficiencies of Interstate 5 (I-5) within the project limits are summarized below:

- There is a lack of managed lane continuity from Avenida Pico to the San Diego County Line.
- Existing aging facility lacks advanced technology to meet current and future transportation demands.
- Existing interchange ramp terminals within the project area are non-ADA compliant (e.g. pedestrian features and discontinuous bicycle facilities).

High-Occupancy Vehicle (HOV) lane and operational improvements have been made on I-5 throughout Orange County north of the project limits. These prior improvements begin at the northern Orange County limit and end just south of Avenida Pico in San Clemente. The Measure M2 Project C immediately north of the project study area, recently extended HOV lanes from their previous terminus to the Avenida Pico interchange vicinity.

Immediately south of the project study area in San Diego County, the San Diego Association of Governments' Regional Transportation Plan calls for the addition of 4 toll lanes between Oceanside and the Orange County Line by 2050.

At interchange ramp terminals in the project area, there are non-ADA compliant pedestrian features and discontinuous bicycle facilities. Addressing these needs will promote multimodal travel options in the local community.

Description of work
There are three Build Alternatives that are being considered. All three would widen the existing mainline to accommodate new lanes. The three Build Alternatives and the No Build Alternative are analyzed in the Preliminary Environmental Analysis Report (PEAR) as described below.

Alternatives
The following alternatives have been developed to meet the purpose and need of the project, while limiting impacts to right-of-way.

<u>Alternative 1 – No Build</u>
No additional lanes or improvements would be provided to the project corridor. This alternative assumes the completion of the I-5/Avenida Pico interchange improvements immediately north of the project location, and the I-5/El Camino Real interchange

improvements, which are both currently under construction. No other improvements would be made within the project area.

Alternative 2 – Add One General-Purpose Lane in each direction

One additional general-purpose lane would be added in each direction of I-5, to provide a total of five general-purpose lanes in each direction through the project corridor. The additional northbound (NB) lane would begin immediately north of the San Diego/Orange County Line and end just south of the Avenida Pico Undercrossing. The additional southbound (SB) lane would begin just north of the Avenue Presidio Undercrossing and become an auxiliary lane, ending at the SB Cristianitos Road exit ramp.

The existing mainline would be widened to the outside to accommodate the additional lane. Bridge undercrossing widening will occur at several locations, and new retaining walls would be constructed at bridge overcrossings within the corridor. Due to column conflicts, replacement of the Concordia Pedestrian Overcrossing will be required. To minimize local impacts along Avenida Del Presidente, the centerline of I-5 will be shifted easterly approximately 8 feet to 10 feet between Cristianitos Road and Avenida San Luis Rey. Additionally, the centerline of I-5 will be shifted westerly at the El Camino Real interchange to minimize right-of-way impacts to the east of the interchange. The existing sound wall on the west side of I-5 at El Camino Real would be impacted with this alternative. The need for sound walls, their locations, and heights would be evaluated in the PA&ED phase.

Ramp improvements will be provided where necessary due to the outside widening, and existing auxiliary lanes will be restored with the project. Local improvements, including signal timing and ADA-compliant pedestrian facilities, would be provided at several ramp intersections. Existing curb ramps within the project limits meet ADA requirements, with the exception of the Cristianitos Road Interchange curb ramps. Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. The curb ramps at the NB on-ramp from El Camino Real would be replaced due to on-ramp reconfiguration. The remainder of the curb ramps within the project limits would be protected in place.

Alternative 3A – Add One HOV Lane in each direction

An HOV lane would be added in each direction of I-5. The northbound (NB) HOV lane would begin immediately north of the San Diego/Orange County Line and connect to the HOV facility being added by the I-5/Avenida Pico interchange project. However, the project limits may extend further south to accommodate new advance overhead and roadside HOV signage. In the southbound (SB) direction, the existing inside general-purpose lane would be converted to an HOV lane from just south of the Avenida Pico Undercrossing to the Avenida Presidio Undercrossing, with outside widening south of Avenida Presidio. At the San Diego/Orange County Line, the SB HOV lane would become the inside general-purpose lane, with the outside general-purpose lane converting to an auxiliary lane and ending at the SB Cristianitos Road exit ramp.

The existing mainline would be widened to the outside to accommodate the HOV lanes. Bridge undercrossing widening will occur at several locations, and new retaining walls would be constructed at bridge overcrossings within the corridor. Due to column conflicts, replacement of the Concordia Pedestrian Overcrossing will be required. To minimize local impacts along Avenida Del Presidente, the centerline of I-5 will be shifted easterly approximately 8 feet to 10 feet between Cristianitos Road and Avenida San Luis Rey. Additionally, the centerline of I-5 will be shifted westerly at the El Camino Real interchange to minimize right-of-way impacts to the east of the interchange. The existing sound wall on the west side of I-5 at El Camino Real would be impacted with this alternative. The need for sound walls, their locations, and heights would be evaluated in the PA&ED phase.

Ramp improvements will be provided where necessary due to the outside widening, and existing auxiliary lanes will be restored with the project. Local improvements, including signal timing and ADA-compliant pedestrian facilities, would be provided at several ramp intersections. Existing curb ramps within the project limits meet ADA requirements, with the exception of the Cristianitos Road Interchange curb ramps. Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. The curb ramps at the NB on-ramp from El Camino Real would be replaced due to on-ramp reconfiguration. The remainder of the curb ramps within the project limits would be protected in place.

Alternative 3B – Add One Price Managed Lane in each direction

One price managed lane, which includes a 4-foot separation from the general-purpose lanes, would be added in each direction of I-5. The NB managed lane would begin immediately north of the San Diego/Orange County Line and connect to the HOV facility being added by the I-5/Avenida Pico interchange project. However, the project limits may extend further south to accommodate new advance overhead and roadside managed lane signage. In the SB direction, the existing inside general-purpose lane would be converted to a managed lane from just south of the Avenida Pico Undercrossing to the Avenida Presidio Undercrossing, with outside widening south of Avenida Presidio. At the San Diego/Orange County Line, the SB managed lane would become the inside general-purpose lane, with the outside general-purpose lane converting to an auxiliary lane and ending at the SB Cristianitos Road exit ramp.

The existing mainline would be widened to the outside to accommodate the managed lanes. Bridge undercrossing widening will occur at several locations, and new retaining walls would be constructed at bridge overcrossings within the corridor. Due to column conflicts, replacement of the Concordia Pedestrian Overcrossing will be required. To minimize local impacts along Avenida Del Presidente, the centerline of I-5 will be shifted easterly approximately 12 feet between Cristianitos Road and Avenida San Luis Rey. Additionally, the centerline of I-5 will be shifted westerly at the El Camino Real interchange to minimize right-of-way impacts to the east of the interchange. The existing sound wall on the west side of I-5 at El Camino Real would be impacted with this alternative. The need for sound walls, their locations, and heights would be evaluated in the PA&ED phase.

Ramp improvements will be provided where necessary due to the outside widening, and existing auxiliary lanes will be restored with the project. Local improvements, including signal timing and ADA-compliant pedestrian facilities, would be provided at several ramp intersections. Existing curb ramps within the project limits meet ADA requirements, with the exception of the Cristianitos Road Interchange curb ramps. Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. The following curb ramps would be replaced due to freeway ramp reconfiguration: NB off-ramp to Avenida Magdalena, NB on-ramp from El Camino Real, NB off-ramp to El Camino Real and NB off-ramp to Avenida Presidio. The remainder of the curb ramps within the project limits would be protected in place.

3. Anticipated Environmental Approval

Check the anticipated environmental determination or document for the proposed project in the table below.

CEQA		NEPA	
Environmental Determination			
Statutory Exemption	☐		
Categorical Exemption	☐	Categorical Exclusion	☐
Environmental Document			
Initial Study or Focused Initial Study with proposed Negative Declaration (ND) or Mitigated ND	☒	Routine Environmental Assessment with proposed Finding of No Significant Impact Complex Environmental Assessment with proposed Finding of No Significant Impact	☒ ☐
Environmental Impact Report	☐	Environmental Impact Statement	☐

CEQA Lead Agency (if determined):	Caltrans
Estimated length of time (months) to obtain environmental approval:	30
Estimated person hours to complete identified tasks:	11,890*

*Please see the Attachment B (Cost Matrix). Costs provided are for environmental tasks only.

4. Special Environmental Considerations

The following is a brief summary of the special considerations that may affect project delivery.

- The Build Alternatives would generally be limited to the existing right-of-way and would require no displacements; however, partial right-of-way acquisitions as well as TCEs would be required.
- The Build Alternatives occur near a regulatory floodplain located just south of the I-5/Avenida Pico interchange (Segunda Deshecha Canada Storm Channel), which would require future analysis related to hydrology and floodplain encroachment should work occur within these floodplain areas.
- The potential exists for encountering LBP, ACM, ADL, and yellow thermoplastic striping paint to be within the right-of-way during project construction. An ISA of the project area will be prepared for the project. Parcel-specific Phase II studies and/or testing for the presence of hazardous materials prior to demolition work may be required, depending on the results of the ISA.
- A portion of the project occurs within the Coastal Zone Boundary as mapped in the City of San Clemente's Local Coastal Program (south of the S. El Camino

Real UC); therefore, a Coastal Development Permit (CDP) from the City of San Clemente will be required.

- A Monarch Butterfly overwintering Eucalyptus grove exists in the ocean side of South San Clemente adjacent to the I-5. Monarch Butterflies are currently being considered for listing by the USFWS as endangered species. If listed, the proposed project has the potential to result in indirect impacts to this species during construction.
- Although no jurisdictional waters were identified that would be impacted by the Build Alternatives, should future biological studies along the corridor identify Waters of the US or Waters of the State along the project corridor that may be impacted, regulatory permitting and compensatory mitigation may be required.
- Given the presence of sensitive receptors along the project corridor, the project has the potential to result in noise and vibration impacts. Therefore, sound barriers may be warranted depending on results of future noise-related studies.
- The Build Alternatives may require multiple utility relocations including those for electrical, cable, telecommunication, water, sewer, and natural gas.

No other circumstances requiring unusual or extended processes are expected.

5. Anticipated Environmental Commitments

Specific avoidance, minimization, and/or mitigation measures/commitments and associated quantitative time and costs cannot be definitively determined at this time since the technical studies have not been initiated; however, based on the preliminary design information developed for this project for completion of the Project Initiation Document, the following identified commitments may be determined to be needed for this project during the PA/ED phase of this project, which are considered to be in addition to applicable standard practice(s).

Community Impacts

Access to some local businesses, residences and community facilities could be temporarily impacted during construction. A Transportation Management Plan (TMP) would be prepared for the project to address traffic handling and bicycle/pedestrian mobility during construction to minimize temporary project effects to local businesses.

Visual/Aesthetics

To maintain consistency of aesthetics along the project corridor and with the adjacent community, ongoing coordination with the Caltrans District Landscape Architect and the City of San Clemente would occur during preliminary engineering and final design efforts. This would include coordination related to potential planting requirements and aesthetic features for structures, including the replacement pedestrian bridge. It may be necessary to replace landscaping that is removed during construction.

Paleontological Resources

Based on the findings of this PEAR, a project-level Paleontological Identification Report/ Paleontological Evaluation Report (PIR/PER) will be required during the PA/ED phase

of the project. Depending on the findings of the PIR/PER, a Paleontological Mitigation Plan (PMP) may also be needed.

Hazardous Waste/Materials
An ISA would be prepared as part of the proposed project, which would include a records search, site reconnaissance, and interviews with the owners of properties within and adjacent to the project right of way as appropriate. The ISA will determine Recognized Existing Conditions (RECs) within the project study area as well as any next steps needed to further analyze, handle, and dispose of any hazardous wastes and/or materials if they are found to occur within the project limits.

Noise
Given that the project has the potential to result in noise and vibration impacts, a Noise Study Report (NSR) would be prepared to determine the existing noise environment and potential project impacts. Based on the results of the NSR, a Noise Abatement Decision Report (NADR) may need to be developed to document any noise abatement considerations, including the addition of sound barriers.

Biological Resources
Preliminary review revealed no critical habitat within the project limits and a low potential for rare plants, threatened species, endangered species, and sensitive species to occur; however, there is a moderate potential for bats to be present in bridge structures, culverts and foliage. A Natural Environment Study Minimal Impact (NES (MI)) would be prepared to assess these potential impacts and the possible need for regulatory permits.

6. Permits and Approvals
Based on a preliminary aerial review of the project site, the Segunda Deshecha Canada Storm Channel, which is a Water of the U.S. and Water of the State, lies south of Avenida Pico. No other potential jurisdictional waters were observed within the project corridor. No impacts to this feature or to other jurisdictional waters are anticipated; therefore, no regulatory permits are expected to be required for this project such as a federal CWA 404 Permit, CWA 401 Water Quality Certification and Waste Discharge Requirements, or a California Department of Fish and Wildlife (CDFW) 1602 Streambed Alteration Agreement.

A portion of the project occurs within the Coastal Zone Boundary as mapped in the City of San Clemente's Local Coastal Program (south of the S. El Camino Real UC); therefore, a Coastal Development Permit (CDP) from the City of San Clemente will be required.

7. Level of Effort: Risks and Assumptions
The following risks and assumptions have been identified during the preparation of this PEAR for the proposed project.

- The Build Alternatives would require partial acquisitions and TCEs; however, this PEAR assumes no full ROW acquisitions would be required. If complications or

issues arise related to the acquisitions and/or TCEs or full acquisitions are needed, additional time, cost, and documentation including a Relocation Impact Document could be required for project implementation.

- It is anticipated that the ISA will recommend further evaluation for suspected LBP, ACM, and/or ADL. If hazardous materials contamination or sources are suspected or identified during future studies or construction activities, additional time and costs could result. Similarly, if additional tests and analysis (including parcel specific ISAs) are required, additional time may be necessary, both for preparation and agency review, along with additional costs.
- The entire project area has been developed and/or disturbed in the past, and it is not anticipated that suitable habitat is present for federal- or state-listed species. If it is found that suitable habitat for sensitive biological resources is present during field studies, additional time may be required during preparation and agency review, as well as additional costs.
- Preparation and processing of a CDP will likely be required for the project.
- Although the entire project area has been developed with an existing interstate and roadways, there is a potential that paleontological resources could be found at depths greater than five feet. If paleontological resources are found, additional time and costs could be required during the project approval process, and there could be potential delays during construction.
- If unanticipated cultural resources are discovered during construction, additional time may be necessary for construction, as well as additional cost.

8. PEAR Technical Summaries

8.1 Land Use

According to the City of San Clemente General Plan Land Use Element, the proposed project is adjacent to Neighborhood and Community Commercial, Mixed Use, Institutional, Public, Open Space and Residential (Low to High Density) Land Use Designations. The proposed project traverses the following Focus Areas, which the City identifies as areas in which future land use changes will be concentrated: Los Molinos, a special industrial area near Avenida Pico; Del Mar T-Zone, the commercial and historic core of the downtown area; South El Camino Real (West of I-5), a residential and neighborhood commercial area; and South El Camino Real (East of I-5), designated as a visitor and community-serving corridor.

Construction of the project would occur primarily within the existing State right-of-way, with minor Temporary Construction Easements (TCEs) and partial acquisitions. No full right-of-way acquisitions are anticipated.

The General Plan Mobility and Complete Streets Element, Policy M-1.10, states the City's support of the extension of an HOV lane on I-5 south to the San Diego County border. Alternative 3A would support this policy.

The project is located adjacent to the inland portion of San Clemente State Beach, within a mile of San Clemente Municipal Golf Course and San Luis Rey Park, and within a half-mile of San Clemente High School athletic fields. No direct or indirect land use impacts are anticipated to occur to any Section 4(f) properties.

Temporary construction activities associated with the project may require temporary closure and/or detours of Class II Bike Lane facilities (on-road striping). According to the San Clemente Trail and Bike Ways Map on the City website, there is a Class II Bike Lane on both sides of Avenida Del Presidente, adjacent to the project boundary.

The Build Alternatives would be consistent with regional and local transportation plans, including the Measure M2 Project C, which is currently in construction, and SANDAG's Regional Transportation Plan.

Given the limited permanent right-of-way acquisitions, further stand-alone analysis of Land Use is not anticipated; however, it will be discussed in the Community Impact Assessment (CIA). If full acquisitions and/or relocations are needed, a Right-of-way Impact Document (RID) and the CIA would cover these topics in more detail.

8.2 Growth

Currently, the mainline along I-5 from Avenida Pico to the San Diego County Line experiences severe congestion and delay during peak periods. The Caltrans District 12 System Management Plan states that the Southern California Association of Governments' regional model forecasts that by 2035 future increased demand will contribute to continued degraded traffic operations. The proposed project alternatives are expected to improve projected traffic congestion; however, they are not anticipated to have a measurable impact on growth in the immediate vicinity as no new access to the State Highway System (SHS) would be provided, and limited developable land is available that would be reasonably accessible via the project improvements. Potential growth impacts will be discussed further in the Project's CIA.

8.3 Farmlands/Timberlands

There are no farmlands or timberlands located within or adjacent to the project area according to the City of San Clemente General Plan Land Use Element. Furthermore, the entire project area is defined as Urban and Built-Up Land by the California Department of Conservation. Therefore, the project would not impact farmlands or timberlands and no stand-alone technical study or memo-to-file documentation would be needed.

8.5 Community Impacts

It is not anticipated that the project would adversely affect the character of the adjacent communities. The project would not permanently divide any communities, as it would occur along an established transportation corridor. The Build Alternatives would move the pedestrian overcrossing; however, the new overcrossing would be completed before the existing structure would be demolished, so there would be no temporary impacts to pedestrian connectivity during construction. Temporary traffic disruptions, such as temporary lane closures and/or detours, would occur during construction. A Transportation Management Plan (TMP) would be prepared for the project to address traffic handling during construction. Partial right-of-way acquisitions and TCEs would be required.

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This executive order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. To determine if the Build Alternatives contain higher than average concentrations of low-income or minority individuals, a review of the U.S. Census data was performed. The Build Alternatives are located within Census Tract 421.03, Block Groups 1, 2 and 4, Census Tract 421.07, Block Group 1, Census Tract 421.08, Block Group 2, Census 421.13, Block Groups 1, 3, and 4, and Census Tract 421.14, Block Group 1.

As indicated in Table 1 below, within the project study area (the Census Tracts and Block Groups listed above), the two largest racial/ethnic groups are White and Hispanic/Latino. Similarly, the two largest racial/ethnic groups in the City of San Clemente, and the County of Orange are also White and Hispanic/Latino. The project study area has a higher percentage of individuals identified as Hispanic/Latino than the City, and a lower percentage than the County.

Table 1 – Population, Race, and Ethnic Distributions

Area	Population	Median Age	White%	African American %	American Indian %	Asian %	Hawaiian/Pacific Islander %	Hispanic/ Latino %
Orange County	3,132,211	37.30	63.0	1.6	0.4	19.2	0.3	34.2
City of San Clemente	65,082	42.40	80.5	0.6	0.2	3.4	0.7	18.6
Project Study Area[1]	11,916	41.2	75.5	0.2	0.4	1.3	0.0	28.8
Census Tract 421.03, Block Group 1	2,222	34.9	75.9	0.0	0.0	0.0	0.0	26.9
Census Tract 421.03, Block Group 2	703	49.1	97.2	0.0	0.0	0.0	0.0	13.7
Census Tract 421.03, Block Group 4	1,869	22.9	73.8	0.7	0.0	3.8	0.0	16.6
Census Tract 421.07, Block Group 1	1,888	32.4	48.0	0.0	0.0	2.1	0.0	62.6
Census Tract 421.08, Block Group 2	517	40.0	95.7	0.0	0.0	0.0	0.0	11.0
Census Tract 421.13, Block Group 1	962	56.9	92.3	0.0	0.0	2.1	0.0	14.0
Census Tract 421.13, Block Group 3	1,052	45.8	79.5	0.0	0.0	0.0	0.0	25.7
Census Tract 421.13, Block Group 4	948	54.6	85.8	0.0	0.0	2.3	0.0	15.5

Area	Population	Median Age	White%	African American %	American Indian %	Asian %	Hawaiian/Pacific Islander %	Hispanic/ Latino %
Census Tract 421.14, Block Group 1	1,755	34.1	74.9	0.3	3.0	0.0	0.0	36.1

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

[1] Project Study Area numbers are the combined totals of all of the Block Groups in the study area.

The majority of partial permanent right-of-way takes and TCEs occur in Census Tract 421.13, Block Group 3. This Block Group is 79.5% white and 25.7% Hispanic/Latino. This percentage of a minority population is higher than the overall percentage in the City, but lower than the Project Study Area as a whole, and lower than the overall percentage in the County. Of the nine Census Tract Block Groups in the study area, three have higher percentages of minority residents than the Block Group where the majority of impacts will occur.

Poverty is defined based on the Department of Health and Human Services (DHHS) poverty guidelines. For 2018, this was $25,100 for a household/family of four. As seen in Table 2 below, the median household income according to the U.S. Census data for the tracts and blocks within the project study area was $79,991 (household incomes ranged from $52,159 to $113,158). The median household income for the City of San Clemente was $97,210, and for Orange County overall was $78,145. The median household income for the project study area is greater than the DHHS poverty guideline value of $25,100, and none of the Census Tract Block Groups' median household income falls below the DHHS poverty guideline.

Table 2 – Median Household Income

Area	Median Household Income
Orange County	$78,145
City of San Clemente	$97,210
Project Study Area[1]	$79,991
Census Tract 421.03 Block Group 1	$74,003
Census Tract 421.03, Block Group 2	$93,083
Census Tract 421.03, Block Group 4	$52,159
Census Tract 421.07, Block Group 1	$59,896
Census Tract 421.08, Block Group 2	$55,667[2]
Census Tract 421.13 Block Group 1	$113,158
Census Tract 421.13, Block Group 3	$72,500
Census Tract 421.13, Block Group 4	$108,333
Census Tract 421.14, Block Group 1	$66,797

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates
[1] Project Study Area numbers are the combined totals of all of the Block Groups in the study area.
[2] Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

The majority of partial permanent right-of-way takes and TCEs occur in Census Tract 421.13, Block Group 3. The median household income of this Block Group is $72,500, which is approximately 7 percent below the Orange County median and the median of the

Project Study Area Block Groups, and 25 percent below the City of San Clemente median. Four of the nine Census Tract Block Groups have median household incomes lower than the median household income in the Block Group where the majority of impacts will occur.

Project improvements would generally be limited to the existing right-of-way and the proposed project would require no displacements and minimal right-of-way acquisitions. Access to some local businesses, residences and community facilities could be temporarily impacted during construction. Accordingly, a CIA would be required to analyze potential impacts and to evaluate appropriate avoidance and minimization measures.

8.6 Visual/Aesthetics

I-5 is not designated by Caltrans as an official State Scenic Highway, nor is it eligible as a State Scenic Highway. The County of Orange General Plan designates I-5 in the project area as a Viewscape Corridor on the Transportation Element's Scenic Highway Plan. A Viewscape Corridor is a route which traverses a corridor within which unique or unusual scenic resources and aesthetic values are found. The designation is intended to minimize the impact of highway and land development upon scenic resources along the route.

The Urban Design Element of the City of San Clemente General Plan designates the I-5 interchanges within the City as Gateways, and Policy UD-2.12 requires working with Caltrans and other agencies to ensure aesthetics are an integral consideration in design, implementation, and maintenance of all highway facilities and rights-of-way, with special emphasis on Gateway areas. Avenida Pico is designated as a Major Urban Scenic Corridor and Policy UD-2.05 requires preservation of public view corridors.

Land uses within the vicinity are characterized by residential, developed commercial, institutional, public and open space uses. The Build Alternatives would add travel lanes to the existing roadway. These improvements would be consistent with the type of improvements that are expected in urban areas and would occur primarily within the existing right-of-way. Coordination would be ongoing with Caltrans District Landscape Architect to ensure that any proposed aesthetic treatments, sound walls or planting, if incorporated, would be consistent with the corridor. Replacement of landscaping removed during construction of either Build Alternative would likely be necessary. Aesthetic treatments for retaining walls and the replacement pedestrian bridge are also topics that would need to be explored in further detail. Coordination with the City may be necessary with regard to visual treatments and replacement landscaping at the interchanges. Based on these conditions, a Visual Impact Assessment Memo would need to be prepared during PA/ED to address the minor visual changes anticipated for the Build Alternatives.

8.8 Cultural Resources

Archaeological Resources

The Build Alternatives are surrounded by urban development along the I-5 from Pico to the San Diego County line. No archaeological resources are known to be present in the anticipated area of potential effect (APE) for the Build Alternatives; however, a record search and survey would be required for verification. Given the extent of existing urban development, it is unlikely that any archaeological resources remain intact within the anticipated APE.

An APE map would be developed and an Historic Property Survey Report (HPSR) and Archaeological Survey Report (ASR) would likely be prepared for the proposed project. A record search and field survey would be completed as part of the HPSR to determine if any resources have been recorded in the APE.

Native American consultation will be required in accordance with Assembly Bill (AB) 52 given that an Initial Study will be prepared for the project in compliance with CEQA. If requested by tribes, government-to-government (lead agency to tribe) consultation may be required. Native American consultation under Section 106 of the National Historic Preservation Act would be required in any case.

Historic Resources

Based on aerial photos and maps, some of the built environment resources adjacent to the APE may be over 50 years old. Further analysis would be conducted to confirm whether any buildings and/or structures would require evaluation or if no further evaluation related to historic resources would be required. If further analysis identifies that historic resources are present, then a Historical Resources Evaluation Report (HRER) would be required.

If any archaeological sites or historical resources are determined to be listed or eligible for listing in the National Register of Historic Places or California Register of Historical Resources, then these would be considered resources under CEQA.

8.9 Hydrology and Floodplain

Based on a review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) (FEMA FIRM Panel Numbers 06059C0528J, 0536J, 0538J and 0539J, dated December 3, 2009), none of the proposed project is located within a 1-percent annual chance (100-year) floodplain. At the northern end of the project area, near Avenida Pico, the project is within a quarter-mile of a 1-percent annual chance (100-year) floodplain. A small portion of the project area south of Avenida Pico on both sides of I-5 is within an area of 0.2 percent annual chance (500-year) floodplain. A regulatory floodway, Segunda Deshecha Canada Storm Channel, crosses under I-5 from east to west in this area. Given that the project activities are not likely to encroach on the 100-year or 500-year floodplains or the channel, no Location Hydraulic Study or Floodplain Evaluation Report would likely be required.

8.10 Water Quality and Storm Water Runoff

The limits of the proposed project are within the jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB) and the receiving body is Segunda Deshecha Channel and various San Clemente Coastal streams (Marquita Storm Channel, Trafalgar Storm Drain, Alessandro Storm Drain, and Riviera Storm Channel). The receiving water body (Segunda Deshecha) is on the 2016 Clean Water Act 303(d) list of Water Quality Limited Segments Requiring TMDLs for unknown sources of Benthic Community Effects, Indicator Bacteria, Malathion, Nitrogen, Phosphorus, Selenium, Toxicity, and Turbidity. In addition to the impaired water bodies, the project is located within the Total Maximum Daily Load (TMDL) for Indicator Bacteria, Project I -Twenty Beaches and Creeks in the San Diego Region as identified in Attachment IV of the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ as amended in Order WQ 2014-0077-DWQ).

Since this project discharges to a water body with an established TMDL as identified in Attachment IV of the Caltrans NPDES permit, any runoff treated in excess of the new impervious area created by the project may be claimed as a Compliance Unit (CU) to meet Caltrans NPDES permit requirements for achieving the TMDL compliance strategy.

This project must conform to all applicable water quality regulations and/or permit requirements of the State Water Resources Control Board (SWRCB), and the San Diego Regional Water Quality Control Board (RWQCB), which include, but are not limited to, the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003 as amended in Order WQ 2014-0077-DWQ), the Statewide General Permit for Storm Water Discharge Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ, NPDES No. CAS000002), the Caltrans Storm Water Management Plan (SWMP) and any subsequent revisions and/or additional requirements at the time of construction.

The project's potential water quality impacts will be evaluated in a Water Quality Assessment Report (WQAR) or a Water Quality Technical Memorandum during the PA/ED phase to analyze the project's temporary and permanent impacts to water quality and identify the avoidance and minimization measures to address these impacts.

8.11 Geology, Soils, Seismic and Topography

The project traverses generally hilly topography. It is located in the seismically active southern California region; however, it is not located in an Alquist-Priolo Earthquake Fault Zone as identified by the California Geologic Survey. In addition, according to the County of Orange General Plan Safety Element Fault Map and Caltrans Fault Database, there are no known faults within the proposed project area.

The City of San Clemente General Plan Geologic, Seismic, and Soil Hazards Map indicates that the area from Avenida Pico to approximately 0.2 - 0.25 mile south of Avenida Pico is in a Liquefaction Zone Area, such that mitigation as defined in Public Resources Code Section 2693(c) would be required. Significant slope areas along the east side of I-5 are shown as within a Landslide Zone Area such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Given these constraints, a geotechnical study will be required for the proposed project. The geotechnical evaluation for planned structures within the liquefaction zone should include field explorations consisting of borings and Cone Penetration (CPT) soundings to an adequate depth for liquefaction evaluation and collection of soil samples at selected depths from the borings. The soil samples should be tested for grain size distribution, Plasticity Index, and moisture contents. Liquefaction analysis should be performed based on the site-specific data and results of the liquefaction analysis should be considered in design of the planned structures.

In addition, improvements within areas susceptible to seismically induced landslides will require evaluation during future phases of the project. A detailed review of available geology maps and reports should first be performed along with site reconnaissance to map bedrock exposure, geologic features, and existing site conditions such as erosion, seepage and other signs of distress. If the initial study determines that the potential hazard exists, a field exploration program, including bucket-auger borings, soil sampling, and down-hole logging, should be conducted. The collected soil samples should be tested for in-place density and shear strength. Slope stability analysis should be performed to assess factor of safety under seismic conditions and develop mitigation measure, if necessary.

8.12 Paleontology

The project footprints for the Build Alternatives are surrounded by urban development along the I-5 from Avenida Pico to the San Diego County line. This area is highly disturbed. Based on a preliminary review of geological mapping, the proposed project site is underlain by Older Quaternary alluvium and the Miocene Capistrano Formation. Older Alluvium can be sensitive anywhere it is exposed, but the Capistrano Formation is generally considered to be sensitive for paleontological resources at depths greater than five feet, as younger, alluvial sediments are typically lying above these rocks. Given the presence of I-5 and other existing roadways, the area has likely been disturbed previously to depths of five feet or greater in some areas. If there are excavations planned that extend into older Alluvial sediments and/or the Capistrano Formation, a project-level Paleontological Identification Report/ Paleontological Evaluation Report (PIR/PER) will be required during the PA/ED phase of the project. Depending on the findings of the PIR/PER, a Paleontological Mitigation Plan (PMP) may also be needed. If paleontological resources are found during the identification phase, additional time and costs could be required during the project approval process.

8.13 Hazardous Waste/Materials

The potential exists for encountering lead-based paint (LBP), asbestos containing material (ACM), aerially deposited lead (ADL), and yellow thermoplastic striping paint to be within the right-of-way during project construction. An Initial Site Assessment (ISA) of the project area will be prepared for the project. Parcel-specific Phase II studies and/or testing for the presence of hazardous materials prior to demolition work may be required, depending on the results of the Phase I ISA. Once the project is constructed, the corridor would continue to function similar to pre-project existing conditions. All vehicles traveling on the improved corridor transporting hazardous waste or materials would continue to be subject to state and federal handling standards and regulations.

8.14 Air Quality

The Build Alternatives are located in the Orange County portion of the South Coast Air Basin (SCAB or Basin) and under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD administers air quality regulations developed at the federal, state, and local levels. The State of California has designated the Orange County portion of the Basin as being a nonattainment area for ozone (O3), particulate matter smaller than 2.5 micrometers (PM2.5), and particulate matter smaller than 10 micrometers (PM10). At the federal level, the U.S. Environmental Protection Agency (USEPA) has designated this area as being a nonattainment area for both O3 (eight-hour standard) and PM2.5.

The proposed project is not currently included in the final adopted Southern California Association of Governments (SCAG) 2017 Federal Transportation Improvement Program (FTIP), however, it is included in the final adopted Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) as project number ORA 150201.

The proposed project is anticipated to generate O3, PM2.5, PM10 and other pollutants related to air quality emissions standards during construction and operations. An Air Quality Study Report (AQSR) will be prepared to address these potential air quality impacts of the project, which will be prepared according to the requirements of the Transportation Conformity Working Group (TCWG) and FHWA.

8.15 Noise and Vibration

The proposed project is bordered by residential, institutional, public, open space, and commercial land uses which are interspersed and extend the length of the corridor. The commercial uses include several hotels/motels, the open space uses include the San Clemente State Beach campground, and the institutional/public uses include San Clemente High School.

A Noise Study Report (NSR) would be required to analyze potential noise and vibration impacts to sensitive receptors. A determination regarding the potential need for new sound barriers would be made during the PA/ED phase of the proposed project. Based on

the results of the NSR, it is expected that a Noise Abatement Decision Report (NADR) may be required. The NADR would document any noise abatement considerations, including the addition of sound barriers.

8.16 Energy and Climate Change

The proposed project is not considered a major project in terms of energy consumption. The difference in energy consumption between the existing and with-project condition is not considered to be substantial because operation of the corridor would continue similar to existing conditions, once constructed. Use of energy associated with temporary construction activities would also not be substantial because this is an expansion of an existing facility. In addition, the project is listed in SCAG's 2016-2040 RTP/Sustainable Communities Strategy. Therefore, an analysis related to energy is not anticipated to be necessary.

The proposed project is intended to reduce congestion and to reduce delays along the I-5 corridor. It is anticipated that the project would result in a reduction in vehicle hours traveled and improved traffic flow, which would be evaluated further in the traffic analysis conducted during the PA/ED phase of the project. As such, the project AQSR would further examine if carbon dioxide emissions may be reduced by the project even though an increase in local vehicle miles traveled may result from the proposed project. A quantitative analysis of greenhouse gas emissions will be prepared as part of the AQSR for the proposed project.

8.17 Biological Environment

The Build Alternatives traverse developed urban landscapes that include heavily disturbed sites, landscaped areas, public lands, and open space areas. Based on a preliminary review of the project site there is a potential for rare plants, threatened species, including CAGN, endangered species, and sensitive species to be present within the anticipated biological survey area and a moderate potential for bats to be present within the anticipated biological survey area, in bridge structures, culverts, and foliage.

Based on CNDDB data, the following species may be present within 0.5 mile of project site: Tidewater Goby, Blochman’s Dudleya, California Glossy Snake, Dulzura Pocket Mouse, Mexican Long-tongue Bat, Pacific Pocket Mouse, Arroyo Toad, Chaparral Ragwort, Coast Horned Lizard, Estuary Seablite, Northwestern San Diego Pocket Mouse, Prostate Vernal Pool Navarretia, South Coast Saltscale, Steelhead, Western Pond Turtle and White Rabbit-Tobacco. In addition, CAGN critical habitat is present in the Northwest corner of the study area, the Southeast corner of the study area, a small isolated patch near the northern 1/3 of the project site within a portion of the ROW, and another small isolated patch adjacent to the west of the ROW near the southern 1/3 of the project site. Least Bells Vireo may also be present in the southern portion of the project study area along San Mateo Creek. In addition, a large population of Monarch butterflies winter adjacent to the project site in a grove of Eucalyptus trees at San Clemente State Beach (next to the Avenida Del Presidente near the Avenida San Luis Ray overcrossing of I-5).

Potential impacts and mitigation to these species will be discussed within the NES (MI) document.

Should suitable habitat for threatened or endangered species be observed within the construction area during development of the project's NES (MI), focused surveys for the applicable species may be required to determine if the habitat is occupied. If the habitat is occupied, then consultation with USFWS and/or CDFW may be required if there is the potential for "take" of a listed species. Depending on the species, preconstruction surveys at a species-specific time of the year may also be required and, if nesting activities are observed, then project activities would not be allowed within an appropriate buffer (commonly 500 feet for threatened, endangered, raptors, and sensitive species). Furthermore, depending on the species, relocation of the species and/or modification of the project design may be necessary to avoid and/or minimize impacts.

The Migratory Bird Treaty Act (MBTA) makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill native birds. The law applies to the removal of nests as well as the abandonment of nests occupied by native birds during the breeding season. Based on the presence of vegetation and trees within and adjacent to the proposed project, if the project requires removal of vegetation or modification of bridge structures during the nesting bird season (typically February 15 through September 15), a preconstruction nesting bird survey would be required. If nesting migratory birds are found immediately prior to or during construction, project activity within an appropriate buffer (varying by species) may be required to halt until all nesting activities have ceased or all juveniles have fledged. There is moderate potential for roosting bats and/or colonial nesting birds to be present within the bridge overcrossings. The installation of bat exclusionary devices on bridge structures outside the bat maternity season (typically April 1 to August 31) prior to any modification or removal of the structures could be required. A preconstruction bat survey may be required.

Based on a preliminary aerial review of the project site, the Segunda Deshecha Canada Storm Channel, which is a Water of the U.S. and Water of the State, lies south of Avenida Pico. No other potential jurisdictional waters were observed within the project corridor. No impacts to this feature or to other jurisdictional waters are anticipated; therefore, no regulatory permits are expected to be required for this project such as a federal CWA 404 Permit, CWA 401 Water Quality Certification and Waste Discharge Requirements, or a California Department of Fish and Wildlife (CDFW) 1602 Streambed Alteration Agreement. The need for regulatory permits will be reassessed in the future based on project design at that time within a NES (MI) document.

8.18 Cumulative Impacts

The Build Alternatives are not anticipated to result in any cumulative impacts to any resources. Contingent upon the results of any related technical study indicating otherwise, it is expected that no stand-alone cumulative impacts analysis will be required. Based upon the completion of technical studies identified in this PEAR, it may be determined

that the proposed project would result in some direct impacts to the following resources: Community, Visual/Aesthetic, Water Quality, Paleontological Resources, Hazardous Waste/Materials, Air Quality, Noise, and Biological Resources. It is anticipated that the potential for cumulative impacts from the proposed project to any of the aforementioned would be low; however, this will be evaluated in the respective technical reports that are prepared, as applicable.

8.19 Context Sensitive Solutions

Caltrans uses Context Sensitive Solutions (CSS) as its approach to plan, design, construct, maintain, and operate its transportation system. CSS uses innovative and inclusive approaches that integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals. CSS are reached through a collaborative, interdisciplinary approach that involves all stakeholders. As the project progresses through the design phase (PA/ED), the incorporation of CSS should be implemented through coordination amongst the project development team (PDT). Any public outreach should also include the topic of CSS so the public can provide input regarding how the project will fit into the community. Some solutions that may apply to the project would involve the replacement of impacted landscaping and the incorporation of surface or other treatment of any structures that are proposed to match the existing context.

9. Summary Statement for PSR or PSR-PDS

The anticipated document for compliance with CEQA and NEPA is a CEQA Initial Study/Mitigated Negative Declaration (IS/MND) and NEPA Routine Environmental Assessment with proposed Finding of No Significant Impact (EA/FONSI) for the project.

Caltrans will act as the CEQA and NEPA Lead Agency for this project.
The final determination regarding the applicable CEQA and NEPA compliance documentation will be made by Caltrans in conjunction with completion of the required technical studies as determined during the PDT process (see Attachment A, PEAR Environmental Studies Checklist).

Based on the findings of the PEAR, key issues to be addressed will include CDP approval, Community Impacts, and Noise, which carry a medium risk.

- A portion of the project occurs within the Coastal Zone Boundary as mapped in the City of San Clemente's Local Coastal Program (south of the S. El Camino Real UC); therefore, a Coastal Development Permit (CDP) from the City of San Clemente will be required.
- Community Impacts, including community character and cohesion, environmental justice, land use, and growth, will be investigated in a Community Impact Assessment (CIA). Although there are various Section 4(f) resources in the project vicinity, no temporary use, constructive use, or direct use of these resources are anticipated for the project. Therefore, compliance with Section 4(f)

will be covered in the CIA rather than a separate stand-alone Section 4(f) Evaluation or *De Minimis Determination*.

- Noise and Vibration will be studied further in a Noise Study Report and in a Noise Abatement Decision Report.

All other environmental study categories appearing on the PEAR Environmental Studies Checklist are evaluated at a low risk; however, a Visual Impacts Assessment Memo, Archaeological Survey Report, Historic Property Survey Report, Section 106/PRC 5024 & 5024.5, Native American coordination, Water Quality Scoping Questionnaire, Water Quality Assessment Report, Geotechnical Report, Paleontological Evaluation Report, Initial Site Assessment, Air Quality Study Report, and Natural Environment Study (Minimal Impact) will be prepared.

Based on the findings of the PEAR, implementation of the project would have either no or less than significant impacts on agriculture and mineral resources. Therefore, no further detailed environmental analysis related to these environmental areas is required as part of future environmental documentation.

Due to the avoidance of the Segunda Deshecha Canada Storm Channel other regulatory permits beyond a CDP are not expected to be required for the project.

Applicable construction windows, the need for biological or Native American monitoring, or compensatory mitigation will be determined during completion of the pertinent technical studies. An Environmental Commitments Record will be required to ensure implementation of all Avoidance, Minimization, and/or Mitigation Measures required to address impacts resulting from the proposed project.

The IS/MND timeline could require approximately 30 months, from the start of the environmental studies to approval of the environmental document.

This project must conform to all applicable water quality regulations and/or permit requirements of the State Water Resources Control Board (SWRCB), and the San Diego Regional Water Quality Control Board (RWQCB), which include, but are not limited to, the Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003 as amended in Order WQ 2014-0077-DWQ), the Statewide General Permit for Storm Water Discharge Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, as amended by Order No. 2010- 0014-DWQ, NPDES No. CAS000002), the Caltrans Storm Water Management Plan (SWMP) and any subsequent revisions and/or additional requirements at the time of construction.

The estimated Disturbed Soil Area (DSA) for this project varies from 2.43-28.6 acres, which will require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) to comply with the National Pollutant Discharge Elimination System (NPDES) Statewide Construction General Permit (CGP). The SWPPP will identify and implement temporary Best Management Practices (BMPs) during construction to address the temporary impacts to water quality.

The project discharges to Segunda Deshecha Creek within the Aliso Creek-Frontal Gulf of Santa Catalina watershed. The receiving water body is on the 2014-2016 Clean Water Act 303 (d) list of Water Quality Limited Segments Requiring TMDLs for phosphorus, toxicity, and turbidity, Selenium, Nitrogen, Malathion, indicator bacteria, and Benthic Community Effects.

Since this project discharges to a water body with an established TMDL as identified in Attachment IV of the Caltrans NPDES permit, any runoff treated in excess of the new impervious area created by the project may be claimed as a Compliance Unit (CU) to meet Caltrans NPDES permit requirements for achieving the TMDL compliance strategy. The attached Storm Water Data Report (SWDR) will evaluate and document compliance with the TMDL within the project limits.

Should dewatering be required, dewatering must comply with San Diego Regional Water Quality Control Board Order R9-20J5-0013, NPDES No. CAG919003.

10. Disclaimer

This PEAR provides information to support programming of the proposed project. It is not an environmental determination or document. Preliminary analysis, determinations, and estimates of mitigation costs are based on the project description provided in the Project Study Report (PSR). The estimates and conclusions in the PEAR are approximate and are based on cursory analyses of probable effects. A reevaluation of the PEAR will be needed for changes in project scope or alternatives, or in environmental laws, regulations, or guidelines.

Recommended Technical Analysis
An updated ISA and/or a Preliminary Site Investigation (PSI) will be conducted for the environmental document during the PA/ED phase and submitted in early phase of PA/ED. A Hazardous Waste Work Plan is required prior to preparing the PSI (if needed) and must be reviewed and concurred by Caltrans. The updated ISA and/or PSI will be summarized in the environmental document.

11. List of Preparers

Cultural Resources specialist Pat Maxon	Date: 1/26/2018
Biologist Wade Caffrey	Date: 1/26/2018
Community Impacts specialist Kathleen Douglas	Date: 2/1/2018
Noise and Vibration specialist Eric Turner	Date: 2/1/2018
Air Quality specialist Eric Turner	Date: 2/1/2018
Paleontology specialist/liaison Pat Maxon	Date: 1/26/2018

Water Quality specialist Patrick Boctor	Date: 2/1/2018
Hydrology and Floodplain specialist Patrick Boctor	Date: 2/1/2018
Hazardous Waste/Materials specialist Brynn McCulloch	Date: 2/20/2018
Visual/Aesthetics specialist Kathleen Douglas	Date: 2/1/2018
Energy and Climate Change specialist Eric Turner	Date: 2/1/2018
Other: N/A	Date: N/A
PEAR Preparer (Name and Title) Sean Noonan, Director of Environmental Planning	Date: 5/18/2018

12. Review and Approval

I confirm that environmental cost, scope, and schedule have been satisfactorily completed and that the PEAR meets all Caltrans requirements. Also, if the project is scoped as a routine EA, complex EA, or EIS, I verify that the HQ DEA Coordinator has concurred in the Class of Action.

_____ Date: _____

Environmental Branch Chief

_____ Date: _____

Project Manager

REQUIRED ATTACHMENTS:

Attachment A: PEAR Environmental Studies Checklist
Attachment B: Estimated Resources by WBS Code
Attachment C: Schedule (Gantt Chart)

Attachment A: PEAR Environmental Studies Checklist

Rev. 08/2018

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use	☐	☐	☒	**L**	Included in CIA
Wild and Scenic River Consistency	☒	☐	☐	**L**	
Coastal Management Plan	☒	☐	☐	**L**	
Growth	☐	☐	☒	**L**	Included in CIA
Farmlands/Timberlands	☒	☐	☐	**L**	
Community Impacts	☐	☐	☒	**M**	
Community Character and Cohesion	☐	☐	☒	**L**	Included in CIA
Relocations	☒	☐	☐	**L**	
Environmental Justice	☐	☐	☒	**L**	Included in CIA
Utilities/Emergency Services	☒	☐	☐	**L**	
Visual/Aesthetics	☐	☒	☐	**L**	VIA Memo
Cultural Resources:	☐	☐	☒	**L**	
Archaeological Survey Report	☐	☐	☒	**L**	
Historic Resources Evaluation Report	☒	☐	☐	**L**	
Historic Property Survey Report	☐	☐	☒	**L**	
Historic Resource Compliance Report	☒	☐	☐	**L**	
Section 106 / PRC 5024 & 5024.5	☐	☐	☒	**L**	
Native American Coordination	☐	☐	☒	**L**	
Finding of Effect	☒	☐	☐	**L**	
Data Recovery Plan	☒	☐	☐	**L**	
Memorandum of Agreement	☒	☐	☐	**L**	
Other:	☐	☐	☐	**L**	
Hydrology and Floodplain	☒	☐	☐	**L**	
Water Quality and Stormwater Runoff	☐	☐	☒	**L**	WQAR or Water Quality Technical Memorandum
Geology, Soils, Seismic and Topography	☐	☐	☒	**L**	Geotechnical Study
Paleontology	☐	☐	☒	**L**	
PER	☐	☐	☒	**L**	
PMP	☐	☐	☐	**L**	TBD pending PIR/PER
Hazardous Waste/Materials:	☐	☐	☒	**L**	
ISA (Additional)	☐	☐	☒	**L**	
PSI	☐	☐	☐	**L**	TBD pending ISA
Other:	☒	☐	☐	**L**	
Air Quality	☐	☐	☒	**L**	AQSR
Noise and Vibration	☐	☐	☒	**M**	NSR and NADR
Energy	☒	☐	☐	**L**	Discussed in Environmental Document
Climate Change and Sea Level Rise	☒	☐	☐	**L**	
Biological Environment	☐	☐	☒	**L**	NES (MI)
Fish Passage	☒	☐	☐	**L**	
Natural Environment Study	☐	☐	☒	**L**	NES (MI)
Biological Assessment Section 7:	☒	☐	☐	**L**	

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Formal	☒	☐	☐	L	
Informal	☒	☐	☐	L	
No effect	☒	☐	☐	L	
Section 10	☒	☐	☐	L	
USFWS Consultation	☒	☐	☐	L	
NMFS Consultation	☒	☐	☐	L	
Species of Concern (CNPS, USFS, BLM, S, F)	☒	☐	☐	L	
Wetlands & Other Waters/Delineation	☒	☐	☐	L	
404(b)(1) Alternatives Analysis	☒	☐	☐	L	
Invasive Species	☒	☐	☐	L	
HMMP	☒	☐	☐	L	
CDFW Consistency Determination	☒	☐	☐	L	
2081	☒	☐	☐	L	
Other:	☒	☐	☐	L	
Cumulative Impacts	☒	☐	☐	L	
Context Sensitive Solutions	☒	☐	☐	L	
Section 4(f) Evaluation	☐	☐	☒	L	Included in CIA
Permits:					
401 Certification Coordination	☒	☐	☐	L	
404 Permit Coordination, IP, NWP, or LOP	☒	☐	☐	L	
1602 Agreement Coordination	☒	☐	☐	L	
Local Coastal Development Permit Coordination	☐	☐	☒	L	San Clemente LCP
State Coastal Development Permit Coordination	☒	☐	☐	L	
NPDES Coordination	☒	☐	☐	L	
TRPA	☒	☐	☐	L	
BCDC	☒	☐	☐	L	

ATTACHMENT B - Resources by WBS Code

Project ID: 1215000141
EA: 0P550
Description: I-5 PSR-PDS from Avenida Pico to San Diego County Line

WBS Task Activity Code	Division Chief	Office Chief	Senior	Generalist	Biology	Cultural	Haz Waste	Socio-Economic	Storm Water	ECL	Steward-ship	Noise/Air	Sup Svcs	Design	Hydraulics	Landscape	Planning	Right of Way	Surveys	Total
Assigned Unit																				
Project Management																				
100.10 – Project Management - PA&ED																				-
100.15 – Project Management - PS&E																				-
100.20 – Project Management - Construction																				-
100.25 – Project Management - Right of Way																				-
Total Project Management	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perform Preliminary Engineering Studies and Draft Project Report																				
160.05 – Updated Project Information																				-
160.10 – Engineering Studies																				-
160.15 – Draft Project Report																				-
160.30 – Environmental Study Request				350																350
160.40 – NEPA Assignment				-																-
Total Perform Prelim Eng Studies & Draft PR	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350
Perform Environmental Studies and Prepare Draft Environmental Document - Task Management Activities																				
165.05 – Env Scoping of Alternatives				150																150
165.10 – General Env Studies				800		400	350		265			2,100			425	425				4,765
165.15 – Biological Studies					950															950
165.20 – Cultural Resource Studies						850														850
165.25 – Draft Env Document				4,050																4,050
165.30 – NEPA Assignment				-																-
Total Perform Env Studies & Prepare DED	-	-	-	5,000	950	1,250	350	-	265	-	-	2,100	-	-	425	425	-	-	-	10,765
Obtain Permits, Licenses, Agreements and Certifications (PLACs) and Route Adoptions during PA&ED Component - Task Management Activities																				
170.05 – Reqired PLACs				400																400
170.10 – PLACs																				-
170.15 – Railroad Agreements																				-
170.20 – Freeway Agreements																				-
170.25 – Agreement for Material Sites																				-
170.30 – Executed Maintenance Agreements																				-
170.40 – Route Adoptions																				-
170.45 – MOU from TERO																				-
170.55 – NEPA Assignment																				-
Obtain PLACS & Rte Adoptions during PA&ED	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400
Circulate Draft Environmental Document and Select Preferred Project Alternative - Task Management Activities																				
175.05 – DED Circulation				1,045																1,045
175.10 – Public Hearing				2,200																2,200
175.15 – Public Comment Responses & Corr				1,050																1,050
175.20 – Project Preferred Alternative				305																305
175.25 – NEPA Assignment				-																-
Total Circ DED & Select Preferred Proj Alt	-	-	-	4,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,600
Prepare and Approve Project Report and Final Environmental Document																				
180.05 – Final Project Report																				-
180.10 – Final Env Document				900																900
180.15 – Completed Env Document				640																640
180.20 – NEPA Assignment				-																-
Total Prep and Approve PR & FED	-	-	-	1,540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,540
Prepare Base Maps and Plan Sheets for PS&E Development																				
185.05 – Updated Project Information																				-

Project ID: 1215000141
EA: 0P550
Description: I-5 PSR-PDS from Avenida Pico to San Diego County Line

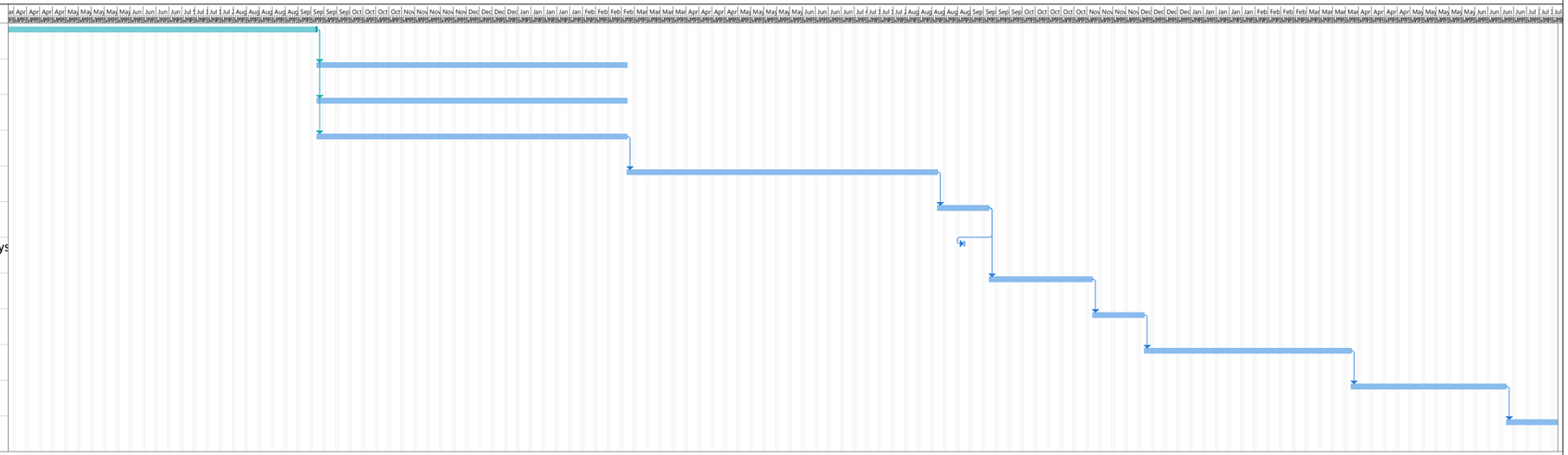
WBS Task Activity Code	Division Chief	Office Chief	Senior	Generalist	Biology	Cultural	Haz Waste	Socio-Economic	Storm Water	ECL	Steward-ship	Noise/Air	Sup Svcs	Design	Hydraulics	Landscape	Planning	Right of Way	Surveys	Total
Assigned Unit																				
185.15 – Preliminary Design																				-
Total Prep Base Maps & Plan Sheets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Right of Way Property Management and Excess Land																				
195.40 – Property Management																				-
195.45 – Excess Land																				-
Total RW Property Mgmt and Excess Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utility Relocation																				
200.15 – Approved Utility Relocation Plan																				-
200.20 – Utility Relocation Package																				-
Total Utility Coordination	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Obtain Permits, Licenses, Agreements, and Certifications (PLACs) during PS&E Component - Task Management Activities																				
205.05 – PLACs Determination																				-
205.10 – PLACs																				-
205.15 – Railroad Agreements																				-
205.25 – Agreement for Material Sites																				-
205.30 – Executed Maintenance Agreements																				-
205.45 – MOU from TERO																				-
205.55 – NEPA Delegation																				-
Total Permits & Agreements during PS&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Obtain Right of Way Interests for Project Right of Way Certification																				
225.75 – Right of Way Clearance																				-
Total Obtain RW Interests for Proj RW Cert	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prepare Draft PS&E																				
230.05 – Draft Roadway Plans																				-
230.10 – Draft Highway Planting Plans																				-
230.30 – Draft Drainage Plans																				-
230.35 – Draft Specifications																				-
230.60 – Updated Project Info for PS&E Pkg																				-
230.90 – NEPA Assignment																				-
230.99 – Other Draft PS&E Products																				-
Total Prepare Draft PS&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mitigate Environmental Impacts and Clean-up Hazardous Waste - Task Management Actitivities																				
235.05 – Environmental Mitigation																				-
235.10 – Detailed Site Investigation for HW																				-
235.15 – HW Management Plan																				-
235.20 – HW PS&E																				-
235.25 – HW Clean-up																				-
235.30 – Haz Substances Disclosure Doc																				-
235.35 – Long Term Mitigation Monitoring																				-
235.40 – Updated Env Commitments Record																				-
235.45 – NEPA Assignment																				-
Total Mit Env Impacts & Clean-up HW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Post Right of Way Certification Work																				
245.75 – Right of Way Clearance																				-
Total Post RW Clearance Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Circulate, Review and Prepare Final District PS&E Package																				
255.05 – Circ. & Rev. Draft Dist PS&E Package																				-

Project ID: 1215000141
EA: 0P550
Description: I-5 PSR-PDS from Avenida Pico to San Diego County Line

WBS Task Activity Code	Division Chief	Office Chief	Senior	Generalist	Biology	Cultural	Haz Waste	Socio-Economic	Storm Water	ECL	Steward-ship	Noise/Air	Sup Svcs	Design	Hydraulics	Landscape	Planning	Right of Way	Surveys	Total
Assigned Unit																				
255.10 – Updated PS&E Package																				-
255.15 – Environmental Reevaluation																				-
255.20 – Final District PS&E Package																				-
255.40 – Resident Engineer's Pending File																				-
255.45 – NEPA Assignment																				-
Total Circ, Rev and Prepare Final Dist PS&E Pkg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contract Bid Documents "Ready to List"																				
260.75 - Env Cert at RTL																				-
Total Contract Bid Documents "RTL"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Construction Engineering and General Contract Administration																				
270.15 – Construction Stakes																				-
270.33 – Construction Inspection																				-
270.66 – Technical Support																				-
Total Const Engineering & Gen Contract Admin.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Administration of Permits, Licenses, Agreements and Certifications (PLACs) and Environmental Stewardship																				
280.10 – PLAC Compliance																				-
280.40 – PLAC Violations																				-
280.50 – Other Environmental Compliance																				-
280.60 – Other Environmental Violations																				-
280.70 – Updated ECR																				-
280.75 – Environmental Reevaluation																				-
280.80 – Updated PLACs																				-
Total Admin of PLACs and Env Stewardship	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Change Order Administration																				
285.05 – Change Order Process																				-
285.10 – Functional Support																				-
Total Change Order Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disputes and Claims																				
290.40 – Potential Claim Record																				-
Total Disputes and Claims	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accept Contract/Prepare Final Construction Estimate and Final Report																				
295.35 – Certificate of Environmental Compliance																				-
295.40 – Long Term Env Mit/Mont after CCA																				-
Total Accept Contract	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Project Hours	-	-	-	11,890	950	1,250	350	-	265	-	-	2,100	-	-	425	425	-	-	-	17,655

ATTACHMENT C: SCHEDULE (GANTT CHART)

ID	WBS	Task Name	Duration	Start	Finish	Predecessors
1	165.05	Env Scoping of Alternatives	6 mons	Wed 4/1/20	Tue 9/15/20	
2	165.10	General Env Studies	6 mons	Wed 9/16/20	Tue 3/2/21	1
3	165.15	Biological Studies	6 mons	Wed 9/16/20	Tue 3/2/21	1
4	165.20	Cultural Resource Studies	6 mons	Wed 9/16/20	Tue 3/2/21	1
5	165.25	Draft Env Document	6 mons	Wed 3/3/21	Tue 8/17/21	4
6	175.05	DED Circulation	1 mon	Wed 8/18/21	Tue 9/14/21	5
7	175.10	Public Hearing	1 day	Wed 9/1/21	Wed 9/1/21	6FS-10 days
8	175.15	Public Comment Responses & Corr	2 mons	Wed 9/15/21	Tue 11/9/21	6
9	175.20	Project Preferred Alternative	1 mon	Wed 11/10/21	Tue 12/7/21	8
10	180.05	Final Project Report	4 mons	Wed 12/8/21	Tue 3/29/22	9
11	180.10	Final Env Document	3 mons	Wed 3/30/22	Tue 6/21/22	10
12	180.15	Completed Env Document	1 mon	Wed 6/22/22	Tue 7/19/22	11



Attachment D - Schedule
Project: I-5 PSR PDS (EA 0P550
Last Updated: Mon 2/25/19

Task, Split, Milestone, Summary, Project Summary, Inactive Task, Inactive Milestone, Inactive Summary, Manual Task, Duration-only, Manual Summary Rollup, Manual Summary, Start-only, Finish-only, External Tasks, External Milestone, Deadline, Progress, Manual Progress

ATTACHMENT J
RISK REGISTER

LEVEL 2 - RISK REGISTER				Project Name:	I-5 (Avenida Pico to San Diego County Line) PSR/PDS		DIST- EA	12-0P550	Project Manager	Carolyn Mamaradlo							
Risk Identification							Risk Assessment						Risk Response				
Status	ID #	Type	Category	Title	Risk Statement	Current status/assumptions	Probability	Cost Impact	Cost Score	Time Impact	Time Score	Rationale	Strategy	Response Actions	Risk Owner	Updated
Retired	1	Threat	PM	Resulation of EA Authorization	Authorization of the EA is essential to allow Caltrans to work on the project. Without it there can be substantial project delays.	In-progress	3-Moderate	4 -Moderate	12	4 -Moderate	12					
Active	2	Threat	PM	Changes to purpose and need	Project purpose and need is not well defined.	Draft purpose and need will be developed with input from PDT and will be revised as comments are received.	2-Low	2 -Low	4	4 -Moderate	8					
Active	3	Threat	PM	PSR-PDS phase deliverables scope creep	Scope creep may create additional costs and schedule delays.	The project is in the early stages of development.	3-Moderate	4 -Moderate	12	4 -Moderate	12					
Active	4	Threat	PM	Project improvements scope creep	Scope creep may create additional costs and schedule delays.	The project limits and scope will be confirmed as traffic data and operational analyses become available.	3-Moderate	4 -Moderate	12	2 -Low	6					
Active	5	Threat	PM	Funding Changes	As a result of funding changes, the need to amend programming (FTIP) for the project may occur which would lead to schedule delays.	The project is in the early stages of development.	2-Low	2 -Low	4	4 -Moderate	8					
Active	6	Threat	Design	SR-241 Extension	The uncertainity of the SR-241 Extension design could change tie-in locations.	TCA is currently working on the PID document.	3-Moderate	4 -Moderate	12	4 -Moderate	12					
Active	7	Threat	Design	Unexpected geotechnical or groundwater issues	Unforeseen field conditions during the exploration program in the next phase may cause additional cost and delays.	The project is in the early stages of development.	2-Low	2 -Low	4	2 -Low	4					
Active	8	Threat	Design	Poor planning decisions	Inaccurate assumptions on technical issues and planning stage.	The project is in the early stages of concept alternative development.	2-Low	2 -Low	4	2 -Low	4					
Active	9	Threat	Design	Incomplete topographical mapping	Inaccuracies or incomplete information could lead to rework of the design.	Any existing aerial mapping will be researched and used during the PID process as appropriate.	2-Low	2 -Low	4	2 -Low	4					
Active	10	Threat	Design	New or revised design standard	As a result of unforeseen design exceptions, additional exceptions or design modifications may occur which would lead to delays and increased cost.	Process has not started.	3-Moderate	2 -Low	6	8 -High	24					
Active	11	Threat	Design	Changes in traffic volumes	Due to completion of Avenida Pico Interchange construction traffic volumes will be different.	Traffic volumes need to be recaptured at start of PA/ED phase.	4-High	4 -Moderate	16	4 -Moderate	16					
Active	12	Threat	Environmental	Missing/lack of availability of project data	Availability of project data and mapping at the beginning of the planning study is insufficient.	Existing data is being used to develop the concept alternatives.	1-Very Low	2 -Low	2	2 -Low	2					
Active	13	Threat	Environmental	Unforeseen CEQA/NEPA requirements	Will create delays and additional costs during the environmental document preparation.	PEAR preparation has not started.	3-Moderate	4 -Moderate	12	4 -Moderate	12					
Active	14	Threat	Environmental	Unanticipated noise impacts	As a result of construction noise and vibration, adjacent businesses or residents disturbance may occur which would lead to complaints and loss of project support.	Will address during the PSR-PDS preparation.	3-Moderate	2 -Low	6	4 -Moderate	12					
Active	15	Threat	Environmental	Local communities pose objections	Project support is essential to obtain timely approvals during the PA&ED phase.	The project is in the early stages of development.	3-Moderate	2 -Low	6	2 -Low	6					
Active	16	Threat	Environmental	Political support changes	Project support is essential to obtain timely approvals during the PA&ED phase.	Process underway as of 9/2017.	3-Moderate	2 -Low	6	2 -Low	6					
Active	17	Threat	Environmental	Water quality regulation changes	As a result of water quality regulations changes, additional studies of BMPs would be required which would lead to cost and schedule delays.	The project is in the early stages of development.	2-Low	2 -Low	4	4 -Moderate	8					
Active	18	Threat	Environmental	Number of alternatives	Number of alternatives to be carried through PA&ED may create an excessive amount of unnecessary work.	Currently there are 4 build concepts to be considered.	2-Low	4 -Moderate	8	2 -Low	4					
Active	19	Threat	Organizational	Reviewers not available/overloaded	Lack of agency staff may cause delays to the project.	Kickoff PDT discussions with Caltrans included identification of review periods by staff involved in project.	4-High	4 -Moderate	16	4 -Moderate	16					
Active	20	Threat	Environmental	Coastal zone impacts require long lead time reviews and/or permits.	Project improvements are in the coastal zone, requiring approvals from the Coastal Commission.	PSR-PDS and PEAR will outline expected review requirements for PA/ED phase.	4-High	2 -Low	8	4 -Moderate	16					
Retired	21	Threat	Design	Weekend volumes differ significantly from weekday volumes.	Traffic volumes for weekdays may be lower than weekend volumes, which may be an issue for the TEPA analyses.	Evaluate future volumes and discuss with agencies.	4-High	1 -Very Low	4	2 -Low	8					
Active	22	Threat	Design	Improvements in San Diego County add 2 lanes in each direction prior to OC improving this freeway segment.	SANDAG planned improvements include the addition of two toll lanes in each direction on I-5 to the San Diego/Orange County line by 2050.	Coordinate with SANDAG as plans for the toll lanes are developed, and monitor timing of improvements.	1-Very Low	1 -Very Low	1	1 -Very Low	1					

ATTACHMENT K
WEEKEND DATA REVIEW MEMORANDUM

KITTELSON & ASSOCIATES
750 THE CITY DRIVE, SUITE 410
ORANGE, CA 92868
P 714.468.1997

TECHNICAL MEMORANDUM

I-5 Avenida Pico to SD County Line PSR/PDS

Weekend Data Review

Date:	May 30, 2018	Project #:19385
To:	Carolyn Mamaradlo, OCTA	
From:	Neelam Dorman & Tim Erney, Kittelson & Associates, Inc.	
cc:	Karen Chapman, TYLin International	

This memorandum documents initial results of the weekend data collection and analysis prepared by Kittelson & Associates, Inc. (KAI), with input from the Orange County Transportation Authority (OCTA), for existing mainline for the Project Study Report/Project Development Support (PSR/PDS) for improvements to Interstate 5 (I-5) between Avenida Pico and Cristianitos Road/San Diego County Line.

Existing Weekend Conditions Freeway Mainline Data and V/C Analysis

Since the study area experiences higher demand during recreational travel outside of standard weekday morning and evening commute week hours, a supplemental weekend conditions analysis was conducted for the project.

Additional freeway mainline traffic count data was collected though the Caltrans Performance Measurement System (PeMS) for I-5 (between Avenida Califia and Cristianitos Road). Data was collected per the following methodology to determine weekend condition trends:

- Collect PeMS freeway mainline traffic count data for the month of weekday data (March), one month to represent summer conditions (July), and one month to represent fall conditions (October)
- Collect traffic count data for Fridays, Saturdays, Sundays, and Mondays for non-holiday weekends
- Determine peak hour volumes per direction for each day (Friday – Monday) and average to develop the overall weekend peak hour volume

Given that recreational weekend traffic could carry over to Fridays and Mondays (e.g. weeks with Friday or Monday holidays), initial traffic count data collection was conducted for the full Friday to Monday period. A review of the collected data for the AM and PM peak hours on Fridays and Mondays generally showed a higher demand for Monday volumes during the AM peak hour as compared to the typical weekday AM peak hour, and higher demand for the PM peak hour for Friday as compared to the typical

weekday PM peak hour. Overall, the peak hour demand for Saturdays and Sundays were higher than those for Fridays and Mondays; therefore, the analysis was focused on the Saturday and Sunday data set.

A volume-to-capacity (V/C) analysis was conducted to gauge the performance for the study mainline segments for weekend conditions. A lane capacity of 1,950 passenger cars per hour per lane was applied for general purpose (mixed-flow) lanes and HOV lanes as defined by OCTA. A V/C ratio is a comparison of an amount of traffic on a road with the capacity of that road. A V/C ratio is expressed as a decimal, with values less than 1.00 indicating that volume is less than capacity and values more than 1.00 indicating that volume exceeds capacity. As values approach 1.00, congestion becomes more severe, with values more than 1.00 indicating severe congestion.

Table 1 and Table 2 present the results of the V/C analysis for the study segment. As shown, the weekend peak hour volumes (on average) are between 20% and 34% higher than weekday peak hour volumes. The volumes for both northbound and southbound are also similar between the three seasons with March having the highest northbound volume and July the highest southbound volume. The V/C analysis results are approximately 0.16 and 0.17 higher for weekend conditions as compared to weekday conditions; however, the study segment is operating under capacity during weekends (i.e., V/C ratio of less than 1.0) for all three seasons.

Table 1: Existing Freeway Weekend Peak Hour V/C Analysis - Northbound

NB-11: Between Cristianitos Road On-Ramp and Avenida Mendicino Off-Ramp						
Month[1]	Weekend Peak Hour[2]	Weekend Peak Hour Volume	Weekday Peak Hour Volume[3]	% Difference Weekend vs Weekday	Weekend Peak Hour V/C[4]	Weekday Peak Hour V/C[4]
March	11 AM	5,396	4,023	34%	0.69	0.52
July	10 AM	5,275		31%	0.68	
October	10 AM	5,308		32%	0.68	

Notes:
1: Data collected for non-holiday Saturday and Sunday for each representative season
2: Weekend peak hour (Saturday and Sunday average)
3: Weekday AM Peak Hour has the highest volume between AM/PM peak hours. Data only available for March weekday conditions.
4: Capacity of 1,950 vehicles per hour per lane

Table 2: Existing Freeway Weekend Peak Hour V/C Analysis - Southbound

SB-10: Between Cristianitos Road On-Ramp and Avenida Califia Off-Ramp						
Month[1]	Weekend Peak Hour[2]	Weekend Peak Hour Volume	Weekday Peak Hour Volume[3]	% Difference Weekend vs Weekday	Weekend Peak Hour V/C[4]	Weekday Peak Hour V/C[4]
March	11 AM	5,576	4,463	25%	0.71	0.57
July	10 AM	5,696		28%	0.73	
October	11 AM	5,372		20%	0.69	

Notes:
1: Data collected for non-holiday Saturday and Sunday for each representative season

2: Weekend peak hour (Saturday and Sunday average)
3: Weekday PM Peak Hour has the highest volume between AM/PM peak hours. Data only available for March Weekday conditions.
4: Capacity of 1,950 vehicles per hour per lane

A supplemental analysis was also conducted to determine the frequency of congestion on I-5 (i.e. speeds less than 35 miles per hour[1]) during Weekend Conditions. Hourly speeds were sourced from PeMS, between Avenida Califia and Cristianitos Road, for non-holidays Fridays, Saturdays, Sundays, and Mondays for July 2016, March 2017, and October 2017. Speeds below 35 miles per hour (MPH) were identified and compared to the total number of weekend hours. Initial analysis shows that speeds are below 35 MPH approximately 6% of weekend hours, only in the northbound direction. Typical congested time of day for the northbound direction was Sunday afternoons. The southbound direction did not show congested speeds below 35 mph for the weekend.

Supporting Studies

Delays in the Project study area along I-5 that occur on peak traffic weekends are caused by chokepoints located primarily outside of the study area. This issue was quantified by OCTA in the 2007/08 I-5 Weekend Highway Capacity Study (Weekend Study) using FreQ[2], a traffic simulation modeling software tool. The analysis evaluated weekend traffic conditions and queuing along the I-5 and identified hotspots and chokepoints contributing to traffic congestion. The analysis included data collection efforts for travel times and volumes along I-5 from SR-55 to the San Diego County Line. FreQ models were developed and calibrated for Saturday southbound and Sunday northbound time periods and directions.

The study confirmed peak travel weekend delays in South Orange County along I-5 and identified the causes of those delays. For instance, heavy congestion was seen in the southbound direction between Junipero Serra Road and Camino De Estrella. The model showed that this congestion was likely caused by a chokepoint south of Camino De Estrella, near the termination of HOV lanes and where the auxiliary lane from the Pacific Coast Highway interchange terminates. In the northbound direction, congestion was likely caused by operational issues at a chokepoint near Camino Capistrano where the northbound HOV lane begins and an auxiliary lane is dropped. This may result in queuing that extends past the San Diego County Line. Based on the Weekend Study, extension of the HOV lanes to Avenida Pico was expected to relieve both the southbound and northbound peak travel weekend congestion between Avenida Pico and the San Diego County Line. OCTA has recently constructed the I-5 South County Improvements Project that added an additional HOV lane in each direction between San Juan Creek Road and Avenida Pico.

Additionally, based on the 2040 mainline segment analysis results provided in the I-5 HOV Lane Extension PA/ED Traffic Study (May 2010), operations improve north of the Project study area, with the additional

[1] Congested speeds defined as below 35 MPH is consistent with what is calculated in OCTAM.

[2] FreQ is an HCM-based tool that permits efficient analysis of freeway corridors, including hotspots, chokepoints, and geometric features.

HOV lane, at the northbound and southbound chokepoints identified above. These improvements are reported for weekday peak hour conditions; however, similar improvements in operations would also be expected for weekend conditions with the implementation of the I-5 HOV Lane Extension project.

To check the validity of the findings from the Weekend Study to today, peak hour volumes on I-5 at the Cristianitos Road interchange from the I-5 Avenida Pico PSR were compared to the I-5 Weekend Highway Capacity Study.

Table 3: Existing Freeway Weekend Peak Hour V/C Analysis - Southbound

	July Peak Volumes at Cristianitos
2007 I-5 Weekend Highway Capacity Study	
Saturday Southbound	6,236
Sunday Northbound	5,612
2017 I-5 PSR	
Saturday Southbound	5,275
Sunday Northbound	5,696

Based on the comparisons, peak volumes at the Cristianitos Road interchange were higher for the Weekend Study in the southbound direction compared to the I-5 Avenida Pico PSR. For the northbound direction, the peak volumes are similar. Therefore, the 2007 Weekend Study findings would remain applicable today as the Project volumes are either higher or similar.

Future Weekend Conditions

Future conditions analysis for weekend conditions was not conducted as future weekend peak hour freeway, ramp and intersection data is not available. In particular, the OCTA travel demand model (OCTAM) does not currently project future weekend conditions. In order to accurately determine future projections for weekend volumes, OCTA would need to collect extensive survey data to determine demand and create a new model to forecast future volumes. The travel functions for weekend conditions are different from weekday conditions, which are based on work commute, and would require significant effort to determine recreational travel patterns. In addition, the specific demand on managed lanes (for Alternative 3) would also differ from weekday conditions, which would require additional refinement and information gathering to correctly account for in the model (e.g. in the mode choice component). The effort to create a new OCTAM for weekend conditions is significant and beyond the scope of this project. While rough order-of-magnitude estimates for future weekend growth can be conducted using historical growth factors applied to current weekend traffic, such an approach would not be consistent with the level of detail provided for weekday conditions. Moreover, such a methodology would not be based on sound travel behavior principles. As a result, it would not be useful as a tool to forecast future conditions and would be difficult to defend. With the addition of a single lane in each direction, a minimum of 20% more traffic demand could be accommodated.

ATTACHMENT L
COMPLETE STREETS CHECKLIST

COMPLETE STREETS CHECKLIST (SUMMER 2016)

PROJECT TITLE:	I-5 (Avenida Pico to San Diego County Line) PSR/PDS
PROJECT PHASE/STATUS:	PSR/PDS
PROJECT LOCATION:	I-5 in San Clemente, from Avenida Pico to San Diego County Line
LEAD AGENCY:	OCTA
CHECKLIST COMPLETION DATE:	February 27, 2018
PROJECT MANAGER NAME:	Karen Chapman, P.E. - Consultant Project Manager
PROJECT MANAGER SIGNATURE:	
CONTACT AGENCY:	T.Y. Lin International - Consultant

In accordance with the Orange County Transportation Authority (OCTA) Pedestrian Action Plan, this checklist has been developed to ensure consideration of complete streets accommodations in projects, and is required for completion by OCTA project managers at initiation of key project phases.

EXEMPTION

Is the project exempt from the Checklist? If so, provide discussion based on Checklist Guide. If not, then prepare remaining questions.

No

A. EXISTING CONDITIONS

Project Area

1 What accommodations for bicycles and pedestrians are now included in the current facility and on facilities that it intersects or crosses? Please provide specifics for the items listed.

Project improvements are concentrated along the Interstate 5 (I-5) mainline and ramps will be reconstructed as needed to accommodate mainline improvements. Bicycle and pedestrian facilities in project area are limited to crossings at freeway interchanges (IC).

Avenida Palizada IC

SB off-ramp side of the intersection is signalized, NB on-ramp side of the intersection is stop controlled. No bikeway designation, sidewalks on both sides, basic yellow crosswalks across ramps only, no pedestrian crossing signs posted, one crossing at Avenida Caballeros and two crossings at Avenida De La Estrella, ADA-compliant ramps, pedestrian-actuated traffic signals, and no bus stops near this interchange.

Avenida Presido IC

Signalized intersection. No bikeway designation, sidewalks on both sides, basic yellow crosswalks across ramps only, no pedestrian crossing signs posted, no marked crossing on north side of intersection, one crossing at Avenida De La Estrella, ADA-compliant ramps, pedestrian-actuated traffic signals, and no bus stops near this interchange.

El Camino Real IC

Signalized intersection. No bikeway designation, sidewalks on both sides, basic white crosswalks across ramps only, no pedestrian crossing signs posted, one crossing at Avenida San Juan and one crossing at Avenida Valencia, ADA-compliant ramps, pedestrian-actuated traffic signals, and a bus stop in WB direction (no bench).

Avenida Magdalena IC

Signalized T intersection. Class II bikeway (bike lane), sidewalks on both sides, basic white crosswalks across ramps, no crossing on north side of intersection, no pedestrian crossing sign posted, one crossing on south side of intersection, ADA-compliant ramps, pedestrian-actuated traffic signals, and a bus stop in NB direction (bench provided).

Avenida Califia IC

4-way stop controlled intersection. Bike lane along both sides of Avenida Del Presidente (parallel to freeway), sidewalks on both sides of Avenida Califia, white ladder crosswalk opposite side of ramps, ADA-compliant ramps, bus stop in SB direction on Avenida Del Presidente (no bench), and bus stop in WB direction on Avenida Califia (no bench).

Cristianitos Rd IC

Off-ramps stop controlled. Bike lane along both sides of Avenida Del Presidente (parallel to freeway), sidewalk on north side of Cristianitos Rd, concrete sidewalk ends at NB on-ramp and continues as a dirt path, ADA-compliant ramps at freeway on and off ramps, basic white crosswalk across ramps only, Trestles parking area including trail heads and bus stops is northwest of this interchange.

2 If there are no existing pedestrian or bicycle facilities, please identify the closest nearby/parallel facilities.

Existing pedestrian and bicycle facilities crossing and near the various interchanges through the project area.

3 Describe pedestrian, bicycle, or transit uses or needs in the project vicinity which you have observed or of which you have been informed.

There are continuous sidewalks with ADA compliant curb ramps in the project area. There is a school in the vicinity of Avenida Palizada interchange and Avenida Presidio interchange. Avenida Califia is on the safe route to schools network. There is a striped bike lanes on Avenida Del Presidente (parallel to the freeway) between Avenida Valencia and Cristianitos Road. There is a striped bike lane on El Camino Real (parallel to the freeway) between Avenida Magdalena and just north of Cristianitos Road. There is public transit throughout the project area and bus stops at or near the various interchanges.

4 What existing challenges could the proposed project improve for bicycle, pedestrian, or transit travel in the vicinity of the proposed project?

None proposed at this time. Existing pedestrian facilities are continuous and ADA-compliant in the project area and do not warrant additional improvements. Existing bicycle facilities are shared roadway (no bikeway designation) in the project area. El Camino Real has been identified as Bikeway Cooridor with proposed bike facilities per OCTA District 5 Bikeways Strategy Report dated March 2015.

5 Please describe the overall context of the project area:

Project area is suburban and the southern portion of the project area is within the coastal zone. The project area consist of a non-grid street system. There are several schools near the project area and other destinations include San Clemente State Beach and campground.

6 What trip generators (existing and future) are in the vicinity of the proposed project that might attract bicyclists or pedestrians, employees, students, visitors, tourists or others?

Existing/future trip generators include the following: Concordia Elementary School, San Clemente High School, Metrolink/Amtrak Station, San Clemente State Beach and campground.

Transit Amenities

7 Is there transit service (bus or rail) in the project area? If yes, please describe briefly.

OCTA Bus service near project area.

8 Are there transit stops? If yes, does the stop need to be moved or removed?

Existing bus stops near El Camino Real Interchange, NB Avenida Magdalena on/off-ramps, and near the Concordia Pedestrian Overcrossing. Removals not expected.

9 Are the transit stops designed consistent with the *OCTA Bus Stop Safety and Design Guidelines* ? (Y/N) Yes

10 Are transit stops accessible? (Y/N) If no, will this project bring the bus stops in compliance with accessibility requirements? (Y/N) Yes, transit stops are accessible.

11 Will construction activities cause bus detours, closures, delay, or impact bus service operations? If so, have these impacts been coordinated with OCTA Transit Department? (Y/N) Yes, temporary detours may be needed.

B. PLANS, POLICIES AND PROCESS

Plans and Public Comments

1 Is the project consistent with the City's General Plan Circulation Element and applicable Bicycle, Pedestrian, or Active Transportation Plans? Y/N Yes, per San Clemente Bicycle and Pedestrian Master Plan, adopted February 2014. http://www.san-clemente.org/departments-services/planning-services/bicyclepedestrianplan

2 Do any state or federal policies call for incorporating bicycle and/or pedestrian facilities into this project? (Y/N) No

3 Is the proposed project consistent with the following OCTA planning documents:
OCTA Regional Bikeway Collaborative Studies? (Y/N; list applicable) Not available
OCTA Non-Motorized Metrolink Accessibility Strategy? (Y/N) Yes
OCTA Commuter Bikeways Strategic Plan (or more recent applicable document)? (Y/N; list applicable) Yes, District 5 Bikeways Strategy Report (March 2015)

4 Has this project been presented to the OCTA Bicycle and Pedestrian Subcommittee or a city equivalent? (Y/N)
If Yes, attach meeting minutes or a summary of comments received.

To be completed at a later time.

5 What effort has been made to solicit input on bicycle, pedestrian and transit accommodations at public meetings?

To be completed at a later time.

How does the project address public comments received at the public meetings identified above?

To be completed at a later time.

6 The OCTA Planning Division can provide a no cost review of active transportation/transit accommodation for the project. If a review has been conducted, which recommendations have been incorporated?

Review has not been completed.

C. THE PROJECT

Project Design

1 Describe three-year summary of collisions involving bicyclists and pedestrians in the project vicinity. Provide source(s).

For District 5, 2007-2011, Bicycle-240, and Pedestrain-2, per OCTA District 5 Bikeways Strategy Report dated March 2015.

2 What accommodations are included for people walking, bicycling, and using transit in the proposed project design?

Existing pedestrian facilities are continuous and ADA-compliant in the project area and do not warrant additional improvements, with the exception of the Cristianitos Road Interchange curb ramps. Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. Existing bicycle facilities are shared roadway (no bikeway designation) in the project area. El Camino Real has been identified as Bikeway Cooridor with proposed bike facilities per OCTA District 5 Bikeways Strategy Report dated March 2015.

3 Describe the applicable design standards or guidelines utilized for the active transportation design elements.

N/A

Hindrances to Active Transportation

4 Will the proposed project remove an existing bicycle, pedestrian, or transit facility, or block or hinder bicycle, pedestrian, or transit movement? (Y/N) If yes, please describe the situation.

No

5 Will the proposed project reduce the width of existing bicycle or pedestrian facilities, such as sidewalks? (Y/N) If yes, please explain why this is unavoidable.

No

6 If the proposed project does not incorporate bicycle and pedestrian accommodations, or would hinder bicycle or pedestrian travel, list the reasons why the project cannot be re-designed to provide for these accommodations.

Cost: (What would be the cost of including the bicycle and/or pedestrian facility?)
Right-of-Way: (Please explain the analysis that led to this conclusion?)
Other: (Please explain.)

Existing pedestrian facilities are continuous and ADA-compliant in the project area and do not warrant additional improvements, with the exception of the Cristianitos Road Interchange curb ramps. Curb ramps on the north side of Cristianitos Road at the freeway ramp termini would be reconstructed to meet ADA standards. Existing bicycle facilities are shared roadway (no bikeway designation) in the project area. El Camino Real has been identified as Bikeway Cooridor with proposed bike facilities per OCTA District 5 Bikeways Strategy Report dated March 2015.

Construction & Maintenance

7 What is the bicycle and/or pedestrian facility's proportion of total project cost?

Less than 1%

8 How will access for bicyclists and pedestrians be maintained during project construction?

Temporary detours are expected to be put in place during freeway interchange construction and/or shared the road sign for bikes.

9 What agency will be responsible for ongoing maintenance and have maintenance costs been identified?

Caltrans

ATTACHMENT M
SUPPLEMENTAL PeMS DATA FOR PROJECT STUDY AREA

ATTACHMENT M: SUPPLEMENTAL PeMS DATA FOR PROJECT STUDY AREA

I-5 Avenida Pico - Cristianitos Road
Saturday Peak Hour Volumes and Speeds

Northbound

Location	Capacity	Highest Volume				Lowest Speed			
		Peak Hour	Volume	V/C	Speed (MPH)	Peak Hour	Volume	V/C	Speed (MPH)
Avenida Vista Hermosa	7,800	10:00 AM	5,500	0.71	62.3	11:00 AM	5,454	0.70	61.0
Avenida Pico		No Data Available							
Avenida Palizada	7,800	10:00 AM	6,434	0.82	58.2	12:00 PM	6,319	0.81	58.1
Avenida Presidio		No Data Available							
El Camino Real		No Data Available							
Avenida Magadelena	7,800	10:00 AM	5,381	0.69	55.9	11:00 AM	5,296	0.68	54.0
Cristianitos Road									
Basilone Road	7,800	9:00 AM	5,925	0.76	56.3	12:00 PM	5,084	0.65	45.8

Southbound

Location	Capacity	Highest Volume				Lowest Speed			
		Peak Hour	Volume	V/C	Speed (MPH)	Peak Hour	Volume	V/C	Speed (MPH)
Avenida Vista Hermosa	7,800	10:00 AM	5,303	0.68	61.4	11:00 AM	5,085	0.65	60.8
Avenida Pico		No Data Available							
Avenida Palizada	9,750	9:00 AM	6,545	0.67	63.6	11:00 AM	6,195	0.64	55.1
Avenida Presidio	7,800	10:00 AM	6,574	0.84	58.4	11:00 AM	6,261	0.80	58.0
El Camino Real		No Data Available							
Avenida Magadelena	9,750	9:00 AM	6,141	0.63	59.1	11:00 AM	5,695	0.58	52.1
Avenida Calafia	7,800	9:00 AM	6,154	0.79	58.8	10:00 AM	6,128	0.79	53.2
Cristianitos Road		No Data Available							
Basilone Road	7,800	10:00 AM	5,387	0.69	59.6	12:00 PM	5,136	0.66	54.9

[1] - Data was obtained for Saturdays between March 2018 and August 2018. Does not include Memorial Day weekend or days data quality was low.

[2] - Peak Hour was determined from a Peak Period of 7:00AM to 1:00PM