08-SBd-10-PM 36.4/R39.2 & Riv-10-PM R0.0/R0.2
EA 1F760K – ID 0815000050
Program Code 800.100 – Local Funds
May 2017

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

To

Request Approval of a Locally Funded Project to Proceed to Project Approval and Environmental Document Phase

On Route 10

Between 16th Street Overcrossing

And County Line Road Undercrossing

APPROVAL RECOMMENDED:

MELECIO CHALCO, *CALTRANS Project Manager*

APPROVAL RECOMMENDED:

RAY DESSELLE, *Deputy District Director, Planning*

APPROVED:

JOHN BULINSKI, *DISTRICT DIRECTOR*

6/13/17
DATE

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Making Conservation a California Way of Life.

To: JOHN BULINSKI
DISTRICT DIRECTOR

Date: March 30, 2017

File: 08-SBd-10-PM 36.4/R39.2
08-Riv-10-PM R0.0/R0.2
EA 1F760K- Program 800.100
Project ID No. 0815000050

From: MAEN SHAAR MS
Planning

Subject: **PROJECT STUDY REPORT-PROJECT DEVELOPMENT SUPPORT (PSR-PDS)**

It is recommended that the attached PSR-PDS for the above-referenced project be approved.

CONCURRED BY:

RAY I. DESSELLE
Deputy District Director
Planning

CONCURRED BY:

JDPJ

CATALINO A. PINING III
Deputy District Director
Traffic Operations

CONCURRED BY:

CHRISTY CONNORS
Deputy District Director
Design

CONCURRED BY:

DAVID BRICKER
Deputy District Director
Environmental Planning

CONCURRED BY:

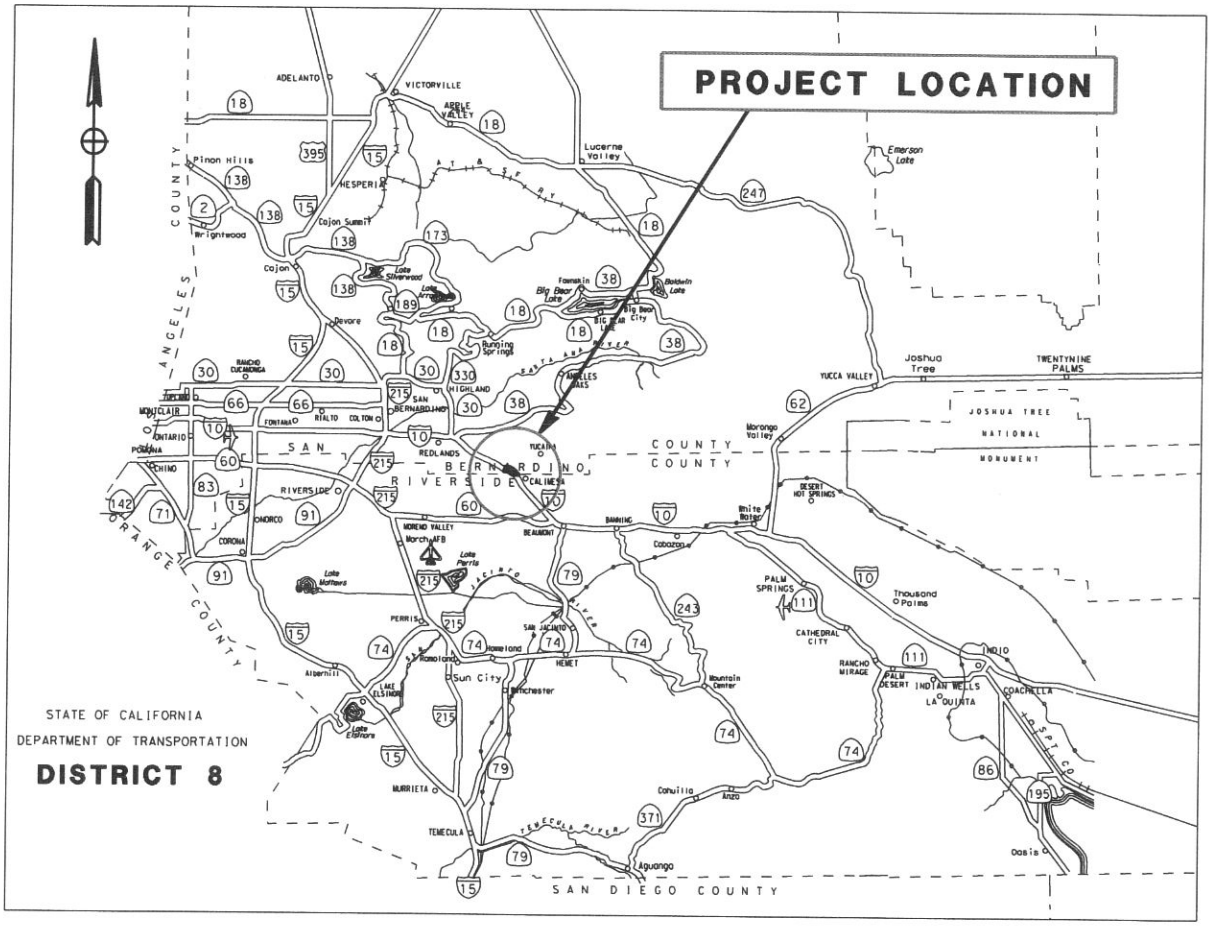
SYED RAZA
Deputy District Director
Program Project Management

Attachment: PSR-PDS
c: Maen Shaar

VICINITY MAP

08-SBd-10-PM 36.4/R39.2
08-Riv-10-PM R0.0/R0.2
EA 1F760K (0815000050)
April 2017

PROJECT STUDY REPORT
PROJECT DEVELOPMENT SUPPORT
(PSR-PDS)



ON INTERSTATE 10 (I-10)

IN YUCAIPA FROM 16TH STREET OVERCROSSING

TO 0.2 MILE EAST OF COUNTY LINE ROAD UNDERCROSSING

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.

Maen Shaar 3/30/17

REGISTERED CIVIL ENGINEER *DATE*

Table of Contents

1. INTRODUCTION

This Project Study Report/Project Development Support (PSR-PDS) is the programming document for the operational improvements on Interstate 10 (I-10) in San Bernardino and Riverside Counties. The project starts from the 16th Street Overcrossing (OC) in Yucaipa, PM 36.4, to 0.2 mile east of County Line Road Undercrossing (UC) in Riverside County, PM R0.2. This PSR-PDS is to request approval of a locally funded project to proceed to Project Approval and Environmental Document (PA/ED) phase. The estimated cost for PA/ED of this project would range from approximately $1.4M to $1.6M. The estimated construction and right of way costs for the project would range from $28M to $32M. This is a Locally Funded Project with the San Bernardino County Transportation Authority (SBCTA) as the Project Sponsor with participation from Caltrans as the Lead Agency in the Project Initiation Document (PID). Local Measure "I" funds will fund subsequent project phases, along with Federal or State funds, if they become available.

This report evaluates the feasibility of constructing an eastbound Truck Climbing Lane (TCL) by widening the median to add a new number 1 lane and transfer the existing number 3 lane to a TCL. This study was initiated at the request of SBCTA in an effort to improve safety and operational characteristics along this segment of Interstate 10.

This project is classified as a Category 4B project as defined in the Project Development Procedure Manual (8th Edition, Part 2, Chapter 8, Section 5) because the improvement under consideration does not require substantial new right-of-way and does not substantially increase traffic capacity. This project category assignment was approved by the Deputy District Director for Design on February 6, 2017 (Attachment L).

Project Limits	08-SBd-10 PM 36.4/R39.2 & Riv-10-PM R0.0/R0.2
Number of Alternatives	2 (including No-Build)
Current Capital Outlay Support Estimate for PA&ED	$1.4M - $1.6M
Current Capital Outlay Construction Cost Range	$28M - $32M
Current Capital Outlay Right-of-Way Cost Range	$10K
Funding Source	Local Funds (SBCTA)
Type of Facility	Interstate Freeway
Number of Structures	5
Anticipated Environmental Determination or Document	CEQA: Initial Study (IS) proposed Mitigated ND NEPA: Routine Environmental Assessment (EA) with proposed Finding of No Significant Impact (FONSI)
Legal Description	In San Bernardino and Riverside Counties in Yucaipa and Calimesa from 16th Street Overcrossing to 0.2 mile east of County Line Road Undercrossing
Project Development Category	4B

CEQA: California Environmental Quality Act; ***NEPA***: National Environmental Policy Act

The remaining capital outlay support, 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 the programming document for the remaining components of the project. A project report will serve as approval of the "selected" alternative.

2. BACKGROUND

Interstate 10 (I-10) is a major freeway that begins at State Route 1 (SR-1) in the City of Santa Monica in Los Angeles County. Crossing the United States, I-10 terminates on the East Coast in the state of Florida.

Within District 8, I-10 is 194.8 miles in length. Beginning as an eight-lane facility in the County of San Bernardino at the Los Angeles County Line and moving easterly, it traverses the cities of Montclair, Upland, Ontario, Rancho Cucamonga, Fontana, Rialto, Colton, San Bernardino, Loma Linda and Redlands. I-10 transitions to six lanes in the city of Yucaipa and into the County of Riverside. I-10 continues through the city of Calimesa to Beaumont where it transitions to eight lanes and traverses the cities of Banning, Palm Springs, Cathedral City and Rancho Mirage. Between the Monterey Avenue interchange in Palm Desert and its junction with SR-111 in Indio, I-10 is a six-lane facility. East of SR-86, the remainder of I-10 in District 8 is a four-lane facility that passes through the cities of Coachella and Blythe ending at the Arizona State Line.

I-10 provides for the safe and efficient, interstate and interregional movement of goods and people. The route also serves as a major east/west urban corridor and commuter route between Los Angeles and the Counties of San Bernardino and Riverside. Rural

areas in eastern Riverside County are connected to the urban centers to the west via I-10. Within District 8, the centers of population, commerce, industry, agriculture, mineral wealth, and recreation are spatially and economically connected to ports, airports, rail yards, numerous highways and other states by I-10.

The entire length of I-10 within District 8 is included in the National Highway System (NHS), the Department of Defense Priority Network and the Strategic Highway Corridor Network (STRAHNET). The 1990 Federal Surface Transportation Assistance Act (STAA) identifies I-10 as a National Network route for STAA Trucks. The Federal Functional Classifications for I-10 are Rural Principal Arterial (PA) and extension of a Rural Principal Arterial into an urban area (P1P).

Existing Facility

This segment of I-10 is a six-lane freeway with three 12-foot wide Mixed Flow Lanes (MFLs) in each direction including standard 8-foot wide inside shoulder, standard 10-foot wide outside shoulder and a 36-foot wide median with metal thrie beam barrier separating east and westbound traffic. The terrain within this segment is mostly rolling with upward steep grades in the eastbound direction. The list of structures within the project limits is shown below:

Structure Name	Number	County	PM
16th Street (OC)	54-0615	San Bernardino	36.44
Oak Glen Creek	54-0648	San Bernardino	R36.90
Live Oak Canyon Road (OC)	54-1291	San Bernardino	R37.03
Wildwood Creek	54-0312	San Bernardino	R38.53
County Line Road (UC)	56-0484	Riverside	R0.02

3. PURPOSE AND NEED

Purpose:

The purpose of this project is to improve operational characteristics for trucks and other slow-moving vehicles on a portion of Interstate 10 (I-10) that includes steep uphill grades.

Need:

Trucks characteristically exhibit the lowest level of hill-climbing performance of all vehicles on highways and freeways. Truck accident frequency increases with differential in speed, thus climbing lanes are advantageous when excessive speed differentials are anticipated.

4. TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT

The following conditions were all met to warrant adding the truck climbing lane:

1. The running speed of trucks falls 10 miles per hour (mph) or more below the running speed of remaining traffic.
2. The critical length of grade is less than the length of grade being evaluated.
3. The sustained upgrades greater than 2 percent if the total rise is greater than 250 feet.
4. The Level of Service (LOS) for the upgrade is equal to or better than LOS D.
5. Adding the TCL results in a one-grade-level of service improvement in traffic operations.

The TEPA report was approved on February 1, 2017 as shown in Attachment F.

TRANSPORTATION MANAGEMENT PLAN (TMP)

TMP's main goal is to help alleviate or minimize work-related traffic delays by the effective application of traditional traffic handling practices and innovative combination of various strategies. The main component of the TMP is public information/awareness campaign. Other TMP strategies such as motorist information, incident management, construction strategies and demand management will be implemented depending on the anticipated traffic impacts. These strategies are designed to improve mobility and enhance safety for the traveling public and highway workers.

TMP data sheet was prepared for this phase on 12/12/2016 (Attachment K). TMP elements include public information, motorist information strategies and incident management.

TMP data sheet will be updated during the Project Approval Phase and a detailed TMP including traffic handling and stage construction plans will be developed during the Design Phase.

COMPLETE STREETS

Inclusion of complete streets (Implementation of Deputy Directive 64-R2) was determined to be unsuitable for this segment of I-10. The mobility and safety needs of bicyclists, pedestrians and transit users can be addressed through the existing parallel local road (Calimesa Boulevard).

5. DEFICIENCIES

In its current condition, this segment of I-10 is in need of improvements. A Truck Climbing Lane would improve safety and the operational characteristics along this segment. A large volume of commercial trucks traverses that segment. Slower moving

trucks, without passing lanes on long stretches, create operational conflicts between autos and slow-moving trucks. This project will serve as an immediate solution to these conflicts. The 2023 Forecasted Volume to Capacity (V/C) ratio will improve from 1.21 for no-build to 0.85 for the build alternative as shown in the table below. The high percentage of trucks (16%), a projected Level of Service (LOS) F in 2023, and a steep upward grade of 4% within this segment of I-10 are deficiencies which this project would address.

a. Vehicle Traffic Data

The following table outlines the current and forecasted traffic data for this project location. Traffic growth assumptions are based on projected population growth, zoning, land use, and forecasted economic growth:

Main Line Traffic Data Information					
	SBd-10-PM 36.40-R39.16 Riv-10-PM R0.00-R0.20				
	Year 2016 (Existing)	Year 2023 (Opening)		Year 2045 (20-Year)	
	No Build	No Build	Build	No Build	Build
Annual Average Daily Traffic (AADT)	111,100	122,500		162,100	
Design Hour Volume (DHV)	8,850	9,950		12,920	
One-Way Peak Hour Volume (PHV)	5,480	7,160		8,011	
Directional Split	62%	62%		62%	
Truck % in ADT	16%	16%		15%	
Truck % in DHV	8%	8%		8%	
Level of Service (LOS)	E	F	D	F	F
Volume/Capacity (V/C) Ratio	0.93	1.21	0.85	1.35	1.12

b. Accident Data:

The Traffic Accident Surveillance and Analysis System (TASAS) – Transportation System Network (TSN) Table B shows the following accident summaries for the segment of I-10 in San Bernardino County between post miles 36.40 and R39.16 within the three-year period from April 1, 2012 to March 31, 2015.

Summary of Actual and Average Accident Rates from 04/01/2012 to 03/31/2015

TASAS – TSN Selective ACCIDENT RATE CALCULATION (Table B)						
I-10 (SBD) PM 36.4-R39.16 (Eastbound)	Actual (Per Million Vehicle Miles)			Average (Per Million Vehicle Miles)		
	FATAL	FATAL + INJURY	TOTAL	FATAL	FATAL + INJURY	TOTAL
	0.006	0.23	0.49	0.004	0.25	0.82

The traffic collision data for a three-year period from the Caltrans TASAS Table B along I-10 in San Bernardino County between 16th Street Overcrossing and San Bernardino/Riverside county line indicates the actual fatal accident rate is higher than the statewide average fatal accident rate while the actual fatal plus injury and statewide average fatal plus injury accident rate is about equal and the actual total accident rate is lower than the statewide average total accident rate.

The output report from the TASAS Selective Accident Retrieval (TSAR) for the three-year period from April 01, 2012 to March 31, 2015 is shown in the tables below:

Type of Collisions								
Head-On	**Sideswipe**	**Rear-End**	**Broadside**	**Hit-Object**	**Overturn**	**Auto-Ped**	**Other**	**Not Stated**
2.6%	26.9%	39.7%	1.3%	26.9%	0.0%	2.6%	0.0%	0.0%

Primary Collision Factors										
HBD	**FTC**	**FTY**	**IT**	**ESS**	**OV**	**ID**	**OTD**	**UNK**	**FA**	**NS**
6.4%	0.0%	0.0%	19.2%	42.3%	24.4%	0.0%	6.4%	1.3%	0.0%	0.0%

HBD = Influence of Alcohol
FTC = Following Too Close
FTY = Failure to Yield
ID = Improper Driving
IT = Improper Turn
ESS = Speeding
OV = Other Violations
NS = Not Stated
OTD = Other Than Driver
UNK = Unknown
FA = Fell Asleep

The Traffic Accident Surveillance and Analysis System (TASAS) – Transportation System Network (TSN) Table B shows the following accident summaries for the segment of I-10 in Riverside County between post miles R0.00 and R0.20 within the three-year period from April 1, 2012 to March 31, 2015.

Summary of Actual and Average Accident Rates from 04/01/2012 to 03/31/2015

TASAS – TSN Selective ACCIDENT RATE CALCULATION (Table B)						
I-10 (RIV) PM R0.0/R0.2 (Eastbound)	Actual (Per Million Vehicle Miles)			Average (Per Million Vehicle Miles)		
	FATAL	FATAL + INJURY	TOTAL	FATAL	FATAL + INJURY	TOTAL
	0.000	0.09	0.28	0.004	0.24	0.77

The traffic collision data for a three-year period from the Caltrans TASAS Table B along I-10 in Riverside County between San Bernardino/Riverside county line and 0.2 mile east

of County Line Road Undercrossing indicates the actual fatal, actual fatal plus injury and actual total accident rates are lower than the statewide average fatal, statewide average fatal plus injury and statewide total accident rates.

Type of Collisions								
Head-On	Sideswipe	Rear-End	Broadside	Hit-Object	Overturn	Auto-Ped	Other	Not Stated
0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Primary Collision Factors										
HBD	FTC	FTY	IT	ESS	OV	ID	OTD	UNK	FA	NS
33.3%	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	0.0%	0.0%	0.0%	0.0%

HBD = Influence of Alcohol
FTC = Following Too Close
FTY = Failure to Yield
ID = Improper Driving
IT = Improper Turn
ESS = Speeding
OV = Other Violations
NS = Not Stated
OTD = Other Than Driver
UNK = Unknown
FA = Fell Asleep

6. CORRIDOR AND SYSTEM COORDINATION

The proposed improvements in this project are consistent with state, regional and local mobility goals, and are being coordinated with the responsible governmental, regulatory and local agencies in the area to ensure consistency with specific local goals and objectives.

The following projects are proposed or under construction within the project limits:

EA	Project Limits	Scope of Work	Status
0K293	R36.9/R39.1	Rehabilitate Roadway (WB Only)	PS&E
0K294	R36.9/R39.1	Rehabilitate Roadway (EB Only)	PID
0C250	0.0/R37.0	Two Express Lanes in each direction	PA&ED
0K291	30.9/33.3	Lane Replacement	PS&E
0P260	33.3/R36.9	Ramp Metering & Widen WB onramp to 2 lanes	PIP

7. ALTERNATIVES

No-Build

The No-Build alternative would maintain the facility in its current condition. No improvements would be implemented at this time; therefore, no capital cost is associated with this alternative. As development continues and the traffic demand increases, traffic operational characteristics will further deteriorate which may result in an increase in congestion, vehicle delay, safety issues, vehicle-operating costs, and vehicle emissions due to slower operating speeds on the freeway. The No-Build

alternative would not address or alleviate the forecasted operational and safety issues along this segment of I-10. This alternative would not satisfy the need and purpose.

Build Alternative- Recommended for Programming

This project proposes to add a Truck Climbing Lane (TCL) along eastbound Interstate 10 (I-10) in the City of Yucaipa from the 16th Street (OC) to 0.2 mile east of County Line Road (UC) by widening the median. The scope of the project consists of the following:

- Install a Concrete Barrier at the new centerline
- Pave the entire median width (36 feet)
- Add a new lane #1 (EB) and new inside shoulders (EB/WB)
- Replace existing lane #1 with new lane #2, existing lane #2 with a new lane #3 and existing lane #3 becomes the TCL
- Rehab lane #3 (new TCL) and outside shoulders (both directions)
- Drainage Upgrade
- Widen Oak Glen Creek Bridge (Number 54-0648)

This alternative was chosen because there is no need for right-of-way acquisition or utility relocations. It involves only one structure compared to other alternatives with multiple structures. The environmental impacts and drainage modifications are less. Other alternatives require ramp modifications and more design exceptions. This alternative has the least project cost.

Staging Requirement

The existing centerline will be shifted six feet to the north into westbound I-10 and the project will be staged as follows:

1. Rehab the outside shoulders for the eastbound and westbound directions. Outside shoulders will be used as a detour
2. Restripe lanes #1 and #2 for both directions (11' for lanes #1 and #2, 12' for lane #3 and 8' for outside shoulders)
3. Place K-Rail 1 foot from the edge of travel way of the temporary lane #1 in both directions
4. Remove thrie beam in the median
5. Clearing and grubbing the median
6. Remove existing shoulder pavement in the median
7. Place new pavement in the median (Lane #1 EB, Inside Shoulder EB and WB)
8. Install concrete barrier at the new centerline (6' north of the original centerline)
9. Rehab the new TCL lane (EB direction)
10. Signage and striping for the new EB TCL (Previously lane #3). Overhead sign will be added at the beginning of the TCL to differentiate this lane from the auxiliary lane, EB off to Live Oak Canyon Road.

Widening the Oak Glen Creek Bridge, drainage modifications, upgrading Metal Beam Guard Rail (MBGR), and other construction activities could be done concurrently with the above work.

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
Build	Table 82.1A-Index 302.1 "Shoulder Width"	High	Non-Standard Width for the Inside Shoulder at the County Line Road (UC). Project requires to shift the centerline 6' into the westbound. But because of the vertical offset between the eastbound and westbound pavements, this would be very costly at the County Line Road Bridge. Also a non-standard width for the inside shoulder is needed at the two overcrossings within the project limits, the 16th Street and Live Oak Canyon Rd because of the columns in the median.
Build	Table 82.1B-Index 504.6 "Mainline Lane Reduction at Interchanges"	High* *If traffic is not adversely affected by the reduction	This project is sponsored by the San Bernardino County Transportation Authority (SBCTA) without any contribution from the Riverside County Transportation Commission (RCTC). The Truck Climbing Lane should not extend far into Riverside County. This requires ending the TCL 0.2 mile into Riverside County which is within a Local Interchange, the County Line Road (UC).

Other Alternatives

Other alternatives such as outside widening or a combination of outside/inside widening would involve increased scope, environmental and right-of-way impacts that are beyond the scope of this project. Thus, these alternatives were not further evaluated at this stage.

8. RIGHT-OF-WAY

All work will be done within the existing Right of Way. Right of Way acquisition is not needed. Relocation of utilities is not anticipated. Railroad Coordination is not anticipated either (Attachment I).

9. STAKEHOLDER INVOLVEMENT

The stakeholders were heavily involved throughout the preparation of the PSR-PDS. Meetings were held with participation from all stakeholders and functional units from Caltrans and SBCTA. Project issues were discussed in PDT meetings, meeting minutes and through phone calls and emails. The report was reviewed and approved after incorporating comments from all stakeholders involved with the project.

10. ENVIRONMENTAL DETERMINATION/DOCUMENT

Caltrans is the California Environmental Quality Act (CEQA) Lead Agency for all improvement projects on the SHS. Caltrans is also the National Environmental Policy Act (NEPA) Lead Agency for this Project.

In conjunction with satisfying compliance documentation requirements with NEPA, contingent upon the results reported from all completed technical studies, it is anticipated that this project will be determined to need an environmental assessment (EA). In conjunction with satisfying compliance documentation requirements for the CEQA, again contingent upon the results reported from all completed technical studies, it is anticipated that an Initial Study (IS) will be required.

If during the Project Approval and Environmental Document (PA&ED) phase, Plans Specifications, and Estimate (PS&E) phase, or during construction phase, the scope of work (including utility relocation requirements) or limits for the project change, completion of the Environmental Re-Evaluation will be required to confirm if the environmental documentation for CEQA and NEPA compliance remains valid. New or revised technical studies may be required and/or an Environmental Document (ED) may need to be prepared and approved to document compliance with all applicable CEQA and NEPA requirements.

This Preliminary Environmental Analysis Report (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-Project Development Support (PSR-PDS). 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 the project scope or alternatives, or in environmental laws, regulations or guidelines. (Attachment G).

Initial Site Assessment (ISA) Checklist

The Initial Site Assessment (ISA) Checklist for hazardous waste completed on November 22, 2016 determined this project to have **Low Risk** for potential hazardous waste involvement. (Attachment H).

11. FUNDING

The proposed project will be funded from the Local Funds Program (800.100, HE13). It has been determined that this project is eligible for Federal-aid funding.

Current Capital Outlay Project Estimate

	Range of Estimate		STIP Funds		Local Funds (Measure I)	
	Construction	Right-of-Way	Construction	Right-of-Way	Construction	Right-of-Way
Build Alternative	$28M-$32M	$10K			$28M-$32M	$10K

The level of detail available to develop these capital outlay project estimates is only accurate to within the above ranges and is useful for long-range planning purposes only. The capital outlay project estimates should not be used to program or commit local-programmed capital outlay funds.

Construction Cost (Current)	Construction Cost (Escalated 2021)
$30.17M	$33.46M

Capital Outlay Support Estimate

Capital outlay support estimate is shown in the table below:

Phase	Cost	Percentage
PA&ED	$1,508,600	5%
PS&E	$3,017,200	10%
R/W	$17,000	N/A
Construction	$4,525,800	15%
Total	**$9,068,600**	**30%**

Attachment (O) has more funding details.

12. SCHEDULE

Project Milestones		Scheduled Delivery Date (Month/Day/Year)
PROGRAM PROJECT	M015	06/12/2017
BEGIN ENVIRONMENTAL	M020	06/26/2017
CIRCULATE DED EXTERNALLY	M120	10/21/2018
PA & ED	M200	12/21/2018
PS&E to DOE	M377	12/07/2019
RIGHT OF WAY CERTIFICATION	M410	01/07/2020
READY TO LIST	M460	01/07/2020
AWARD	M495	06/09/2020
APPROVE CONTRACT	M500	07/09/2020
CONTRACT ACCEPTANCE	M600	11/19/2021
END PROJECT	M800	11/19/2023

The anticipated funding fiscal year for construction is 2019/2020.

13. RISKS

Two risks identified in the risk register (Attachment M):

- Project Funding by SBCTA
- Change to Existing Project Conditions or Limits

14. FHWA COORDINATION

Federal Highway Administration (FHWA)

Per the current Joint Stewardship and Oversight Agreement (Agreement) between the California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA), dated May 28, 2015, this project is considered to be a Delegated Project. However, should any future situation/circumstance that will potentially classify the project as a Project of Division Interest arises, Caltrans shall notify FHWA and reassess this project using the Project of Division Interest selection criteria outlined in the Agreement. This PSR-PDS has been reviewed by the Caltrans' FHWA Liaison, Anthony Ng, and is eligible for federal funding.

15. PROJECT REVIEWS

Field Review	Maen Shaar	Date 9/23/16
District Design	Larry Sartori	Date 1/31/17
SBCTA Project Manager	Dennis Saylor	Date 1/31/17
SBCTA Project Manager	Paul Melocoton	Date 1/31/17
Caltrans Project Manager	Melecio Chalco	Date 1/31/17
Design/FHWA Liaison	Anthony Ng	Date 1/31/17
District Environmental Studies	James Shankel	Date 1/31/17
Constructability Review	Mohammad Hossain	Date 1/31/17

16. PROJECT PERSONNEL

NAME	TITLE	PHONE NUMBER
Dennis Saylor	Project Manager, SBCTA	(909) 884-8276
Paul Melocoton	Project Manager, SBCTA	(909) 884-8276
Melecio Chalco	Project Manager, Caltrans	(909) 383-6761
James Shankel	Office Chief, Environmental	(909) 383-6379
Tracey Roberts	Environmental	(909) 383-5929
Jose Fernandez	Traffic Operations, TEPA	(909) 383-6499
Larry Sartori	Office Chief, Design	(909) 388-6090
Maen Shaar	Office Chief, Planning	(909) 383-7131
Mina Pezeshpour	Branch Chief, Structure Design	(909) 598-3219
Cesar Sanchez	Office of Bridge Design	(909) 595-5182

17. ATTACHMENTS (122)

A. Title Sheet (1)

B. Typical Cross Sections (4)

C. Layouts (12)

D. Structures (5)

E. Preliminary Cost Estimate – Build Alternative (10)

F. Traffic Engineering Performance Assessment (TEPA) (25)

G. Preliminary Environmental Analysis Report (PEAR) (10)

H. Initial Site Assessment (ISA) Checklist (1)

I. Right of Way Data Sheet (8)

J. Storm Water Data Report (SWDR) (7)

K. Transportation Management Plan (TMP) Data Sheet (5)

L. Project Category Approval (1)

M. Risk Register (1)

N. Materials Report - EA 0K293 (For Reference Only) (31)

O. Funding Details (1)

Attachment (A)

Title Sheet

INDEX OF PLANS

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

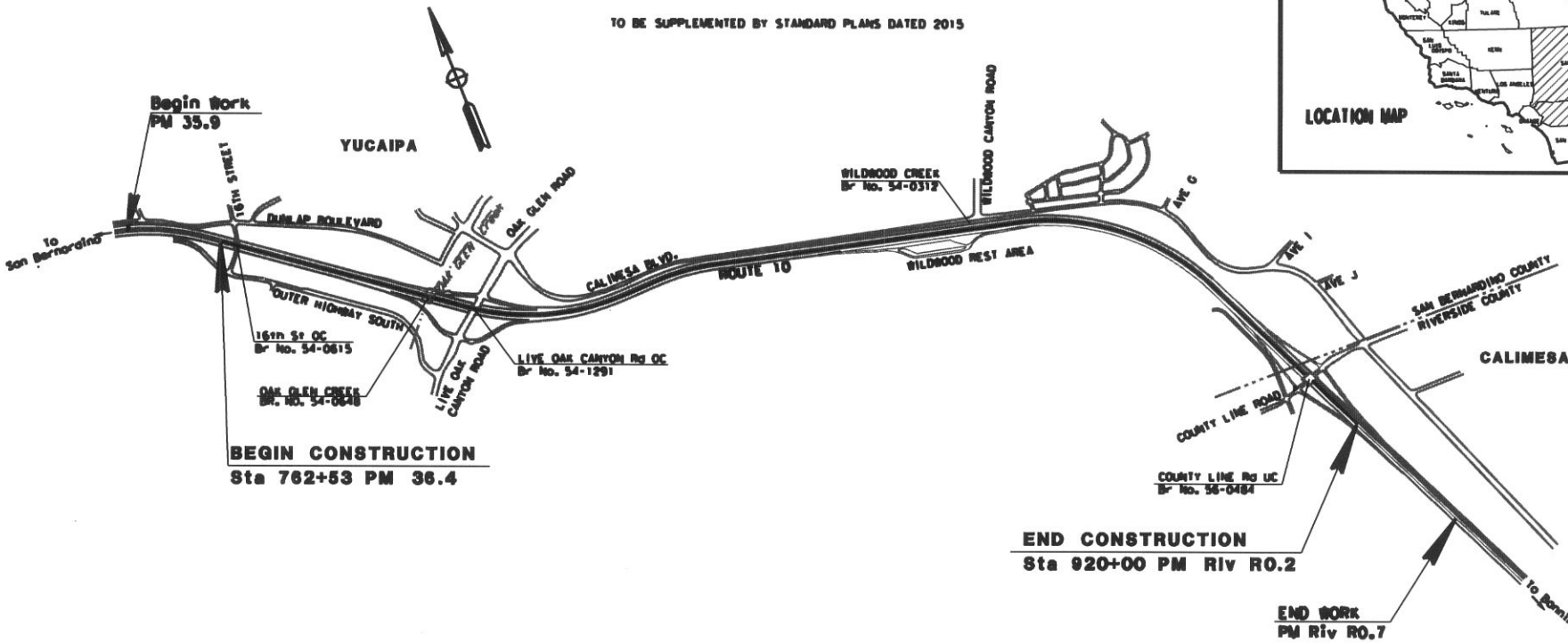
STATE HIGHWAY

IN SAN BERNARDINO AND RIVERSIDE COUNTIES
IN YUCAIPA AND CALIMESA FROM 16th STREET OVERCROSSING
TO 0.2 MILE EAST OF COUNTY LINE ROAD UNDERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2015

Dist	COUNTY	ROUTE	TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd,Riv	10	36.4/R30.2 R0.0/R0.2		

LOCATION MAP



NO SCALE

PROJECT ENGINEER
REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — Civil

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

CONTRACT No.	08-1F760K
PROJECT ID	0815000050

LAST REVISED 07-20-16 — DATE PLOTTED => <DATE> — TIME PLOTTED => <TIME>

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

PROJECT MANAGER

DESIGN MANAGER

BORDER LAST REVISED 10/4/2013 | CALTRANS WEB SITE IS: HTTP://WWW.DOT.CA.GOV/ | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => $USER | BDR FILE => $REQUEST | UNIT 2201 | PROJECT NUMBER & PHASE 0815000050K

Attachment (B)

Typical Cross Sections

Dist	County	Route	Post Mile Total Project	Sheet No.	Total Sheets
08	Sbd,Riv	10	38.4/R39.2 R0.0/R0.2		

REGISTERED Civil ENGINEER DATE

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REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

PLANNING

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN DESIGNATION (ROUTE 10)

ADT (2016) = 111,100 T = 16%
ADT (2045) = 162,100 V = 70 mph

TRAFFIC INDEX (TI)

40 YEAR	INSIDE SHOULDER	LANE NO. 1	LANE NO. 3
	9.0	14.5	17.0

PAVEMENT CLIMATE REGION

INLAND VALLEY

EXIST STRUCTURE SECTIONS:

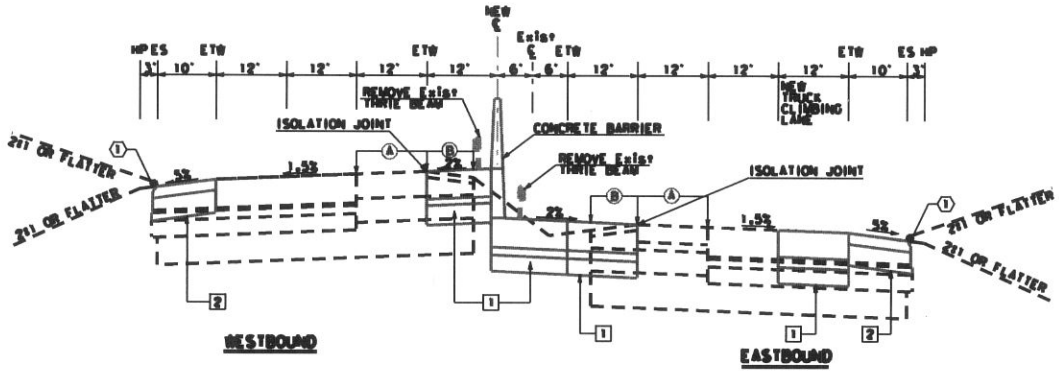
(A)
- 0.67' PCC
- 0.42' RUBTB
- 1.00' CLASS 2 AS (TYPE A)
- 1.50' CLASS 2 AS (TYPE B)

(B)
- 0.25' AC (TYPE B)
- 0.83' CLASS 2 AB
- 1.00' CLASS 2 AS (TYPE A)
- 1.50' CLASS 2 AS (TYPE B)

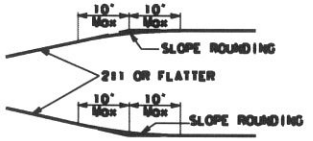
STRUCTURE SECTIONS:

(1)
- 1.10' CRCP
- 0.25' HMA-A
- 0.80' AS CLASS 2

(2)
- 0.30' HMA-A
- 1.05' AB CLASS 2



Sta 762+53.00 TO Sta 818+69.00±
Sta 864+51.00 TO Sta 909+00.00



SLOPE ROUNDING DETAIL

(1) PAVEMENT EDGE TREATMENT (SAFETY EDGE) SEE REVISED STANDARD PLANS RSP P74 AND RSP P76

± Outside shoulders will be used for traffic detour. Auxiliray lanes could be used for detour where available.

TYPICAL CROSS SECTIONS

NO SCALE X-1

LAST REVISED DATE PLOTTED => DATE
07-20-16 TIME PLOTTED => TIME

BORDER LAST REVISED 7/2/2010 | USERNAME => USER DGN FILE => REQUEST | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2201 | PROJECT NUMBER & PHASE 0815000050K

Dist	County	Route	Post Mile Prefix	Post Mile	Sheet No.	Total Sheets
08	Sbd,Riv	10		35.4/39.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PLANNING

DESIGN DESIGNATION (ROUTE 10)

ADT (2016) = 111,100 T = 16%
ADT (2045) = 162,100 V = 70 mph

TRAFFIC INDEX

40 YEAR	INSIDE SHOULDER	LANE NO. 1	LANE NO. 3
	9.0	14.5	17.0

PAVEMENT CLIMATE REGION

INLAND VALLEY

EXIST STRUCTURE SECTIONS:

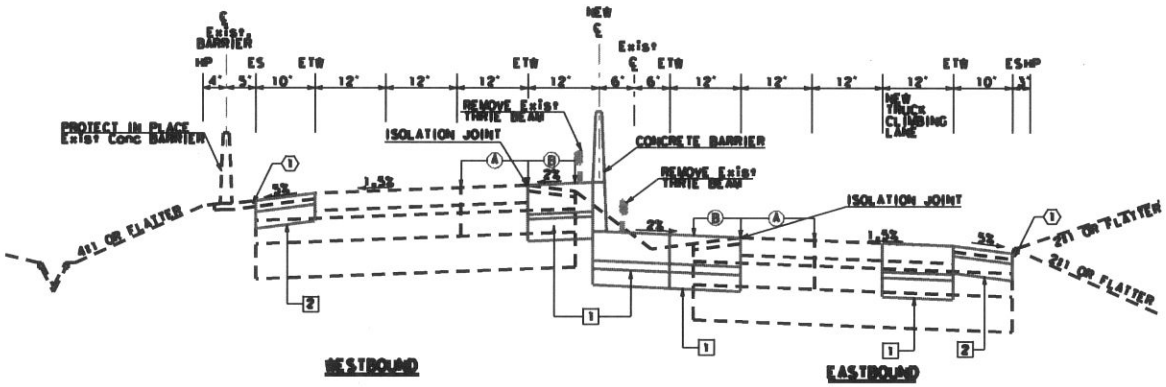
(A)
- 0.67' PCC
- 0.42' RAC1B
- 1.00' CLASS 2 AS (TYPE A)
- 1.50' CLASS 2 AS (TYPE B)

(B)
- 0.25' AC (TYPE B)
- 0.83' CLASS 2 AB
- 1.00' CLASS 2 AS (TYPE A)
- 1.50' CLASS 2 AS (TYPE B)

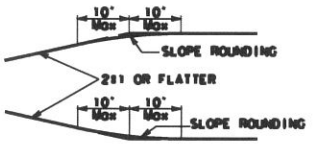
STRUCTURE SECTIONS:

[1]
- 1.10' CRCP
- 0.25' HMA-A
- 0.80' AS CLASS 2

[2]
- 0.50' HMA-A
- 1.05' AB CLASS 2



Sta 818+69.00 TO Sta 864+51.00



SLOPE ROUNDING DETAIL

[1] PAVEMENT EDGE TREATMENT (SAFETY EDGE) SEE REVISED STANDARD PLANS RSP P74 AND RSP P76

TYPICAL CROSS SECTIONS

NO SCALE X-2

LAST REVISION DATE PLOTTED => DATE
07-20-16 TIME PLOTTED => TIME

BORDER LAST REVISED 7/2/2010 | USERNAME => USER | DGN FILE => REQUEST | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2201 | PROJECT NUMBER & PHASE 0815000050K

Dist	County	Route	Post Mile Total Project	Sheet No.	Total Sheets
08	San.Riv	10	38.1/39.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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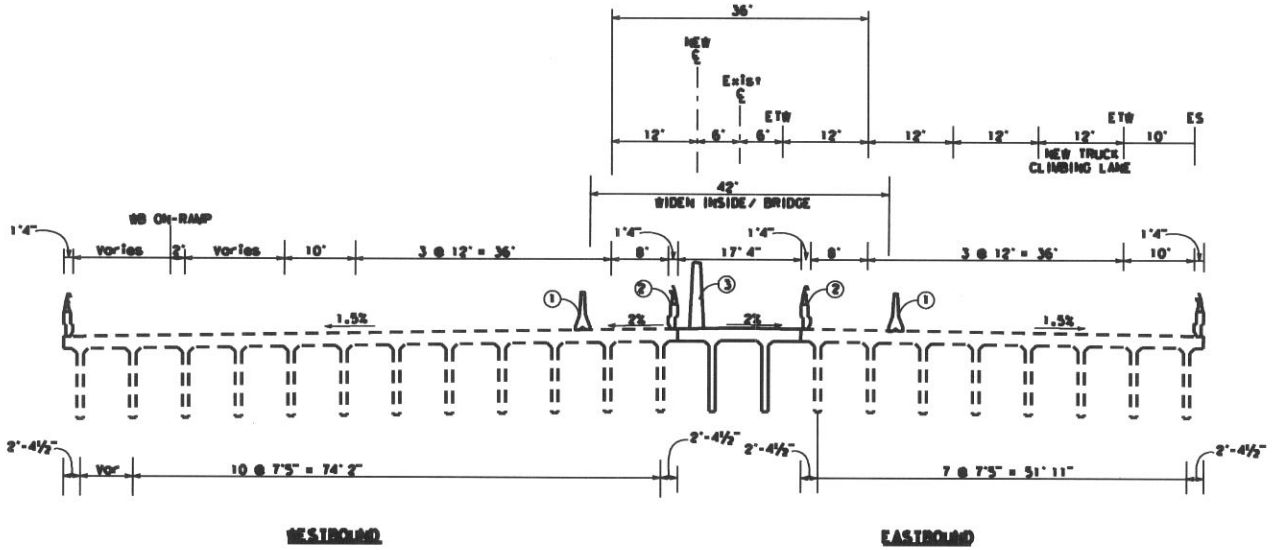
FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

PLANNING



WESTBOUND

EASTBOUND

OAK GLEN CREEK "WIDEN"
BRIDGE NO 54-0648

① K-RAIL
② REMOVE EXISTING CONCRETE BARRIER (TYPE 1)
③ NEW CONCRETE BARRIER

BRIDGE TYPICAL CROSS SECTIONS

NO SCALE

X-3

LAST REVISED 07-20-16 | DATE PLOTTED => TIME PLOTTED =>

BORDER LAST REVISED 7/2/2010 | USERNAME => USER | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2201 | PROJECT NUMBER & PHASE 0815000050K

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
08	Sbd,Riv	10	[illegible]		

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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NOTES:

1. DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATION.
2. SUPERELEVATION AS SHOWN OR AS DIRECTED BY THE ENGINEER.
3. FOR CONCRETE PAVEMENT JOINTS, DOWELS AND TIE BARS, SEE STANDARD PLANS

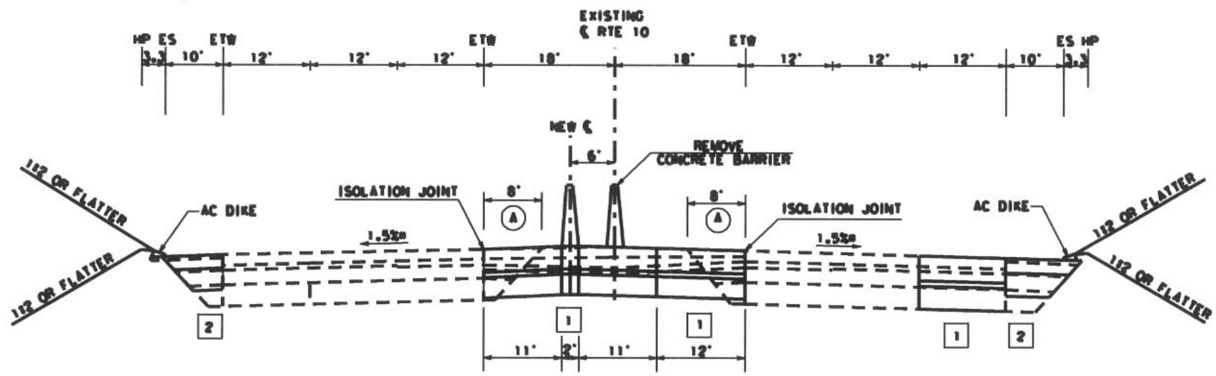
STRUCTURAL SECTIONS:

1 — KEEP EXISTING OR 1.10' CRCP, 0.25' HMA-A, 0.80' AS CLASS 2

2 — 0.50' HMA-A, 1.05' AB CLASS 2

Exist STRUCTURAL SECTIONS:

A — 0.2' AC, 0.33'-0.42' AB (VARIES), 1.0' AS (CLASS 2 TYPE A), 1.5' AS (CLASS 2 TYPE B)



WESTBOUND **RIV I-10** **EASTBOUND**

STA 909+00 TO STA 920+00

* EXCEPT IN SUPERELEVATION

TYPICAL CROSS SECTIONS

NO SCALE

X-4

STATE OF CALIFORNIA · DEPARTMENT OF TRANSPORTATION

PLANNING

PROJECT ENGINEER	
CALCULATED/DESIGNED BY	CHECKED BY
DATE / REVISED BY	DATE REVISED

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

USERNAME => $USER DGN FILE => $REQUEST

UNIT 2201

PROJECT NUMBER & PHASE 0815000050K

LAST REVISION 07-20-16 DATE PLOTTED => $DATE TIME PLOTTED => $TIME

Attachment (C)

Layouts

Dist	County	Route	Post Miles Total Project	Sheet No.	Total Sheets
08	SBd, Riv	10	36.4/R39.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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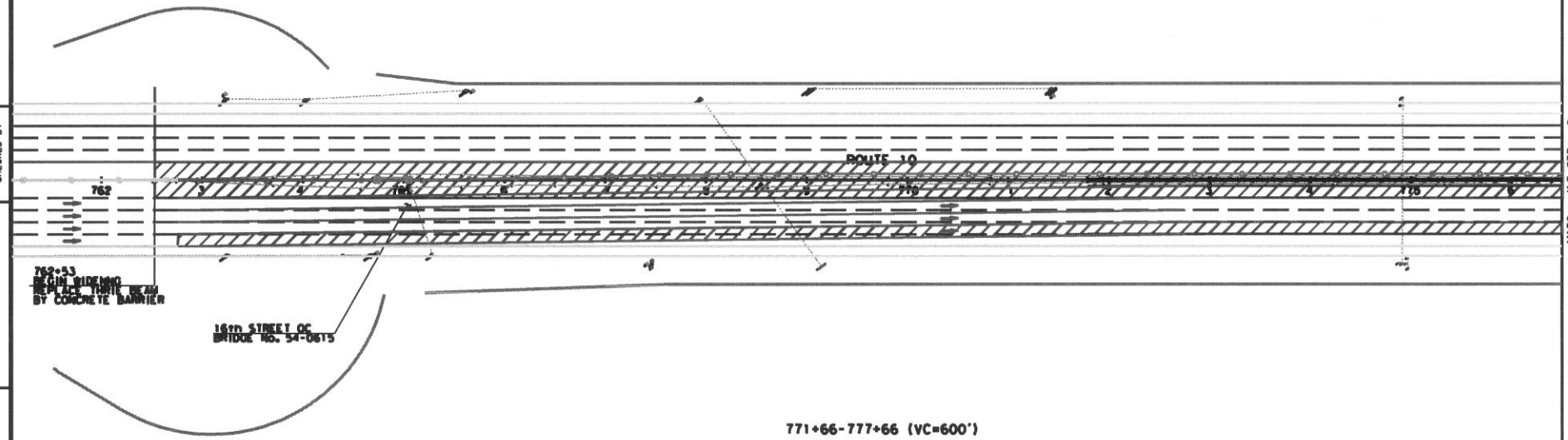
LEGEND:

INSIDE WIDENING



771+66-777+66 (VC=600')

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DATE REVISED

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

Caltrans

LAYOUT
SCALE 1"=50'

L-1

BORDER LAST REVISED 7/2/2010

USERNAME => $USER
DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE 0815000050K

LAST REVISED DATE PLOTTED => $DATE
07-20-16 TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd., Riv	10	36.4/R39.2 R0.0/R0.2		

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

MATCH LINE SEE L-1

MATCH LINE SEE L-3

ROUTE 10

BB 789+42

EB 790+57

END EB 4TH LANE
784+00 PM R36.8

OAK GLEN CREEK
BRIDGE No. 54-0648
PM 36.9

LIVE OAK CANYON ROAD EB OFF-RAMP

777+66-793+41 (G=+0.213%)

LAYOUT

SCALE: 1"=50'

L-2

BORDER LAST REVISED 7/2/2010

USERNAME => %USER
DGN FILE => %REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE 0815000050K

DATE PLOTTED => %DATE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd, Riv	10	36.4/R39.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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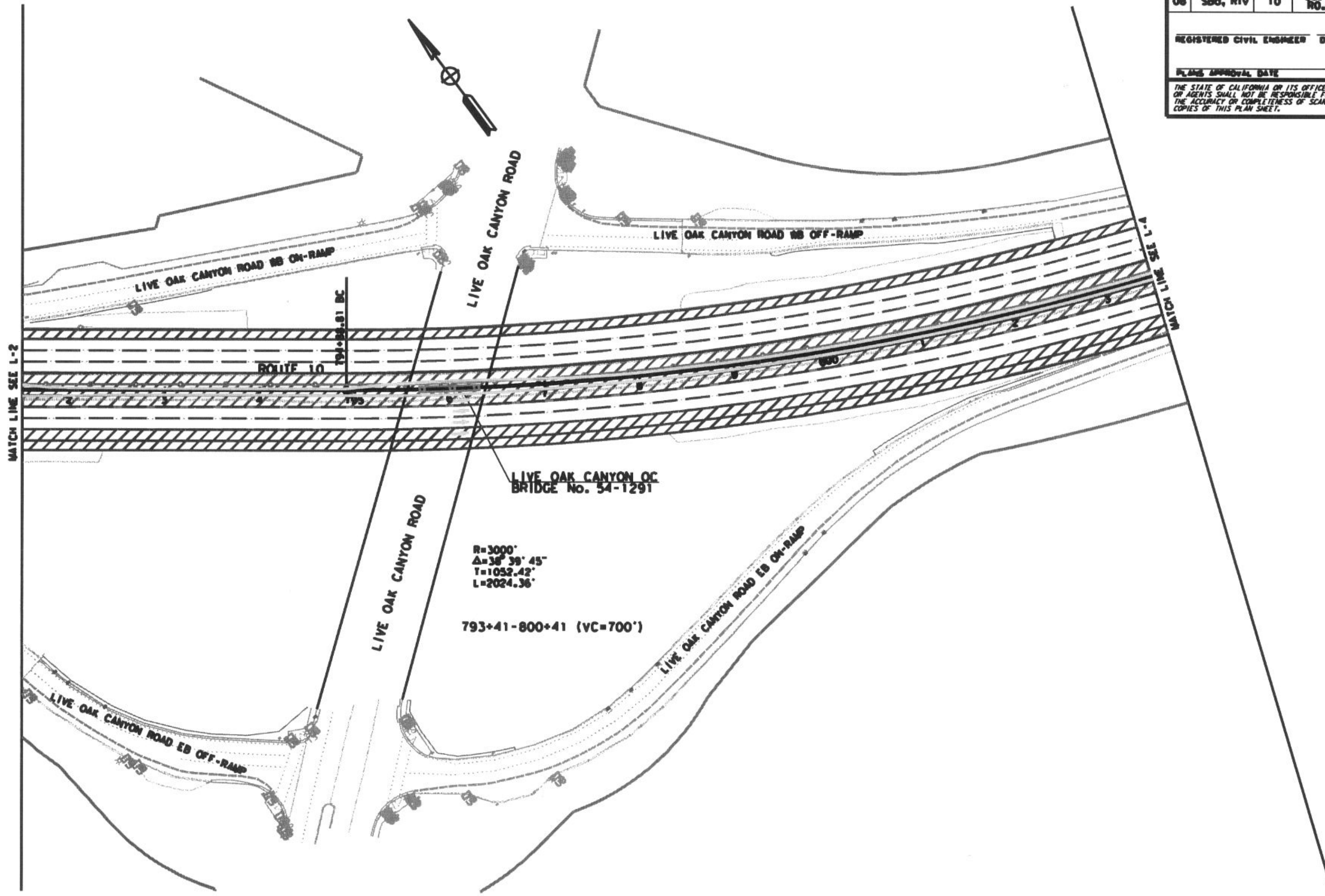

LAYOUT
SCALE: 1"=50'

L-3

STATE OF CALIFORNIA · DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISED BY
Caltrans		CHECKED BY	DATE REVISED

BORDER LAST REVISED 7/2/2010 | USERNAME => USER DGN FILE => REQUEST | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2201 | PROJECT NUMBER & PHASE | 0815000050K

LAST REVISION 07-20-16 | DATE PLOTTED => DATE | TIME PLOTTED => TIME

Dist	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd.,Riv	10	15.4/19.2 10.0/14.0		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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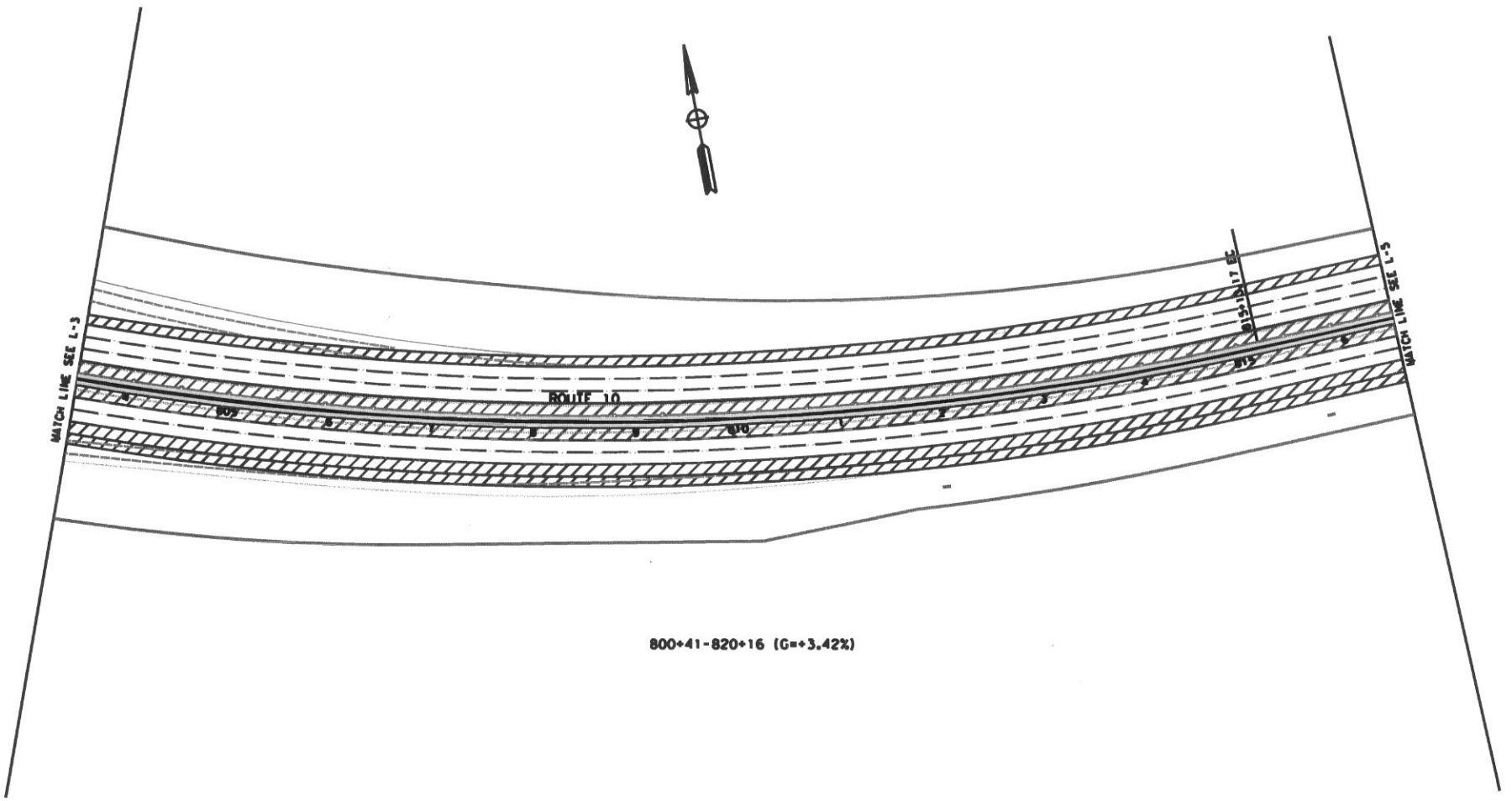
CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

DEPARTMENT OF TRANSPORTATION



800+41-820+16 (G=+3.42%)

LAYOUT

SCALE 1"=50'

L-4

BORDER LAST REVISED 7/2/2010

USERNAME => USER
DGN FILE => REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE 0815000050K

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd.Riv	10	36.4/R39.2 R0.0/R0.2		

REGISTERED Civil ENGINEER DATE

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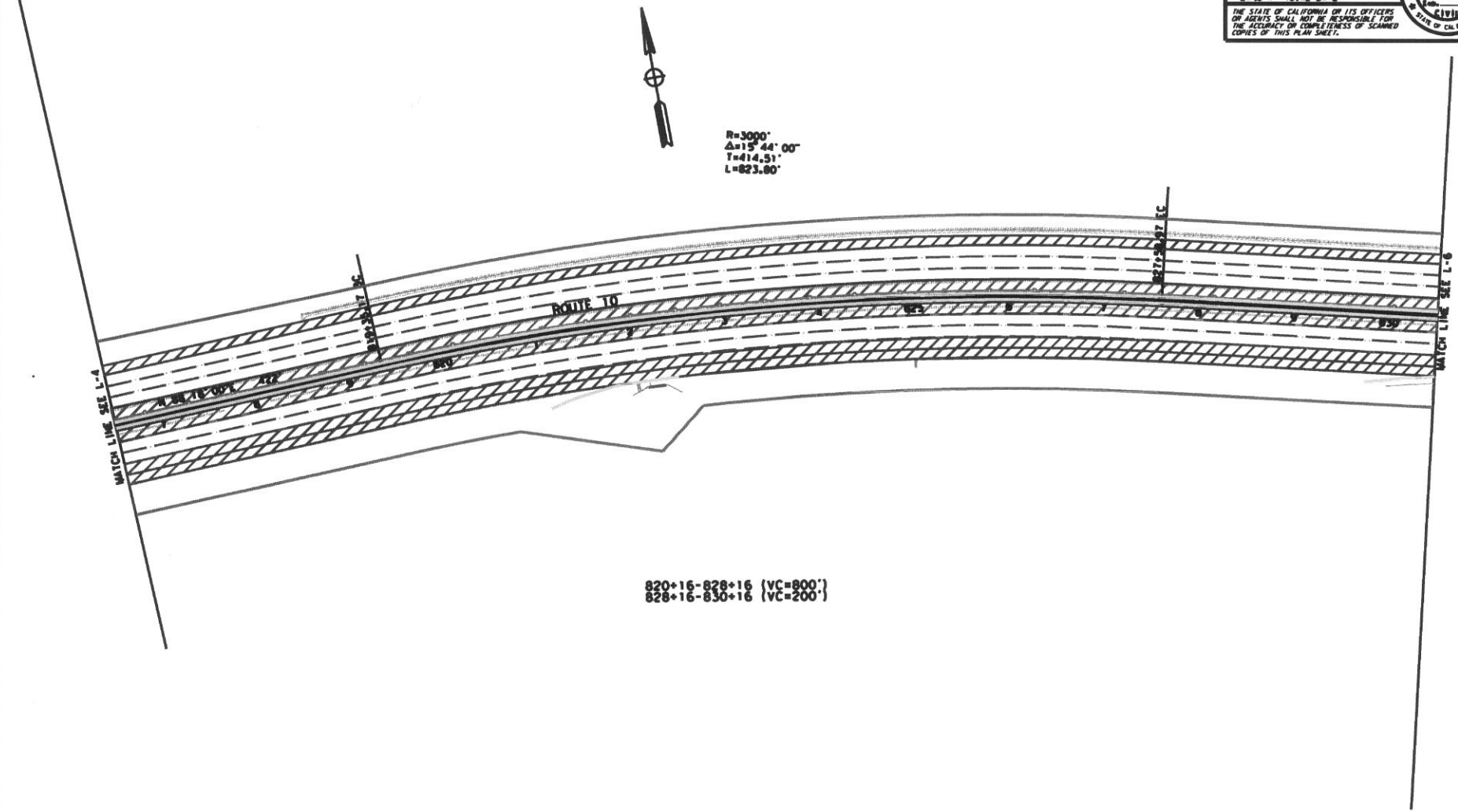

LAYOUT

SCALE:1"=50'

L-5

REVISED BY | DATE REVISED

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

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DATE PLOTTED => 07-20-16 | TIME PLOTTED => BY TIME

BORDER LAST REVISED 7/2/2010 | USERNAME => USER | DGN FILE => REQUEST | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2201 | PROJECT NUMBER & PHASE 0815000050K

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd,Riv	10	36.4/R39.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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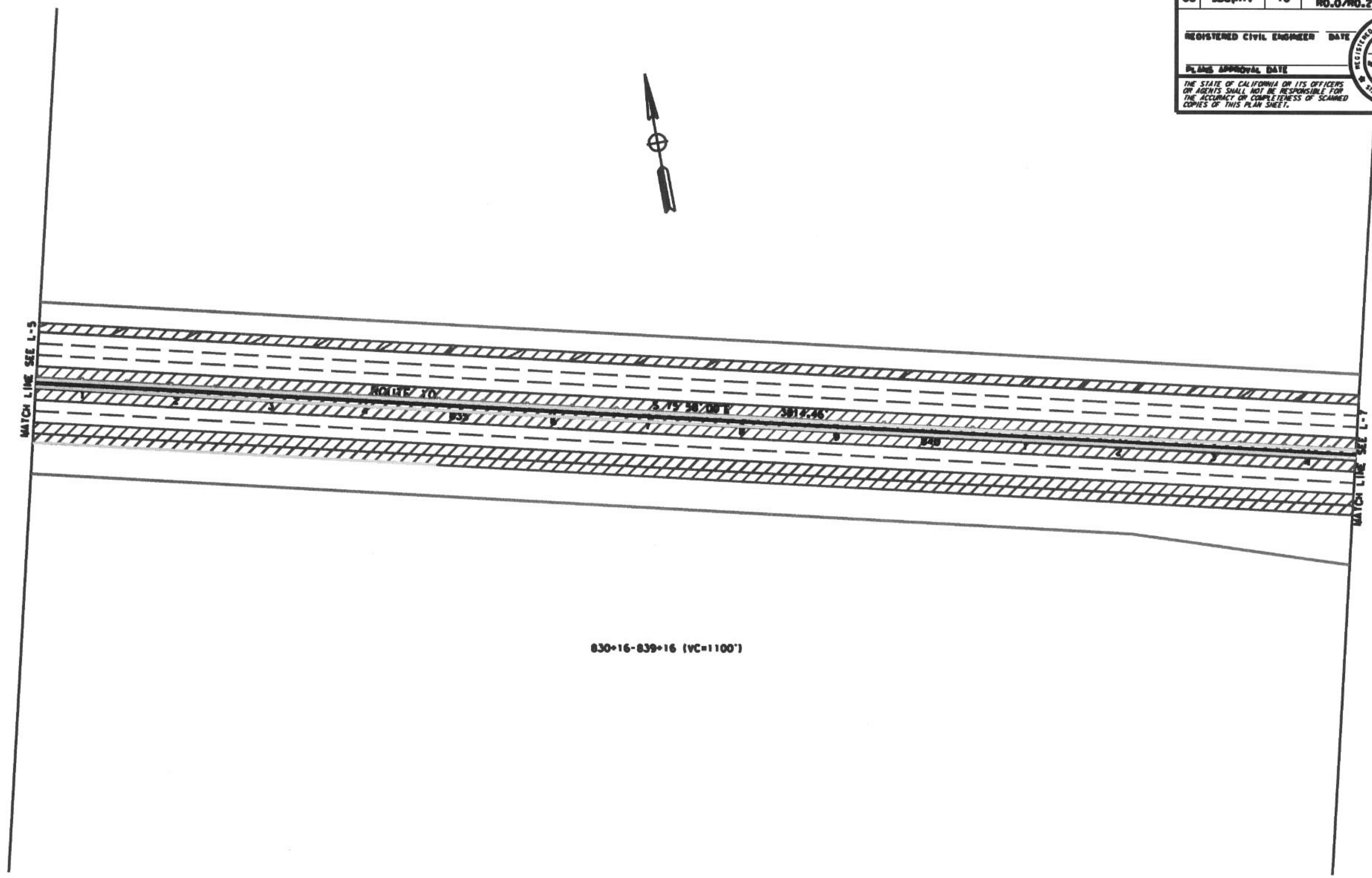

LAYOUT

SCALE:1"=50'

L-6

STATE OF CALIFORNIA · DEPARTMENT OF TRANSPORTATION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => $USER
DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE

0815000050K

LAST REVISION DATE PLOTTED => $DATE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd.Riv	10	16.4/R19.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

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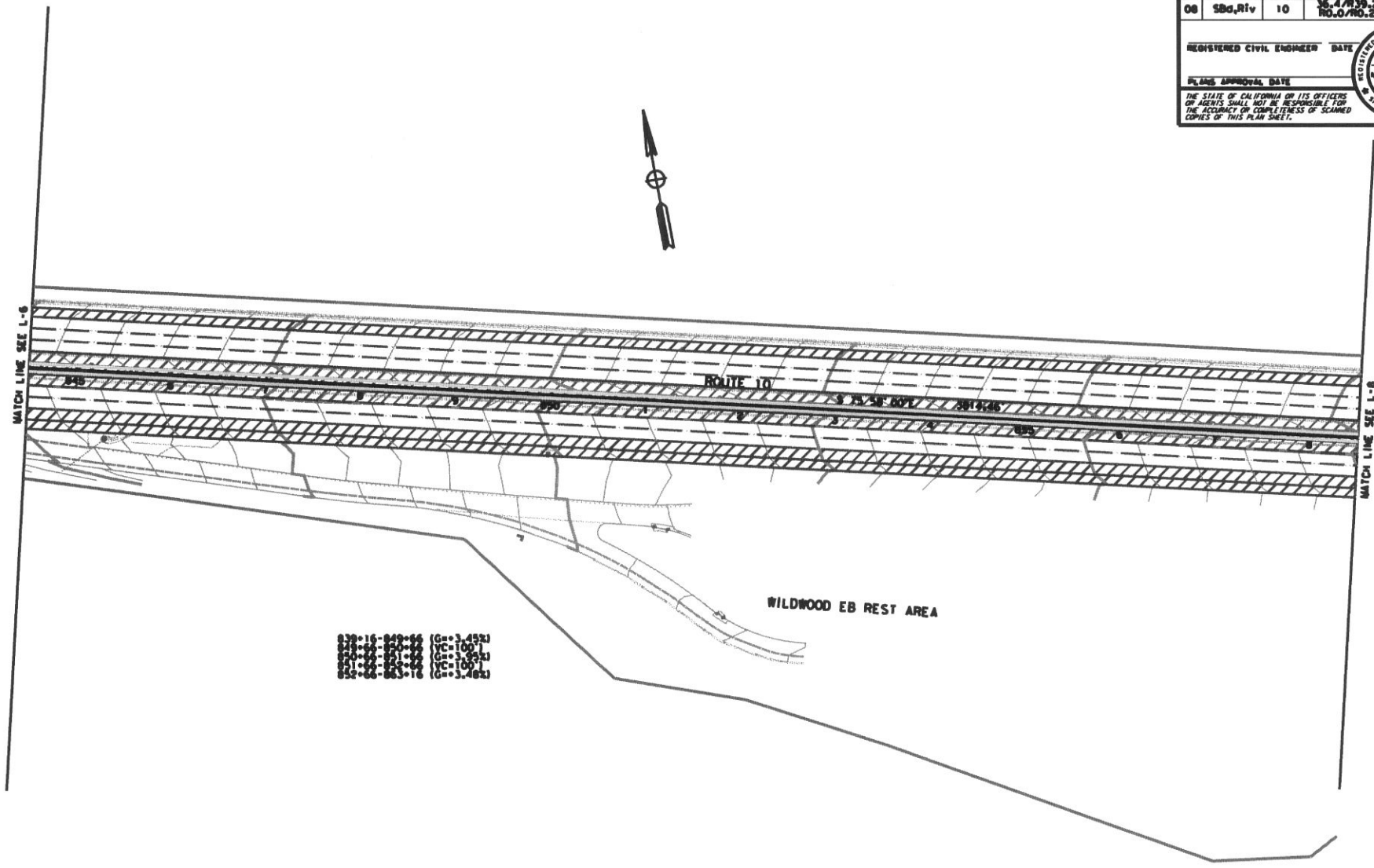

LAYOUT
SCALE: 1"=50'

L-7

REVISED BY
DATE REVISED
CALCULATED-DESIGNED BY
CHECKED BY
FUNCTIONAL SUPERVISOR
STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION | DATE PLOTTED => 07-20-16 | TIME PLOTTED => 07:16

BORDER LAST REVISED 7/2/2010 | USERNAME => DUSER | DGN FILE => DREQUEST | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2201 | PROJECT NUMBER & PHASE 0815000050K

Dist	County	Route	Post Mile Total Project	Sheet No.	Total Sheets
08	SBd,Riv	10	36.4/39.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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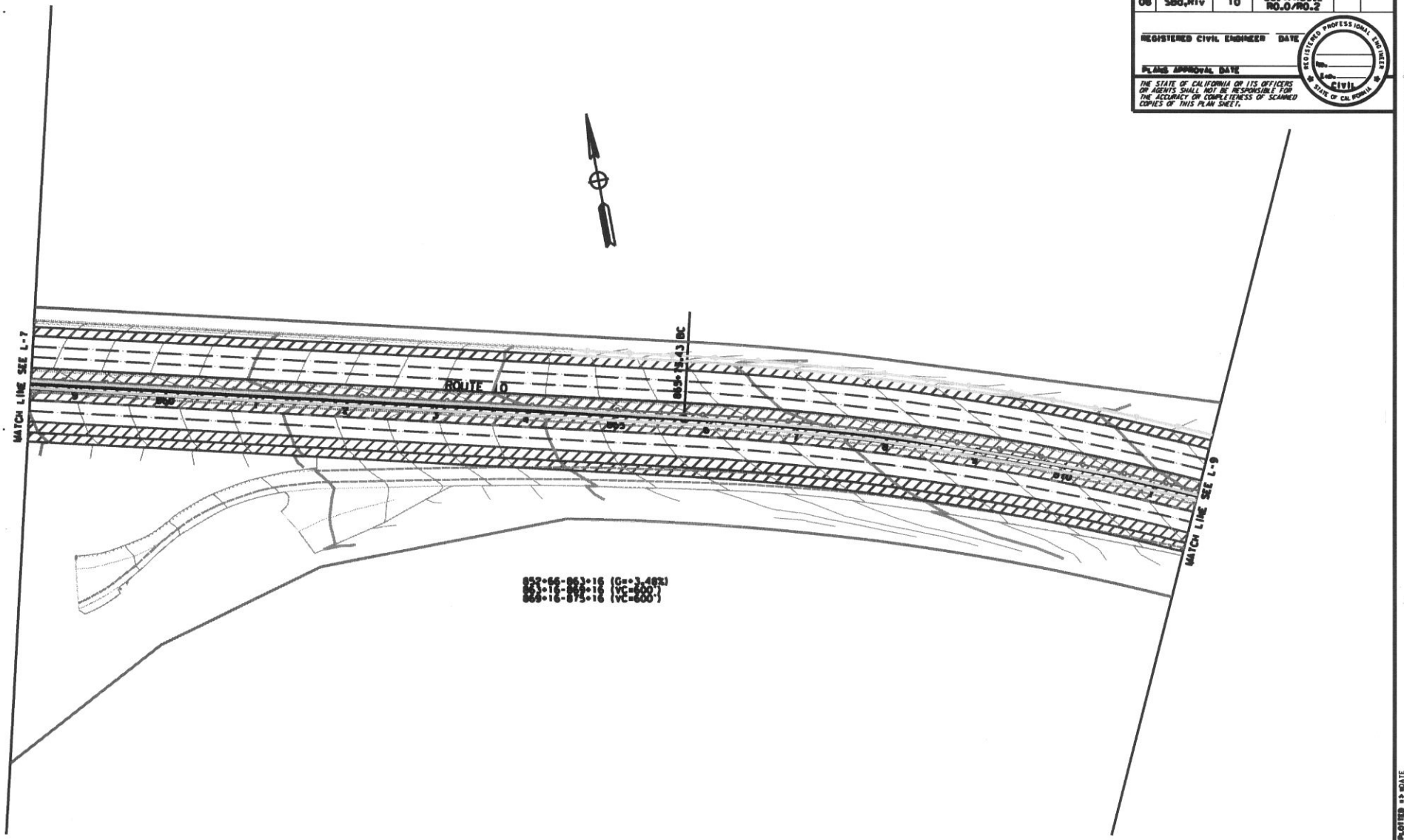

LAYOUT

SCALE: 1"=50'

L-8

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STATE OF CALIFORNIA · DEPARTMENT OF TRANSPORTATION

BORDER LAST REVISED 7/2/2010

USERNAME => %USER
DGN FILE => &REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE 0815000050K

DATE PLOTTED => %DATE

Dist	County	Route	Post Mile Total Project	Sheet No.	Total Sheets
08	SBd,Riv	10	36.1/39.2 R0.0/R0.2		

REGISTERED Civil ENGINEER DATE

PLANS APPROVAL DATE

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DATE REVISED

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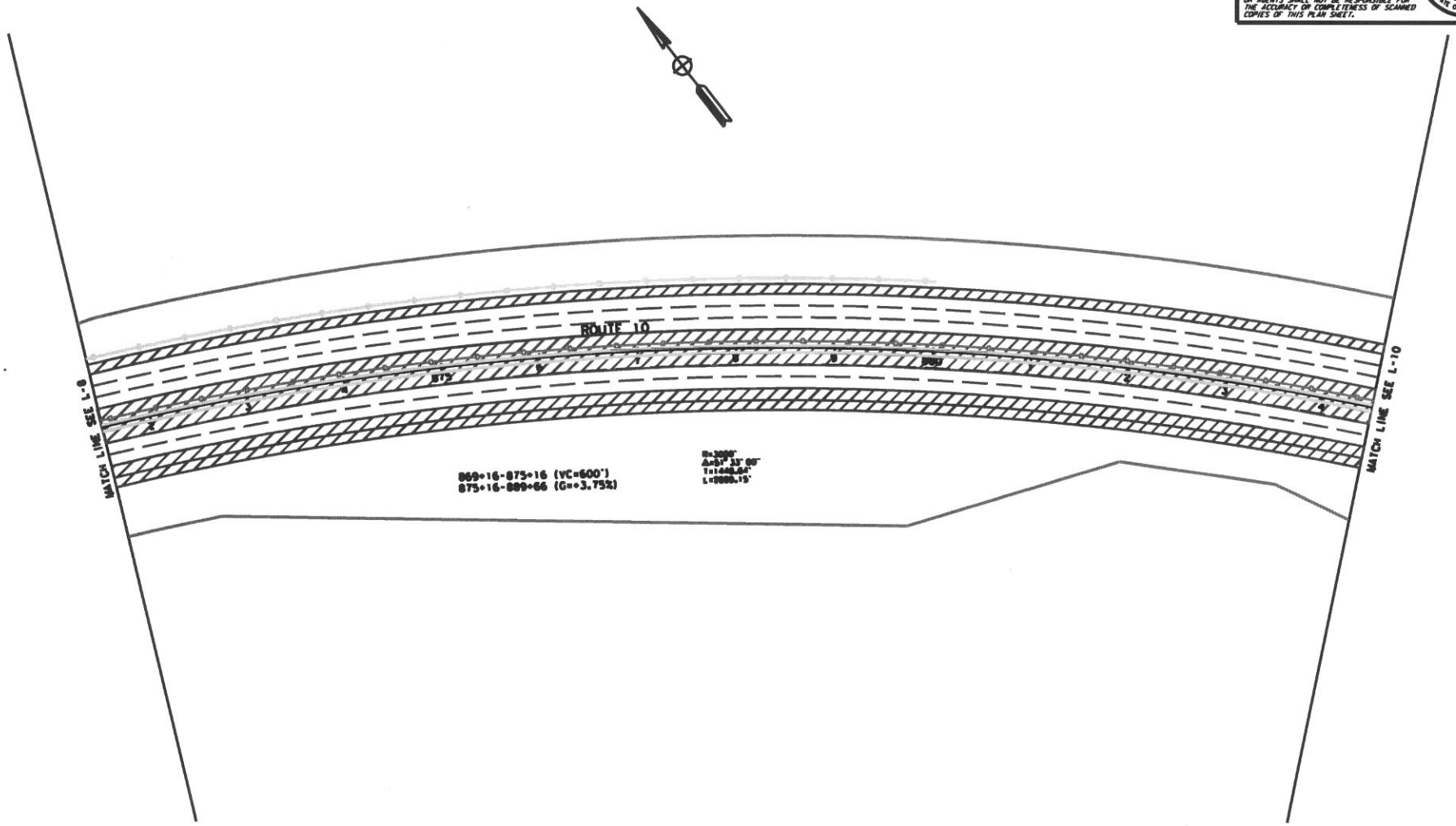

LAYOUT

SCALE: 1"=50'

L-9

LAST REVISED DATE PLOTTED => DATE
07-20-16 TIME PLOTTED => TIME

BORDER LAST REVISED 7/2/2010

USERNAME => USER
DGN FILE => <REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE 0815000050K

DIST	COUNTY	ROUTE	POST MILE / TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
08	SBd.,Riv	10	36.4/R39.7 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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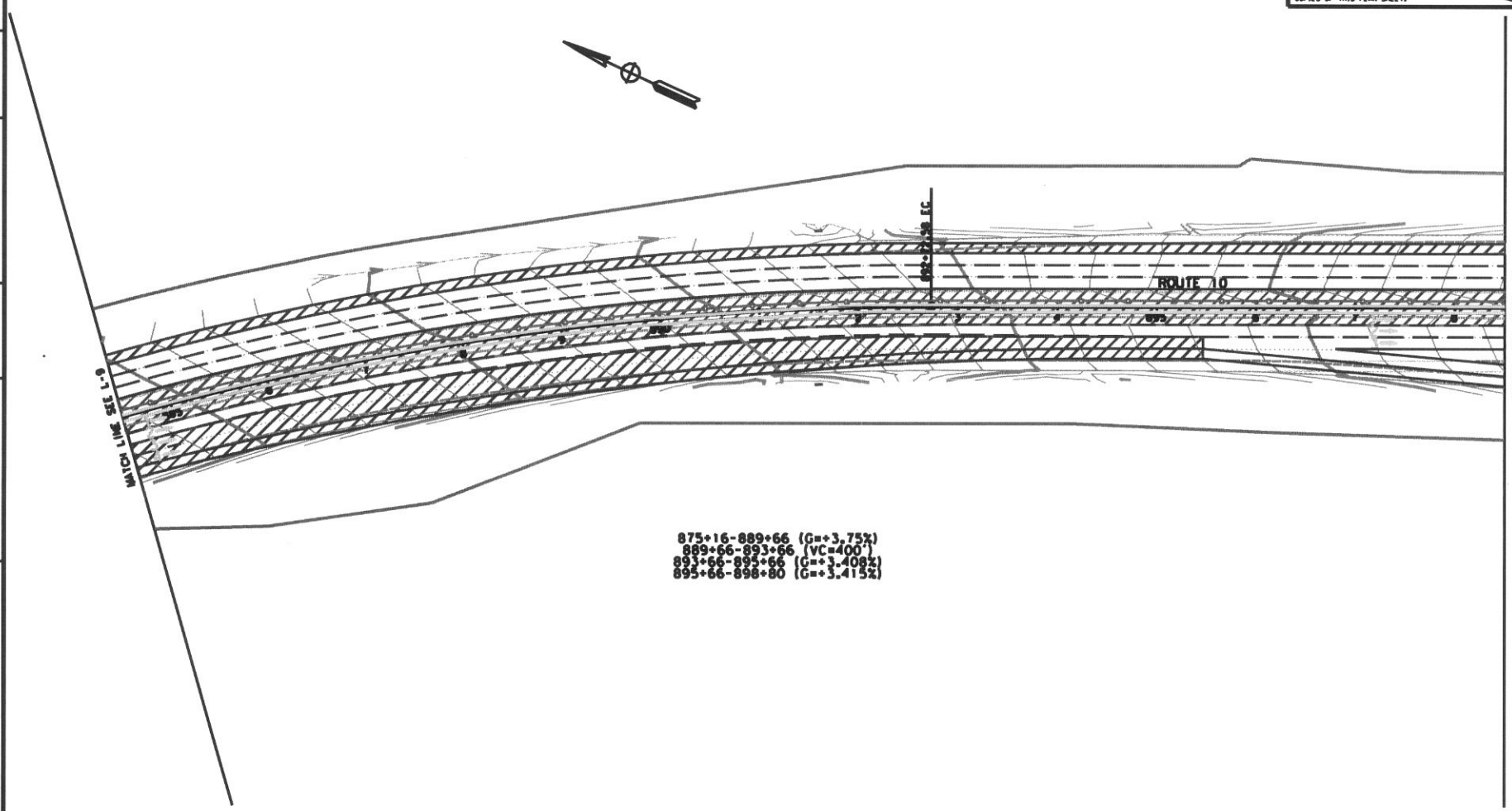
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



LAYOUT

SCALE: 1"=50'

L-10

LAST REVISED DATE PLOTTED => DATE
TIME PLOTTED => TIME
07-20-16

BORDER LAST REVISED 7/2/2010

USERNAME => USER
DGN FILE => REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE 0815000050K

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	SBd,Riv	10	36.4/R39.2 R0.0/R0.2		

REGISTERED CIVIL ENGINEER DATE

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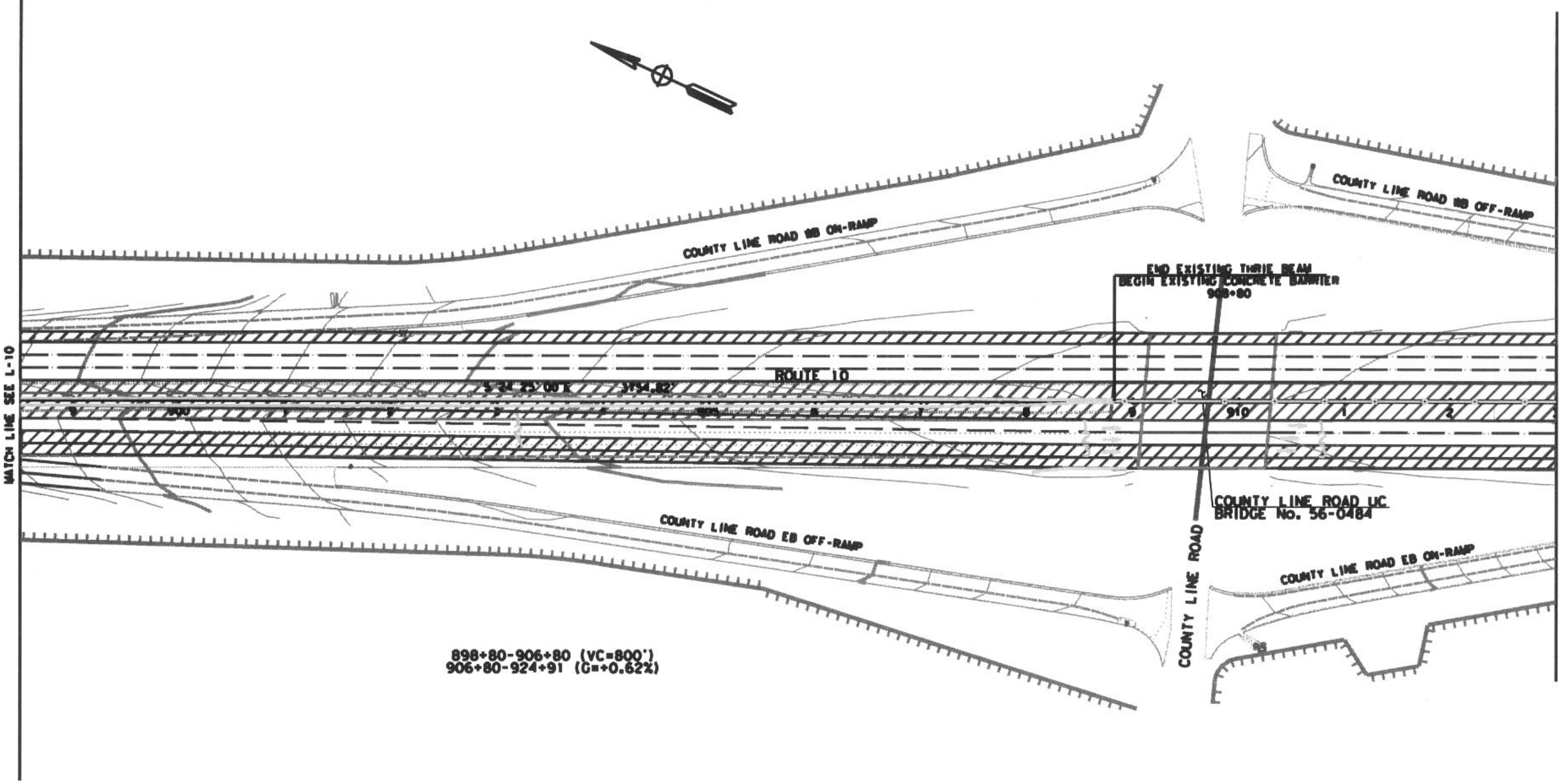

LAYOUT
SCALE: 1"=50'

L-11

STATE OF CALIFORNIA · DEPARTMENT OF TRANSPORTATION

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

LAST REVISION 07-20-16

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

BORDER LAST REVISED 7/2/2010

USERNAME => $USER
DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 2201

PROJECT NUMBER & PHASE

0815000050K

NOTE: FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT DISTRICT OFFICE.

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
08	Sbd,Riv	10	[illegible]		

REGISTERED CIVIL ENGINEER

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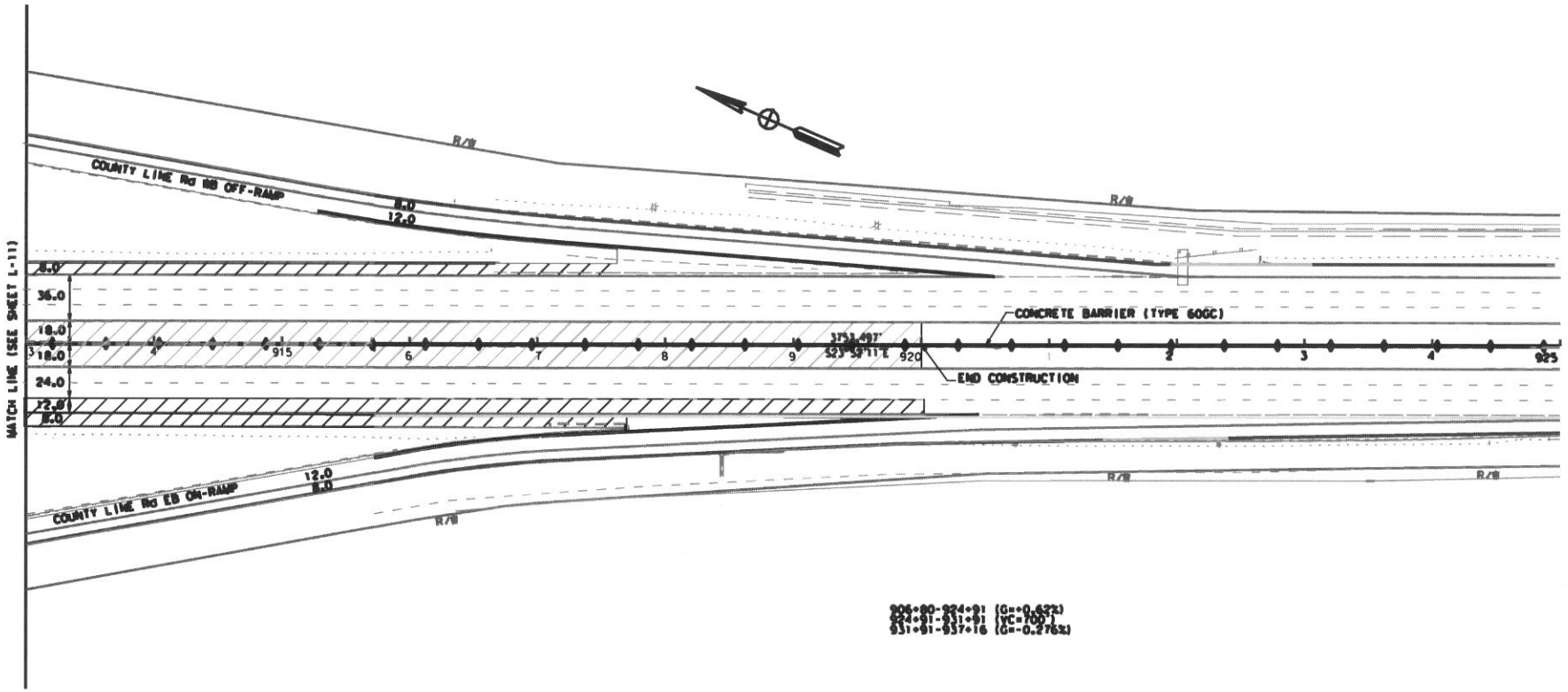
REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

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



LAYOUT

SCALE: 1"=50'

L-12

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

USERNAME => $USER
DGN FILE => $REQUEST

CU 2201

EA 472301

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

PLANNING

DATE REVISED BY

DATE REVISED

CALCULATED/DESIGNED BY

CHECKED BY

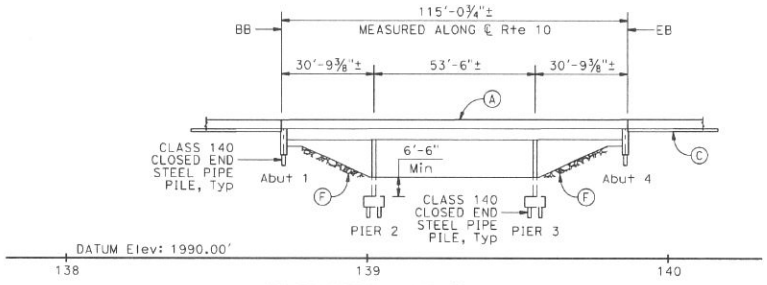
PROJECT ENGINEER

Attachment (D)

Structures

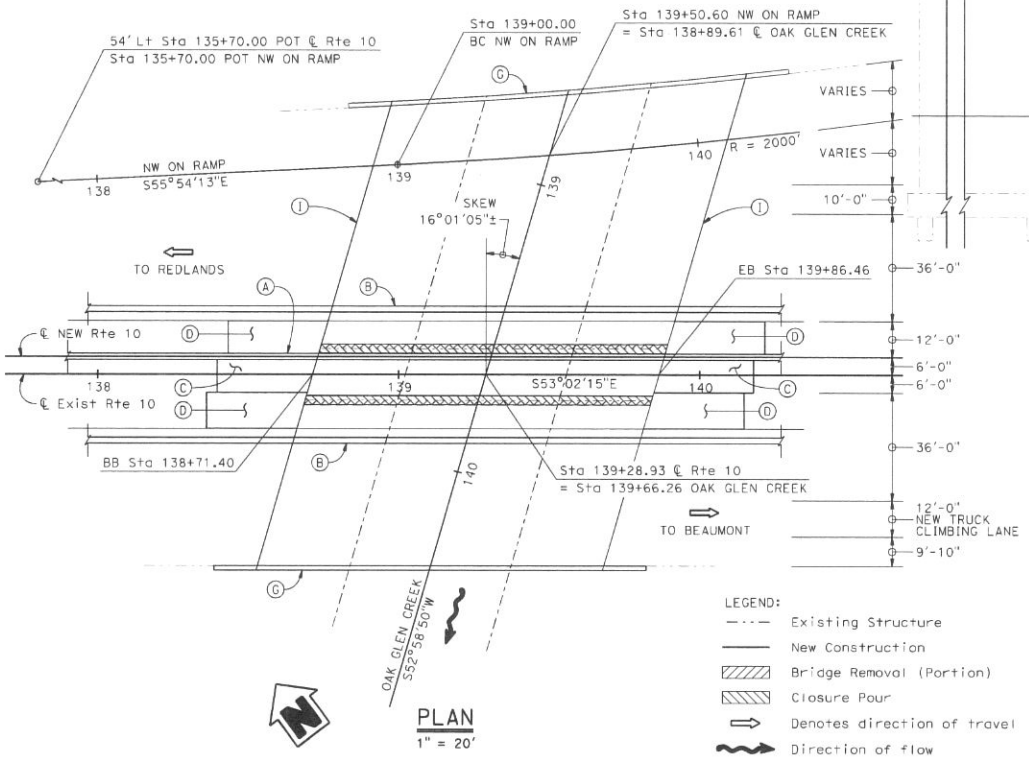
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF STRUCTURES

DIST	COUNTY	ROUTE	POST MILE
08	SBd	10	R36.9



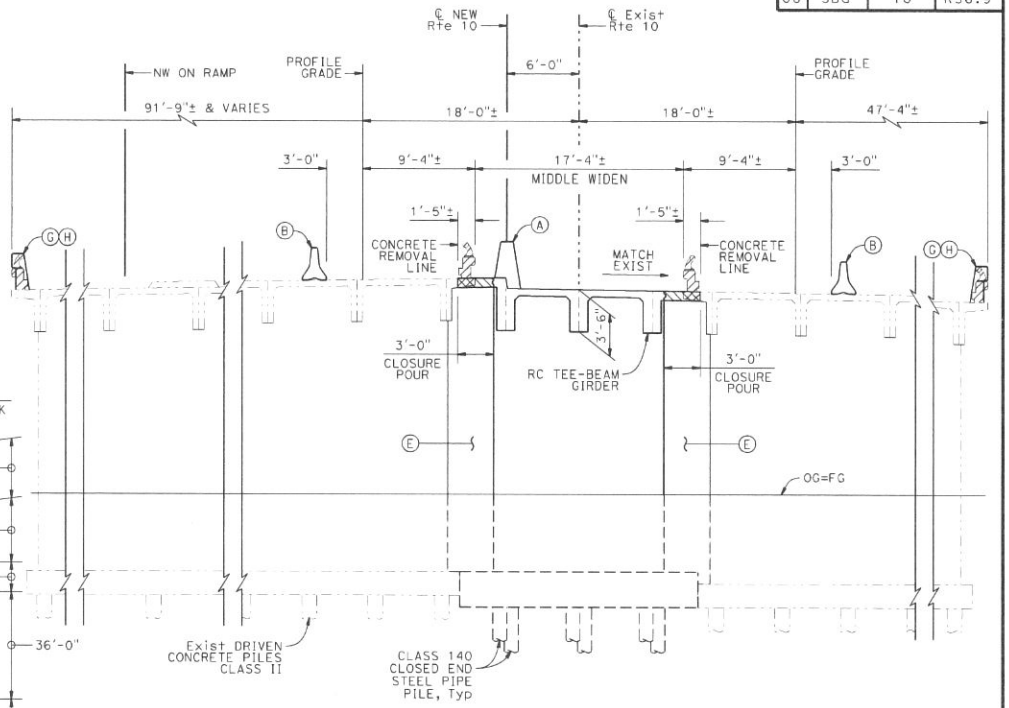
ELEVATION AT ℄ RTE 10

1" = 20'



PLAN

1" = 20'



TYPICAL SECTION

1" = 5'

NOTES:

- (A) Concrete Barrier Type 60A (MOD)
- (B) Temporary Railing Type K, see "ROADWAY PLANS"
- (C) Structure Approach Type N(30D)
- (D) Structure Approach Type R(30D)
- (E) Infill Wall
- (F) Remove and replace rip rap, see "ROADWAY PLANS"
- (G) Concrete Barrier Type 736
- (H) Existing Barrier Railing Type 1 to be removed
- (I) Joint Seal Type A (MR = ½")

ASSUMPTIONS:

1. Temp shoring will be required for pier foundation excavation and construction.
2. Site liquefaction potential is low. Liquefaction potential and resultant lateral spreading will be determined after a subsurface investigation is performed.
3. Existing profile and cross slope to be maintained.
4. Widening requires restriping of lane lines.
5. This project may require permits. District to investigate early.
6. As-built stations and datum shown.

LEGEND:

- Existing Structure
- New Construction
- Bridge Removal (Portion)
- Closure Pour
- Denotes direction of travel
- Direction of flow

ORIGINAL SCALE IN INCHES 0 1 2 3

DESIGNED BY C. Sanchez	DATE 02/22/16	STRUCTURE DESIGN BRANCH 21
DRAWN BY P. Perez	DATE 02/22/16	
CHECKED BY P. Rimal	DATE 02/22/16	
APPROVED M. Pezeshpour	DATE 02/22/16	

ALTERNATIVE 1

PLANNING STUDY

OAK GLEN CREEK

UNIT: 3623	BRIDGE No. 54-0648
SCALE: X	PROJECT No. & PHASE: 0815000050

FILE => Oak Glen Alt 1.dgn

CONTRACT No.: 08-1F760K

USERNAME => a135307 DATE PLOTTED => 28-OCT-2016 TIME PLOTTED => 09:33

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 08-09-10)

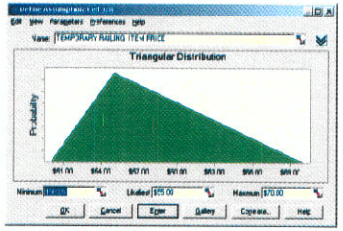
PROBABILISTIC STRUCTURE COST ESTIMATE

INPUT

[ ] GENERAL PLAN ESTIMATE [X] ADVANCE PLANNING ESTIMATE

Revised -October 13, 2016

		IN EST:	11/1/2016
		OUT EST:	11/29/2016
BRIDGE NAME:	Oak Glen Creek Br. (Widen) Alternative 1		
BRIDGE NUMBER:	54-0648	**DISTRICT:**	08
TYPE:	3 Span, RC T-beam	**CO:**	SBd
EA:	08-1F760K	**RTE:**	10
PROJECT ID:	08 1500 0050	**PM:**	36.9
ACCELERATED BRIDGE PROJECT	NO	**DEPTH**	3'-6"
		LENGTH	115
DESIGN SECTION:	21	**WIDTH**	20
# OF STRUCTURES IN PROJECT :	1	**AREA**	2321
		EST. NO.	1
PRICES BY :	VTD	**COST INDEX:**	431
PRICES CHECKED BY :		**DATE:**	
QUANTITIES BY:	C. SANCHEZ	**DATE:**	10/28/2016



The Assumption

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	ITEM PRICE RANGE MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)		CY	160	$90.00	$110.00	$150.00	$17,610
2	STRUCTURE BACKFILL (BRIDGE)		CY	97	$115.00	$155.00	$200.00	$14,989
3	STRUCTURAL CONCRETE, BRIDGE		CY	146	$1,150.00	$1,300.00	$1,500.00	$189,962
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	36	$550.00	$700.00	$760.00	$25,317
5	STRUCTURAL CONCRETE, APPROACH SLAB	N(30D)	CY	32	$720.00	$850.00	$950.00	$27,339
6	STRUCTURAL CONCRETE, APPROACH SLAB	R(30D)	CY	67	$1,300.00	$1,400.00	$1,600.00	$94,375
7	BAR REINFORCING STEEL (BRIDGE)		LB	35544	$1.00	$1.30	$1.70	$46,207
8	JOINT SEAL (MR = 1/2")	A	LF	331	$25.00	$30.00	$42.00	$9,917
9	TEMPORARY RAILING	K	LF	357	$35.00	$50.00	$65.00	$17,850
10	BRIDGE REMOVAL (PORTION)		CY	15	$700.00	$1,000.00	$1,200.00	$14,770
11	BRIDGE REMOVAL (BARRIER)	TYPE 1	LF	571	$35.00	$50.00	$65.00	$28,550
12	CONCRETE BARRIER	TYPE 60A (MOD)	LF	178	$70.00	$115.00	$160.00	$20,470
13	DRILL AND BOND DOWEL		LF	216	$40.00	$45.00	$50.00	$9,720
14	FURNISH STEEL PIPE PILE	CLASS 140 ALT. V	LF	1600	$35.00	$50.00	$60.00	$80,000
15	DRIVE STEEL PIPE PILE	CLASS 140 ALT. V	EA	24	$2,000.00	$2,500.00	$3,000.00	$60,000
16	CONCRETE BARRIER	736	LF	288	$100.00	$120.00	$140.00	$34,560
17	PAVING NOTCH EXTENSION		CF	38	$230.00	$270.00	$300.00	$10,260
18	AGGREGATE BASE (APPROACH SLAB)		CY	7	$320.00	$370.00	$410.00	$2,590
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
							SUBTOTAL	$704,486

Comments
Suggested Work Schedule = +/- 5 months.

TIME RELATED OVERHEAD		10%	$70,449
MOBILIZATION		10%	$86,104
SUBTOTAL BRIDGE ITEMS			$861,039
CONTINGENCIES		25%	$215,260
		SUBTOTAL	$1,076,299

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL		SF				

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY

Notes

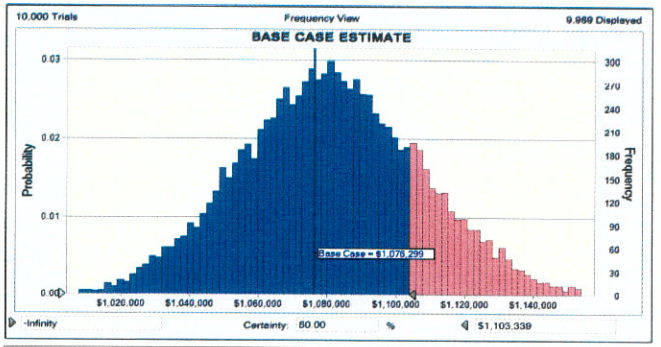
Highlighted cells represent the quantities and prices that are included in the model.
Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

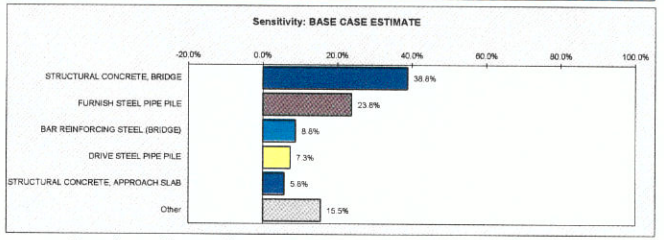
BASE CASE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION

BASE CASE ESTIMATE: $1,076,299

OUTPUT

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.





Percentiles:	Forecast values
0%	$996,855
10%	$1,047,466
20%	$1,058,331
30%	$1,066,785
40%	$1,073,993
50%	$1,080,561
60%	$1,087,151
70%	$1,094,412
80%	$1,103,339
90%	$1,115,034
100%	$1,173,108

Recommended Range

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

80% FORECAST VALUE = $1,103,000.00

***80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction**

Years Beyond Midpoint	Escalation Rate	Escalated Budget Est.
1	2.90%	$1,135,000
2	3.00%	$1,169,000
3	3.30%	$1,208,000
4	3.00%	$1,244,000
5	2.80%	$1,279,000

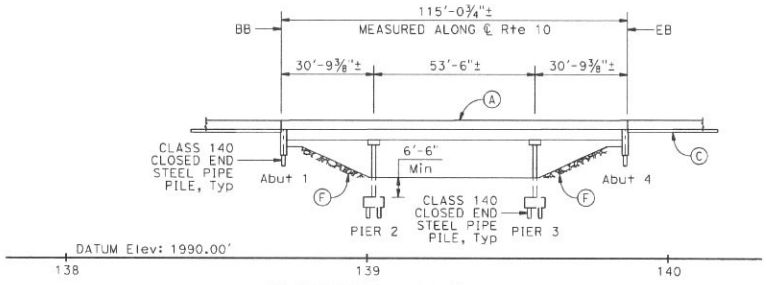
* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at http://www.dot.ca.gov/hq/oppd/costest/data.htm. Web page updated May 2014.

80 % Forecast
BRIDGE COST PER SQUARE FOOT = $475
BRIDGE REMOVAL =

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

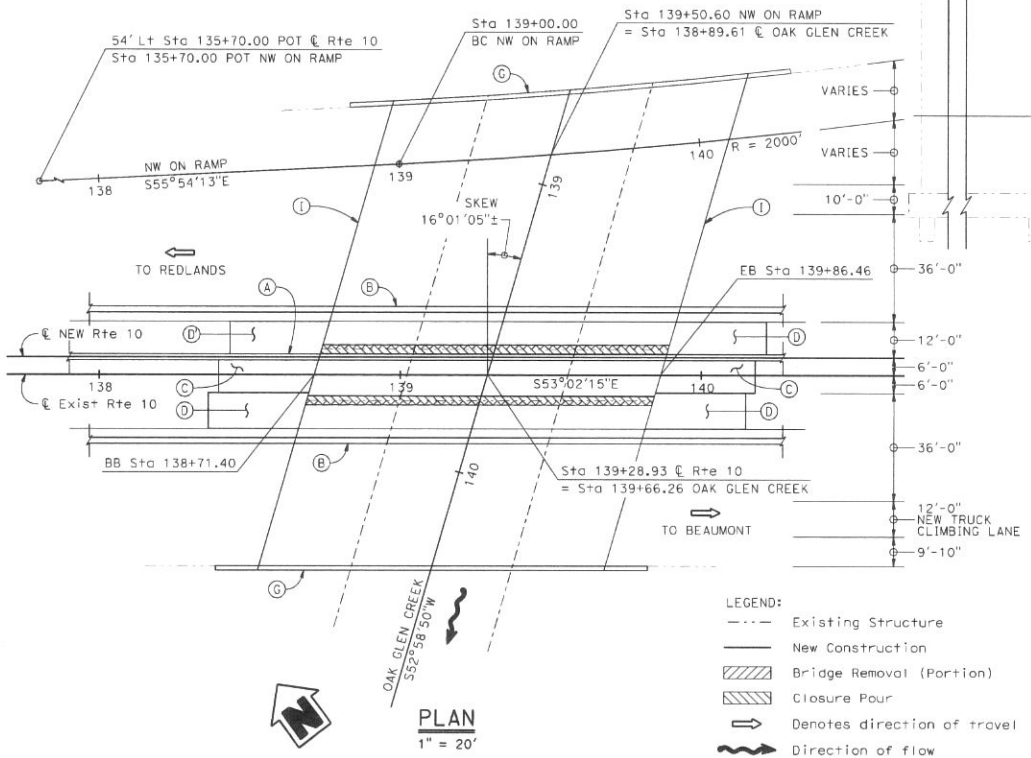
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF STRUCTURES

DIST	COUNTY	ROUTE	POST MILE
08	SBd	10	R36.9



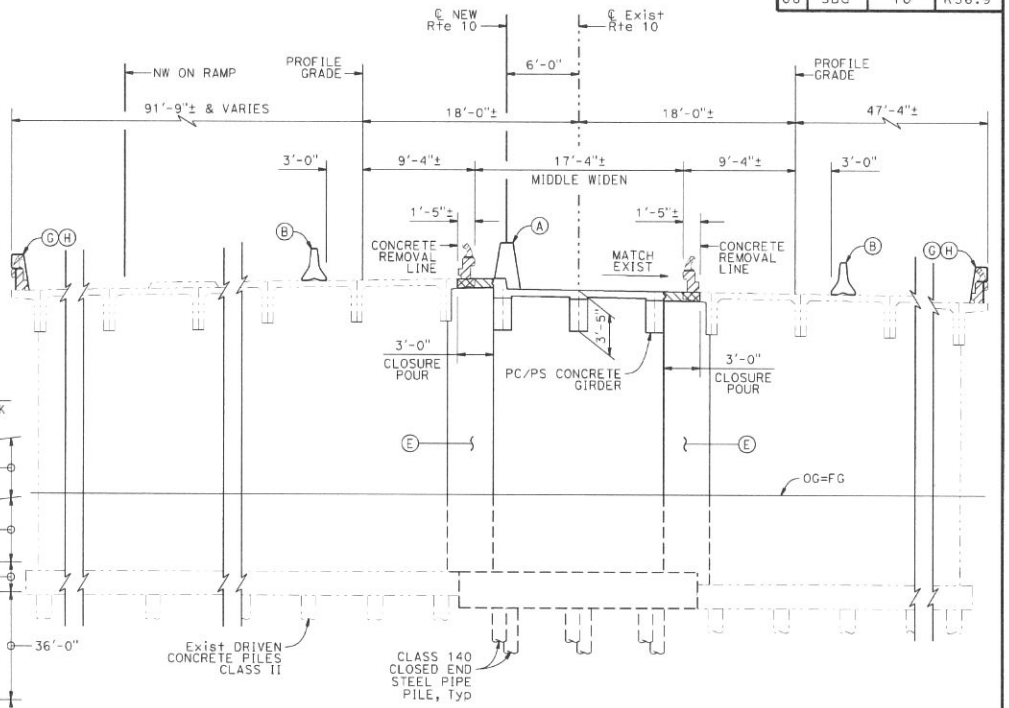
ELEVATION AT ℄ RTE 10

1" = 20'



PLAN

1" = 20'



TYPICAL SECTION

1" = 5'

LEGEND:

- Existing Structure
- New Construction
- Bridge Removal (Portion)
- Closure Pour
- Denotes direction of travel
- Direction of flow

NOTES:

- (A) Concrete Barrier Type 60A (MOD)
- (B) Temporary Railing Type K, see "ROADWAY PLANS"
- (C) Structure Approach Type N(30D)
- (D) Structure Approach Type R(30D)
- (E) Infill Wall
- (F) Remove and replace rip rap, see "ROADWAY PLANS"
- (G) Concrete Barrier Type 736
- (H) Existing Barrier Railing Type 1 to be removed
- (I) Joint Seal Type A (MR = ½")

ASSUMPTIONS:

1. Temp shoring will be required for pier foundation excavation and construction.
2. Site liquefaction potential is low. Liquefaction potential and resultant lateral spreading will be determined after a subsurface investigation is performed.
3. Existing profile and cross slope to be maintained.
4. Widening requires restriping of lane lines.
5. This project may require permits. District to investigate early.
6. As-built stations and datum shown.

DESIGNED BY C. Sanchez	DATE 02/22/16	STRUCTURE DESIGN BRANCH 21
DRAWN BY P. Perez	DATE 02/22/16	
CHECKED BY P. Rimal	DATE 02/22/16	
APPROVED M. Pezeshpour	DATE 02/22/16	

ORIGINAL SCALE IN INCHES 0 1 2 3

ALTERNATIVE 2
PLANNING STUDY
OAK GLEN CREEK

UNIT: 3623	BRIDGE No. 54-0648
SCALE: X	PROJECT No. & PHASE: 0815000050

CONTRACT No.: 08-1F760K

FILE => Oak Glen Alt 2.dgn

USERNAME => s1353307 DATE PLOTTED => 28-OCT-2016 TIME PLOTTED => 09:33

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 08-09-10)

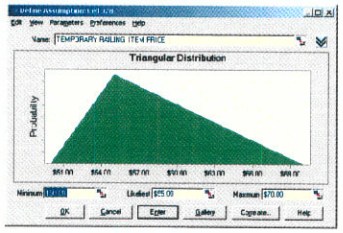
PROBABILISTIC STRUCTURE COST ESTIMATE

INPUT

[ ] GENERAL PLAN ESTIMATE [X] ADVANCE PLANNING ESTIMATE

Revised: October 13, 2016

		IN EST:	11/1/2016
		OUT EST:	11/29/2016
BRIDGE NAME:	Oak Glen Creek Br. (Widen) Alternative 2		
BRIDGE NUMBER:	54-0648	**DISTRICT:**	08
TYPE:	3 Span, PC/PS Concrete Girder	**CO:**	SBd
EA:	08-1F760K	**RTE:**	10
PROJECT ID:	08 1500 0050	**PM:**	36.9
ACCELERATED BRIDGE PROJECT	NO	**DEPTH**	3'-6"
		LENGTH	115
DESIGN SECTION:	21	**WIDTH**	20
# OF STRUCTURES IN PROJECT:	1	**AREA**	2321
		EST. NO.	1
PRICES BY:	VTD	**COST INDEX:**	431
PRICES CHECKED BY:		**DATE:**	
QUANTITIES BY:	C. SANCHEZ	**DATE:**	10/28/2016



The Assumption

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	ITEM PRICE RANGE MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)		CY	160	$90.00	$110.00	$150.00	$17,610
2	STRUCTURE BACKFILL (BRIDGE)		CY	97	$115.00	$155.00	$200.00	$14,989
3	STRUCTURAL CONCRETE, BRIDGE		CY	132	$1,150.00	$1,300.00	$1,500.00	$171,600
4	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	36	$550.00	$700.00	$760.00	$25,317
5	STRUCTURAL CONCRETE, APPROACH SLAB	N(30D)	CY	32	$720.00	$850.00	$950.00	$27,339
6	STRUCTURAL CONCRETE, APPROACH SLAB	R(30D)	CY	67	$1,300.00	$1,400.00	$1,600.00	$94,375
7	BAR REINFORCING STEEL (BRIDGE)		LB	26991	$1.00	$1.30	$1.70	$35,088
8	JOINT SEAL (MR = 1/2")	A	LF	331	$25.00	$30.00	$42.00	$9,917
9	TEMPORARY RAILING	K	LF	357	$35.00	$50.00	$65.00	$17,850
10	BRIDGE REMOVAL (PORTION)		CY	15	$700.00	$1,000.00	$1,200.00	$14,770
11	BRIDGE REMOVAL (BARRIER)	TYPE 1	LF	571	$35.00	$50.00	$65.00	$28,550
12	CONCRETE BARRIER	TYPE 60A (MOD)	LF	178	$70.00	$115.00	$160.00	$20,470
13	DRILL AND BOND DOWEL		LF	208	$40.00	$45.00	$50.00	$9,360
14	FURNISH STEEL PIPE PILE	CLASS 140 ALT. V	LF	1600	$35.00	$50.00	$60.00	$80,000
15	DRIVE STEEL PIPE PILE	CLASS 140 ALT. V	EA	24	$2,000.00	$2,500.00	$3,000.00	$60,000
16	CONCRETE BARRIER	736	LF	288	$100.00	$120.00	$140.00	$34,560
17	PAVING NOTCH EXTENSION		CF	38	$230.00	$270.00	$300.00	$10,260
18	AGGREGATE BASE (APPROACH SLAB)		CY	7	$320.00	$370.00	$410.00	$2,590
19	FURNISH PC/PS CONCRETE RECTANGULAR GIRDER		EA	9	$6,800.00	$8,500.00	$10,200.00	$76,500
20	ERECT PC/PS CONCRETE GIRDER		EA	9	$2,500.00	$3,000.00	$3,500.00	$27,000
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
							SUBTOTAL	$778,146

Comments
Suggested Work Schedule = +/- 4 months.

TIME RELATED OVERHEAD			
MOBILIZATION		10%	$77,815
SUBTOTAL BRIDGE ITEMS		10%	$95,107
CONTINGENCIES			$951,067
		25%	$237,767
		SUBTOTAL	$1,188,834

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL		SF				

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY

Notes

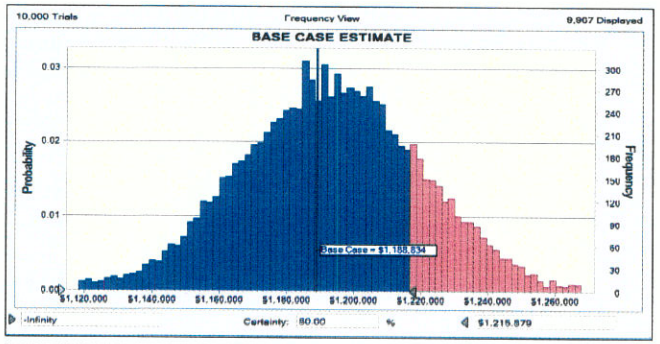
Highlighted cells represent the quantities and prices that are included in the model.
Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

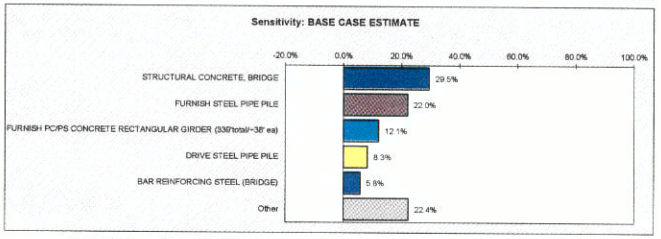
BASE CASE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION

BASE CASE ESTIMATE: $1,188,834

OUTPUT

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.





Percentiles:	Forecast values
0%	$1,098,199
10%	$1,158,618
20%	$1,170,273
30%	$1,178,943
40%	$1,186,200
50%	$1,193,035
60%	$1,199,877
70%	$1,207,104
80%	$1,215,879
90%	$1,227,628
100%	$1,290,907

Recommended Range

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

80% FORECAST VALUE = $1,216,000.00

***80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction**

Years Beyond Midpoint	Escalation Rate	Escalated Budget Est.
1	2.90%	$1,251,000
2	3.00%	$1,289,000
3	3.30%	$1,332,000
4	3.00%	$1,372,000
5	2.80%	$1,410,000

* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at http://www.dot.ca.gov/hq/oppd/costest/data.htm. Web page updated May 2014.

80 % Forecast
BRIDGE COST PER SQUARE FOOT = $524
BRIDGE REMOVAL =

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

Bridge Architecture & Aesthetics
Preliminary Architectural/Aesthetic Recommendation (PAAR)

1. PROJECT TYPE

Dist: EA: **Co** **Rte** **PM Ahd** **PM Back**

08 1F760K

Project Name

OAK GLEN CREEK BR (WIDEN)

2. PROJECT DESCRIPTION

☐ OC ☐ POC ☐ UP ☐ RW ☐ PH ☐ VARIOUS
☐ UC ☐ OH ☒ BR ☐ SW ☐ TUN ☐ Other...

○ 100 PM	○ 160 APS	○ 165 Graphic	○ 240 Graphic	○ 240 PS&E	○ 275 Const.	○ UN
○ 150 APS	○ 160 Graphic	○ 165 Model	○ 240 GP	○ 240 TSM.	○ OVERSIGHT	○ ----
	○ 165 ENV	○ 175 Display	○ 240 Model	○ 250 PS&E	○ Design Build	○ Otl

Aesth Proj Contact: Isaac Tasabia **DES Design Senior**

Designer:

3. PROJECT REQUIREMENTS

◉ Level 1 - Standard Aesthetic Rec.Req ○ Level 3 - Complex Aesthetic Rec. Req
---> ○ Level 2 - Moderate Aesthetic Rec. Req ○ Level 4 - Politically Sensitive Project

4. CHECKED

☒ Route Books
☐ Maintenance Books
☒ BIRIS (as builts)
☒ Photo File
☐ Other...

5. EXISTING CONDITIONS- BRIDGE NAME - OAK GLEN CREEK BR# 54-0648

___ Route Theme Description
X No Route Theme exists
Description of *previous* bridge CIP BOX / TYPE 2 COL / TYPE 736 BARRIER / ROCK COBBLE TREATMENT
Description of *next* bridge PC GIRDERS / DROP CAP BENTS / TYPE 2 BARRIER / NO TREATMENT
Other FRACTURED RIB TEXTURED GRAPHICS ON SOME RW's

X Ext Girder ☒ Vertical ☐ Sloped ☐ Ratio: 1:2 ☐ Ratio: 1:1 ☐ Special ☐ Other...
X Overhang
X Abutment ☒ Open ☐ Closed ☐ Sloped In ☐ Sloped Out ☐ Other...
X Rail ☐ Type 25 ☐ Type 26M ☐ Type 28 ☐ Type 29M ☐ Type 80 ☐ Pattern
☐ Type 25M ☐ Type 27 ☐ Type 28M ☐ Type 732 ☐ Type 80SW ☐ Other...
☐ Type 26 ☐ Type 27M ☐ Type 29 ☐ Type 736 ☐ Texture
___ Column ☐ Type 1 ☐ Type 3 (two way flare) ☐ RW ☐ HW ☐ OW ☐ Pattern
☐ Type 2 (one way flare) ☐ R ☐ H ☐ O ☐ Texture ☐ Other...
**R-Round, RW-Round Wide, H-Hexagonal, HW-Hex/Wide, O-Octagonal, OW-Oct/Wide*
X Wing Wall
___ Retaining Wall
___ See Drawing

6. ARCHITECTURAL/AESTHETIC RECOMMENDATION

___ Match Existing (see box #5)
X Recommendations (see below)
___ Ext Girder ☐ Vertical ☐ Sloped ☐ Ratio: 1:2 ☐ Ratio: 1:1 ☐ Special ☐ Other...
___ Overhang
X Abutment ☒ Open ☐ Closed ☐ Sloped In ☐ Sloped Out ☐ Other...
X Rail ☐ Type 25 ☐ Type 26M ☐ Type 28 ☐ Type 29M ☐ Type 80 ☐ Pattern
☐ Type 25M ☐ Type 27 ☐ Type 28M ☐ Type 732 ☐ Type 80SW ☐ Other...
☐ Type 26 ☐ Type 27M ☐ Type 29 ☒ Type 736 ☐ Texture
___ Column ☐ Type 1 ☐ Type 3 (two way flare) ☐ RW ☐ HW ☐ OW ☐ Pattern
☐ Type 2 (one way flare) ☐ R ☐ H ☐ O ☐ Texture ☐ Other...
**R-Round, RW-Round Wide, H-Hexagonal, HW-Hex/Wide, O-Octagonal, OW-Oct/Wide*
___ Wing Wall
___ Retaining Wall
___ See Drawing

Comments ALTERNATIVE 1 (MEDIAN WIDEN) PREFERRED - MATCH EXISTING STRUCTURE TYPE / PIER WALL
NO BARRIER TREATMENT RECOMMENDED AT THIS TIME.

Attachment (E)

Preliminary Cost Estimate (Build Alternative)

PROJECT

PLANNING COST ESTIMATE

4: 08-1F760K (0815000050) PID: 081F760

EA: 08-1F760K (0815000050)

PID: 081F760K

District-County-Route: 08-SBd/Riv-10

PM: 36.4/R39.2 & R0.0/R0.2

Type of Estimate : Preliminary

Program Code : 800.100/HE13

Project Limits : SBd-10-36.4/R39.2; Riv-10-R0.0/R0.2

Project Description: In Yucaipa and Calimesa from 16th Street (OC) to 0.2 mile east of County Line Road (UC)

Scope : Add a Truck Climbing Lane in the Eastbound Direction of Interstate 10

Alternative : Build (Median Widening+Rehab EB/WB Outside Shoulders+Rehab EB Lane #3)

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost	Escalated Cost
TOTAL ROADWAY COST	$ 28,945,900	$ 32,104,416
TOTAL STRUCTURES COST	$ 1,216,000	$ 1,348,687
SUBTOTAL CONSTRUCTION COST	$ 30,161,900	$ 33,453,103
TOTAL RIGHT OF WAY COST	$ 10,000	$ 10,000
TOTAL CAPITAL OUTLAY COSTS	**$ 30,172,000**	**$ 33,464,000**
PR/ED SUPPORT	$ 1,508,600	$ 1,508,600
PS&E SUPPORT	$ 3,017,200	$ 3,017,200
RIGHT OF WAY SUPPORT	$ 17,000	$ 17,000
CONSTRUCTION SUPPORT	$ 4,525,800	$ 4,525,800
TOTAL SUPPORT COST	**$ 9,068,600**	**$ 9,068,600**
TOTAL PROJECT COST	**$ 39,250,000**	**$ 42,550,000**

If Project has been programmed enter Programmed Amount

	Month	/ Year
Date of Estimate (Month/Year)	3	/ 2017
Estimated Construction Start (Month/Year)	7	/ 2020
Number of Working Days =	320	
Estimated Mid-Point of Construction (Month/Year)	3	/ 2021
Estimated Construction End (Month/Year)	11	/ 2021
Number of Plant Establishment Days	270	

Estimated Project Schedule

PID Approval	6/12/2017
PA/ED Approval	12/21/2018
PS&E	12/7/2019
RTL	1/7/2020
Begin Construction	7/9/2020

Reviewed by District O.E. or Cost Estimate Certifier

Maen Shaar	3/22/2017	(909) 383-7131
Office Engineer / Cost Estimate Certifier	**Date**	**Phone**

Approved by Project Manager

Melecio Chalco	3/22/2017	(909) 383-6761
Project Manager	**Date**	**Phone**

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	Earthwork	$	2,317,000
2	Pavement Structural Section	$	7,237,500
3	Drainage	$	1,000,000
4	Specialty Items	$	2,200,000
5	Environmental	$	470,000
6	Traffic Items	$	890,000
7	Detours	$	2,529,200
8	Minor Items	$	1,664,400
9	Roadway Mobilization	$	1,830,900
10	Supplemental Work	$	1,081,400
11	State Furnished	$	764,800
12	Time-Related Overhead	$	1,171,500
13	Roadway Contingency	$	5,789,200
	TOTAL ROADWAY ITEMS	**$**	**28,945,900**

Estimate Prepared By :	Maen Shaar, Office Chief	3/22/2017	(909) 383-7131
	Name and Title	Date	Phone
Estimate Reviewed By :	Melecio Chalco, Project Manager	3/22/2017	(909) 383-6761
	Name and Title	Date	Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

EA: 08-1F760K (0815000050) PID: 081F760K

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY	45,000	x	40.00	=	$	1,800,000
198001	Imported Borrow	CY	19,800	x	15.00	=	$	297,000
160101	Clearing & Grubbing	LS	1	x	100,000.00	=	$	100,000
170101	Develop Water Supply	LS	1	x	120,000.00	=	$	120,000

TOTAL EARTHWORK SECTION ITEMS $ 2,317,000

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
400050	Continuously Reinforced Concrete Pavement	CY	29,000	x	180.00	=	$	5,220,000
404092	Seal Pavement Joint	LS	1	x	75,000.00	=	$	75,000
404094	Seal Longitudinal Isolation Joint	LS	1	x	75,000.00	=	$	75,000
390132	Hot Mix Asphalt (Type A)	TON	13,400	x	100.00	=	$	1,340,000
250401	Class 2 Aggregate Subbase	CY	21,100	x	25.00	=	$	527,500

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS $ 7,237,500

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
XXXXXX	Drainage Upgrade	LS	1	x	1,000,000.00	=	$	1,000,000

TOTAL DRAINAGE ITEMS	$	1,000,000

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
150662	Remove Metal Beam Guard Railing (Thrie)	LF	30,000	x	10.00	=	$	300,000
839734	Concrete Barrier (Type 736SV)	LF	15,000	x	120.00	=	$	1,800,000
XXXXXX	Salvage Guardrail	LS	1	x	100,000.00	=	$	100,000

TOTAL SPECIALTY ITEMS	$	2,200,000

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)		Cost		
XXXXXX	Environmental Mitigation	LS	1	x	100,000.00	= $	100,000		
						Subtotal Environmental Mitigation		*$*	*100,000*

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)		Cost		
200001	Highway Planting	LS	1	x	50,000.00	= $	50,000		
208000	Irrigation System	LS	1	x	50,000.00	= $	50,000		
						Subtotal Landscape and Irrigation		*$*	*100,000*

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)		Cost		
130100	Job Site Management	LS	1	x	270,000.00	= $	270,000		
							Subtotal NPDES	*$*	*270,000*

							TOTAL ENVIRONMENTAL	**$**	**470,000**

Supplemental Work for NPDES

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	15,000.00	= $	15,000		
066596	Additional Water Pollution Control**	LS	1	x	10,000.00	= $	10,000		
066597	Storm Water Sampling and Analysis***	LS	1	x	5,000.00	= $	5,000		
							Subtotal Supplemental Work for NDPS	*$*	*30,000*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

SECTION 6: TRAFFIC ITEMS

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
066576A	Overhead Sign Panel	LS	1	x	30,000.00	=	$	30,000
120090	Construction Area Signs	LS	1	x	10,000.00	=	$	10,000
XXXXXX	Traffic Signing and Striping	LS	1	x	150,000.00	=	$	150,000

Subtotal Traffic Signing and Striping $ *190,000*

6D - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
129100	Temporary Crash Cushion Module	LS	1	x	20,000.00	=	$	20,000
120100	Traffic Control System	WD	320	x	1,000.00	=	$	320,000
129000	Temporary Railing (Type K)	LF	32,000	x	10.00	=	$	320,000
120159	Temporary Traffic Stripe (Paint)	LS	1	x	40,000.00	=	$	40,000

Subtotal Stage Construction and Traffic Handling $ *700,000*

TOTAL TRAFFIC ITEMS $ **890,000**

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
390132	Hot Mix Asphalt (Type A)	TON	11,880	x	100.00	=	$	1,188,000
260203	Class 2 Aggregate Base	CY	12,320	x	35.00	=	$	431,200
190101	Excavation	CY	18,200	x	50.00	=	$	910,000

TOTAL DETOURS **$ 2,529,200**

SUBTOTAL SECTIONS 1 through 7 $ 16,643,700

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
ADA Items			1.0%		$	166,437	
8B - Bike Path Items							
Bike Path Items			1.0%		$	166,437	
8C - Other Minor Items							
Other Minor Items			8.0%		$	1,331,496	
Total of Section 1-7	$	16,643,700	x 10.0%	=	$	1,664,370	

TOTAL MINOR ITEMS **$ 1,664,400**

SECTIONS 9: MOBILIZATION

Item code								
999990	Total Section 1-8	$	18,308,100	x	10%	=	$	1,830,810

TOTAL MOBILIZATION **$ 1,830,900**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066094	Value Analysis	LS	1	x	10,000.00	=	$	10,000
066070	Maintain Traffic	WD	320	x	700.00	=	$	224,000
066920	Dispute Review Board	LS	1	x	15,000.00	=	$	15,000
066015	Federal Trainee Program	LS	1	x	20,000.00	=	$	20,000
066610	Partnering	LS	1	x	50,000.00	=	$	50,000

*Cost of **NPDES** Supplemental Work specified in Section 5D* = $ 30,000

Total Section 1-8 $ 18,308,100 4% = $ 732,324

TOTAL SUPPLEMENTAL WORK **$ 1,081,400**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066105	Resident Engineers Office	LS	1	x	100,000.00	=	$100,000
066062A	Incident Management-COZEEP	LS	1	x	159,600.00	=	$159,600
066063	Public Information	LS	1	x	50,000.00	=	$50,000
066065	Tow Truck Service Patrol	LS	1	x	50,000.00	=	$50,000
XXXXXX	Motorist Information Strategies-PCMS	LS	1	x	39,000.00	=	$39,000

Total Section 1-8	$	18,308,100	2%	=	$	366,162

TOTAL STATE FURNISHED	$764,800

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway and Structures Contract Items excluding Mobilization	$19,524,100	(used to calculate TRO)
Total Construction Cost (excluding TRO and Contingency)	$23,201,200	(used to check if project is greater than $5 million excluding contingency)

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = **6%**

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	320	X	$3,661	=	$1,171,500

TOTAL TIME-RELATED OVERHEAD	$1,171,500

Note: If the building portion of the project is greater than 50% of the total project cost, then TRO is not included.

SECTION 13: ROADWAY CONTINGENCY

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-12	$	23,156,700	x	**25%**	=	$5,789,175

TOTAL CONTINGENCY	$5,789,200

EA: 08-1F760K (0815000050) PID: 081F760K

II. STRUCTURE ITEMS

Bridge 1

DATE OF ESTIMATE	11/29/16		00/00/00		00/00/00
Bridge Name	Oak Glen Creek		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Bridge Number	54-0648		57-XXX		57-XXX
Structure Type	3 Span, PC/PS Concrete Girder		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	20 LF		0 LF		0 LF
Total Bridge Length (Feet)	115 LF		0 LF		0 LF
Total Area (Square Feet)	2321 SQFT		0 SQFT		0 SQFT
Structure Depth (Feet)	4 LF		0 LF		0 LF
Footing Type (pile or spread)	Pile		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$524		$0		$0
COST OF EACH	**$1,216,000**		**$0**		**$0**

DATE OF ESTIMATE	00/00/00		00/00/00		00/00/00
Name	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	0 LF		0 LF		0 LF
Total Length (Feet)	0 LF		0 LF		0 LF
Total Area (Square Feet)	0 SQFT		0 SQFT		0 SQFT
Structure Depth (Feet)	0 LF		0 LF		0 LF
Footing Type (pile or spread)	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$100		$0		$0
COST OF EACH	**$0**		**$0**		**$0**

TOTAL COST OF BRIDGES		**$1,216,000**
TOTAL COST OF BUILDINGS		**$0**
Structures Mobilization Percentage	0%	**$0**

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Structures Contingency Percentage	0%	**$0**
TOTAL COST OF STRUCTURES		**$1,216,000**

Estimate Prepared By: Cesar Sanchez — 11/19/2016

Office of Bridge Design ------ Division of Structures — Date

EA: 08-1F760K (0815000050) PID: 081F760K

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill, Fees	$	0
	A2)	SB-1210	$	0
B)		Acquisition of Offsite Mitigation	$	0
C)	C1)	Utility Relocation (State Share)	$	0
	C2)	Potholing (Design Phase)	$	0
D)		Railroad Acquisition	$	0
E)		Clearance / Demolition	$	0
F)		Relocation Assistance (RAP and/or Last Resort Housing Costs)	$	0
G)		Title and Escrow	$	0
H)		Project Permit Fees	$	10,000
I)		Condemnation Settlements 0%	$	0
J)		Design Appreciation Factor 0%	$	0
K)		Utility Relocation (Construction Cost)	$	0

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$10,000**
M)	**TOTAL R/W ESTIMATE: Escalated**	**$10,000**
N)	**RIGHT OF WAY SUPPORT**	**$17,000**

Support Cost Estimate Prepared By	David R. Chavez	Project Coordinator[1]	(909) 381-2951 Phone
Utility Estimate Prepared By		Utiliy Coordinator[2]	Phone
R/W Acquistion Estimate Prepared By		Right of Way Estimator[3]	Phone

Note: Items G & H applied to items A + B

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

Attachment (F)

Traffic Engineering Performance Assessment (TEPA)

TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT REPORT

FOR

SBD-10 EASTBOUND TRUCK CLIMBING LANE IMPROVEMENTS

This traffic engineering performance assessment report 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.

JOSE D. FERNANDEZ, JR., P.E.
Lead Engineer
Office of Traffic Operations, Surveillance B

02/01/2017
DATE

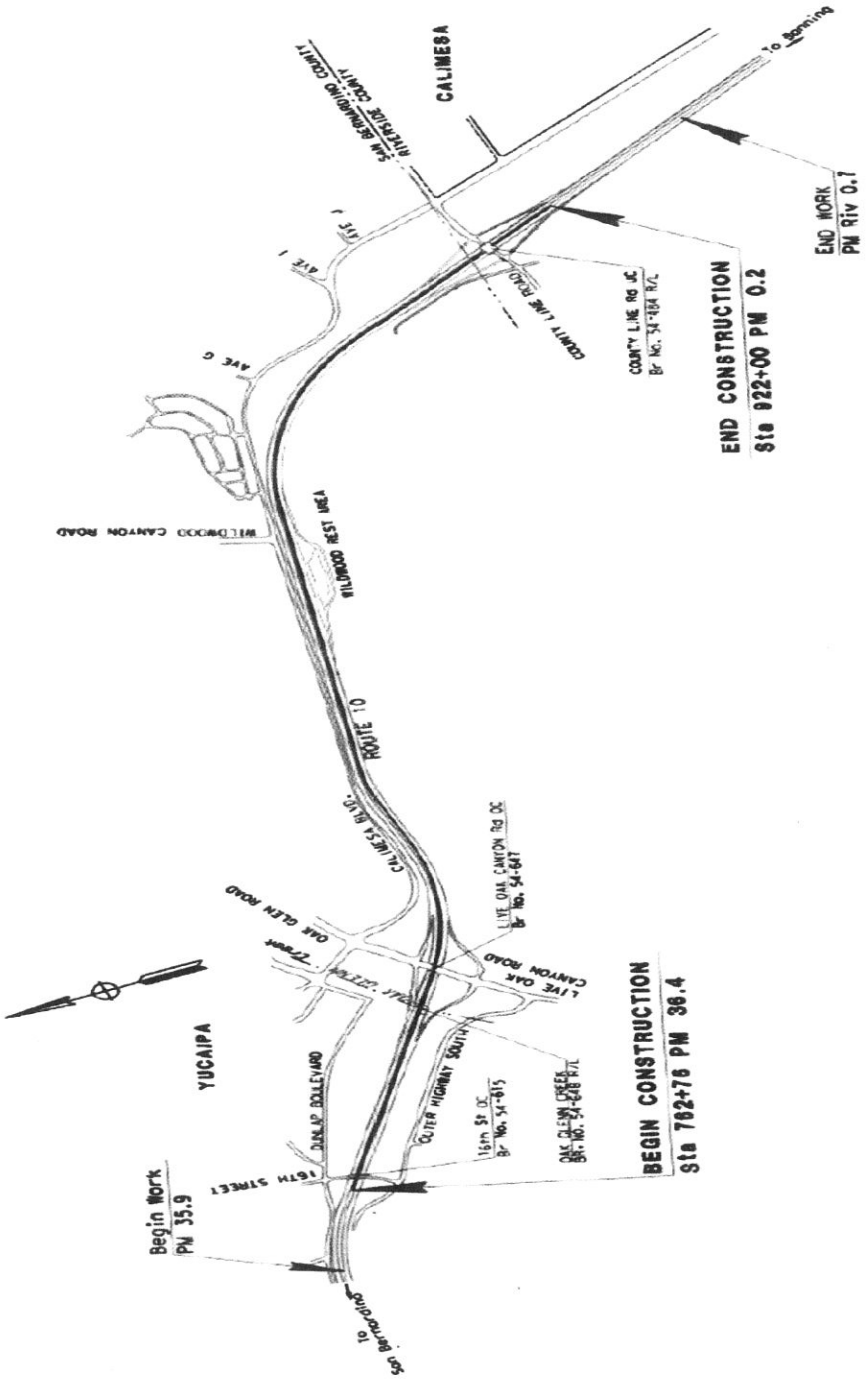
CONCURRED BY:

HAISSAM YAHYA., P.E.
Office Chief
Office of Traffic Operations, Surveillance B

2/1/17
DATE

Caltrans
DISTRICT 8
OFFICE OF TRAFFIC OPERATIONS

VICINITY MAP



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1.0 INTRODUCTION

The Project Study Report-Project Development Support (PSR-PDS) proposes to add a Truck Climbing Lane (TCL) by widening the median of eastbound Interstate 10 in the City of Yucaipa from the 16th Street Overcrossing to 0.2 mile east of County Line Road Undercrossing.

This segment of I-10 is a six-lane freeway with three 12-foot wide Mixed Flow Lanes (MFL) in each direction including standard 8-foot wide inside shoulder, standard 10-foot wide outside shoulder and 20-foot wide median with metal thrie beam barrier separating east and westbound traffic. The terrain within this segment is mostly rolling with upward steep grades in the eastbound direction. The list of structures within the project limits is shown below:

Structure Name	Number	County	PM
16th Street (OC)	54-0615	San Bernardino	36.44
Oak Glen Creek	54-0648	San Bernardino	R36.90
Live Oak Canyon Road (OC)	54-1291	San Bernardino	R37.03
Wildwood Creek	54-0312	San Bernardino	R38.53
County Line Road (UC)	56-0484	Riverside	R0.02

The preferred alternative proposes to add a TCL by widening the median of eastbound I-10 but several alternatives such as outside shoulder widening and combination of outside/inside shoulder widening was also considered but will not be discussed in the Project Study Report-Project Development Support (PSR-PDS). A detailed project information is shown in **Table 1**.

This Traffic Engineering Performance Assessment (TEPA) report is prepared in support of the addition of Interstate 10 (I-10) (Redlands Freeway) eastbound (EB) truck climbing lane. The analysis has been prepared in accordance with Article 5 in Chapter 5 of Appendix S: Preparation of Guidelines for the PSR-PDS Project Initiation Documents of the Project Development Procedures Manual. As specified in the guidelines, the intent of this TEPA report is to use readily-available information and data in applying macro-level analysis and evaluation techniques to provide a technical foundation for developing a preliminary purpose and need statement for the proposed project. It also outlines the scope and magnitude of the more detailed analyses to be conducted as part of subsequent project development efforts during the Project Approval and Environmental Document (PA&ED).

Table 1: Project Information

Project Limit	08-SBd & Riv-10-PM 36.40/R39.16 & PM R0.00/R0.20
Facility Type	Interstate Freeway
Project Type	Improve Safety and Operations
Targeted System User	Trucks
Key Transportation Agencies	Caltrans District 8 and San Bernardino County Transportation Authority (SBCTA)
Context	Urban
Project Manager	Melecio Chalco

1.1 BACKGROUND

Interstate 10 (I-10) is a major freeway beginning from State Route 1 (SR-1) in the City of Santa Monica in Los Angeles County and terminating on the East Coast in the state of Florida.

Within District 8, I-10 is 194.8 miles in length. It begins as an eight-lane facility in the County of San Bernardino at the Los Angeles County Line and going easterly, it traverses the Cities of Montclair, Upland, Ontario, Rancho Cucamonga, Fontana, Rialto, Colton, San Bernardino and Loma Linda. I-10 transitions to six lanes in the City of Redlands, and passes through the City of Yucaipa and into the County of Riverside and continues through the City of Calimesa to Beaumont where it transitions to eight lanes and traverses the Cities of Banning, Palm Springs, Cathedral City and Rancho Mirage. Between the Monterey Avenue interchange in Palm Desert and its junction with SR-111 in Indio, I-10 is a six-lane facility. East of SR-86, the remaining segments of I-10 in District 8 is a four-lane facility that passes through the Cities of Coachella and Blythe and ending at the Arizona State Line.

I-10 provides for the safe and efficient interstate and interregional movement of goods and people. The route also serves as a major east/west urban corridor and commuter route between Los Angeles and the Counties of San Bernardino and Riverside. Rural areas in eastern Riverside County are connected to the urban centers to the west via I-10. Within District 8, the centers of population, commerce, industry, agriculture, mineral wealth, and recreation are spatially and economically connected to ports, airports, rail yards, numerous highways and other states by I-10.

The entire length of I-10 within District 8 is included in the National Highway System (NHS), the Department of Defense Priority Network and the Strategic Highway Corridor Network (STRAHNET). The 1990 Federal Surface Transportation Assistance Act (STAA) identifies I-10 as a National Network route for STAA Trucks. The Federal Functional Classifications for I-10 are Rural Principal Arterial (PA) and extension of a Rural Principal Arterial into an urban area.

1.2 PURPOSE AND NEED

Purpose:

The purpose of this project is to enhance the movement of goods by improving safety and operations on uphill grades and reduce congestion along this segment of I-10 caused by slow trucks in combination with high traffic volumes. From an operations standpoint, truck climbing lane would separate the slow moving trucks from passenger vehicles. As a result, traffic can continue at free-flow speeds by passing trucks and other slow-moving vehicles. From a safety perspective, providing passing opportunities with a truck climbing lane reduces the probability of risky passing maneuvers.

Need:

Trucks characteristically exhibit the lowest level of hill-climbing performance of all vehicles on highways and freeways. As a result, at uphill grades of sufficient length and steepness, their speed loss may impede the traffic flow and reduce the capacity of the highway and freeway. The addition of climbing lanes along the uphill grade sections counteracts the congestion and speed differentials caused by slow trucks and high traffic volumes. Climbing lanes are also advantageous where there are a lot of truck related accidents. Increase regional and interregional traffic volumes combined with long and steep grades justifies the need for this project.

1.3 WARRANT ANALYSIS

Warrant Analysis:

The following criteria was used to determine the need to construct the truck climbing lane for this project:

1) Critical Length of Grade - According to Caltrans Highway Design Manual Topic 204.5 and AASHTO, a common criterion for all types of highways is to consider the addition of climbing lane where the running speed of trucks falls 10 miles per hour or more below the running speed of remaining traffic. HDM Figure 204.5 shows the speed reduction curves for a 200 lb/hp truck, which is representative of large trucks operating near maximum gross weight. If the critical length of grade is less than the length of grade being evaluated, consideration of a climbing lane is warranted.

   Also according to Caltrans HDM Topic 204.5 regardless of traffic volumes, the need for a climbing lane should be investigated on sustained upgrades greater than 2 percent if the total rise is greater than 250 feet. For the current project along I-10 EB, it was observed that the sustained upgrades greater than 2 percent exists between PM R37.160 and PM R39.054 as shown on **Figure 1**. Existing eastbound I-10 profile grade data was from Caltrans as-built plans on file. As shown on **Figure 1**, the length of tangent measures (actual length of the upgrade) approximately 10,000 feet and the gradient (percent of

upgrade) is equal to 3.24 percent. By using Caltrans HDM Figure 204.5 (**Figure 2**), the critical length of grade was determined to be approximately 1560 feet for an upgrade of approximately 3.24 percent and corresponding to a 10 mph reduction in truck speed.

As such, the actual length of upgrade exceeds the critical length of grade. Hence, this criterion for truck climbing lane warrant is met.

Also, Caltrans District 8 Office of Traffic Operations performed a speed survey at I-10 eastbound PM 38.2 last November 16, 2016 to determine the 85th percentile speed for passenger cars and trucks. It was determined that the 85th percentile speed is 73 mph and 57 mph for passenger cars and trucks respectively. The speed survey showed the trucks' 85th percentile speed was reduced to 16 mph below the passenger cars' 85th percentile speed.

Figure 1: I-10 Eastbound Profile Grade

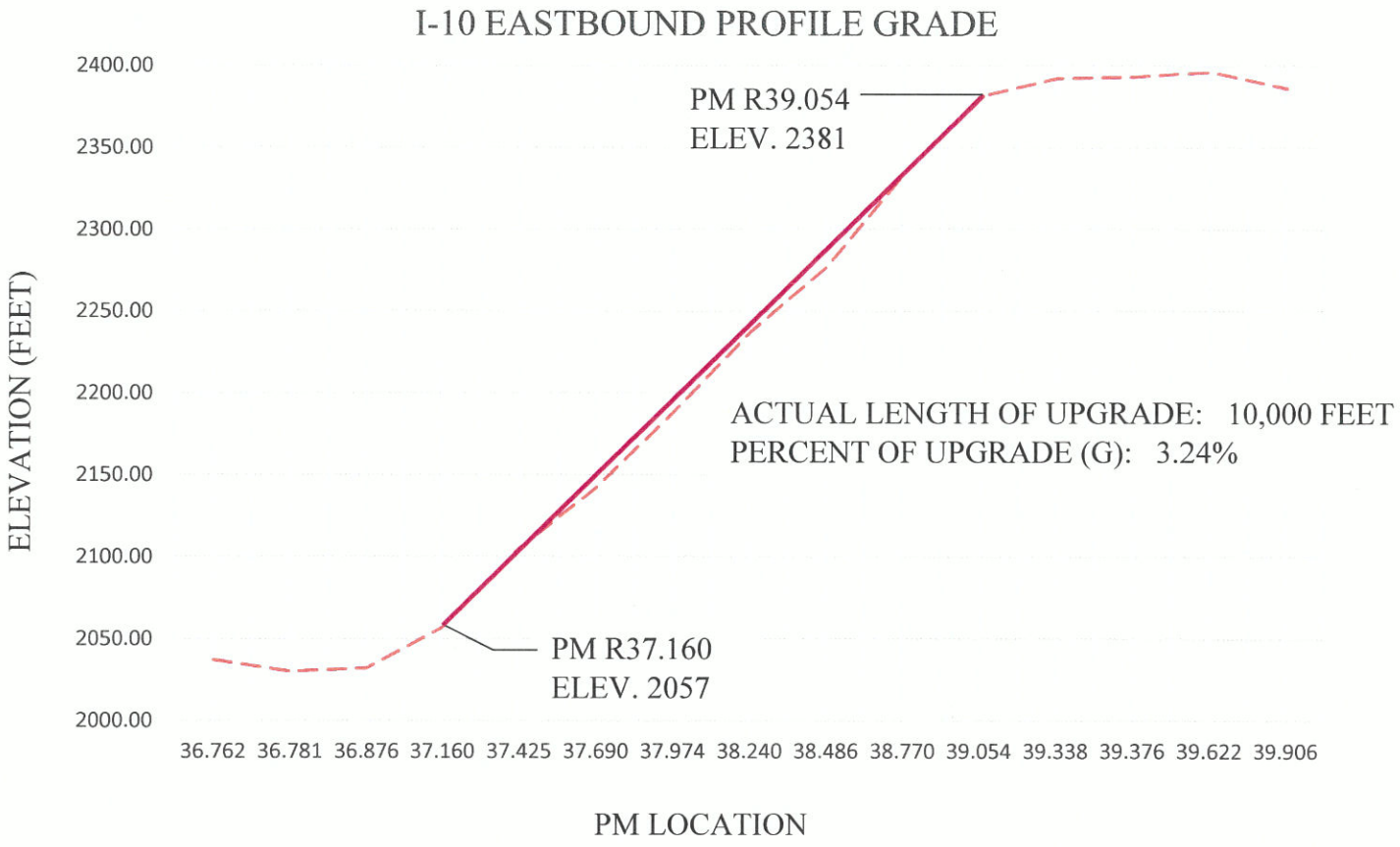
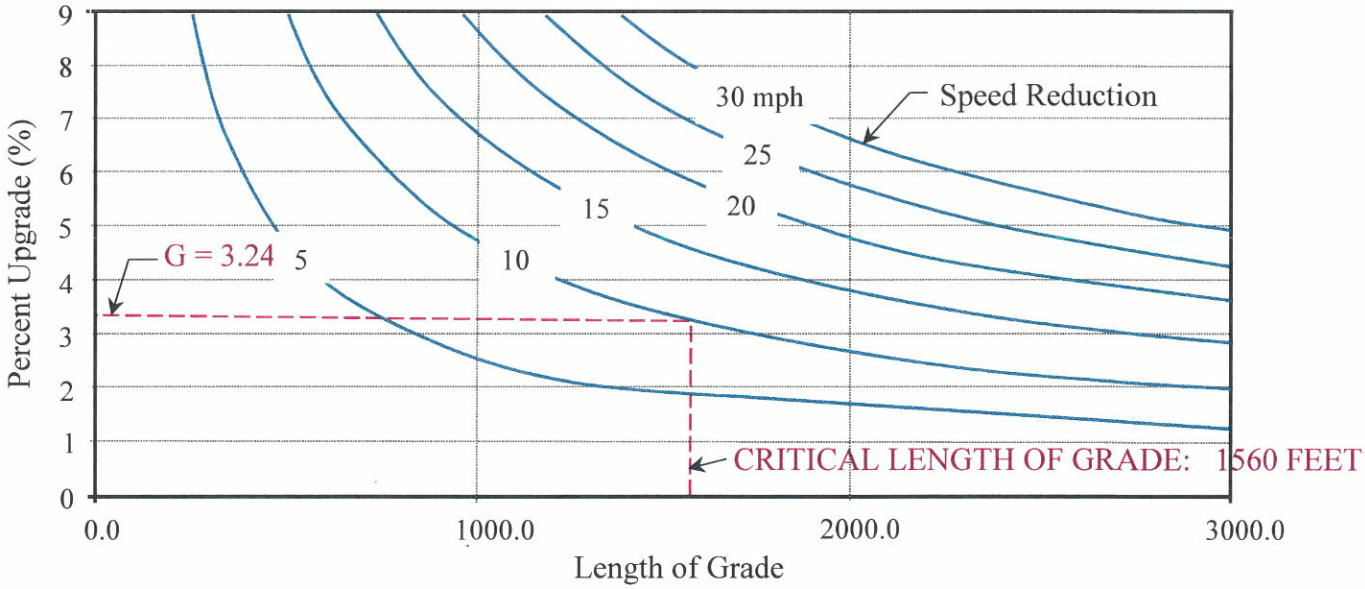


Figure 2: Caltrans HDM Figure 204.5

Figure 204.5
Critical Length of Grade
For Design



ASSUMED TYPICAL HEAVY TRUCK OF 200LB/HP

2) Operational Assessment – According to AASHTO, climbing lanes should not generally be considered unless the level of service (LOS) for the upgrade is equal to or greater than LOS D. In addition, climbing lanes would be good solution for a facility where the addition of this treatment results in a one-grade-level improvement in traffic operations; therefore, avoiding a reduction of two or more levels of service. As shown in Table 3, the existing level of service for the I-10 EB exceeds LOS D during the PM peak hour. Additional HCS analysis was performed to determine the existing level of service for the I-10 EB with an assumed truck climbing lane. This analysis resulted in a one-grade-level improvement in level of service (LOS D). Hence, this criterion for truck climbing warrant is met.

3) Location of the Climbing Lane - The location where the climbing lane should begin depends on the speeds at which trucks approach the grade and the extent of sight distance restrictions on the approach. Where there are no sight distance restrictions or other conditions that limit speeds on the approach, the added lane may be introduced on the upgrade beyond its beginning because the speed of trucks will not be reduced beyond the tolerable level to following drivers until they have traveled some distance up the grade. The ideal design is to extend the climbing lane to point above the crest, where a typical truck could attain a speed that is within 15 km/h (10 mph) of the speed of other vehicles. Climbing lanes on multilane roads are usually placed on the outer or right-hand side of the roadway.

2.0 PROJECT ALTERNATIVES

Preferred Alternative:

This project proposes to add a Truck Climbing Lane (TCL) in eastbound Interstate 10 in the City of Yucaipa from the 16th Street (OC) to 0.2 mile east of County Line Road (UC) by widening the median. The scope of the project consists of the following:

- Remove thrie beam barrier from the median
- Pave the entire median width (36 feet)
- Install a concrete barrier at the new centerline
- Add a new lane #1 (EB) and new inside shoulders (EB/WB)
- Replace existing lane #1 by new lane #2, lane #2 by a new lane #3 and lane #3 becomes the new TCL
- Drainage upgrade
- Add sound wall on the westbound (Station 864+50 to 880+00). This element will be finalized in the next phase, Project Approval/Environmental Document (PA/ED) Phase
- Widen Oak Glen Creek Bridge (Number 54-0648)

Staging Requirements:

The existing centerline will be shifted six feet to the north into westbound I-10 and the project will be staged as follows:

1. Restripe lanes # 1 and 2 for both directions (11' for lanes #1 and #2, 12' for lane #3 and 8' for shoulders)
2. Place K-Rail 1' from the edge of the travel way of the temporary lane #1 in both directions
3. Remove thrie beam in the median
4. Clearing and grubbing the median
5. Remove existing shoulder pavement in the median
6. Place new pavement in the median (Lane #1 EB, Inside Shoulder EB and WB)
7. Install Concrete barrier at the new centerline (6' north of the original centerline)
8. Signage and stripping for the new EB TCL (previously lane #3)

Widening the Oak Glen Creek Bridge, drainage modifications and other construction activities could be done concurrently with the above work.

Other Alternatives Considered:

Other alternatives such as outside widening or a combination of outside/inside widening will not be discussed in the PSR-PDS report.

3.0 SUMMARY OF PRELIMINARY FINDINGS & RECOMMENDATIONS

This section summarizes the methodologies used to evaluate the traffic operational and safety impacts on the proposed I-10 eastbound truck climbing lane in San Bernardino County in Yucaipa from 16th Street Overcrossing to 0.2 mile east of County Line Road Undercrossing. According to Article 5 to meet the purpose of the PSR-PDS, the preliminary engineering studies should be limited to an assessment of readily available information and data, macro-level analysis and evaluation and define the scope of work and produce reliable estimates of the operational and safety impacts of the proposed highway infrastructure.

3.1 ASSESSMENT APPROACH, DATA SOURCES & MAJOR ASSUMPTIONS

3.1.1 EXISTING AND FUTURE YEAR TRAFFIC DATA

The Base Year 2013 traffic data including the Annual Average Daily Traffic (AADT), Design Hourly Volume (DHV) and truck percentage were taken from Caltrans Office of Traffic Operations website http://www.dot.ca.gov/trafficops/census/. Horizon Year 2035 traffic data including AADT, DHV and truck percentage were taken from the Southern California Association of Governments (SCAG) traffic model. Interim years such as 2015 (Existing Year) and 2021 (Opening Year) traffic data were determined by using a compounded growth rate and interpolating between the Base Year 2013 and Horizon Year 2035. Years beyond the Horizon Year 2035 such as Design Year 2045 traffic data were extrapolated using a straight-line growth rate. The rate is based on the 2012 SCAG Regional Transportation Plan (RTP) which includes Population/Household/Employment growth factors in the studied area.

3.1.2 ANALYSIS METHODOLOGY

This TEPA focuses on the planning level freeway operations. The freeway mainline was analyzed using Highway Capacity Software (HCS) 2010 traffic operations software. This tool is consistent with the methodologies contained in the Highway Capacity Manual 2010 (HCM 2010).

The Level of Service (LOS) was calculated for the project study corridor to evaluate traffic operation condition. LOS is a qualitative measure of the traffic operating conditions whereby a letter rating A (the best) to F (the worst), is assigned. These ratings represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. The service performance measure for this freeway segment is density. For the purpose of this planning level analysis, peak hour capacity of the mainline segment is assumed to be 2,200 vehicle per hour per lane. **Table 2** shows the criteria.

Table 2: LOS Criteria

Level of Service	Description	Density (pc/mi/ln)
A	Free flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤11
B	Free flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	>11 to 18
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	>18-26
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	>26-35
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queueing.	>35-45
F	Represents a breakdown flow.	>45

The basic freeway segments operational analysis module of the HCS 2010 program doesn't allow coding/inputting of the special purpose travel lanes reserved for a single vehicle type, such as a truck climbing lane. So, in order to perform the operational assessment along the study corridor with an additional truck climbing lane, the following assumption was made:

- For the scenario, where there are three general purpose lanes and one truck climbing lane considered, HCS analysis were coded in as three general purpose lanes without truck traffic percentage; it assumes all the trucks would be using the additional truck climbing lane.

3.2 PRELIMINARY ASSESSMENT FINDINGS

The Existing Year 2016 no-build, Opening Year 2023 no-build/build and Design Year 2045 no-build/build conditions' Level of Service (LOS) are shown on **Tables 3**:

Table 3: SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 Level of Service

Main Line Traffic Data Information					
	Year 2016 (Existing/ No Build)	Year 2023 (Opening)		Year 2045	
	No Build	No Build	Build	No Build	Build
Annual Average Daily Traffic (AADT)	111,100	122,500		162,100	
Design Hour Volume (DHV)	8,850	9,950		12,920	
One-way PHV	5,480	7,160		8,011	
Directional Split	62%	62%		62%	
Truck % in ADT	16%	16%		15%	
Truck % in DHV	8%	8%		8%	
Volume/Capacity (V/C) Ratio	0.93	1.21	0.85	1.35	1.12
Level of Service	E	F	D	F	F

3.2.1 ASSESSMENT OF SAFETY PERFORMANCE/NEEDS

Three-Year Accident History:

I-10 accident data were retrieved from the Caltrans Transportation System Network (TSN) and Traffic Accident Surveillance and Analysis System (TASAS) Table B.

The most recent three-year TASAS Table B accident history between April 1, 2012 and March 31, 2015 for the segment of I-10 in San Bernardino County is shown below in **Table 4** for similar type of facilities:

Table 4. Accident History

Accident Rates (# of Accidents/Million Vehicle Miles)						
Location I-10 (San Bernardino County)	**Actual Accident Rates (MVM)**			**Average Accident Rates (MVM)**		
	Fatal	**Fat+Inj**	**Total**	**Fatal**	**Fat+Inj**	**Total**
PM 36.40/R39.16	0.006	0.23	0.49	0.004	0.25	0.82

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS)
Note: Highlighted portion denotes actual collision rates greater than statewide average collision rates for similar facilities.

The type of collisions and primary collision factors percentages are shown in **Table 5** and **6** below:

Table 5. Type of Collisions

Type of Collisions								
Head-On	**Sideswipe**	**Rear-End**	**Broadside**	**Hit-Object**	**Overturn**	**Auto-Ped**	**Other**	**Not Stated**
2.6%	26.9%	39.7%	1.3%	26.9%	0.0%	2.6%	0.0%	0.0%

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS)

Table 6. Primary Collision Factors

Primary Collision Factors										
HBD	**FTC**	**FTY**	**IT**	**ESS**	**OV**	**ID**	**OTD**	**UNK**	**FA**	**NS**
6.4%	0.0%	0.0%	19.2%	42.3%	24.4%	0.0%	6.4%	1.3%	0.0%	0.0%

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS)

HBD = Influence of Alcohol
FTC = Following Too Close
FTY = Failure to Yield
ID = Improper Driving
IT = Improper Turn
ESS = Speeding
OV = Other Violations
NS = Not Stated
OTD = Other Than Driver
UNK = Unknown
FA = Fell Asleep

The most recent three-year TASAS Table B accident history between April 1, 2012 and March 31, 2015 for the segment of I-10 in Riverside County is shown below in **Table 7** for similar type of facilities:

Table 7. Accident History

Accident Rates (# of Accidents/Million Vehicle Miles)						
Location I-10 (Riverside County)	Actual Accident Rates (MVM)			Average Accident Rates (MVM)		
	Fatal	Fat+Inj	Total	Fatal	Fat+Inj	Total
PM R0.00/R0.20	0.000	0.09	0.28	0.004	0.24	0.77

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS)
Note: Highlighted portion denotes actual collision rates greater than statewide average collision rates for similar facilities.

The type of collisions and primary collision factors percentages are shown in **Table 8** and **9** below:

Table 8. Type of Collisions

Type of Collisions								
Head-On	Sideswipe	Rear-End	Broadside	Hit-Object	Overturn	Auto-Ped	Other	Not Stated
0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS)

Table 9. Primary Collision Factors

Primary Collision Factors										
HBD	FTC	FTY	IT	ESS	OV	ID	OTD	UNK	FA	NS
33.3%	0.0%	0.0%	0.0%	0.0%	66.7%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS)

HBD = Influence of Alcohol
FTC = Following Too Close
FTY = Failure to Yield
ID = Improper Driving
IT = Improper Turn
ESS = Speeding
OV = Other Violations
NS = Not Stated
OTD = Other Than Driver
UNK = Unknown
FA = Fell Asleep

The traffic collision data for a three-year period from the Caltrans TASAS Table B along I-10 in San Bernardino County between 16th Street Overcrossing and San Bernardino/Riverside county line indicates the actual fatal accident rate is higher than the statewide average fatal accident rate while the actual fatal plus injury and statewide average fatal plus injury accident rate is equal and the actual total accident rate is lower than the statewide average total accident rate.

The traffic collision data for a three-year period from the Caltrans TASAS Table B along I-10 in Riverside County between San Bernardino/Riverside county line and 0.2 mile east of County Line Road Undercrossing indicates the actual fatal, actual fatal plus injury and actual total accident rates are lower than the statewide average fatal, statewide average fatal plus injury and statewide total accident rates.

Safety Performance Function (SPF) During Construction:

A. Roadway Segment Crash Analysis

The total and property damage only (PDO) collisions' predicted average crash frequency comparison between without improvements and during construction are shown in **Table 5**:

Table 10. Total and Property Damage Only (PDO) Collisions' Predicted Average Crash Frequency Comparison between Without Improvements and During Construction for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

Roadway Segment Crashes for Urban Freeway Segments			
Crash Severity Level	**Without Improvements (including Median Thrie Beam Barrier & 10-foot) Wide Inside & Outside Shoulders)**	**During Construction (including Temporary K-Rail, 11-foot Wide Lane #1 & #2, One-foot Wide Inside Shoulders & Eight-foot Wide Outside Shoulders)**	**Average Crash Frequency Reduction (Crash Per Year)**
	Predicted Average Crash Frequency, $N_{spf\ rd}$ (Crashes Per Year)	**Predicted Average Crash Frequency, $N_{spf\ rd}$ (Crashes Per Year)**	
Total	171.000	186.000	-15.000
Property Damage Only (PDO)	122.000	129.900	-7.900

Source: Highway Safety Manual (HSM)

The total collisions' predicted average number of crashes per year for the highway segment during construction (186.00) is higher than the total collisions' predicted average number of crashes per year for the highway segment without improvements (171.00). The average crash frequency will increase to 15.000 crashes per year for total collisions.

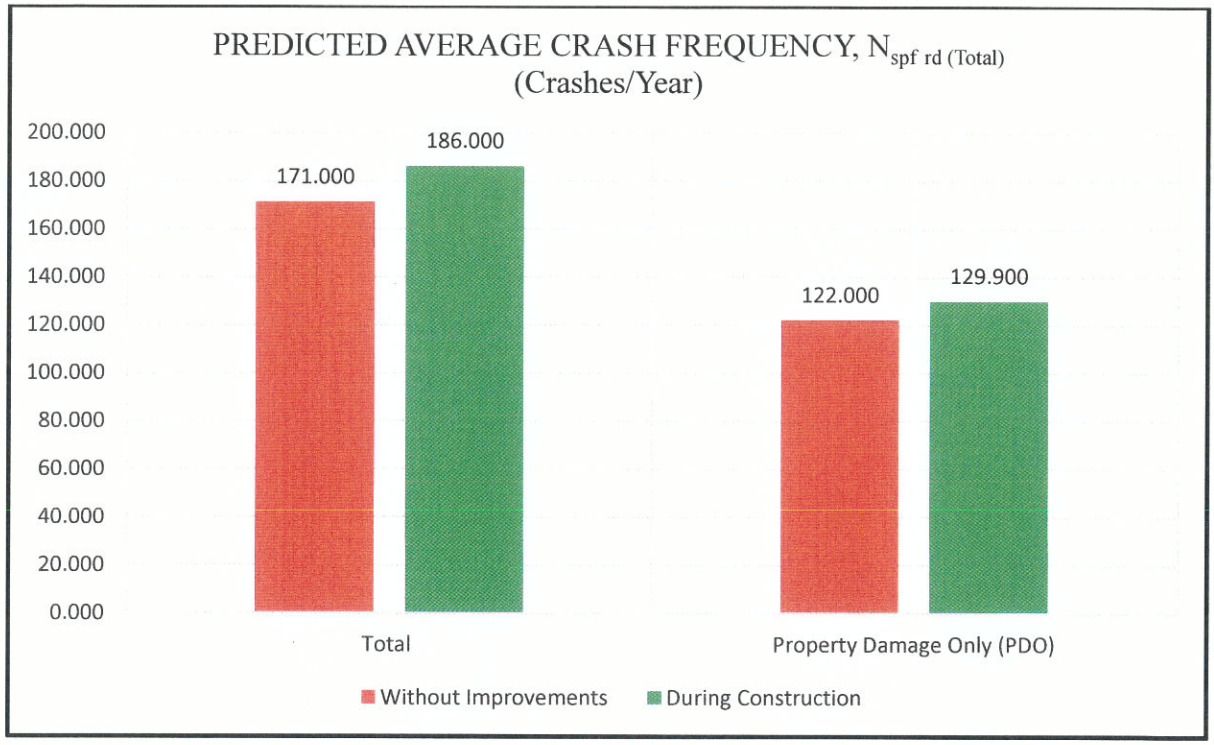


Figure 3. Total and Property Damage Only (PDO) Collisions' Predicted Average Crash Frequency Comparison between Without Improvements and During Construction for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

B. Analysis of Crash Types

The total collisions for different collision types predicted average crash frequency comparison between without improvements and during construction are shown in **Table 11**:

Table 11. Total Collisions for Different Collision Types' Predicted Average Crash Frequency Comparison between Without Improvements and During Construction for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

Roadway Segment Crashes for Urban Freeway Segments			
Collision Type	**Without Improvements (including Median Thrie Beam Barrier & 10-foot) Wide Inside & Outside Shoulders)**	**During Construction (including Temporary K-Rail, 11-foot Wide Lane #1 & #2, One-foot Wide Inside Shoulders & Eight-foot Wide Outside Shoulders)**	**Average Crash Frequency Reduction (Crash Per Year)**
	Predicted Average Crash Frequency, $N_{spf\ rd(Total)}$ (Crashes Per Year)	**Predicted Average Crash Frequency, $N_{spf\ rd(Total)}$ (Crashes Per Year)**	
	Total	**Total**	
Broadside	7.500	7.700	-0.200
Rear End	93.600	101.200	-7.600
Sideswipe	30.200	32.600	-2.400
Hit Object	25.800	28.900	-3.100

Source: Highway Safety Manual (HSM)

The total collisions for different collision types' predicted average number of crashes per year during construction are higher than the total collisions for different collision types' predicted average number of crashes per year without improvements. There will be increase in broadside (0.200), rear end (7.600), sideswipe (2.400) and hit object (3.100) collisions.

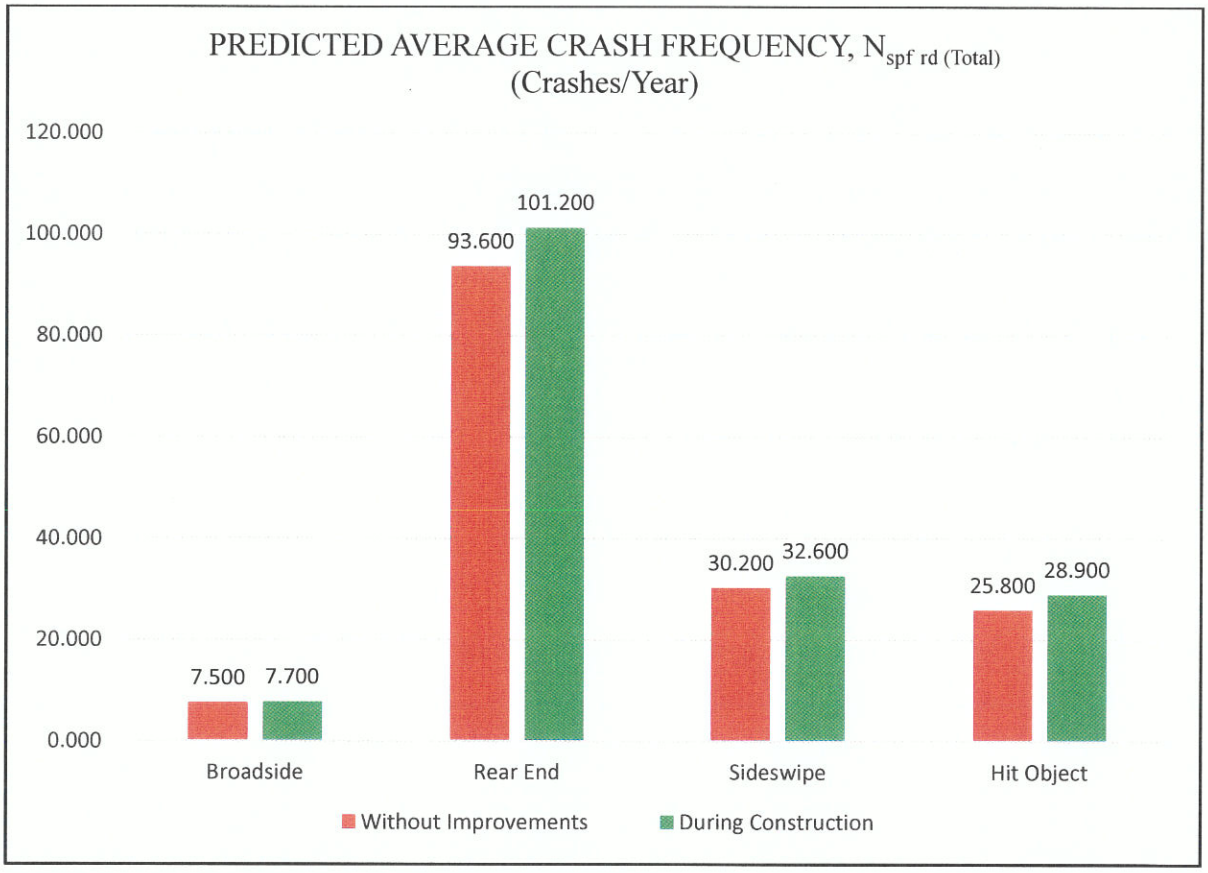


Figure 4. Total Collisions for Different Collision Types' Crash Rates Comparison between Without Improvements and During Construction for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

Safety Performance Function (SPF) After Improvements:

A. Roadway Segment Crash Analysis

The total and property damage only (PDO) collisions' predicted average crash frequency comparison between without and with improvements are shown in **Table 12**:

Table 12. Total and Property Damage Only (PDO) Collisions' Predicted Average Crash Frequency Comparison between Without and With Improvements for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

Roadway Segment Crashes for Urban Freeway Segments			
Crash Severity Level	**Without Improvements** (including Median Thrie Beam Barrier & 10-foot) Wide Inside & Outside Shoulders)	**With Improvements** (including Truck Climbing Lane, Concrete Median Barrier & 10-foot Wide Inside & Outside Shoulders)	Average Crash Frequency Reduction (Crash Per Year)
	Predicted Average Crash Frequency, $N_{spf\ rd}$ (Crashes Per Year)	**Predicted Average Crash Frequency, $N_{spf\ rd}$ (Crashes Per Year)**	
Total	171.000	162.900	8.100
Property Damage Only (PDO)	122.000	114.300	7.700

Source: Highway Safety Manual (HSM)

The total collisions' predicted average number of crashes per year for the highway segment with improvements (162.900) is less than the total collisions' predicted average number of crashes per year for the highway segment without improvements (171.000). The average crash frequency will be reduced to 8.100 crashes per year for total collisions.

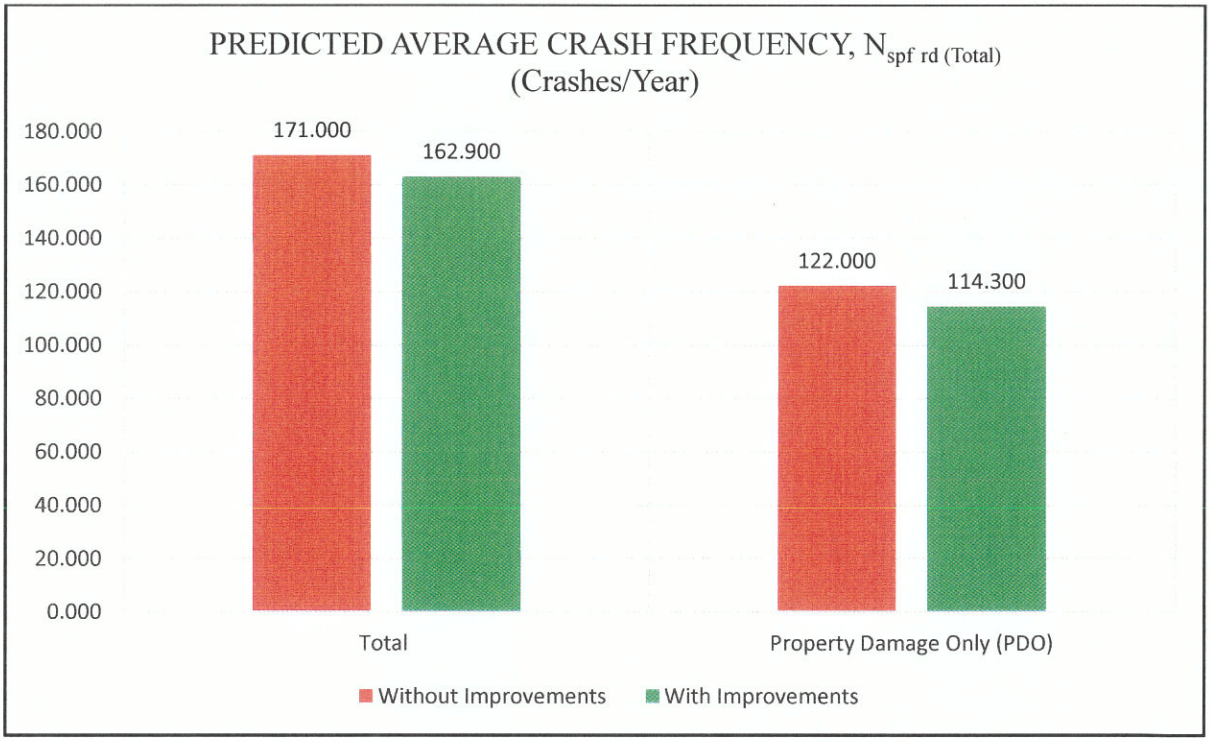


Figure 5. Total and Property Damage Only (PDO) Collisions' Predicted Average Crash Frequency Comparison between Without and With Improvements for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

B. Analysis of Crash Types

The total collisions for different collision types' predicted average crash frequency comparison between without and with improvements are shown in **Table 13**:

Table 13. Total Collisions for Different Collision Types' Predicted Average Crash Frequency Comparison between Without and With Improvements for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

Roadway Segment Crashes for Urban Freeway Segments			
Collision Type	**Without Improvements (including Median Thrie Beam Barrier & 10-foot) Wide Inside & Outside Shoulders)**	**With Improvements (including Truck Climbing Lane, Concrete Median Barrier & 10-foot Wide Inside & Outside Shoulders)**	**Average Crash Frequency Reduction (Crash Per Year)**
	Predicted Average Crash Frequency, $N_{spf\ rd(Total)}$ (Crashes Per Year)	**Predicted Average Crash Frequency, $N_{spf\ rd(Total)}$ (Crashes Per Year)**	
	Total	**Total**	
Broadside	7.500	7.300	0.200
Rear End	93.600	88.100	5.500
Sideswipe	30.200	28.100	2.100
Hit Object	25.800	25.600	0.200

Source: Highway Safety Manual (HSM)

The total collisions for different collision types' predicted average number of crashes per year with improvements are less than the total collisions for different collision types' predicted average number of crashes per year without improvements. The proposed improvements will result to reduction in broadside (0.200), rear end (5.500), sideswipe (2.100) and hit object (0.200) collisions.

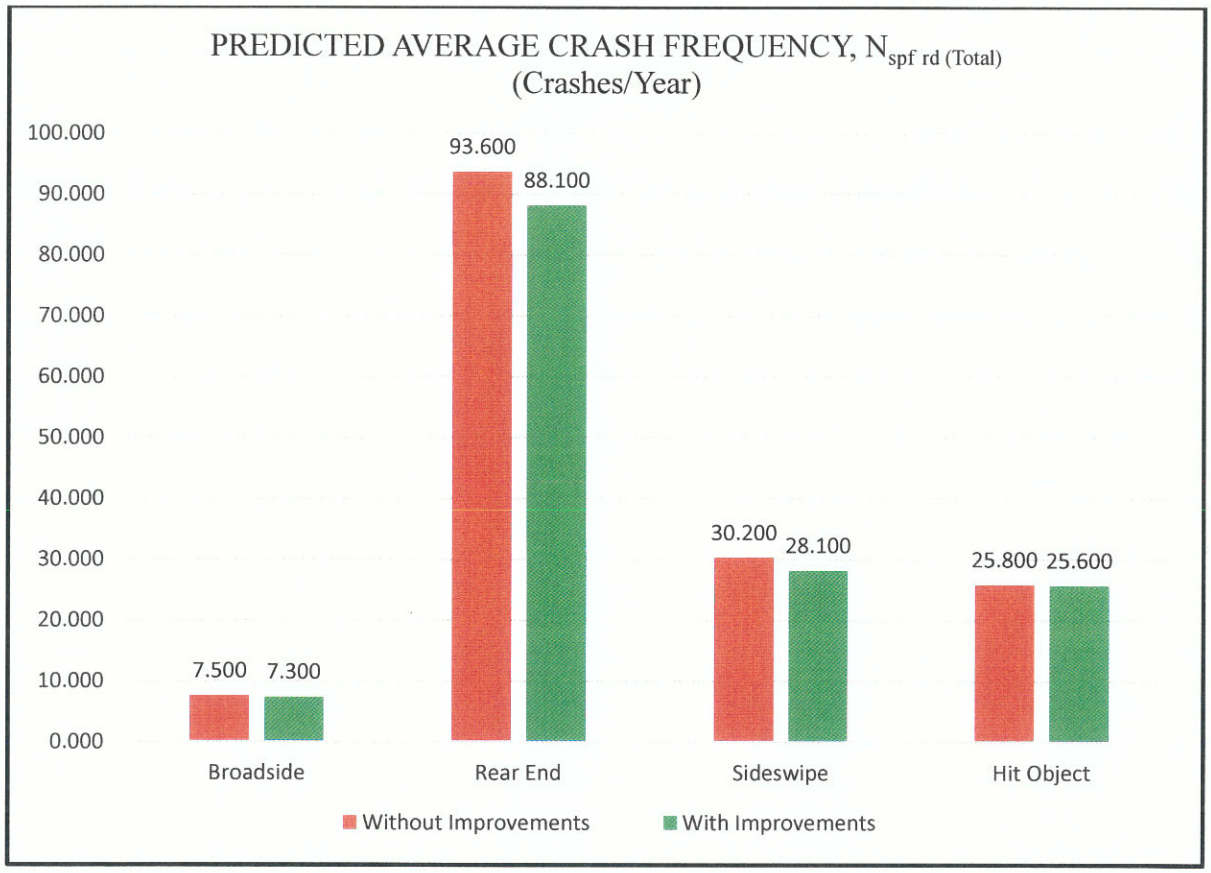


Figure 6. Total Collisions for Different Collision Types' Crash Rates Comparison between Without and With Improvements and During Construction for SBd-10-PM 36.40/R39.16 & Riv-10-PM R0.00/R0.20 (AADT Year 2023)

The proposed construction of the eastbound truck climbing lane will provide improved operation by reducing the traffic delay caused by the combination of slow trucks on grades and high traffic volumes. It is expected to reduce the number and severity of traffic collisions especially truck related collisions.

4.0 SCOPE OF FUTURE TRAFFIC ENGINEERING STUDIES, ACTIVITIES, AND TASKS

4.1 FORECASTING/OPERATIONAL EVALUATION

A reevaluation of the existing and future traffic conditions is needed if and when the project will be delayed for three years. Updated traffic counts including peak hour volumes, truck percentages and field measured speeds should be collected for the study of the freeway mainline segment. Opening and design years' traffic forecasts need to be recalculated based on the latest available SCAG RTP traffic model outputs. Both Year 2045 no-build and build scenarios will experience

unacceptable LOS F. As a result, the addition of a general purpose lane needs to be considered and studied in the future to upgrade it to an acceptable LOS D.

4.2 SAFETY ANALYSIS & EVALUATION

The three-year accident history (April 1, 2012 through March 31, 2015) from the TASAS Table B was evaluated from this TEPA. This analysis should be updated using the most recent accident data available at the PA&ED phase. Proposed traffic handling and stage construction plans that includes the implementation of non-standard lane and shoulders widths and temporary k-rail during construction and the replacement of the median thrie beam barrier with concrete barrier will be reviewed by Office of Traffic Operations and Safety.

There is potential increase in the collision rates for different collision types such as broadside, rear-end, sideswipe and hit object during construction as predicted in Table 13 due to reduction in lane and shoulder widths (11-foot wide lanes for nos. 1 and 2, 8-foot wide outside shoulders and one-foot wide inside shoulders) and the implementation of temporary k-rail in both directions of travel. Temporary k-rail shall be installed with at least one-foot wide buffer in front and back of it. Adequate advance warning signs of lane and shoulder width reduction, lighting, enhanced pavement markings to improve visibility of the lane lines, reflectors on temporary k-rails, delineators, and chevrons on horizontal curves are potential countermeasures that can be implemented to improve motorists' awareness of the driving conditions and enhance motorists' safety during construction.

4.3 TRANSPORTATION MANAGEMENT PLAN (TMP) FOR WORKZONE

TMP data sheet will be prepared during the PA&ED phase and a detailed TMP including traffic handling and stage construction plans will be developed during the PS&E Phase. TMP's main goal is to help alleviate or minimize work-related traffic delays by the effective application of traditional traffic handling practices and innovative combination of various strategies. The main component of the TMP is public information/awareness campaign. Other TMP strategies such as motorist information, incident management, construction strategies and demand management will be implemented depending on the anticipated traffic impacts. These strategies are designed to improve mobility and enhance safety for the traveling public and highway workers.

4.4 COMPLETE STREETS

Inclusion of complete streets (Implementation of Deputy Directive 64-R2) was determined to be unsuitable for this segment of I-10. The mobility and safety needs of bicyclists, pedestrians and transit users can be addressed through the existing parallel local road (Calimesa Boulevard).

5.0 REFERENCES

The referenced studies and sources used for preparation of the TEPA are listed below:

- Article 5 in Chapter 5 of Appendix S: Preparation Guidelines for Project Study Report/Project Development Support Initiation Documents of the Project Development Procedures Manual prepared by Caltrans (June 2013)
- HCM and HCS 2010
- Caltrans Transportation System Network (TSN) and Traffic Accident Surveillance and Analysis System (TASAS) Table B
- Caltrans Office of Traffic Operations website http://www.dot.ca.gov/trafficops/census/
- 2012 SCAG RTP Traffic Model
- Caltrans Office of Traffic Operations Engineering and Traffic Survey
- Highway Safety Manual

Attachment (G)

Preliminary Environmental Analysis Report (PEAR)

PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT

1. Project Information

District	County	Route	PM	EA 08-1F760 PN 0815000050
08	SBd	I-10	36.4 / R39.2	
Project Title: SBd-10 Eastbound Truck Climbing Lane Improvements				
Project Manager Melecio Chalco			**Phone #** (909) 383-6761	
Project Engineer Maen Shaar			**Phone #** (909) 383-7131	
Environmental Branch Chief James Shankel			**Phone #** (909) 383-6379	
PEAR Preparer Tracey D'Aoust Roberts, Environmental Planner			**Phone #** (909) 383-5929	

2. Project Description

Purpose and Need

Purpose: The purpose of this project is to improve operational characteristics for trucks and other slow moving vehicles on a portion of Interstate 10 (I-10) that includes steep uphill grades.

Need: Trucks characteristically exhibit the lowest level of hill-climbing performance of all vehicles on highways and freeways. Truck accident frequency increases with differential in speed, thus climbing lanes are advantageous when excessive speed differentials are anticipated.

Description of work

The proposed project will occur in San Bernardino County on I-10 from post mile (PM) 36.4 to R39.2 in the City of Yucaipa and in Riverside County from PM R0.0 to R 0.2 in the City of Calimesa. The proposed project consists of the addition of an Eastbound (EB) truck climbing lane (TCL) from the 16th Street Overcrossing (OC) to the east of County Line Road, widening of the Oak Glen Creek Bridge, installation of a concrete barrier at the new center lane, and the possible addition of a sound wall in the westbound (WB) lanes.

Alternatives

Alternative 1 (The Project):

The Build Alternative (the project) proposes to add a TCL on eastbound I-10 from the 16th Street OC to just east of County Line Road. The project will realign the freeway by paving the median and shifting the existing three lanes towards the centerline with the

number three lane becoming the new TCL, and will also involve widening the Oak Glen Creek Bridge and installing a concrete barrier in the median.

Alternative 2 (No Project)
Under the "No Project" or, No Build Alternative, no improvements would be constructed within this segment of I-10.

3. Anticipated Environmental Approval

CEQA		NEPA	
Environmental Determination			
Statutory Exemption	☐		
Categorical Exemption	☐	Categorical Exclusion	☐
Environmental Document			
Initial Study with Mitigated Negative Declaration (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:	36
Estimated person hours to complete identified tasks:	N/A

The anticipated environmental approval identified above is based on the limited preliminary design information available and the results of related initial coordination with all Caltrans Functional Disciplines expected to be involved with the development of this proposed project.

4. Special Environmental Considerations

Several listed species as well as migratory birds are expected to be located throughout the project area resulting in a potential need for construction monitoring and/or pre-construction surveys to comply with the Migratory Bird Treaty Act as well as the Endangered Species Act.

5. Anticipated Environmental Commitments

No preliminary determinations have been made. Environmental commitments will be identified during completion of required technical studies.

6. Permits and Approvals

The Build Alternative is expected to require the following permits and approvals:

- Section 1602 Streambed Alteration Agreement from California Fish and Wildlife Services
- Section 404 Nationwide Permit (NWP) or Jurisdictional Delineation (JD) from the Army Corp of Engineers (ACOE)
- Section 401 Water Quality Certification (WQC) Permit from the Regional Water Quality Control Board (RWQCB)
- 2081 Incidental Take Permit
- National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Storm Water Permit and Waste Water Discharge Requirements for the State of California Department of Transportation Order No. 2012-0011-DWQ, NPDES No. CAS00003
- NPDES General Permit, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities Order No. 2009-0009-DWQ-NPDES No. CAS000002

7. Level of Effort: Risks and Assumptions

- There will be no additional alternatives
- All work will be done in Caltrans right of way
- No major scope changes and/or no changes to the project limit such that either new technical studies are required, or existing technical studies require updating
- Formal Section 7 Consultation with USFWS will be required
- A Section 4(f) determination will not be required, nor will preparation of Section 4(f) documentation be necessary.
- No major Native American, State Historic Preservation Officer (SHPO), or federal agency concerns, or major concerns related to AB52 requirements
- No unexpected archaeological or historical resource discoveries requiring formal evaluations for NRHP eligibility
- No unexpected archaeological or historical resource discoveries requiring ESAs and monitoring
- A water Quality Assessment will not be required
- The project is expected to require a 2081 Incidental Take Permit

8. PEAR Technical Summaries

8.1 Land Use:

The project takes place on I-10 at Oak Glen Parkway in the City of Yucaipa to Countyline Road in the City of Calimesa. The principle land use in the vicinity of the proposed project is regional commercial, graze land, a small section designated as single-family residential, and a small agricultural designation. Based on the scope of work provided in conjunction preparation of this PEAR, no stand-alone technical study on this subject is expected to be required to address and satisfy compliance documentation requirements for CEQA or NEPA, for this proposed project.

8.2 Growth:

Based on the scope of work provided in conjunction preparation of this PEAR, no stand-alone technical study on this subject is expected to be required to address and satisfy

compliance documentation requirements for CEQA or NEPA, for this proposed project. However, the ED will be required to include the First Cut Screening.

8.3 Farmlands/Timberlands:

At the most western segment of the proposed project, prime and unique farmland exist. It is not expected that the proposed project will require the conversion of the farmland. Based on the scope of work provided in conjunction preparation of this PEAR, it is anticipated that either a form NCRS-CPA-106 or a form AD-1006 will need to be prepared and processed. Caltrans, as the CEQA and NEPA lead agency, will perform this task, although it will be expected that any needed maps or figures will be provided by the project sponsor.

8.4 Community Impacts:

The area that surrounds the project is characterized by regional commercial, grazing land, and a small section of single-family residential. Additionally, a relatively small area in the most western section of the project is zoned for agriculture. Within a half mile of the proposed project, there is one school (Mesa View Middle School). Within a half mile of the proposed project, there are two parks, Creekside Park and "I" Street Park. There are no emergency services within a half mile of the project. The project is expected to be constructed entirely within the existing State right of way.

Based on the scope of work provided in conjunction preparation of this PEAR, no stand-alone technical study on this subject is expected to be required to address and satisfy compliance documentation requirements for CEQA or NEPA, for this proposed project.

8.5 Visual/Aesthetics:

The widening of the Oak Glen Creek Bridge would require Caltrans to remove trees and shrubs, because of this, a tree type and count for the trees to be removed is needed. The scope of the Project is not expected to impact the existing urban view sheds. Based upon the results of the questionnaire to determine Visual Impact Assessment (VIA), preparation of an abbreviated VIA will be needed.

8.6 Cultural Resources:

The project appears to qualify as a Screened Undertaking, which will require minimal documentation for compliance with Section 106 and CEQA, as applicable for Cultural Resources. Any cultural resources identified within State right of way may need additional PRC 5024 (State-owned resources) compliance.

8.7 Hydrology and Floodplain:

The project area is located within the Santa Ana River Hydrological Unit, San Timoteo Hydrological Area, South Mesa Sub Area, and 4801.670000 planning watershed which is in the Santa Ana RWQCB.

Four waterways are associated with Flood Insurance Rate Map (FIRM) maps delineating Federal Emergency Management Agency (FEMA) defined flood plains. Wilson Creek (also known as Oak Glen Creek) is within panel 06071C8740H within Zone AE and

Zone X; Yucaipa Creek in panel 06071C8740H in Zones AE and X; Golf Course Wash in panel 06065C0785G in Zone A, AE, and X; and Wildwood Creek in panels 06071C8740H and 06065C0785G in Zones AE, AO, and X. A Location Hydraulic Study and Floodplain Evaluation Report will be prepared.

8.8 Water Quality and Storm Water Runoff:
Several seasonally wet areas, drainages, or areas of standing water or flooding are in the project area. These are Oak Glen Creek, Yucaipa Creek, Wildwood Creek, Wilson Creek, Calimesa Channel, Golf Course Wash, and Calimesa storm drain. None of these waterways are currently listed as impaired bodies of water by the Clean Water Act (CWA) Section 303(d). Preparation of a Scoping Questionnaire for Water Quality Issues will be required. Contingent upon the results, a Water Quality Assessment Report may be required.

8.9 Geology, Soils, Seismic and Topography:
The project area is made of young axel-valley deposits (Latest Holocene) along the west and to the east, San Timoteo beds of Frick, upper member (Pleistocene and Pliocene) which are non-marine sandstone and conglomerate. The young axel-valley deposits consist mainly of thin to thick-bedded, very fine to medium sand, which varies from white to light gray to very pale brown. The sand is interlayered with subordinate pebbly fine sand and dark colored organic rich layers.

The area is characterized by rolling to moderately steep hills with a general southerly slope and the area is cut with several deep ravines.

Several fault lines exists near the project area, one of which crosses the Oak Glen Creek Bridge (Chicken Hill Fault). The San Andreas Fault zone lies 6.43 km (4 miles) to the northwest of the proposed project. The Banning fault runs parallel approximately 0.80 km (one half mile) from I-10 at Oak Glen Road. The Crafton Hills Fault line crosses the I-10 less than 0.80 km (one half a mile) west of the Live Oak Canyon Road / Oak Glen Road interchange. Finally, the Chicken Hill Fault crosses the I-10 at the Live Oak Canyon Road/Oak Glen Rd interchange.

Based on the scope of work provided in conjunction preparation of this PEAR, no stand-alone technical study on this subject is expected to be required to address and satisfy compliance documentation requirements for CEQA or NEPA, for this proposed project.

8.10 Paleontology:
Due to the location of the project and based on the scope of work provided in conjunction with preparation of this PEAR, no stand-alone technical study on this subject is expected to be required to address and satisfy compliance documentation requirements for CEQA or NEPA, for this proposed project.

8.11 Hazardous Waste/Materials:
According to the Initial Site Assessment (ISA) checklist prepared for the project initiation phase of the project, the proposed project has a "LOW RISK" of having potential

hazardous waste involvement and will not affect any sites on the Cortese List. An additional ISA will be prepared as well as Asbestos, Lead-Based Paint, and an Aerially Deposited Lead (ADL) Surveys during the PA&ED phase.

8.12 Air Quality:
Due to the scope of the project and the location of the project in an urbanized area of the San Bernardino/Riverside County, this project will require preparation of an Air Quality Study and Air Quality Conformity Analysis.

8.13 Noise and Vibration:
This project is a Type I project as defined in 23 Code of Federal Regulations (CFR) 772 and will require a Noise Study Report (NSR). A Noise Abatement Decision Report may be required, contingent upon the results of the NSR.

8.14 Energy and Climate Change:
Based on the scope of work provided in conjunction preparation of this PEAR, no stand-alone technical study on either the subject of Energy or the subject of Climate Change is expected to be required to address and satisfy compliance documentation requirements for CEQA or NEPA, for this proposed project.

8.15 Biological Environment:
The project is not within any designated critical habitat however mountain yellow legged frog, coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, Santa Ana sucker, Santa Ana river woolly star, slender-horned spine flower, San Bernardino Merriam's kangaroo rat, northwestern San Diego pocket mouse, and migratory birds are all anticipated to be located throughout the project area.

Based on the current limits identified for the proposed project, a small portion at the eastern limits of the project is located within the boundaries of the Western Riverside Multiple Species Habitat Conservation Plan (WRMSHCP), however, the project is not located within a portion of the WRMSHCP associated with a conservation area, criteria cells, or survey areas.

The proposed project is expected to require a Section 1602 Streambed Alteration Agreement from California Fish and Wildlife Services, a Section 404 Nationwide Permit (NWP) from the Army Corp of Engineers (ACOE), a Section 401 Water Quality Certification (WQC) Permit from the Santa Ana Regional Water Quality Control Board (RWQCB), and a 2081 Incidental Take Permit.

A Natural Environment Study (NES) will be prepared, which may require inclusion of a jurisdictional delineation report. Coordination with the CDFW, USFWS, ACOE, and Santa Ana RWQCB will occur, and a streamlined biological opinion (BO) will be requested through the WRMSHCP for potential impacts to federal listed species. For any project effects to the riparian/riverine areas or the focused survey species, the preparation of a WRMSHCP Determinations of Biologically Equivalent or Superior Preservation (DBESP) report will be required. Additionally, due to the project location, a Bat Survey

Report will be performed. Finally, a formal USFWS Section 7 consultation is expected to be required.

8.16 Cumulative Impacts:
Based on the scope of work provided in conjunction preparation of this PEAR, no stand-alone technical study on this subject is expected to be required to address and satisfy compliance documentation requirements for CEQA or NEPA, for this proposed project.

8.17 Context Sensitive Solutions:
It is anticipated that the proposed project will be developed, consistent with the Caltrans Director's Policy on Context Sensitive Solutions (CSS). The Director's Highway Design Manual, Federal Highway Administration (FHWA) regulations, FHWA's Flexibility in Highway Design publication, and the American Association of State Highway Transportation Officials': A Policy on Geometric Design of Highways and Streets, all share a philosophy that explicitly allows flexibility in applying design standards and approving exceptions o design standards where validated by applying sound engineering judgment. This design philosophy seeks transportation solutions that improve mobility and safety while complementing and enhancing community values and objectives. CSS may require wall treatments, landscaping, and other enhancements to the project area.

9. Summary Statement for PSR or PSR-PDS
Caltrans in the California Environmental Quality Act (CEQA) Lead Agency for all improvement projects on the SHS. Caltrans is also the National Environmental Policy Act (NEPA) Lead Agency for this project.

In conjunction with satisfying compliance documentation requirements with NEPA, contingent upon the results reported from all completed technical studies, it is anticipated that this project will be determined to need an environmental assessment (EA). In conjunction with satisfying compliance documentation requirements for the CEQA, again contingent upon the results reported from all the completed technical studies, it is anticipated that an Initial Study (IS) will be required.

If during the Project Approval and Environmental Document (PA&ED) phase, Plans Specifications, and Estimated (PS&E) phase, or during the construction phase, the scope of work (including utility relocation requirements) or limits for the project change, completion of the Environmental Re-Evaluation will be required to confirm of the environmental documentation for CEQA and NEPA compliance remains valid. New or revised technical studies may be required and/or an Environmental Document (ED) may need to be prepared and approved to document compliance with all applicable CEQA and NEPA requirements.

10. Disclaimer
This Preliminary Environmental Analysis Report (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.

11. List of Preparers

Cultural Resources specialist Dicken Evenson, Associate Environmental Planner	Date: 11/21/2016
Biologist Alisha Curtis, Environmental Planner (Natural Studies)	Date: 11/3/2016
Community Impacts specialist Tracey D'Aoust Roberts, Environmental Planner	Date: 12/5/2016
Noise and Vibration specialist Meenu Chandan, Transportation Engineer	Date: 12/9/2016
Air Quality specialist Edison Jaffery, Transportation Engineer	Date: 1/17/2017
Paleontology specialist/liaison Bahram Karimi, Associate Environmental Planner	Date: 10/31/2016
Water Quality specialist Tracey D'Aoust Roberts, Environmental Planner	Date: 11/17/2016
Hydrology and Floodplain specialist Roy King, Project Engineer	Date: 11/29/2016
Hazardous Waste/Materials specialist Laleh Modrek, Transportation Engineer	Date: 11/22/2016
Visual/Aesthetics specialist Tony Calvillo, Landscape Architect	Date: 12/05/2016
PEAR Preparer Tracey D'Aoust Roberts, Environmental Planner	Date: 3/3/2017

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 Preliminary Class of Action.

Environmental Branch Chief — Date: 3/15/17

Project Manager — Date: 3/15/17

REQUIRED ATTACHMENTS:

Attachment A: PEAR Environmental Studies Checklist

Attachment A: PEAR Environmental Studies Checklist

District: 8	County: SBd/ RIV	Route: 10	PM 36.4/39.2 0.0/0.2	EA: 08-1F760 Proj ID: 0815000050
Project Title: TMS Field Elements				

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use	☒	☐	☐	L	
Growth	☒	☐	☐	L	
Farmlands/Timberlands	☒	☐	☐	L	NCRS-CPA-106 or form AD-1006, ED
Community Impacts	☒	☐	☐	L	
Community Character and Cohesion	☒	☐	☐	L	
Relocations	☒	☐	☐	L	
Environmental Justice	☒	☐	☐	L	
Utilities/Emergency Services	☒	☐	☐	L	
Visual/Aesthetics	☒	☐	☐	L	
Cultural Resources:					
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	LHS, SFER, SQWQI
Water Quality and Stormwater Runoff	☐	☐	☒	L	
Geology, Soils, Seismic and Topography	☒	☐	☐	L	
Paleontology	☐	☐	☐	L	
PER	☒	☐	☐	L	
PMP	☒	☐	☐	L	
Hazardous Waste/Materials:					
ISA (Additional)	☐	☐	☒	L	Checklist
PSI	☐	☐	☒	L	ADL Survey
Other:	☒	☐	☐	L	
Air Quality	☐	☐	☒	L	
Noise and Vibration	☐	☐	☒	L	
Energy and Climate Change	☒	☐	☐	L	
Biological Environment					
Natural Environment Study	☐	☐	☒	H	
Natural Environment Study (MI)	☒	☐	☐	L	
Section 7:					
Formal	☐	☐	☒	M	

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Informal	☒	☐	☐	L	
No effect	☒	☐	☐	L	
Section 10	☒	☐	☐	L	
USFWS Consultation	☐	☐	☒	H	
NMFS Consultation	☒	☐	☐	L	
Species of Concern (CNPS, USFS, BLM, S, F)	☐	☐	☒	M	
Wetlands & Other Waters/Delineation					
404(b)(1) Alternatives Analysis	☒	☐	☒	L	
Invasive Species	☐	☐	☒	H	NES
Wild & Scenic River Consistency	☒	☐	☐	L	
Coastal Management Plan	☒	☐	☐	L	
HMMP	☒	☐	☐	L	
DFG Consistency Determination	☒	☐	☐	L	
2081	☐	☐	☒	M	
Other:	☐	☐	☒	H	WRCMSHCP Consistency, Bat survey
Cumulative Impacts	☒	☐	☐	L	
Context Sensitive Solutions	☒	☐	☐	L	Design will address
Section 4(f) Evaluation	☒	☐	☐	L	
Permits:					
401 Certification Coordination	☐	☐	☒	L	
404 Permit Coordination, IP, NWP, or LOP	☐	☐	☒	L	
1602 Agreement Coordination	☐	☐	☒	L	
Local Coastal Development Permit Coordination	☒	☐	☐	L	
State Coastal Development Permit Coordination	☒	☐	☐	L	
NPDES Coordination	☐	☐	☒	L	All work by Design
US Coast Guard (Section 10)	☒	☐	☐	L	
TRPA	☒	☐	☐	L	
BCDC	☒	☐	☐	L	

Attachment (H)

Initial Site Assessment (ISA) Checklist

INITIAL SITE ASSESSMENT (ISA) CHECKLIST UPDATE

DATE: 11/22/16

PROJECT INFORMATION

District **08** County **Riv** **SBd** Route **10** **10** Post Mile **R0.0/R0.2** **36.4/R39.2** E.A **1F760** PN **0815000050**

Description of Work: **It is proposed to add an east bound truck climbing lane, widening the Oak Glen Creek Bridge, installing concrete barrier in the median, and adding sound wall in the west bound.**

Project Engineer **Maen Shaar** Telephone **909-383-7131**

Environmental Coordinator **Tracy Roberts** Telephone **909-388-5929**

DATE ISA NEEDED **11/30/16**

Attach the project location map and an aerial photo to this checklist to show the location of proposed R/W and all known and/or potential hazardous waste sites.

1. Project Features: New R/W? **NO** Excavation? **YES** Railroad Involvement? **NO** Structure Demolition/Modification? **YES** Utility Relocation? **YES**
2. Project Setting: Rural - Urban - **X**
   Current Land Uses: Existing Roadway
   Adjacent Land Uses: Vacant, Residential, Commercial
   (Industrial light industry, commercial, agriculture, residential, other)
3. Check Federal, State, and local environmental and health regulatory agency records as necessary to see if any known hazardous waste site is in or near the project area. If a known site is identified, show its location on the attached map and attach additional sheets as needed to provide all information available pertinent to the proposed project. IS PROJECT
4. AFFECTING SITES LISTED ON CORTESE LIST? **NO** IF YES, DESCRIBE SITE:_
5. Conduct Field Inspection **PHOTOLOG** Date **11/21/16**

Storage Structures/Pipelines:				Contamination: (spills, leaks, illegal dumping, etc)		Hazardous Materials: (asbestos, lead, etc.)	
UST's	**NO**			Surface Staining	**NO**	Buildings	**NO**
Surface tanks	**NO**			Oil Sheen	**NO**	Sprayed-on Fireproofing	**NO**
Sumps	**NO**	Ponds	**NO**	Odors	**NO**	Pipe Wrap	**NO**
Drums	**NO**	Basins	**NO**	Vegetation damage	**NO**	Friable Tile	**NO**
Transformers	**NO**			Other		Acoustical Plaster	**NO**
Landfill	**NO**					Serpentine	**NO**
Other						Paint **TBD**	Other

Other comments and/or observations

Asbestos and Lead-Based Paint, and ADL Survey are required for this project. The studies should be performed during WBS 165 Stage (prior to PAED)

If the project will remove yellow or white traffic stripe, include one or more of the following standard special provisions (SSP's) in the PS&E package.

14-11.12 Remove Yellow Traffic Stripe and Pavement Markings with hazardous waste Residue

14-11.14 For the removal and disposal Treated Wood Waste such as sign posts and guardrail posts

36-4 Residue Containing Lead from Paint & Thermoplastic

84-9.03C Remove Traffic Stripes and Pavement Marking Containing Lead

Per project engineer there is No new right of way is required for this project

ISA DETERMINATION:

Does the project have potential hazardous waste involvement? **LOW RISK**

If there is known or potential hazardous waste involvement, is additional ISA work needed before task orders can be prepared for the Preliminary Site Investigation? **NO** If yes, explain, and give estimate of additional time required:

ISA CONDUCTED BY: Laleh Modrek **DATE:** **11/22/16**

LALEH MODREK, ENV. ENG. MS-824
DISTRICT 08 HAZARDOUS WASTE COORDINATOR (RIV)
(909) 388-7146

Attachment (I)

Right of Way Data Sheet

Date: August 30, 2016
08-SBd-10 – PM 36.4/R39.2
Add Truck Climbing Lane (EB)
EA 1F760 PN #0815000050

To: MAEN SHAAR
Planning Division

From: DAVID R CHAVEZ,
R/W Project Coordination

Subject: Current Estimated Right of Way Costs

We have completed an estimate of the right of way costs for the above-referenced project based on maps we received from you on **August 31, 2016**, and the following assumptions and limiting conditions:

[ ] 1. The mapping did not provide sufficient detail to determine the limits of the right of way required.

[ ] 2. The transportation facilities have not been sufficiently designed so that the estimator could determine the damages to any of the remainder parcels affected by the project.

[ ] 3. Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.

[ ] 4. We have determined there are no right of way functional involvement in the proposed project at this time, as designed.

Right of Way Lead Time will require a minimum of 6 months after we begin receiving final right of way requirements (PYPSCAN node No. 224), necessary environmental clearance has been obtained, and freeway agreements have been approved. From the date of receipt of final right of way requirements (PYPSCAN node No. 225), we will require a minimum of 4 months prior to the date of certification of the project. Shorter lead times will require either more right of way resources or an increased number of condemnation suits filed. Either of these actions may reflect adversely on the District's other programs or our public image generally.

*TOTAL PROJECT HOURS FOR R/W: 344

*NOTE: THESE HOURS ARE PRELIMINARY BASED ON THE INFORMATION PROVIDED WITH THE DATA SHEET REQUEST. HOURS ARE SUBJECT TO CHANGE AS NEW INFORMATION IS PROVIDED.

Attachments:
[XX] Right of Way Data Sheet
[XX] Utility Information Sheet
[XX] Railroad Information Sheet

Date: August 30, 2016
08-SBd-10 – PM 36.4/R39.2
Add Truck Climbing Lane (EB)
EA 1F760 PN #0815000050

1. Right of Way Cost Estimate:

			Value
A.	Acquisition, including Excess Lands, Damages, Goodwill, Major Rehabilitation, and Environmental Permits to Enter	$	0.00
B.	Acquisition of Offsite Mitigation.	$	0.00
C.	Utility - Relocation (State share) - Potholing $0.00	$	0.00
D.	RAP	$	0.00
E.	Clearance/Demolition	$	0.00
F.	Title and Escrow Fees	$	0.00
G.	Project Permit Fees	$	10,000.00
H.	Condemnation Costs	$	0.00
I.	**Total R/W Estimate:**	**$**	**10,000.00**
J.	Construction Contract Work	$	0.00

1a. Real Property Services:

A.	Routine Maintenance (Object Code 058)	$	0.00
B.	Advertising Costs (Object Code 039)	$	0.00
C.	Utility Costs (Object Code 002)	$	0.00
D.	Total Real Property Services Estimate:	$	0.00

2. Anticipated PYPSCAN Date of Right of Way Certification December 2, 2019

3. Parcel Data:

Type	Dual/Appr	Utility Involvement
X ____	____	U4-1 ____
A ____	____	-2 ____
B ____	____	-3 ____
C ____	____	-4 ____
D ____	____	U5-7 12
E xxxx		-8 ____
F xxxx		-9 ____

Total ____

RR Involvement	No
C&M Agreement	0
Svc Contract	0
OE Clearances/ Clauses	0
LIC/ROE	0

Government Lands	No
Number of Parcels	0

Misc. R/W Work	No
RAP Displacement	0
Clear/Demo	0
Const Permits	0
Condemnation	0
Permits to Enter-ENV	0

Areas: Right of Way: S.F. 0
Excess: S.F. 0
No. Excess Land Parcels: 0

4. Are there major items of Construction Contract Work?
   Yes ____ No __X__ (If yes, explain.)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

   Type and Number of Parcels:

Fee	0
Partial	0
Full	0
Easements	0
Temporary	0
Permanent	0

6. Is there an effect on assessed valuation?
   Yes ____ Not Significant ____ No __X__ (If yes, explain.)

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

   (See attached Exhibit 4-EX-5 for explanation.)

8. Are railroad facilities or rights of way affected? Yes ____ No __X__
   (If yes, attach Railroad Information Sheet, Exhibit 4-EX-6.)

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

10. Are RAP displacements required? Yes ____ No __X__ (If yes, provide the following information.)
    No. of single family ____ No. of business/nonprofit ____
    No. of multi-family ____ No. of farms ____
    Based on Draft/Final Relocation Impact Statement/Study dated _____, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there material borrow and/or disposal sites required?
    Yes ____ No __X__ (If yes, explain.)

12. Are there potential relinquishments and/or abandonments?
    Yes ____ No __X__ (If yes, explain.)

13. Are there existing and/or potential Airspace sites?
    Yes ____ No __X__ (If yes, explain.)

14. Indicate the anticipated Right of Way schedule and lead time requirements.
    (Discuss if District proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)
    PYPSCAN lead time (from Maps to R/W to project certification) __6__ months.

15. Is it anticipated that all Right of Way work will be performed by CALTRANS staff?
    Yes __X__ No ____ (If no, discuss.)

Date: August 30, 2016
08-SBd-10 – PM 36.4/R39.2
Add Truck Climbing Lane (EB)
EA 1F760 PN #0815000050

Evaluations prepared by:

Right of Way: Name DAVID ADAMS Date 9/16/16

Railroad: Name DAVID BUZON Date 9/13/2016

Utilities: Name Date 10-17-16

Government Lands: Name ANTHONY RIZZI Date 9/13/16

Property Management: Name JACKIE WILLIAMS Date 9-16-16

Reviewed By:

DAVID R. CHAVEZ, Senior
Project Coordination
District 8, Right of Way

Date 10/18/16

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

for: REBECCA GUIRADO, acting
Deputy District Director
District 8, Right of Way

Date 10/19/16

cc: Program Manager
Project Manager

08-SBD-RT 10-PM 36.4/R39.2
08-RIV-RT 10-PM R0.0/R0.2
EA 1F760 Project #0815000050

UTILITY INFORMATION SHEET

1. Name of utility companies involved in project:

   Southern California Edison-Distribution, Southern California Gas-Distribution, ATT Transmission and Distribution, City of Calimesa, South Mesa Water Co, City of Yucaipa, Yucaipa Valley Co Water, Terradex Inc, Western Heights Water Co, Spectrum (TWC), and Frontier (Verizon).

2. Types of facilities and agreements required:

   Underground electric, gas, telephone, fiber optic, water, sewer and cable TV.
   Overhead electric, telephone and cable TV.

   Notices to Owners and Utility Agreements should not be required. Possible potholing.

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? **No.**

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

   Design has indicated that this project construction proposes to "add an eastbound truck climbing lane to improve the capacity, Level of Service (LOS), and safety at this segment of RT 10 in Yucaipa from the 16th St OC in SBD Co to 0.23 miles east of County Line Rd UC in RIV Co. No Utility Relocations are estimated at this time. $7,000 are estimated for Positive Location (Potholing). This estimate could change as more information becomes available.

   Since excavation exceeds 6-inches in dirt and 1 foot in pavement, existing utilities must be plotted on Utility Plans. Design (Project Engineer) must order a Utility Search from the Utility Engineering Work Group (UEW). Design must provide UEW with geometric base maps and a written request for updated existing utility verification. Once the current existing utility maps (As-Builts) are received back from all of the Utility Owner's, then the UEW provides them to the PE who is then responsible for generating updated Utility Plan sheets for inclusion to Construction Plans. The Project Engineer must provide the assigned R/W Utility Coordinator will a set of the newly updated Utility Plans. The Project Engineer will then determine all utility conflicts that require Positive Location (Potholing) and/or Relocation. The R/W UC will assist the PE in coordinating with the Utility Owners and the State Relocation Inspector to make those determinations.

5. PMCS Input Information:

   Total estimated cost of State's obligation for **Potholing = $7,000.** Total estimated cost of State's obligation for **Utility Relocation (Phase 9 funding) = $0**.

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

Utility Involvement			
U4-1	____	U5-7	**12**
-2	____	-8	____
-3	____	-9	____
-4	____		

Prepared By: _____ Date: **October 4, 2016**
JERRY ARNERICH
Right of Way Utility Estimator

Date: August 30, 2016
08-SBd-10 – PM 36.4/R39.2
Add Truck Climbing Lane (EB)
EA 1F760 PN #0815000050

RAILROAD AND GOVERNMENT LANDS INFORMATION SHEET

1. Describe railroad facilities or rights of way affected.

   None

2. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facility be more cost effective than construction of a facility to perpetuate the rail service? Yes ____ No__X__(If yes, explain.)

3. Discuss types of agreements and rights required from the railroads. Are grade crossings requiring service contracts, or grade separations requiring construction and maintenance agreements involved?

   None

4. Remarks (non-operating railroad right of way involved?):

   None

5. Are Government Lands involved? Yes ____ No __X__
   If yes, number of parcels _____
   Agency Name and Explanation:

6. PMCS Input Information

RR Involvement	**No**
C&M Agreement	0
SVC Contract	0
OE Clearances/ Clauses	0
LIC/RE	0
Government Lands	**No**
Number parcels	0

Prepared By: _____ Date: 9/13/2016
DAVID BUZON
Right of Way Railroad Coordinator

Prepared By: _____ Date: 9/13/16
ANTHONY RIZZI
Right of Way Government Lands Coordinator

Date: August 30, 2016
08-SBd-10 – PM 36.4/R39.2
Add Truck Climbing Lane (EB)
EA 1F760 PN #0815000050

PROPERTY MANAGEMENT/EXCESS LAND INFORMATIONAL SHEET

WBS CODE	WBS ACTIVITY	NUMBER OF PARCELS	HOURS	COST
	PROPERTY MANAGEMENT	**NOT APPLICABLE**	**X**	
195.40.05	Fair Market Rent Determinations (Residential)			
195.40.10	Fair Market Rent Determinations (Non-Residential)			
195.40.15	Regular Rental Property Management			
195.40.20	Property Maintenance and Rehabilitation (Rental Property)			
195.40.25	Property Maintenance and Rehabilitation (Non-Rental Property)			
195.40.30	Hazardous Waste and Hazardous Materials			
195.40.35	Transfer of Property to Clearance Status			
270.25.03	Secure Lease for Resident Engineer's Office Space or Trailer			
		Subtotal		
	EXCESS LAND	**NOT APPLICABLE**	**X**	
195.45.05	Excess Land Inventory			
195.45.10	Excess Land Appraisal and Public Sale Estimate			
195.45.15	Excess Land Inventory ("Roberti Bill")			
195.45.20	Excess Land Sales to $15,000			
195.45.25	Excess Land Sales from $15,001 to $500,000			
195.45.30	Excess Land Sales over $500,000			
195.45.35	CTC and AAC Coordination			
		Subtotal		
		TOTAL HOURS (ONLY)		

Jackie Williams

Date: 9-16-16

JACKIE WILLIAMS
Property Management
Excess Land

Right of Way Workplan Breakdown:

Date Prepared 17-Oct-16

EA: 1F760

0

Date of Data Sheet: 10/17/2016

Utility Portion of DS Total $7,000

Project Coordinator: DAVID R CHAVEZ

R/W Data Sheet Total $10,000

Project Manager: Melecio Chalco

08.400- WBS Description	WBS 11.2 RW Codes	Hours Needed		Hours if	OVERSIGHT HOURS		
PROJECT MANAGEMENT - PID COMPONENT	K.100.05	0	2%		100.05	0	
PROJECT MANAGEMENT - PA & ED	0.100.10	0	2%		100.10	0	
PROJECT MANAGEMENT - PS&E	0.100.15	0	2%		100.15	0	
PROJECT MANAGEMENT - CONSTRUCTION	2.100.20	0	2%		100.20	0	
PROJECT MANAGEMENT - RIGHT OF WAY	3.100.25	69	92%	69	100.25	69	
INITIAL ALTERNATIVES DEVELOPMENT	K.150.10	19	60%				
ALTERNATIVES ANALYSIS	K.150.15	10	30%				
APPROVED PID [PSR PSSR ETC]	K.150.25	3	10%	32			
ENGINEERING STUDIES	0.160.10	17	40%		160.10	1	
DRAFT PROJECT REPORT	0.160.15	17	40%		160.15	1	
ENVIRONMENTAL STUDY REQUEST [ESR]	0.160.30	9	20%	43	160.30	0	
GENERAL ENVIRONMENTAL STUDIES	0.165.10	29	50%		165.10	1	
DRAFT ENVIRONMENTAL DOCUMENT	0.165.25	29	50%	58	165.25	1	
RAILROAD AGREEMENTS	0.170.15	0	100%		170.15	0	
PUBLIC HEARING	0.175.10	0	100%		175.10	0	
FINAL PROJECT REPORT	0.180.05	1	50%		180.05	0	
FINAL ENVIRONMENTAL DOCUMENT	0.180.10	1	50%	3	180.10	0	
UPDATED PROJECT INFORMATION	1.185.05	21	45%		185.05	1	
ENGINEERING REPORTS	1.185.20	5	10%		185.20	0	
RIGHT OF WAY REQUIREMENTS MAPS	1.185.25	21	45%	46	185.25	1	
PROPERTY MANAGEMENT	2.195.40	0	100%				
EXCESS LAND	2.195.45	0	100%				
APPROVED UTILITY RELOCATION PLAN	2.200.15	13	15%		200.15	1	
UTILITY RELOCATION PACKAGE	2.200.20	43	50%		200.20	2	
UTILITY RELOCATION MANAGEMENT	2.200.25	22	25%		200.25	1	
UTILITY CLOSE OUT	2.200.30	9	10%	87	200.30	0	
RAILROAD AGREEMENTS	1.205.15	3	100%		205.15	0	
PARCEL AND PROJECT DOCUMENTATION	2.225.50	0	5%		225.50	0	
RIGHT OF WAY APPRAISALS	2.225.60	0	p8	95%			
RIGHT OF WAY ACQUISITION	2.225.65	0	p15 p30				
RIGHT OF WAY RELOCATION ASSISTANCE	2.225.70	0	p21 p37				
RIGHT OF WAY CLEARANCE	2.225.75	0	p24				
RIGHT OF WAY CONDEMNATION	2.225.80	0	p27	0			
DRAFT SPECIFICATIONS	1.230.35	0	50%		230.35	0	
UPDATED PROJECT INFORMATION FOR PS&E PACKAGE	1.230.60	0	50%	0	230.60	0	
ENVIRONMENTAL MITIGATION	1.235.05	0	50%		235.05	0	
DETAILED SITE INVESTIGATION FOR HAZARDOUS WASTE	1.235.10	0	50%	0	235.10	0	
PARCEL AND PROJECT DOCUMENTATION	2.245.50	0	5%		245.50	0	
RIGHT OF WAY APPRAISALS	2.245.60	0	s8	95%			
RIGHT OF WAY ACQUISITION	2.245.65	0	s15				
RIGHT OF WAY RELOCATION ASSISTANCE	2.245.70	0	s21				
RIGHT OF WAY CLEARANCE	2.245.75	0	s24				
RIGHT OF WAY CONDEMNATION	2.245.80	0	s27 s30	0			
CIRCULATED & REVIEWED DRAFT DISTRICT PS&E PACKAGE	1.255.05	0	10%		255.05	0	
UPDATED PS&E PACKAGE	1.255.10	0	15%		255.10	0	
RIGHT OF WAY CERTIFICATION DOCUMENT	1.255.65	1	50%		255.65	0	
UPGRADED/UPDATED RIGHT OF WAY CERTIFICATION DOCUMENT	1.255.75	1	25%	3	255.75	0	
CONSTRUCTION ENGINEERING WORK	3.270.22	0	100%		270.20	0	
FUNTIONAL SUPPORT	3.285.10	0	100%		285.10	0	
TECHNICAL SUPPORT	3.270.66	0	100%		290.35	0	
RW Support Costs	Total Hours	344		PY 0.19		82	0.05

Updated September 2016

Attachment (J)

Storm Water Data Report (SWDR)

Dist-County-Route: 08-SBd/Riv-10
Post Mile Limits: 36.4/R39.2 & R0.0/R0.2
Project Type: Add an eastbound Truck Climbing Lane
Project ID (EA): 0815000050 (EA 1F760K)
Program Identification: HE13-800.100
Phase: ☒ PID ☐ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Santa Ana

1.	Does the project disturb 5 or more acres of soil?	Yes ☒	No ☐
2.	Does the project disturb more than 1 acre of soil and not qualify for the Rainfall Erosivity Waiver?	Yes ☒	No ☐
3.	Is the project required to implement Treatment BMPs?	Yes ☒	No ☐
4.	Does the project impact existing Treatment BMPs?	Yes ☐	No ☒

If the answer to any of the preceding questions is "Yes", prepare a Long Form – Stormwater Data Report. Unless otherwise agreed upon by the District/Regional Design Stormwater Coordinator.

Total Disturbed Soil Area: 13.1 Acres New Impervious Surface: Yes
Estimated Const. Start Date: February 2021 Estimated Const. Completion Date: Feb. 2023
Risk Level: RL 1 ☐ RL 2 ☐ RL 3 ☐ Not Applicable ☒

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

Maen Shaar 2/1/17
Maen Shaar, Registered Project Engineer *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]

Patrick Hally 2/1/2017
Patrick Hally, District/Regional Design SW Coordinator or Designee *Date*

1. Project Description

- The project starts from the 16th Street Overcrossing (OC) in Yucaipa, PM 36.4, to 0.2 mile east of County Line Road Undercrossing (UC) in Riverside County, PM R0.2. It is proposed to construct an eastbound Truck Climbing Lane (TCL) by widening the median to add a new number 1 lane which changes the existing lanes 1, 2 and 3 to become lanes 2, 3 and a new TCL.

  The scope includes removing the Thrie Beam from the median, pave the whole median (36 feet) to add a new lane number 1 and inside shoulders for the eastbound and westbound directions, install concrete barrier in the median, widen the Oak Glen Creek Bridge (Number 54-0648), in addition to upgrade the drainage. All work is done within the State Right-of-Way.

- The total disturbed soil area (DSA) is estimated to be 13.1 acres. The primary DSA contributor is from removing the paved shoulders and the soil in the median plus any type of excavation area.

  The New Impervious Surface (NIS) consists of the new paved median which has a new lane number 1 lane, new EB inside shoulder, and a new WB inside shoulder. The Net New Impervious (NNI) area is estimates at 7.3 acres, and the Replaced Impervious Surface (RIS) is estimated at 5.8 acres.

- ***Per discussion with the District Storm Water Coordinator, a short form - stormwater data report will be used for the PSR-PDS. A long form is required for the next phase, Project Approval and Environmental Document (PA/ED) Phase.***

2. Site Data and Stormwater Quality Design Issues

- The project is within the jurisdiction of the Cities of Yucaipa (CAS 618036) and Calimesa (CAS 618033) and are located within an urban MS4 Permittees. The project does not require 401 certification. The rainy season is defined year round and considered a semi-arid climate. The average annual precipitation for the project is 13 in/yr. The temperature varies from a minimum of 19 degrees Fahrenheit in winter time to a maximum of 113 degrees Fahrenheit during summer. The average wind speed within the project limits ranges from 0.0 to 12.5 mph throughout the year. The soil type within project limit consists of Hydrologic Soil group of B

  The hydrologic information pertinent to this project is shown in the following table:

Route	Post Mile	Hydrologic Unit	Receiving Water
SBd-10	36.4 – R37.05	801.61	San Timoteo Creek, Yucaipa Creek
SBd-10	R37.05 – R37.15	801.67	Yucaipa Creek, Oak Glen Creek
SBd-10	R37.15 – R37.6	801.66	Yucaipa Creek
SBd-10	R37.6 – R39.1	801.67	Yucaipa Creek
Riv-10	R0.0 – R0.2	801.63	Yucaipa Creek

These water bodies are not 303(d) listed. There are not drinking water reservoirs and/or recharge facilities in the vicinity of the project.

The Contractor storage yard will implement BMP's to minimize the risk associated with all the construction activities.

3. Construction Site BMPs

- It is anticipated that a SWPPP will be prepared for this project.

- The following Temporary Construction Site BMPs will be implemented into this project and will be paid for in a lump sum bid item "Job Site Management"

BMP NS-1, Water Conservation Practices
BMP NS-3, Paving & Grinding Operation
BMP NS-8, Vehicle & Equipment Cleaning
BMP NS-9, Vehicle & Equipment Fueling
BMP NS-10, Vehicle & Equipment Maintenance
BMP WM-1, Material Delivery and Storage
BMP WM-2, Material Use
BMP WM-3, Stockpile Management
PMB WM-4, Spill Prevention & Control
BMP WM-5, Solid Waste Management
BMP WM-8, Temporary Concrete Washout
BMP WM-9, Sanitary/Septic Waste Management
BMP WM-10, Liquid Waste Management

- The following temporary Construction Site BMPs will be paid as separate bid line Items:

Prepare Storm Water Pollution Prevention Program
BMP SC-7, Street Sweeping and Vacuuming
BMP SC-8, Sand Bag Barrier
BMP SC-10, Storm Drain Inlet Protection
BMP SS-7, Geotextiles, RECP, Plastic Covers
, Concrete Waste Management

The Temporary Construction Site BMPs cost for this project are estimated based on the "Unit Cost" method presented in Appendix F.6.3 of the Caltrans Project planning and Design Guide.

Required Attachments[1]

- Vicinity Map
- Evaluation Documentation Form
- Cost Estimate for BMPs

[1] Additional attachments may be required as applicable or directed by the District/Regional Design Storm Water Coordinator (e.g., BMP line item estimate, SW, DPP, and CS Checklists).

DATE: 01/11/2017

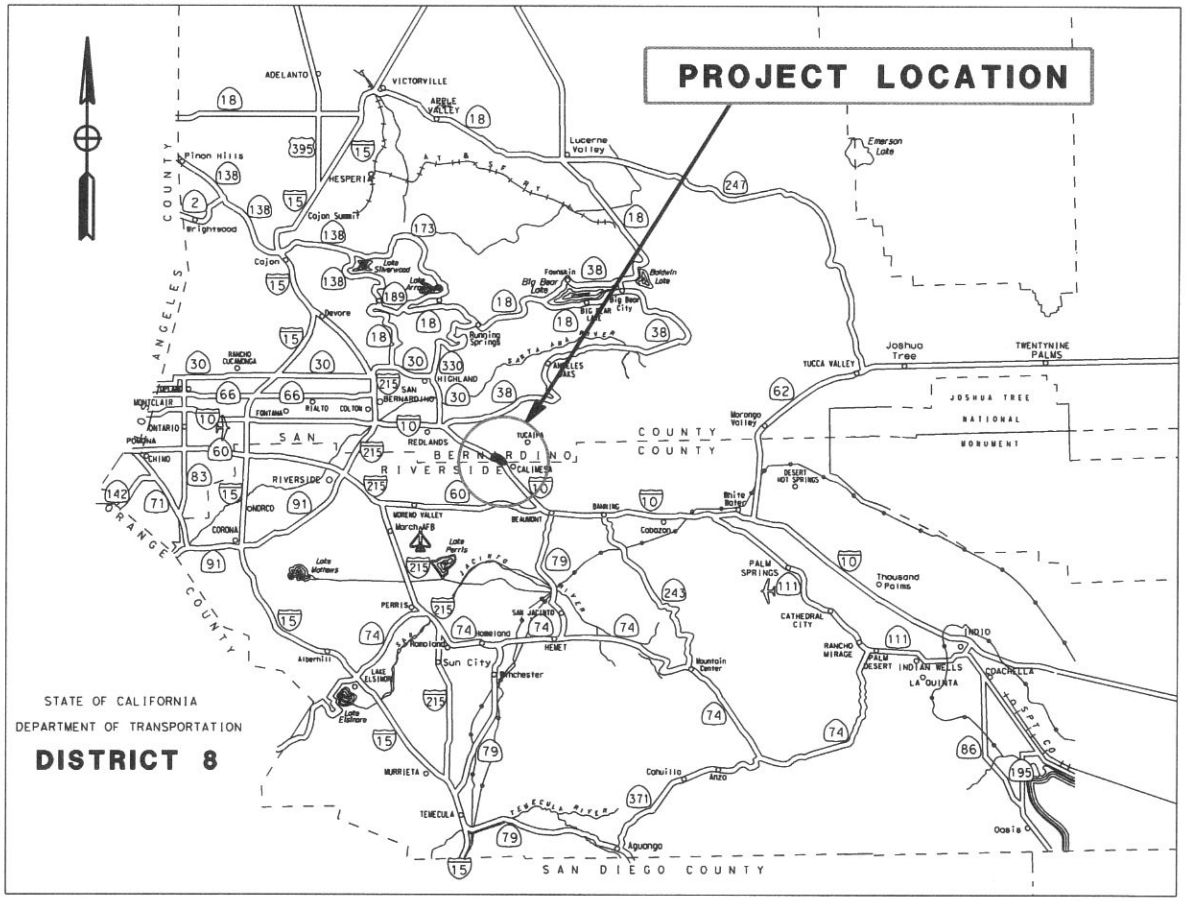
Project ID (EA): 0815000050 (1F760K)

No.	Criteria	Yes ✓	No ✓	Supplemental Information for Evaluation
1.	Begin Project evaluation regarding requirement for implementation of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Treatment BMPs. Continue to 2.
2.	Is the scope of the Project to install Treatment BMPs (e.g., Alternative Compliance or TMDL Compliance Units)?		✓	If **Yes**, go to 8. If **No**, continue to 3.
3.	Is there a direct or indirect discharge to surface waters?	✓		If **Yes**, continue to 4. If **No**, go to 9.
4.	As defined in the WQAR or ED, does the project: a. discharge to areas of Special Biological Significance (ASBS), or b. discharge to a TMDL watershed where Caltrans is named stakeholder, or c. have other pollution control requirements for surface waters within the project limits?		✓ ✓ ✓	If **Yes to any**, contact the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to discuss the Department's obligations, go to 8 or 5. _____*(Dist./Reg. Coordinator initials)* If **No** to all, continue to 5.
5.	Are any existing Treatment BMPs partially or completely removed? (ATA condition #1, Section 4.4.1)		✓	If **Yes**, go to 8 **AND** continue to 6. If **No**, continue to 6.
6.	Is this a Routine Maintenance Project?		✓	If **Yes**, go to 9. If **No**, continue to 7.
7.	Does the project result in an increase of one acre or more of new impervious surface (NIS)?	✓		If **Yes**, go to 8. If **No**, go to 9.
8.	Project is required to implement Treatment BMPs.	Complete Checklist T-1, Part 1.		
9.	Project is not required to implement Treatment BMPs. _____*(Dist./Reg. Design SW Coord. Initials)* _____*(Project Engineer Initials)* _____ *(Date)*	Document for Project Files by completing this form and attaching it to the SWDR.		

VICINITY MAP

08-SBd-10-PM 36.4/R39.2
08-Riv-10-PM R0.0/R0.2
EA 1F760K (0815000050)
April 2017

PROJECT STUDY REPORT
PROJECT DEVELOPMENT SUPPORT
(PSR-PDS)



ON INTERSTATE 10 (I-10)

IN YUCAIPA FROM 16TH STREET OVERCROSSING

TO 0.2 MILE EAST OF COUNTY LINE ROAD UNDERCROSSING

08-SBd-10-PM36.4/R39.2
08-Riv-10-PM R0.0/R0.2
EA 1F760K (0815000050)
BMPs Cost Estimate

The Cost Estimate for the Best Management Practices (BMPs) for Water Pollution is **$300,000**

Attachment (K)

Transportation Management Plan (TMP) Data Sheet

For DTM use		Caltrans District 8 (Riverside & San Bernardino)	
Developer		TMP Data Sheet (Ver. Aug. 2015)	

Transportation Management Plan (TMP) Data Sheet is for PID, PSR, PR and PS&E considering DTM's requirements. The validity of this TMP expires at the same time the associated LRCs expires.

The TMP Data Sheet includes background & signature, TMP elements & TMP estimate

Requester: *Complete section (A) & (B) of this page only*

Requester: Submit separate request for each roadway (Type the information in the cells below with yellow background ONLY)

TMP receiver: Please note that

Project shall not be certified without the approval of the Lane Requirement Charts (LRCs) & the TMP by the DTM

(A) Requester's info.			
1-Date of request	10/31/2016	**2**-Department	
3-Full name	Maen Shaar	**4**- Phone No.	909-383-7131
5-E-mail address	maen.shaar@dot.ca.gov		
6-Project Manager's name	Melecio Chalco		
7-Project Manager's E-mail	melecio.chalco@dot.ca.gov		

(B) Project information		**1**-EA#/ID#	1F760K/0815000050
2-County/Route	SBd & Riv/10	**3**-phase/sub object	
4-Post mile (From-To)	SBd PM 36.4/R39.2 & Riv R0.0/R0.2		
5-Short description of job	**Add an Eastbound Truck Climbing Lane by widening the median**		
Construction period per WPS			
6-Estimated start date		**8**-# of working days	240
7-Estimated end date		**9**-Estimated Proj. cost	$25,000,000

10- Requester: Use section (H), in the bottom of the page, to add any other information that helps developing the TMP

11- Documents to send → *Requester: Please attach the location map in jpeg/pdf format to your E-mail*

12- If hard copies are requested, Send or bring them to the DTM office located on the south side of 11th. Floor, Attn: Al Afaneh. Questions: call 383-6262

13- E-mail the request to: al_afaneh@dot.ca.gov

Following is for DTM use >>>>>>>>>>> Developer: Fill info in green cells only

C) BACKGROUND INFORMATION		Date request received		Job assigned to	
# of working days	240				
Estimated Project cost ($)	25,000,000	Per E-mail dated	08/09/16		
TMP estimate($)	**$248,600**	Equal to **0.99%**	Of the project cost		

D) IMPACT	High	Medium	Low	NA	Developer: (*Briefly, explain the high impact/mitigation):*
State Hwy.		x			
Local road	X				
Ramp/connector		X			

E) Developer: Complete the info					
Developed by	DARA MALEKI			Date	12/12/2016
Title					
E-mail					
Phone/Fax	909-806				

F) Approved by		Original signed by:	Al Afaneh	Date	12/12/16
Name:	Al Afaneh				
Title	District Traffic Manager				
E-mail	al.afaneh@dot.ca.gov				
Phone/Fax	383 6262/383 1068				

G) District's info:		
Department of Transportation		
District:	8	
Address:	464 W. Fourth St., San Bernardino, Ca., 92401-1400	
Operations, DTM, MS >>>>	1150	

H) Remarks	

TMP Elements	EA #/ID#	1F760K/0815000050	Date	12/12/2016

Note: An X in the check box means you need to include this in the project unless staging, material, or work hour changes eliminate the need for the item. A ? in the box means TMP anticipates this - please check into this. A blank box means the item is not needed at this time based on the information received.

1 Public Information/Public Awareness Campaign (PAC) — 50000

BEES 066063 (Traffic Management Plan-Public Information). Cost to be reduced by Public Affairs (PA) and Construction Liaison (CL) only. Show under **State Furnished** as the **total** of PA+CL.

1.1	X	Include Rideshare information in PA/CL project material to encourage vehicles reduction in work area
1.2	X	Brochures and Mailers
1.3		Media Releases (& minority media sources)
1.4		Paid Advertising
1.5		DT
1.6	X	Public Meetings/PAC Mtgs./Speakers Bureau (show cost also for room rental)
1.7		Hand deliver notices to vicinity
1.8	X	Broadcast fax service
1.9	X	Telephone Hotline OR
1.10		1-800-COMMUTE (The telephone number is shown on CS-Info signs) -
1.11	X	Visual Information (videos, slide shows, etc.)
1.12		Local cable TV and News
1.13		Traveler Information System (Internet)
1.14		Internet, E-mail
1.15		Notification to targeted groups:
		Revised Transit Schedules/maps
		Rideshare organizations
		schools
		organizations representing people with disabilities
		bicycle organizations
1.16		Include PA/CL/Consultant resources in WPS
1.17		Commercial traffic reporters/feeds - e.g. brief Traffic Information people (TIP) group
1.18		Insert SSP's
		"A representative of the Contractor, at Superintendent level or higher, and authorized to commit the Contractor, shall attend and participate in all Public Awareness Campaign meetings. Time commitment for the meeting(s) varies from two to four hours per month."
1.19	X	Others

Section 1 Total | $ 50,000

2 Traveler Information Strategies

Project team needs to coordinate with Traffic Design!

2.1		Existing Electronic Message Signs (Stationary) - list locations. See Note 5
		New Installation (Stationary) - BEES 860532 CHANGEABLE MESSAGE SIGN SYSTEM - list locations. See Note 5
2.2	X	Portable Changeable Message Signs (PCMS).BEES 128650

These PCMS advise motorists to divert at remote advance decision points - outside the usual work limits. Unlike stationary CMS, you are allowed to use them for advance motorist information - e.g. a week ahead. Their placement may need to be cleared **environmentally** so that they can be included in plans and SSP later. They may be **in addition** to Traffic Design's PCMS for regular traffic handling in and next to a work area.

Placement Details: units to be placed in the direction of travel towards the closure at 1 mile and 1/2 mile before getting to the closure. Total No. of PCMSs needed is units for 6 months ( )= $

2.3		Lane Closure Web Site
2.4	X	Caltrans Highway Information Network (CHIN)
2.5		Radar Speed Message Sign (Specter sign) BEES 066064 (approx. EA @ $30,000)
2.6		Bicycle and pedestrian information, e.g. Detour maps
2.7	X	Others

Section 2 Total | $ 39,000

3 Incident Management

3.1	CHP's Construction or Maintenance Zone Enhanced Enforcement Program – COZEEP or MAZEEP. BEES 066062 -

TMP Elements	EA #/ID#	1F760K/0815000050	Date	12/12/2016

show under "State or Agency furnished" in the Cost Estimate.

Make sure to consider the LC hours and add CHP driving time to/from their office

Day COZEEP: To protect active closures

# of days	hours/day	CHP vehicles	# of officers.	Rate/Hr.	
90	8	1	1	$ 95	$ 68,400

Night COZEEP: To protect active closures

# of nights		hours/night	CHP vehicles	# of officers. Nights need 2	Rate/Hr.	
48		10	1	2	$ 95	$ 91,200

3.2 BLANK

3.3 **Freeway Service Patrol (FSP) for Construction (CFSP)** $/hr./truck $55

BEES 066065 - show under "State or Agency furnished" in the Cost Estimate

Short duration or remote area CFSP usually is bid with much higher hourly rates. If enhancement of program FSP feasible, CFSP could tie into the lower long-term FSP rates.

	# of trucks	# of days	Hours per day	
A For service within the regular FSP hours				$0
For service outside the regular FSP hours				
B Extended Peak hour coverage				$0
C Night support during structure freeway closures and major traffic shifts				$0
D Weekend support				$0

Local agency (SAFE) support 8% $0

8% of truck cost

CFSP CHP support 5% $0

5% of truck cost only if within regular FSP and area

Equipment/Supplies 10% $0

% of truck cost unless more detail available

Consult with the Inland Empire division of CHP or the border division in the southern Riverside county to select the method which is acceptable for the B,C,D that are outside the regular FSP hours or area.

Method 1

CFSP/CHP support 20% $0

20% of truck cost or

CFSP Dispatcher @

# of days		# of nights	hours	# of FSP	Rate	# of FSP vehicles	
			0		$45		$ -
			0				

CFSP CHP Officers (See Cozeep rate)

# of days		# of nights	hours	# of officers	Rate	# of CHP vehicles	
0		0	0	1	45	0	$ -
0		0	0	2	0	0	$ -

☐ Cooperative Agreement or Task Order with SAFE
for $0

☐ Task Order with CHP (State-wide Master Agreement for FSP support).
for $0
Contact District FSP Coordinator for task orders.

☐ Service Contract

☐ Local Agency will arrange CFSP with SAFE

☐ Local Agency will arrange CFSP administration with CHP

3.3 Total $0

Section 3 Total	$ 159,600

4 Construction Strategies

TMP Elements	EA #/ID#	1F760K/0815000050	Date	12/12/2016

Contact DTM, at 909-383-6262, to get Delay Calculations, Lane Requirement Charts (LRC), Table Z and Special events list. Inform DTM of any concerns/commitments Re special LC days, times, seasons, events; environmental restrictions; if work may be affected by snow and low or high temperatures. E.g. desert heat may delay AC dig out curing which may increase traffic impact when vehicles overheat in the queue; etc. IF traffic volumes vary significantly between seasons, consider 2 sets of LRCs to avoid CCOs.

4.1 This TMP presumes that work is planned as below. If different, TMP needs to be revised. The Lead Project Engineer is responsible to include all appropriate closure charts.

- ☐ Off peak
- ☐ Night
- ☐ Weekend

4.2

- ☐ Flagging
- ☐ Shoulder
- ☐ Lane
- ☐ Street
- ☐ Ramp
- ☐ Connector*
- ☐ Extended Weekend Closures*
- ☐ Total Facility Closures*

*Consult with TMP developer and the DTM regarding Cozeep & other costs. Show your detour and traffic diversion plans.

CAUTION: If the Lane Requirement Chart (LRC) for full mainline closures, of one or both directions on a highway or freeway, does not show the maximum number of allowable closures, the PSE cannot be certified by DTM/TMP.

4.3 ☐ Coordinate with adjacent construction and planned projects - also on detour routes. Use SSP 07-850

4.4 ☐ BEES 066008 Incentives/Disincentives

4.5 ☐ Strictly enforce Constr. Progress Schedule (CPM)

4.6 ☐ Include Specification 12-4.03_A0

BEES 066022 (Traffic) Right of Way delay. Show in supplemental work. If State (or agency) denies an approved closure or orders the contractor an earlier pick up, this shall be used to pay damages, e.g. for AC cold load, etc.

4.7 ☐ 10-Min. Delay Penalty — Contact DTM at 909-838-6262 for 10 Min. Delay penalty Calculations. Note that Delay Penalty is different from the R/W Delay shown above!

4.8 ☐ Others

Section 4 Total	$ -

5 Demand Management (DM)

Project team needs to coordinate with RCTC/SANBAG/CVAG

Traffic diversion may increase available work hours.

5.1 ☐ A coop will be executed - mentioned in PSR or PR.

☐ Instead of a coop, 15% is added to the cost of DM elements since the payment to the local agency will be routed through the contractor.

☐ Instead of a coop, the local agency will make their own arrangements with RCTC/SANBAG.

☐ PA/CL or local agency need to inform commuters through RCTC/SANBAG. Funds part of PA/CL.

5.2 ☐ HOV Lanes/Ramps (New or Convert)

5.3 ☐ Park-and-Ride Lots

☐ Leased spaces (Sponsored spaces may be feasible in exchange for signs and print coverage)

5.4 ☐ Parking Management/Pricing (Coordination with local agency is required)

5.5 ☐ BEES 066067 Rideshare Promotion

5.6 Rideshare Incentives -

Section 5 Total	$ -

6 Alternate Route Strategies

Caution - signed detours may require environmental clearance. Traffic diversion may increase available work hours. Please work with Traffic Design.

6.1 ☐ Add Capacity to Freeway connector

6.2 ☐ Ramp Closures

6.3 ☐ Temporary Highway Lanes or Shoulder Use

6.4 ☐ Parking Restrictions

6.5 ☐ Street Improvements

- ☐ State R/W - Signals, Widen, etc.
- ☐ Local R/W - Signals, Widen, etc. Coop or Permit may be needed

6.6 ☐ Local Street USE - Coop or Permit may be needed

6.7 ☐ Traffic Control Officers (see 3.1 Cozeep)

6.8 ☐ Signed detour - using State routes

6.9 ☐ Signed detour - using local streets and roads

6.10 ☐ Adjust signals

6.11 ☐ Temporary bicycle or pedestrian facilities

6.12 ☐ Others

Section 6 Total	$ -

TMP Estimate

Developed by	DARA MALEKI	EA#/ID#	1F760K/0815000050	Date	12/12/2016

TMP developer: Amounts under the cost column will automatically be copied from the TMP elements

TMP Elements	Cost
1. Public Information	$50,000
2. Motorist Information Strategies	$39,000
3. Incident Management	$159,600
4. Construction Strategies	$0
5. Demand Management (DM)	$0
6. Alternate Route Strategies	$0
Total TMP Estimate	$ 248,600

Attachment (L)

Project Category Approval

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Serious drought.
Help Save Water!

To: CHRISTY CONNORS
DEPUTY DISTRICT DIRECTOR
DESIGN

Date: February 02, 2017

File: 08-SBd-10-36.4/R39.2
08-Riv-10-R0.0/R0.2
Add TCL (EB)
08-2201-1F760K
ID 0815000050

From: MAEN SHAAR
PID/Special Studies
Planning

Subject: **REQUEST FOR PROJECT DEVELOPMENT CATEGORY APPROVAL**

In accordance with Chapter 8, Section 5 of the Project Development Procedure Manual, your approval is requested to assign the above-mentioned project to Category 4B.

A Project Study Report-Project Development Support (PSR-PDS) is being prepared to add an east bound truck climbing lane to improve Level of Service (LOS) and safety at this segment of interstate 10. The project is located in Yucaipa from the 16th street overcrossing in San Bernardino County to 0.2 mile east of County Line Road undercrossing in Riverside County. It is a locally funded project.

The scope includes adding an EB TCL by widening the median only, widening the Oak Glen Creek Bridge, installing concrete barrier in the median, and adding sound wall in the west bound.

The Category 4B is recommended based on the following project considerations:

1. The project will not require additional right of way
2. The project will not increase freeway traffic capacity

APPROVED BY: _____ 2/6/17
CHRISTY CONNORS
Deputy District Director
Design

Date

Attachment (M)

Risk Register

EA 1F760 (0815000050) EA 1F760SBD-10 EB Truck Climbing Lane Improvements In Yucaipa - ACTIVE RISK REGISTER

Risk 001 Project Funding by SBCTA RBS: PPM Owner: Melecio Chalco Updated: 5-09-2017

Description: Any delay in meeting this project's current PA&ED date could impact the San Bernardino County Transportation Authority's (SBCTA) schedule to take advantage of funding opportunities.

Status:

Response Options: Accept

Impacts:

		Costs (dollars)		Delays (days)	
	Probability	Capital	Support	Development	Construction
Optimistic	10%			0 Days	
Most Likely					
Pessimistic	19%			0 Days	

Assessment Notes:

Risk 002 Change to Existing Project Conditions or Limits RBS: PPM Owner: Melecio Chalco Updated: 5-09-2017

Description: Because there are other future projects contemplated within this project's limits, there is the potential to change existing conditions that need to be considered, as they could impact cost, scope or schedule.

Status:

Response Options: Coordinate and assess impacts as required.

Impacts:

		Costs (dollars)		Delays (days)	
	Probability	Capital	Support	Development	Construction
Optimistic	20%	$ 2,279	$ 0	0 Days	0 Days
Most Likely					
Pessimistic	39%	$ 4,558	$ 0	0 Days	0 Days

Assessment Notes:

Attachment (N)

Materials Report
EA 0K293
(For Reference Only)

State of California Business, Transportation and Housing Agency

Memorandum

To: **Larry Sartori,**
Office Chief, Design C,
MS-1164

Date: **November 15, 2016**

Attention: **Dat Wong,**
Project Engineer
(909)386-5479

File No: **08-SBd-10**
PM 36.8/R39.2
EA 08-0K293, 0812000100
Rehabilitation WB
(from 0.20 mile west of Live Oak Canyon Rd to County Line Rd)

From: **DEPARTMENT OF TRANSPORTATION**
Bruce W. Kean
District 8 Materials Engineer

Subject: **Final Materials Report**

This Materials Report is prepared per your request of June 8, 2016. Information contained herein was based on an analysis of historical data for other past projects within the project limits, the documentation that accompanied your request, and followed the requirements for Materials Report and pavement design specified in Topic 114 and Chapter 600 series of the Caltrans Highway Design Manual (Sixth Edition).

1.0 GENERAL

1.1 Proposed Improvements

According to your request, the project limits starts from 0.20 miles west of Live Oak Canyon Road and ends at County Line Road in the city of Calimesa along route 10 in San Bernardino county from post mile 36.8 to 39.2. The scope of the project has been changed, the current scope of work for this project is as follows:

- Replace Lanes No. 2 & 3 and outside shoulder for westbound (WB) only PM R36.8 / R39.2.
- Replace existing thrie-beam barrier in the median.
- Remove existing oleanders in the median and replace planting within the project limits.
- Rehabilitate Hot-Mix-Asphalt pavement for the Live Oak Canyon Road Ramps, Wildwood EB rest area, County Line Road EB off-ramp and WB on-ramp.
- Grind the existing No. 1 lane for WB only.
- Upgrade existing drainage system, if needed.
- Upgrade MBGR and end treatment to current standards.
- Random slabs replacement for WB only.
- Replace with existing curb and dike with mountable dike.
- The existing median shoulder will be used as a detour during the lane replacement.

1.2 Existing Facilities

Within the project limits, I-10 is an six-lane freeway with three lanes in each direction and Portland Cement Concrete (PCC) pavement in all six lanes.

All lanes are 12 feet wide, inside 8 feet wide paved (AC) shoulder and outside shoulders (HMA) are 10 feet wide. At center line concrete metal beam guard rail barrier has been installed.
All lanes are 12 feet wide,. from Live Oak Canyon to County Line Road there is a 36-foot wide unpaved median separated by Metal Beam Guard Rails.

1.3 Climate

This project is located in an Inland Valley Region with average rainfall and occasional thunderstorms. The average annual rainfall is approximately 13.6 inches with a majority of the precipitation occurring between November and April. Annual precipitation ranges from a low of 4.8 inches up to a high of 27.0 inches. Temperatures vary greatly between day and night and from winter to summer; the temperature ranges between 18^0F (-7.8^0C) and 118^0F (47.7^0C). An average wind speeds in Redlands and Yucaipa throughout the year range from 0 to 12 mph.

1.4 Geology, Terrain, Soil

This project area lies within the cities of Calimesa and Yucaipa. According to the United States Department of Agriculture (USDA) Web Soil Survey, the foot print of I-10 within the project limits consists of 45% Ramona sandy loam, 21.7% Hanford coarse sandy loam, 8.8% Cieneba rock outcropping with the remaining 24.5% being various other forms of sand and/or loam (sandy loam, fine sandy loam, loamy sand, gravelly loamy sand or loam.)

The elevation within the project limits ranges from 2040 feet in Live Oak Road crossing to 2392 feet above sea level at County Line near Calimesa.

1.5 Resistance Values for Basement Soils

The Materials Report for Proposed Construction on State Highway Route 26 (I-10) in San Bernardino County from 0.8 mile east to 2.2 miles east of Redlands, dated April 14, 1955 indicates that R-values obtained ranged from a low of 14 to a high of 65 with most values between 20 and 40. This section of I-10 covers the segment just west of Yucaipa Blvd. (PM 35.2) to 16th St. (PM 36.5) and is 1.3 miles long.

Final Materials Report for the construction of I-10 Westbound Mixed Flow Lane Addition prepared by CH2MHILL (EA#0F1500) shows the R-value of subgrade soils range from 5 to 75.

R-Value of 15 was used for pavement design, therefore an R-value of 15 will be adequate for this segment.

2.0 EXISTING STRUCTURAL SECTIONS

The existing pavement structural section thickness of the roadbed varies from 3.50' to 4.0' and some places it may be thicker due to overlays at the top of old roadbed. As built plans also indicates the existence of tie bars. The PCC thickness varies from 0.67' to 0.75'. There are two types of road mixed cement treated bases, i.e., class A RMCTB and class B RMCTB, under this RMCTB there is class II AS type A and B. The thickness of this Class II AS varies from 1.0' to 2.50'

In October of 1945, As-built plans for Map File Number 8VC7 and in August of 1960 As-built plans for map file Number 8V13C16 show construction and realignment of the roadway with generally 0.67' PCC over imported borrow for I-10 (then Route 26) and 0.67' PCC over 0.33' Road Mixed Concrete Treated Base (RMCTB) (Class A) over 0.42' RMCTB (Class B) over 0.50' Aggregate Base (AB) (Class 2) respectively for all the existing 4 lanes at that time.

From the as built plans of contract No. 64-8V13C9-I and document No. 80000306 dated 5-28-1963, the cross sections provided to us by your office indicate that existing mainline inner lanes (lane number 1) consist of 0.67' PCC over 0.42' Road Mixed Cement Treated Base (RMCTB) Class B, over 0.33' Road Mixed Cement Treated Base (RMCTB) Class A, over 1.00' Class A AS, over 1.50' Class II Aggregate Sub-base (AS). The outer lanes (lane number 2 and 3) consist of 0.75' PCC with the same RMCTB and AB/AS. The total thickness of pavement structural section is between 3.92' and 4.00'.

The existing outside shoulders are shown to consist of 0.17' to 0.25'. Type B AC over Class II AB over 1.0 Class II AS (Type A) over 1.50' Class II AS (Type B). The existing inside shoulders are shown to consist of 0.17' to 0.25' Asphalt Concrete (AC) Type B, over 0.33' Class B RMCTB over 0.58' Class II AS (Type A)

In August of 1986, As-built plans for project EA 08-263001 show a medium seal coat was placed on 6th St. EB on ramp, Cypress St. WB off ramp, Ford St. EB off ramp, three Yucaipa Blvd. ramps, Live Oak Cny. EB off ramp, and County Line Rd. EB off and WB on ramps.

In September of 1988, As-built plans for project EA 08-304801 show four slabs were replaced between Ford St. and County Line Rd. with 0.75' PCC.

In March of 2003, As-built plans for project EA 08-1A9301 show 180 slabs were replaced in lanes # 2 and #3 between PM 34.8 and 36.5, with a thickness of 1.08' Portland Cement Concrete (PCC).

In August, 2004, As-built plans for EA 08-453611 show the project cold planed 0.15' and placed 0.15' AC (Type A) on both EB and WB outside shoulders from County Line Rd. to east of SR-38. This project also ground the EB mainline lanes from Live Oak Cny to County Line Rd. and WB mainline lanes from Ford St. to County Line Rd. The pavement section for the I-10 mainline lanes between PM 30.9 and PM R39.1 are shown to be 0.75' PCC, over 0.33' RMCTB (Class A), over 0.50'AS (Class2). The section for the outside shoulders is shown to be 0.25' AC (Type B), over 0.65' AB (Class 2), over 0.50' AS (Class 2).

The August 2005 As-built plans for Project EA 08-4192U1 show the EB Truck Climbing Lane construction, as well as construction of concrete median barrier, concrete shoulders, auxiliary lanes and sound walls. The existing structural section is shown the same as in the plans for EA 08-453611 above.

Table 1: Summary of Existing Pavement Structural Section for lane#1, 2, and 3 as per as-built planes (document # 80000306 and contract #08-038924 dated 5-28-1963)

Pavement Structural Section Material	East Bound (ft)		West Bound (ft)	
	Inner Lane (#1) (ft)	Outer Lane (#2 &#3) (ft)	Inner Lane (#1) (ft)	Outer Lane (#2 &#3) (ft)
PCC	0.67	0.75	0.67	0.75
Class "B" RMCTB	0.42		0.42	
Class "A" RMCTB		0.33		0.33
Class "II" AS(TYPE A)	1.00	1.00	1.00	1.00
Class II AB	1.50	1.50	1.50	1.50
Total Thickness	3.59	3.58	3.59	3.58

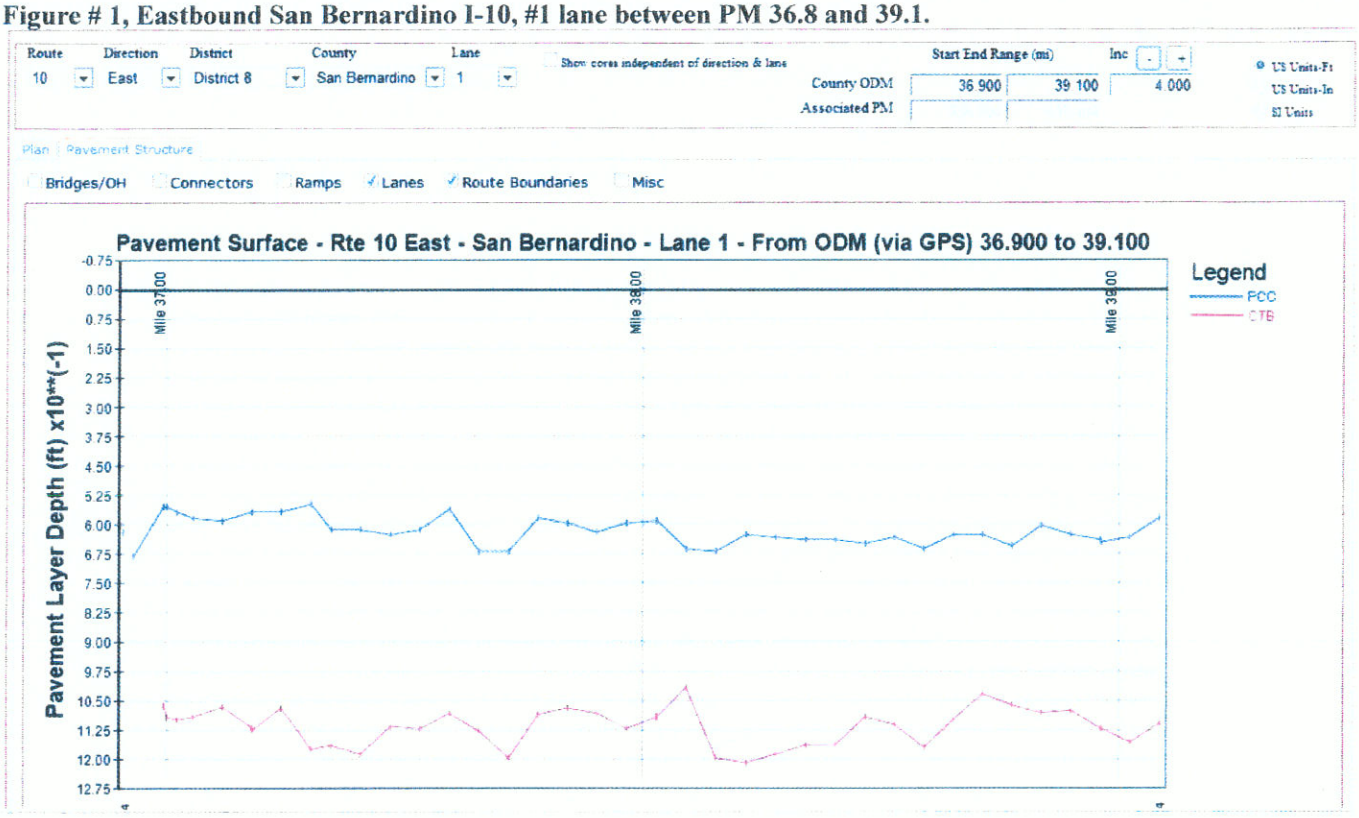
2.1 GROUND PENETRATING RADAR (iGPR SOFTWARE)

A software tool for determining materials used and the depth of layers for existing roadway structural section detected by ground penetrating radar is available for many lanes of freeway throughout California. Use of the software results in a location map and a graph of pavement depth. The software is available at this website:
http://www.ucprc.ucdavis.edu/iGPR/

Not all lanes on all roadways are available, but many lanes of both directions of I-10 are well represented in the system. A total of 6 graphs were selected, and are attached for your review in this report..

Post miles are shown at the bottom of the graph, and also on the label for bridges. Bridge start (BRSTRT) and bridge end (BREND) indicate an undercrossing bridge. Overcrossing bridges are shown as OHBR. The iGPR does not detect pavement structural section at/on bridges.

Figure # 1, Eastbound San Bernardino I-10, #1 lane between PM 36.8 and 39.1.



Go to next page

Figure # 2, Eastbound San Bernardino I-10, #2 lane between PM 36.8 and 39.1.

Figure # 3, Eastbound San Bernardino I-10, #3 lane between PM R36.8 and R39.1.

Figure # 4, Westbound San Bernardino I-10, #1 lane between PM 36.8 to 39.1

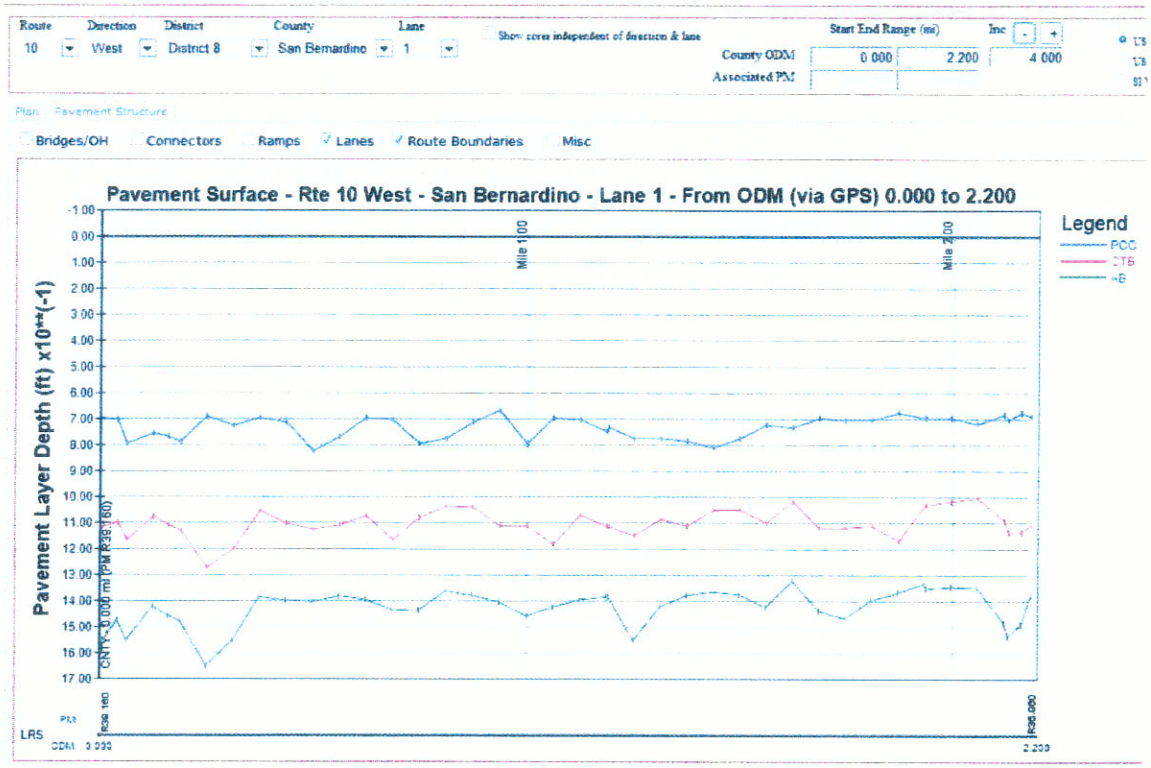


Figure # 5, Westbound San Bernardino I-10, #2 lane between PM 36.8 to 39.1

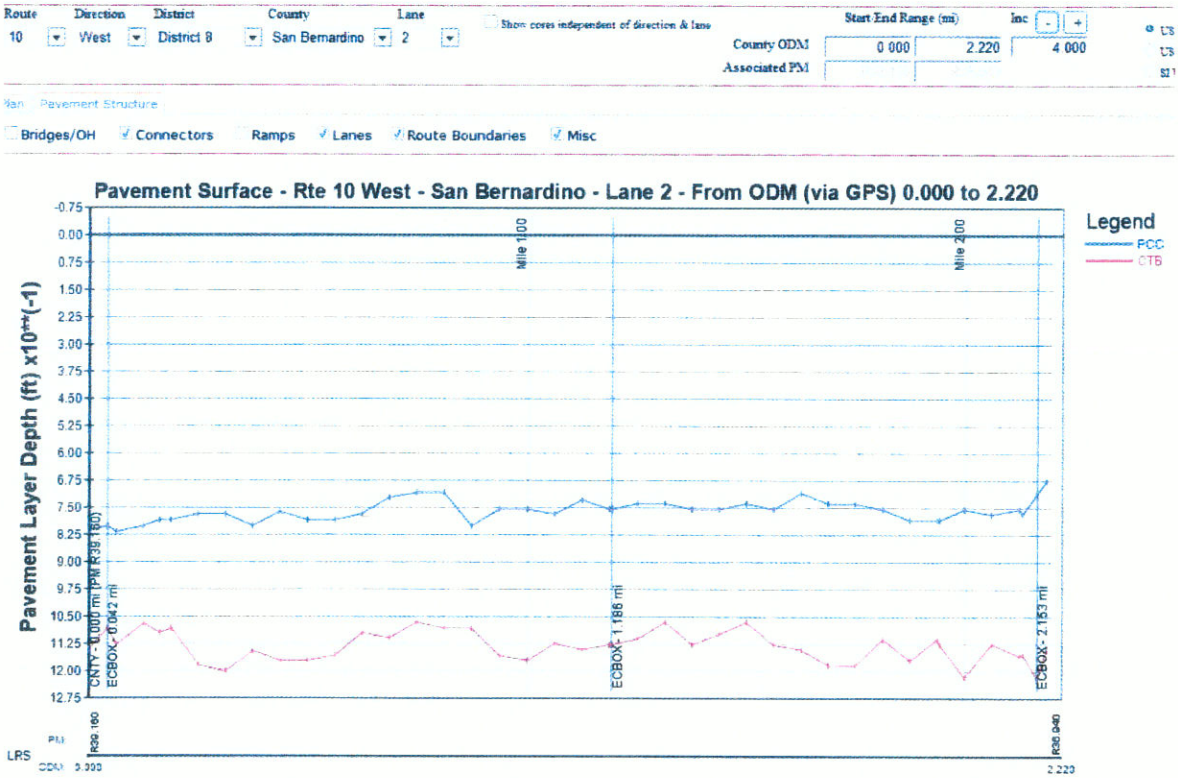


Figure # 6, Westbound San Bernardino I-10, #3 lane between PM 36.8 to 39.1

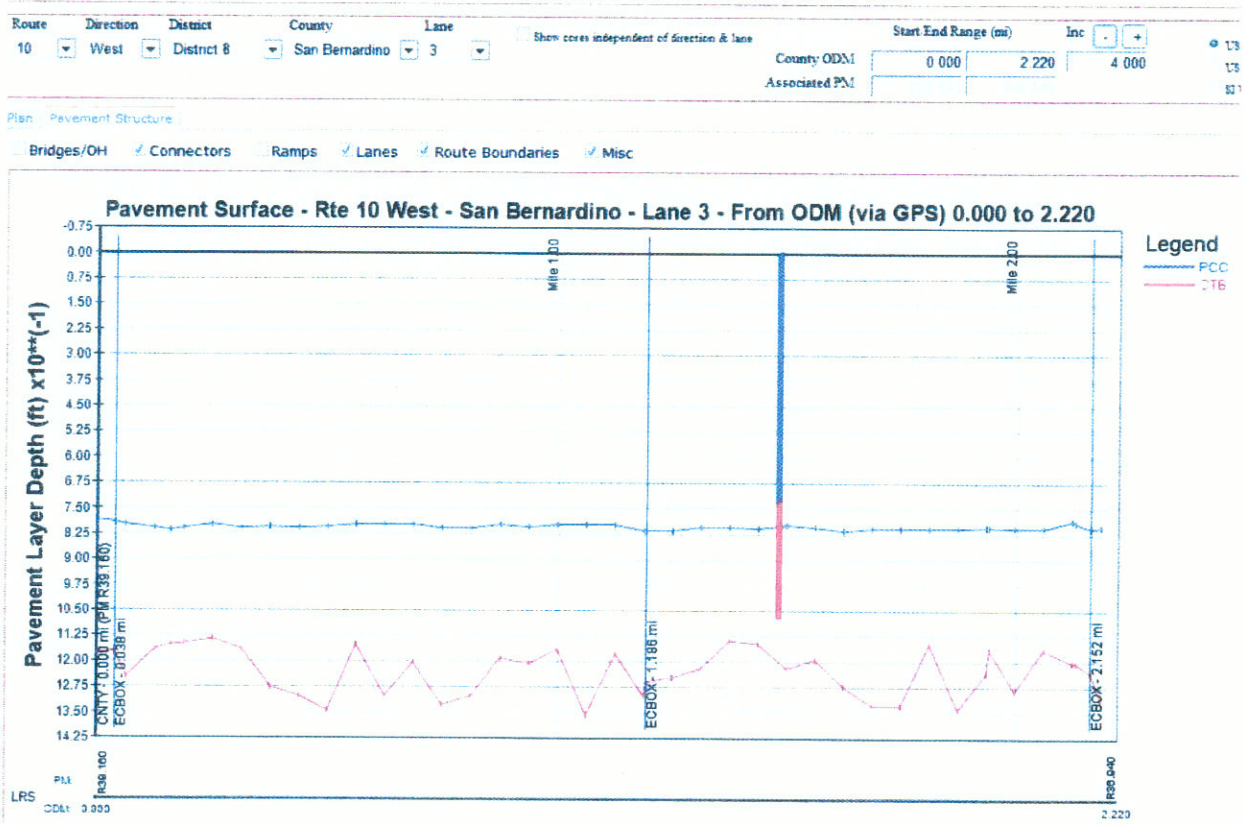
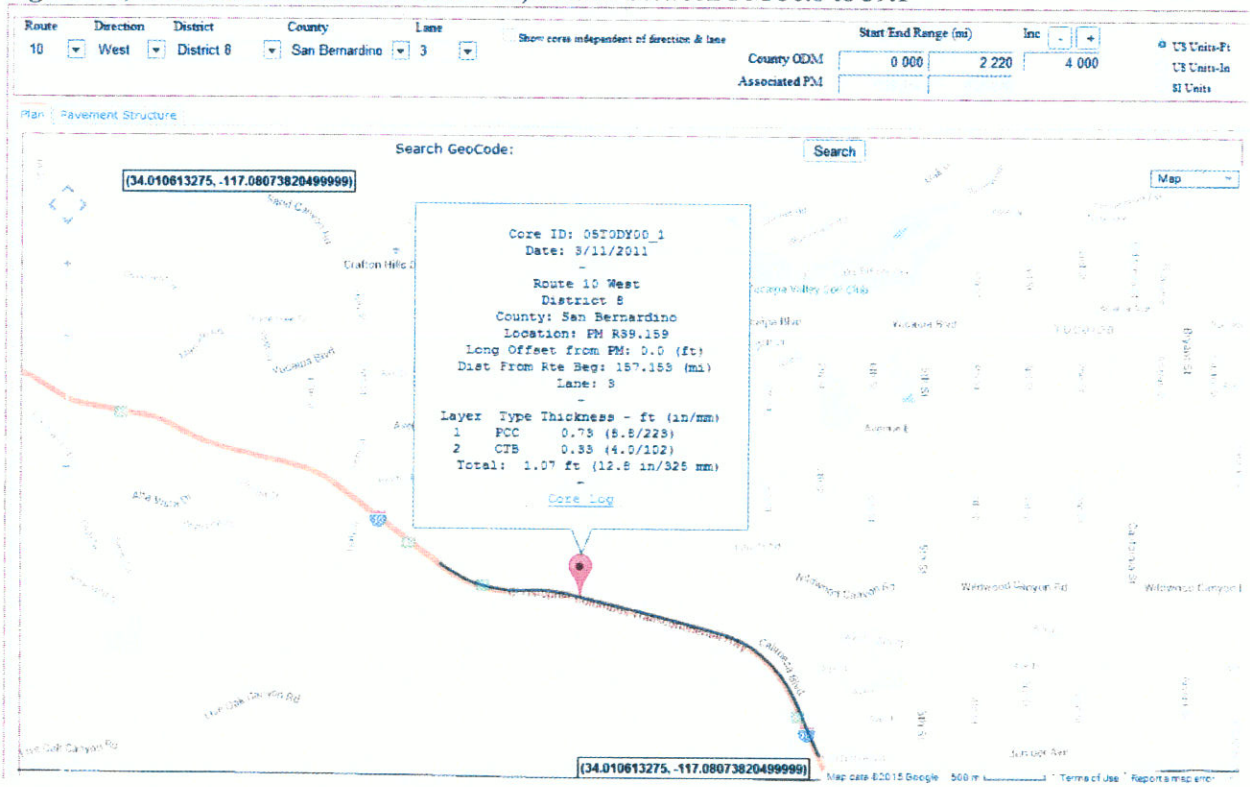


Figure # 7, Westbound San Bernardino I-10, #3 lane between PM 36.8 to 39.1



Across the top of the graph are the District, County, Route, PM (at the center of the graph), the Direction, the Lane Number and the View Range which will result in the post miles shown at the bottom. The upper right corner shows the radio buttons for units, in this case US Units-Ft. On this graph, we are looking at the SBd-10 PM 36.8 to 39.1, EB or WB #1, 2, and 3 in US feet.

Historically, the roadway has been rehabilitated and reconstructed many time since its original construction. From the iGPR data, it is clear that the thickness of CTB and Class II AB changes along roadway. The CTB thickness variation is about +/- 0.40' as reported in the Table 2 below, whereas the Class II AB is about +/- 0.25'. This variation is due to previous rehabilitation and reconstruction works performed during the life of this route.

Table 2: Summary of Existing Pavement Structural Section for lane#1, 2, and 3 as per iGPR data

Pavement Structural Section Material	East Bound (ft)			West Bound (ft)		
	Lane #1	Lane # 2	Lane # 3	Lane # 1	Lane # 2	Lane # 3
PCC	0.67	0.75	0.75	0.65	0.75	0.75
CTB	0.45	0.70	0.70	0.35-0.40 CTB	0.33-0.55	0.33-0.55
Class II AB	0.26			0.26 Class II AB		

3.0 PAVEMENT DESIGN PARAMETERS

3.1 R-Value

Based on the discussions in section 1.5 "Resistance Values for Basement Soils" it is concluded that the design R-Value for this segment is determined as 15.

3.2 Traffic Index (TI) and Average Daily Traffic (ADT)

The traffic information were provided in the memorandum dated April 21, 2015 from the Office of Forecasting. These information are summarized here for pavement design.

Table 3A: Mainline Traffic Information (AADT and Truck Percentage)

	Existing (2015)	Opening Year (2020)	20-Year (2040)	40-Year (2060)
AADT	110,000	117,800	157,300	207,000
Truck % in ADT	16%	16%	16%	16%

Table 3B: Ramp Traffic Information (AADT)

	Existing (2015)	Opening Year (2020)	20-Year (2040)	40-Year (2060)
AADT County Line Road EB off-ramp	7,400	7,800	8,800	9,800
AADT County Line Road WB on-ramp	7,000	7,400	8,300	9,200

Note: Ramp with higher traffic volume

Table 4: Mainline TIs (SBd-10 PM 36.8/ 39.1)

Forecasted Period	Inside Lane #1 + first 2 ft. of the Inside Shoulder	Inside Shoulder	Outside Lanes (#2 & #3)+ first 2 ft. of the Outside Shoulder	Outside Shoulder
20-Year (2041)	13.0	8.0	15.5	9.5

40-Year (2061)	14.5	9.0	17.0	11.0

* See page 610-9 of Highway Design Manual, All the shoulders will be designed for TI of 9.0

Table 5: Ramps TIs

Ramp Location	20-Year (2041)	40-Year (2041)
TI for County Line Road EB off-ramp and WB on-ramp	10.5	11.5
TI for County Line Road EB on-ramp	9.5	10.5
TI for County Line Road WB off-ramp	9.0	10.0

Wildwood Rest Area

Medium Truck Traffic is considered for roads and parking spaces in the rest area [topic 613, HDM]. The TIs for parking area are given below;

Table 6: TIs for Rest Area (Topic 613, HDM)

Rest Area Segments	20-year Design Life (TI)	40-year Design Life (TI)
Truck Road (Medium)	10.0	11.0
Truck Parking	8.0	9.0
Auto Road	5.5	6.5
Auto Parking	5.0	6.0

3.3 Pavement Design Life

a) New and reconstruction pavement:
Lane #3 is in bad condition and need reconstruction, based on the traffic data provided by the Office of Forecasting and the Highway Design Manual (HDM) Table 612.2, any new sections to replace the existing pavement are required to be designed for the 40-Year design period, if the 20 years AADT after construction will equal or exceed 150,000.

b) Rehabilitation of Existing pavement:
The minimum pavement design life for roadway rehabilitation projects shall be 20 years except for roadways with existing rigid pavements or with a current Annual Average Daily Traffic (AADT) of at least 15,000 vehicles, where the minimum pavement design life shall be 20 or 40 years depending on which design life has the lowest life-cycle costs. [section 612.5 Roadway Rehabilitation]. I-10 is a major interstate freeway and have high truck volume (16%). Considering current and projected annual average daily traffic long life pavement strategy is required for this facility. However for comparison purpose 20-year design period pavement will be designed. The pavement design with the lowest life cycle cost shall be selected.

4.0 PAVEMENT DESIGN

We designed rigid structural sections for the replacing concrete mainline lanes and both rigid and flexible alternatives for shoulder and ramp rehabilitation. For each type of pavement we provide pavement design for 20-Year and 40-Year design life. The Rubberized Hot Mix Asphalt Type G (RHMA-G) is also offered to comply with Caltrans guidelines to use RHMA-G as much as possible, if feasible. Designer may select the one which is the most cost effective based on the LCCA analysis results.

Please find rigid structural sections for the traveled way below, in Tables 6 and 7. The percentage of truck traffic is projected to remain steady or increase on I-10, up to and even beyond the year 2035. Since there is an active project to further widen the I-10 to Ford St. (Project EA 08-0C2501, PN 0800000040) with a construction year of 2019, an

alternative for concrete shoulders with the same section as the adjacent lane up to PM 33.3 should be considered. The LCCA should be performed as soon as possible to maximize the use of our pavement investment.

The new pavement with lateral support can only be allowed if following condition permits:

- The transverse joints of existing pavement are at the same location as of the new pavement with current standards
- The new pavement is tied with the existing pavement

The lane #1 has skew joints and are at random location, therefore the existing lane cannot be tied with the new lane. An isolation joint should be provided and this lane (lane #2) will be without lateral support.

4.1 New Pavement and Shoulder Reconstruction

Rigid pavement sections shown below in Tables 6 & 7 were obtained using the procedure described in Section 623.1 of the 6th edition of the HDM updated on May 7, 2012. This procedure utilized "Type II" soil, "Inland Valley" climate region, and Table 623.1 (G) with lateral support for rigid shoulders and without lateral support for flexible shoulders.

If lane #3 is tied with lane #2 and rigid outside shoulders then lane #3 will be considered as lateral supported pavement. If the new rigid pavement cannot be tied with the existing rigid pavement then the new pavement section should be selected as non-lateral supported pavement section. If flexible shoulders are considered to construct then lane #3 will also be designed as non-lateral supported pavement section.

The LCB thickness of 0.35' should only be used if construction traffic is not allowed. On this project construction traffic cannot be restricted therefore the LCB thickness is increased to 0.50'. A 0.10' HMA Type A between the JPCP and LCB is recommended by this office.

Flexible pavement section (HMA) for shoulders are provided for comparing with other options. An LCCA should be performed. In general HMA shoulders are not recommended. Shoulder flexible pavement sections shown below in Tables 6, 7 & 8 were obtained by employing CalFP version 1.1, a computer program. This program is based on design methodology documented in Chapter 630 of the Caltrans HDM.

In case of rehabilitation, it is always preferred to replace base and sub base at the same time to get maximum service life of the pavement. If there are limitations of schedule and funds, the existing AS class II can be kept in place. Before placing lean concrete base (LCB), the relative compaction of existing sub base should be checked and it should not be less than 95% and should not be less than minimum thickness of 0.70'.

Following points should be considered for details pavement design:

1. If the transverse joints of existing and new pavement can be aligned then the new lane should be tied with the existing rigid pavement and use pavement with lateral support or use pavement without lateral support and isolation joint will be required between existing and new pavement.
2. Flexible shoulders are provided for comparing with other option for determining most cost effective pavement during the service life of the project. This office does not recommend flexible shoulders with JPCP travel way.
3. If the existing sub base meets the minimum requirements stated in the following Tables then the existing base should not be disturbed, re-compact the top surface in-place and place LCB, interlayer/or bond breaker and JPCP.
4. To avoid widened slab (use same type of pavement for travel way and shoulder) and to keep the travel lane width 12', then see section 4.2.1 and Figure 9: Showing Typical recommended shoulder structural section.
5. For random slab replacement, ignore Class II aggregate sub base.

Table 6: 20-Year Pavement Design: Rigid Mainline Lanes with rigid/ or Flexible shoulders – Subgrade Type II – Inland Valley Climate

Option/Alternative	Lane #1+ first 1 feet of inside shoulder (TI=13.0)	Lane #2 (TI=15.5)	Lane #3 + first 2 feet of shoulder (TI=15.5)	Inside and Outside Shoulders 20-yr Design (TI_{max}=9.0)
Alternative I (20-yr JPCP with 20-yr rigid shoulder)	1.00' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.30' Total	1.20' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.50' Total	1.05' JPCP 0.10' HMA-A 0.50' LCB 0.85' AS Class 2(2.50' Total	0.75' JPCP 0.10' HMA-A 0.50' LCB 1.15'AS Class 2 2.50' Total
Alternative II (20-yr JPCP with 20-yr rigid shoulder Class II AB only)	1.00' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.30' Total	1.20' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.50' Total	1.05' JPCP 0.10' HMA-A 0.50' LCB 0.85' AS Class 2 2.50' Total	0.80' JPCP 1.55'AB Class 2 2.50' Total
Alternative III (20-yr JPCP with 20-yr HMA w/RHMA-G shoulder)	1.00' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2(3) 2.30' Total	1.20' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2(3) 2.50' Total	1.20' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2(3) 2.50' Total	0.20' RHMA-G(5) 0.25' HMA Type A 1.90' AB Class 2 2.50' Total
Alternative IV (20-yr JPCP with 20-yr HMA shoulder)	1.00' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.30' Total	1.20' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.50' Total	1.20' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.50' Total	0.45' HMA Type A 1.90' AB Class 2 2.50' Total

Table 7: 40-Year design: Rigid Mainline Lanes with rigid/ or Flexible shoulders – Subgrade Type II – Inland Valley Climate

Option/Alternative	Lane #1+ first 1 feet of inside shoulder (TI=14.5)	Lane #2 (TI=17.0)	Lane #3 + first 2 feet of shoulder (TI=17.0)	Inside and Outside Shoulders 20-yr Design (TI_{max}=9.0)
Alternative I (40-yr JPCP with 20-yr rigid shoulder)	1.15' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.45' Total	1.25' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.55' Total	1.10' JPCP 0.10' HMA-A 0.50' LCB 0.80' AS Class 2 2.55' Total	0.75' JPCP 0.10' HMA-A 0.50' LCB 1.20'AS Class 2 2.55' Total
Alternative II (40-yr JPCP with 20-yr rigid shoulder) Class II AB only	1.15' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.45' Total	1.25' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.55' Total	1.10' JPCP 0.10' HMA-A 0.50' LCB 0.80' AS Class 2 2.55' Total	0.80' JPCP 1.60'AB Class 2 2.55' Total
Alternative III (40-yr CRCP with 20-yr rigid shoulder) Class II AB only	1.00' CRCP 0.25' HMA-A(1) 0.70' AS Class 2 1.95' Total	1.10' CRCP 0.25' HMA-A 0.70' AS Class 2 2.05' Total	0.95' CRCP 0.25' HMA-A 0.85' AS Class 2 2.05' Total	0.80' JPCP 1.25' AB Class 2 2.05' Total

Alternative IV (40-yr JPCP with 20-yr HMA w/RHMA-G shoulder)	1.15' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.45' Total	1.25' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.55' Total	1.25' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.55' Total	0.20' RHMA-G 0.25' HMA Type A 1.95' AB Class 2 2.55' Total
Alternative V (40-yr JPCP with 20-yr HMA shoulder)	1.15' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.45' Total	1.25' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.55' Total	1.25' JPCP 0.10' HMA-A 0.50' LCB 0.70' AS Class 2 2.55' Total	0.45' HMA Type A 1.95' AB Class 2 2.55' Total

Table 7A: 40-Year design: Rigid Mainline Lanes (CRCP) with rigid/ or Flexible shoulders – Subgrade Type II –
Inland Valley Climate

Option/Alternative	Lane #1+ first 1 feet of inside shoulder (TI=14.5)	Lane #2 (TI=>17.0)	Lane #3 + first 2 feet of shoulder (TI=>17.0)	Inside and Outside Shoulders 20-yr Design (TI_{max}=9.0)
Alternative I (40-yr CRCP with 20-yr rigid shoulder)	N/A	1.10' CRCP 0.25' HMA-A 0.70' AS Class 2 2.05' Total	1.10' CRCP 0.25' HMA-A 0.80' AS Class 2[(1)(2)] 2.05' Total	1.10' CRCP[(5)] 0.25' HMA-A 0.80' AS Class 2 2.05' Total
Alternative II (40-yr CRCP with 20-yr rigid shoulder)	N/A	1.10' CRCP 0.25' HMA-A 0.70' AS Class 2 2.05' Total	1.10' CRCP 0.25' HMA-A 0.80' AS Class 2[(1)(2)] 2.05' Total	0.75' JPCP 0.25' HMA-A 1.05'AS Class 2 2.05' Total
Alternative III (40-yr CRCP with 20-yr rigid shoulder) Class II AB only	N/A	1.10' CRCP 0.25' HMA-A 0.70' AS Class 2 2.05' Total	1.10' CRCP 0.25' HMA-A 0.80' AS Class 2 2.05' Total	0.80' JPCP 1.05'AB Class 2 2.05' Total
Alternative IV (40-yr CRCP with 20-yr HMA shoulder)	N/A	1.10' CRCP 0.25' HMA-A 0.70' AS Class 2 2.05' Total	1.10' CRCP 0.25' HMA-A 0.80' AS Class 2 2.05' Total	0.45' HMA Type A 1.60' AB Class 2 2.05' Total

4.1.1 Shoulders

A tied CRCP shoulder or widened traffic lane with HMA or JPCP shoulders and no tie bars can be used adjacent to CRCP traffic lanes but this option is not a preferred option. Drainage inlets placed in the shoulder area should be called out by type and follow the applicable details shown on Revised Standard Plans RSP P45 and RSP P46.

4.1.2 CRCP Shoulders (Recommended for this project)

For longer life and constructability purpose, we recommend CRCP shoulders should be constructed monolithically with the CRCP mainline travel way with no longitudinal construction joints. Longitudinal and transverse bars are extended through the shoulder area (see Revised Standard Plan RSP P4). The shoulder cross slope should match the lane cross slope and may require a design exception. The pavement structure design for the tied concrete shoulder should match the adjacent traffic lane.

Tied concrete shoulders are the most adaptable and preferred type when future widening is anticipated within the pavement design life, or when the shoulder will be used temporarily for stage construction or as a bus or truck lane. When tied concrete shoulders are expected to be converted into a future traffic lane, they should be built to the same geometrics and pavement structure standards as the CRCP traffic lane.

4.1.3 Widened Lanes

This office discourage widened slabs but in some cases it may not be avoided. If required, CRCP widened lanes are 14' wide with either JPCP or HMA shoulders (Revised Standard Plan RSP P5A). The edge of traveled way is striped for a 12' lane width, so the additional 2' width becomes part of the shoulder and keeps the wheel path away from the edge of pavement. This reduces critical edge stresses from heavy vehicle loading. During future maintenance or construction operations, the wider shoulders can be used to detour traffic.

HMA or JPCP shoulders may be placed adjacent to the widened lane. JPCP used in a shoulder application is constructed without tie bars. The design standards for lane and shoulder addition with widened lane are provided in Revised Standard Plan RSP P5B.

4.2 Joint Seals

Longitudinal and transverse joints will be required in new rigid pavement (JPCP) as per current standards. All joints should be sealed with preformed compression seal option (P20, 2015 HDM), no other option should be allowed. Other seal options in this area perform poorly.

4.3 Rapid Set Concrete (RSC) Construction

In some area the construction window may not be enough to use regular concrete, especially in gore area and close to the bridges. The existing sub base should be re-compacted to 95% of relative compaction and place 0.50' LCB (RSC). For Gore area use the same pavement sections as of shoulders. Use Base Bond Breaker as per 2015 standard specification 36-2. Place JPCP as per require design life. These pavement structural section are summarized in the following Table.

Table 8: Mainline and Shoulders Rapid Set Concrete (RSC) 20-year Design

Option/Alternative	Lane #1+ first 1 feet of inside shoulder (TI=13.0)	Lane #2[3] (TI=15.5)	Lane #3 + first 2 feet of shoulder (TI=15.5)	Inside and Outside Shoulders 20-yr Design (TI_{max}=9.0)
Alternative I (20-yr JPCP with 20-yr rigid shoulder)	1.00' JPCP Bond Breaker[1] 0.50' LCB	1.20' JPCP Bond Breaker[1] 0.50' LCB	1.05' JPCP Bond Breaker[1] 0.50' LCB	0.75' JPCP Bond Breaker[1] 0.50' LCB

(1) White opaque polyethylene film under ASTM C171 except the minimum thickness must be 6 mils

Table 9: Mainline Rapid Set Concrete (RSC) 40-year Design

Option/Alternative	Lane #1+ first 1 feet of inside shoulder (TI=14.5)	Lane #2[3] (TI=17.0)	Lane #3 + first 2 feet of shoulder (TI=17.0)	Inside and Outside Shoulders 20-yr Design (TI_{max}=9.0)
Alternative I (40-yr JPCP with 20-yr rigid shoulder)	1.15' JPCP Bond Breaker[1] 0.50' LCB	1.25' JPCP Bond Breaker[1] 0.50' LCB	1.15' JPCP Bond Breaker[1] 0.50' LCB	0.75' JPCP Bond Breaker[1] 0.50' LCB

(1) White opaque polyethylene film under ASTM C171 except the minimum thickness must be 6 mils

4.2 Considerations for concrete shoulder construction:

There are requirements and recommendations for shoulder construction specified in the HDM Topic 613.5(2)(b) Based on this, this office recommends the following:

4.2.1 Using LCB or HMA-A Base (Preferred Option)

1) The AS and LCB/HMA-A under the adjacent lane should be extended at the same 2% slope under the JPCP/CRCP shoulder up to at least one foot beyond ES. The additional one foot will give the shoulder edge support. If PCC curbs will be constructed, then the LCB and AS should be extended more than 1 foot to provide support to the curbs.

2) The JPCP/CRCP surface course of the shoulder should be constructed tapered from ETW with lane thickness and ending at ES with shoulder thickness. The taper can also follow the typical 5% shoulder slope, which may have a slightly different thickness at ES depending on the shoulder width.

By tapering the JPCP/CRCP shoulder thickness, we ensure the placement of the tie bar between lane and shoulder at mid-depth providing maximum strength. Another benefit is that under this procedure, there is no need to have widen slabs in the adjacent lane , which this Office does not recommend. Widen slabs may curl differently due to the length/width ratio.

The additional cost due to more material may be more than offset by the potential savings in initial labor and future maintenance cost.

Based on the above and the typical recommended JPCP/CRCP (Figure 8 shows only JPCP, consider this JPCP also CRCP) thicknesses for the mainline lane [(if mainline is 1.10') and shoulder (0.80')] for a project, the 10-feet shoulder cross slope would be at 5%. See the sketch below:

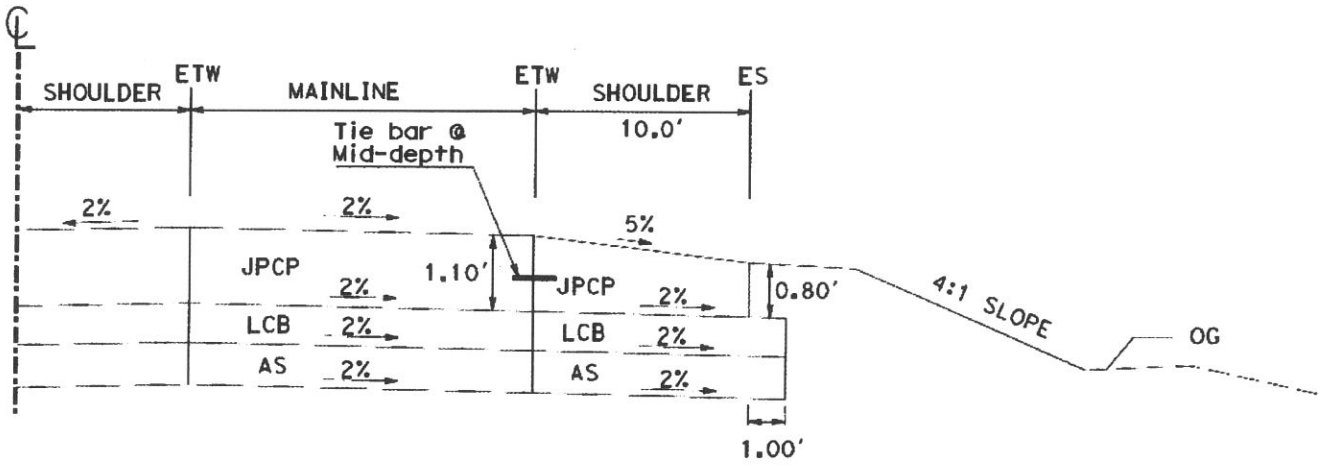


Figure 8: Showing Typical Recommended Shoulder Structural Section.

4.2.2 Without LCB

The total depth of the shoulder pavement structure (depth from the surface to the subgrade) shall match the pavement structure grading plane of the adjacent traffic lane. See Figure 9

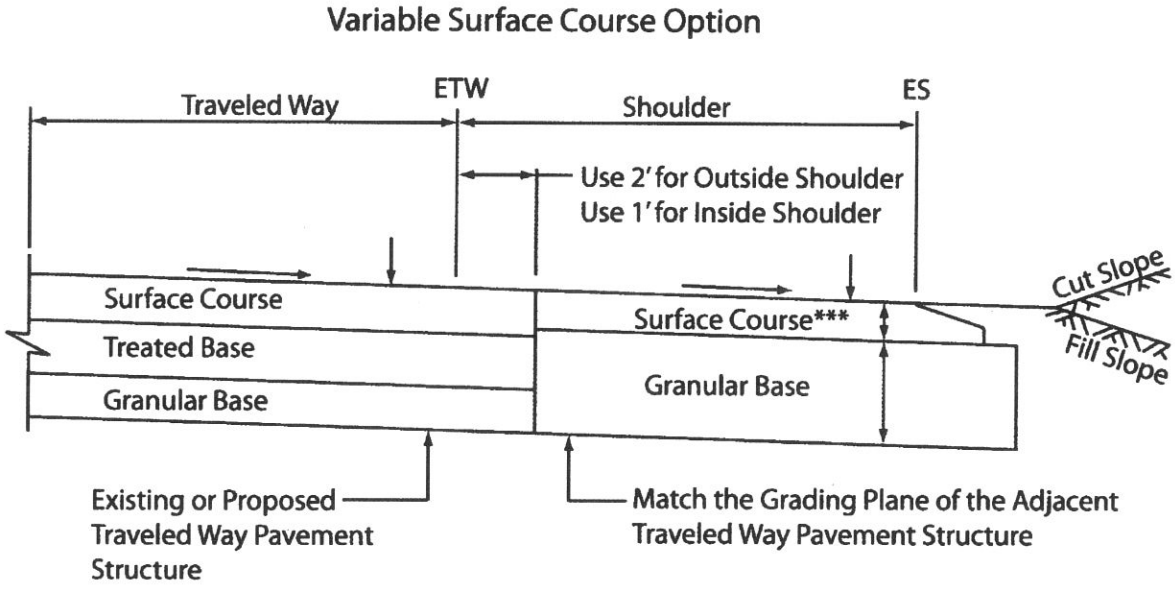


Figure 9A, Shoulder Design for TI Less Than Adjacent Lane TI-Figure 613.5A of HDM

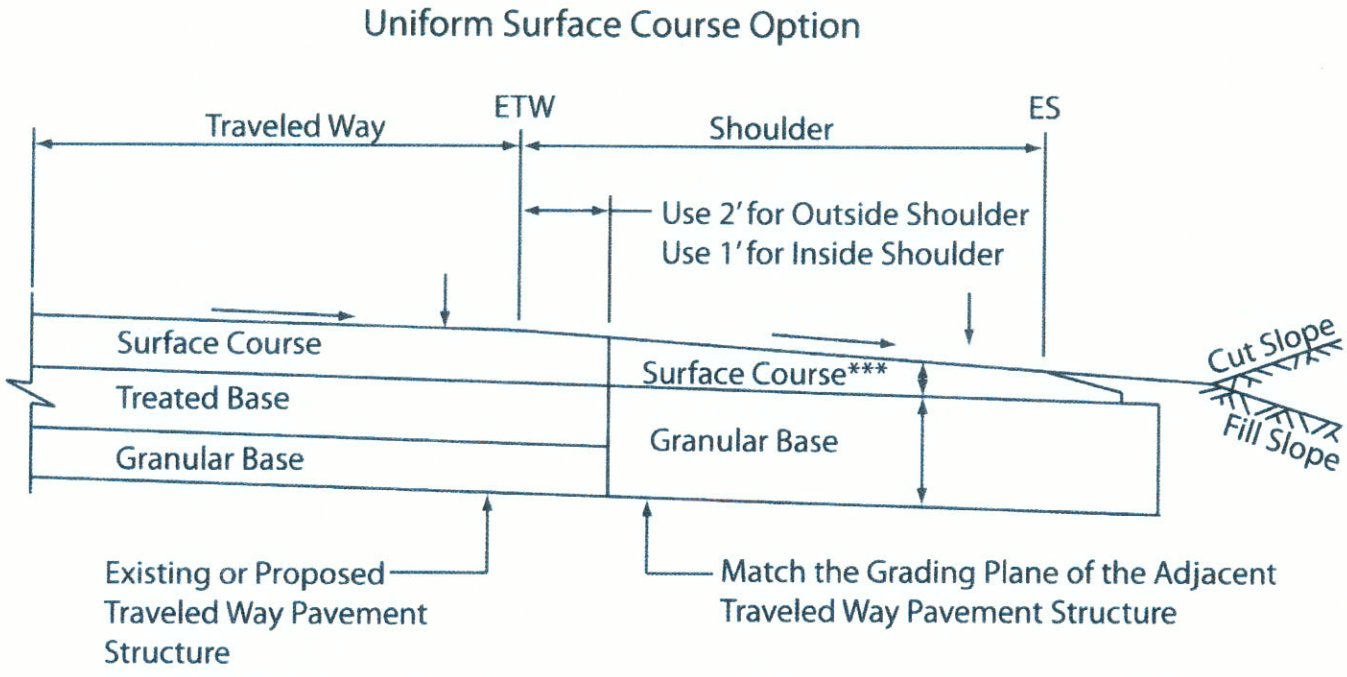


Figure 9B, Shoulder Design for TI Less Than Adjacent Lane TI-Figure 613.5A of HDM

4.2.1 Ramps and their Shoulders

Since the structural section of existing shoulders and ramps has been shown to be 0.25' AC or less in most cases, the typical mill and overlay of 0.50' would not be possible. Rehabilitation of shoulders and ramps in this case, would simply be reconstruction.

In Tables 10 and 11 below are recommendations for the on/off ramps and shoulders for 20-Yr Design and 40 Yr Design:

The following concrete sections are also the recommended options for the Ramp Termini to be constructed on all AC off ramps. Sections were obtained from the September 1, 2006 edition of the HDM, using Table 623.1(G), "Type II" soil, "Inland Valley" climate region with no lateral support.

The ramp termini should be extended back to first set of signal loops and also for un-signalized intersection (considering the future signals).

Table 10: Ramps and Shoulders 20-Yr. Design

Location	Option 1 Reconstruction with concrete-Rigid	Option 2 Reconstruction with HMA-Flexible
TI for County Line Road EB off-ramp and WB on-ramp (R value = 15, Subgrade Type II, TI=10.5)	0.85' JPCP 0.10' HMA-A BB 0.50' LCB 0.60' AS Class 2 -or- 0.95' JPCP over 1.30' AB Class 2	0.85' HMA 1.00' AB Class 2

Table 11: Ramps and Shoulders 40-Yr. Design

Location	Option 1 Reconstruction-Rigid	Option 2 Reconstruction with HMA- Flexible
TI for County Line Road EB off-ramp and WB on-ramp (R value = 15, Subgrade Type II, TI=11.5)	0.95' JPCP 0.10' HMA-A BB 0.50' LCB 0.60' AS Class 2 -or- 0.95' JPCP 0.25' HMA-A 0.60' AS	0.20' RHMA-G 1.30' HMA-A 0.50' AB Class 2

Note: For HMA, use HMA Type – A or RHMA Type – G.

4.2.2 Ramps and shoulders Rapid Set Concrete (RSC)

If the construction window is not enough to use the regular concrete then the existing sub base should be scarified and compacted to 95% of relative compaction and place 0.50' LCB (RSC). Place 0.85' or 0.95' JPCP as per require design life. These pavement structural section are summarized in the following Table.

Table 12: Ramps and Shoulders Rapid Set (RSC)

Location	Option 3 20-year – TI=10.5 Reconstruction - Rigid	Option 4 40-year – TI =11.5 Reconstruction - Rigid
TI for County Line Road EB off-ramp and WB on-ramp (R value = 15, Subgrade Type II)	0.85' JPCP Bond Breaker(1) 0.50' LCB 0.60' AS(2)	0.95' JPCP Bond Breaker(1) 0.50' LCB 0.60' AS(2)

(1) White opaque polyethylene film under ASTM C171 except the minimum thickness must be 6 mils
(2) If existing AS/AB is more than 0.60 then no need of replacement. Compact the existing AS/AB to95% relative compaction and place LCB.

4.3 Wildwood Rest Area

The existing pavement condition at rest area is very poor. Alligator cracks exists at the surface. These cracks are due to fatigue caused by excessive loading, weak surface layer, weak base and weak subgrade. The existing AC layer is only 0.25' which is very thin to carry effectively existing traffic loading. See the Figure 10.

This roadside rest area provides the facility for trucks and automobiles. For truck parking areas, where pavement will be subjected to truck starting/stopping and oil drippings which can soften asphalt binders, separate flexible pavement structures which may include thicker structural sections, alternative asphalt binders, aggregate sizes, or mix designs should be considered. Rigid pavement should be preferred.

The surface of parking areas should be crowned or sloped to minimize the amount of surface water penetrating into the pavement. Drainage facilities for the surface runoff should be provided. For flexible pavement, a mix using 3/4 inch or 1 inch aggregate is recommended to provide a relatively low permeability. The flexible pavement (HMA) should be placed in 0.20' to 0.45' thick lift depending on aggregate size to provide maximum density. Contact Materials Engineering when final design decision is made.

4.3.1 Pavement Design for Rest Area

Due to insufficient AC and base layers, cold plan and overlay option will not work. Therefore reconstruction of existing pavement is required.
The 20-year designed TI for Truck roads and parking area is considered as 10.0 and for auto roads and parking area use TI of 5.5. And the 40-year designed TI for Truck roads and parking area is considered as 11.0 and for auto roads and parking area use TI of 6.5.

20-year and 40-year pavement design is included in the report. To determine most cost effective pavement option, LCCA should be completed before making any decision.

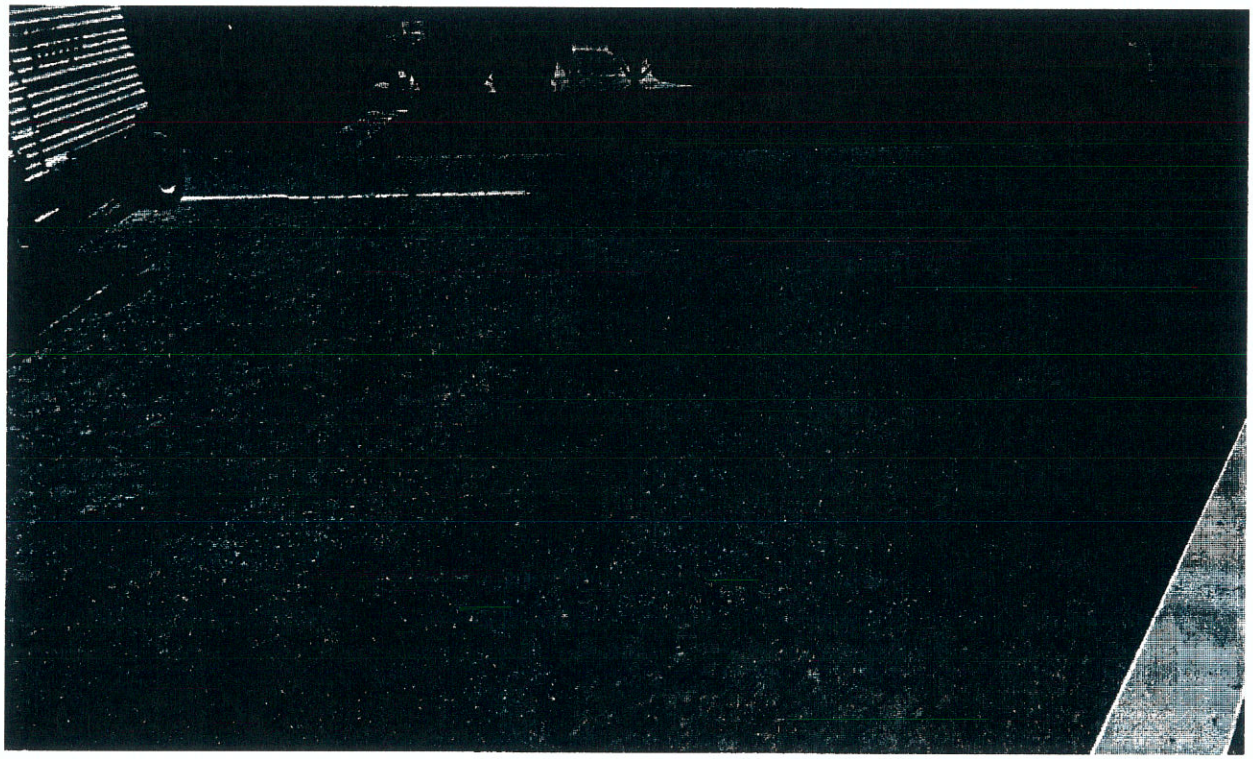


Figure 10: Wildwood Rest Area

Table 13: Wildwood Rest Area- 20-Yr. Design

Location	Option 1 Reconstruction with concrete	Option 2 Reconstruction with HMA (R-Value 15)
Truck Road/Ramps Type II, TI=10.0)	0.80' JPCP 0.10' HMA-A BB 0.35' LCB[1] 0.50' AS Class 2 -or- 0.90' JPCP over 1.00' AB Class 2	0.0.60' HMA-A 1.30' AB Class 2 or 0.10' RHMA-G over 0.50'HMA-A over 01.30' AB Class 2
Truck Parking Area Type II, TI=9.0)	0.75' JPCP 0.10' HMA-A BB 0.35' LCB[1] 0.50' AS Class 2 -or- 0.80' JPCP over 1.00' AB Class 2	0.60' HMA-A 1.00' AB Class 2 or 0.10' RHMA-G over 0.50'HMA-A over 1.00' AB Class 2
Auto Road and Parking Area	0.75' JPCP	0.40' HMA-A

Type II, TI=5.5)	0.10' HMA-A BB 0.35' LCB(1) 0.50' AS Class 2 -or- 0.80' JPCP over 1.00' AB Class 2	0.40' AB Class 2 or 0.10' RHMA-G over 0.30'HMA-A over 0.40' AB Class 2

Note: (1)0.35' LCB is allowed only if no construction traffic is allowed.

Table 14: Wildwood Rest Area 40-Yr. Design

Location	Option 1 Reconstruction with concrete	Option 2 Reconstruction with HMA (R-Value 15)
Truck Road/Ramps for Rest Area Type II, TI=11.0)	0.85' JPCP 0.10' HMA-A BB 0.35' LCB 0.60' AS Class 2 -or- 0.95' JPCP over 1.30' AB Class 2	0.20' RHMA-G over 1.25'HMA-A over 0.50' AB Class 2
Truck Parking Area Type II, TI=10.0)	0.80' JPCP 0.10' HMA-A BB 0.35' LCB 0.60' AS Class 2 -or- 0.90' JPCP over 1.30' AB Class 2	0.20' RHMA-G over 1.05'HMA-A over 0.50' AB Class 2
Auto Road and Parking Area Type II, TI=6.5)	0.75' JPCP 0.10' HMA-A BB 0.35' LCB 0.50' AS Class 2 -or- 0.80' JPCP over 1.00' AB Class 2	0.20' RHMA-G over 0.65'HMA-A over 0.50' AB Class 2

4.3.2 Upgrading/CAPM Wildwood Rest Area

The existing parking area and ramps in the rest area can be upgraded by using the CAPM strategy. Cold plane the existing AC. The thickness of cold planning depends on the location and design life. These thicknesses are shown in the following Table. If during desired cold planning thickness the base appears then check the thickness of the base. The minimum thickness is 0.50'. Top 0.5' of base should be compacted to 95% relative compaction. After compacting the base layer, the overlay process should be started.

Table 15: Wildwood Rest Area 40-Year. Design

Location	**Option 1** **CAPM**	**Option 2** **10-year Design Life**
Truck Road and Parking Area Type II	0.10' RHMA-G over 0.20'HMA-A over existing base.	0.20' RHMA-G over 0.30'HMA-A over existing base (Check for min 0.50' AB Class 2)
Auto Road and Parking Area Type II	0.10' RHMA-G over 0.15'HMA-A over existing base.	0.10' RHMA-G over 0.20'HMA-A over existing base (Check for min 0.50' AB Class 2)

- Base should be re-compacted to 95% relative compaction before overlaying.
- Before overlaying, make sure existing Class II AB/AS has thickness 0.50' or greater.
- Provide a proper camber, minimum slope for draining storm/rain water should be kept 2%.

4.4 Upgrading Existing Ramps

Prior to any overlay, localized areas of failure such as rutting and potholes should be repaired. A field review should be conducted to locate specific areas of severe failure identified by rutting greater than 0.60 inches and/or loose or spalled pavement. Repair procedures are the following:

- Cold plane of existing pavement
- Dig out and repair the localized failed areas that still exist and seal all cracks wider than 0.20 inches
- Place 0.60 ft. of dense graded HMA type A
- We also recommend that any transverse or longitudinal cracks greater than 0.25 inches wide be sealed

4.5 Upgrade of Existing Pavement

4.5.1. Mainline Lanes #1

a.) Random Slab Replacement - Conduct a field review of existing pavement and locate specific areas of severe distress then:

- Remove PCC and RMCTB and replace failed slabs (PCC and RMCTB) with tie bars as required to provide smooth and serviceable pavement
- Perform continuous profile grinding to correct poor ride quality from faulting, slab curl and irregular slab replacement surfaces
- Seal longitudinal and transverse joints after diamond grinding and/or joint dowel bar retrofit
- Grout and seal random transverse cracks (i.e. cracks functioning as a joint greater than 0.25 inches
- Grout and seal random longitudinal cracks greater that 0.25 inches
- Dowel bar retrofit of pavement transverse joints prior to diamond profile grinding of retrofitted pavement.
- Use the pavement structural section (0.67'or 0.75' PCC and 0.33' or 0.42' Class "A" or "B" RMCTB). Total thickness JPCP may vary from 1.0' to 1.17'. Use White opaque polyethylene film under ASTM C171as bond breaker if needed.

b.) Lane Replacement - Lane Replacement is done when the concrete pavement structure has deteriorated to the point that preservation strategies are not practical or cost effective. When at least 10% of the slabs in a given lane require replacement, or 100 feet or more in total length is damaged, replacing the entire lane has typically been a more cost-effective alternative than slab replacement.

The existing lanes which are not being replaced should be grinded and the joints are required to be re-sealed.

4.6 Detours on Shoulders

If staging conditions require using the shoulders temporarily to detour traffic, then these shoulders should be constructed to handle temporary traffic. The flexible pavement sections shown below in Tables 16 were obtained employing CalFP version 1.1, based on the 20-Year ESALs (26,371,840 and 105,487,360) provided by the Office of Forecasting, and Table 613.3C of the HDM.

Table 16: Pavement Structural Sections for Detours PM 36.8 to 39.1

Design period and TI	Pavement Structural Section (PSS)	
	PSS with Class II AB	Full Depth PSS
2-Year Detour (TI=9.0)	0.60' HMA Type A 1.15' AB Class 2	1.05'HMA Type A

1-Year Detour (TI=8.0)	0.50' HMA Type A 1.05' AB Class 2	0.95' HMA Type A
6-month Detour (TI=7.5)	0.50' HMA Type A 0.90' AB Class 2	0.90' HMA Type A

As discussed with design on July 21, 2016, right shoulder will be used temporary for a week or less. The existing AC on this shoulder is about 0.25', which is not sufficient to carry the current traffic loads. It will stripe out if not improved to take current traffic loads. Remove AC and aggregate base (AB) about 0.50'from right shoulder and replace it with 0.50 HMA Type A.

5.0 PAVEMENT DESIGN RECOMMENDATIONS

The 20-year projected AADT is more than 150,000 and as per HDM Table 612.5, the pavement design life for this facility (which include mainline and ramps) should be designed with **40 year design life**. This office would like to encourage the use of concrete sections (JPCP) for shoulders and ramps whenever possible, due to its longer service life and the reduced frequency of required maintenance.

5.1 Smoothness and Grinding of Existing Rigid Pavement.

Caltrans has implemented the use of inertial profiler (IP) to measure pavement smoothness along with new specification requirements for acceptance of pavement smoothness. The International Roughness Index (IRI) is a controlling factor for smoothness. The pavement should be smooth as required in 2015 standard specifications. The ProVAL software is used for analyzing pavement smoothness and how to identify and make the necessary smoothness corrections.

Existing rigid pavement and replaced slabs must be ground to the point of getting desired IRI before paving adjoining lanes.

6.0 RUMBLE STRIPS

There are no rumble strips within the project limits.

7.0 LIFE CYCLE COST ANALYSIS (LCCA)

It is required that an LCCA be performed for this project. The LCCA is an effective and useful tool for comparing the value of alternative pavement structures and strategies. It can be used to compare life-cycle cost for:

- Different pavement types (rigid, flexible, composite)
- Different rehabilitation strategies
- Different pavement design lives

The LCCA must be conducted by the Project Engineer during the early stages of the project, and be an integral part of the decision making process for selecting pavement type and design strategy. The final pavement structural section should be decided by the designer for the one with the lowest life-cycle costs.
For information and guidance, please refer to Topic 619.1 of the Caltrans HDM, and to the "Life-Cycle Cost Analysis Procedures Manual", available at the Caltrans Pavement Engineering website **http://www.dot.ca.gov/hq/esc/Translab/OPD/LCCA_Manual_MASTERFinal.pdf**

8.0 CULVERTS & CORROSION POTENTIAL

Culverts and drainage facilities require a 50-Year maintenance free design life. Site specific corrosion investigations were needed to determine the corrosivity of the site and to provide appropriate corrosion mitigation measures to obtain the desired design lives. Factors that contribute to corrosion include the presence of soluble salts, soil and water resistivity, soil and water pH, and the presence of oxygen.

Corrosion investigation was performed by URS Corporation Live Oak Canyon Road improvement at I-10 project (EA# 08-433201) during the year 2002. The test results are summarized in the following Table:

Table # 17: Corrosion Investigation Test Results

Test Description	Soil Properties	
	EA#08-433201	**EA#08-0F150**
1-Soluble Sulfates(ppm)	44 to 117	57 to 86
2-Soluble Chlorides (ppm)	182 to 812	43 to 60
3-pH	7.2 to 8.3	7.84 to 7.96
4-Resistivity (ohm-cm)	1,600 to 2,000	1,630 to 6,544

According to Section 6.1 of the Caltrans "Corrosion Guidelines" dated November 2012, a site is considered corrosive if one or more of the following conditions exist for the representative soil and/or water samples taken at the site:

- **Chloride concentration is 500 ppm or greater,**
- **Sulfate concentration is 2000 ppm or greater, or**
- **pH is 5.5 or less.**
- **A minimum resistivity value for soil and/or water less than 1,000 ohm-cm**

The resistivity less than 1,000 ohm-cm indicates the presence of high quantities of soluble salts and a higher propensity for corrosion. Soil and water that have a minimum resistivity less than 1,000 ohm-cm require more testing for chlorides and sulfates.

Design has not provided any information about existing culverts or utilities. If any underground utilities or culvert exists, it should be upgraded/rehabilitated for next 50 year design period.

9.0 MATERIALS SPECIFICATIONS

9.1 Earthwork

- Clearing and grubbing is recommended as per Section 16 of the Standard Specifications, to remove vegetation, topsoil, and any artificial fills or debris, and to prepare the site for the proposed facilities.
- Earthwork should conform to Section 19 of the Standard Specifications.
- The imported borrow for subgrade should have a minimum R-value of 40 within the project limit including any subgrade soil replacement

- The subgrades for paved areas should be compacted to a minimum relative compaction of 95%, as per Section 19-5.03B "Relative Compaction (95 Percent)" of the Standard Specifications
- Subgrade soils require not less than 95% compaction to a minimum depth of 2.5 feet below finished grade for the width of travel way and auxiliary lane plus 3 feet on each side of edge of shoulder.[index 614.6 of HDM].
- Structural backfill material should conform to requirements described in Section 19 of the 2015 Caltrans Standard Specifications. Specified Imported Borrow for this project can be used as structural backfill if it complies with the specifications for structural backfill.

9.2 Rigid Pavement

- Jointed Plain Concrete Pavement (JPCP) shall conform to Section 40 of the 2015 Standard Specifications.
- HMA Type A for interlayer between JPCP and LCB should comply with the 3/8-inch aggregate grading and asphalt binder PG 64-28M.
- Lean Concrete Base (LCB) shall conform to Section 28 of the 2015 Standard Specifications.
- Aggregate Subbase (AS) should be Class 2 conforming to Section 25 of the 2015 Standard Specifications.
- Longitudinal and Transverse Joints should be Sealed with preformed compression Seals. And reseal joints of existing PCC.
- Smoothness requirements: Smoothness requirements are stated in section 40 of 2015 standard specifications. In general; no area of localized roughness with an International Roughness Index greater than 120 in/mi and. Mean Roughness Index of 60 in/mi or less within a 0.1 mile section is not acceptable.

9.3. Flexible Pavement

- Asphalt Binder for HMA Type A should be PG 64-28 M.
- Asphalt Binder for the RHMA Type G should be PG 64-16.
- AB shall be Class 2 conforming to Section 26 of the 2015 Standard Specifications.
- Prime Coat shall be applied to base material prior to placing hot mix asphalt concrete. If the quantity required exceeds one ton, it shall be included as a pay item in the engineer's estimate.
- Tack Coat shall be applied to the existing AC surface and between successive layers of HMA, and over LCB prior to 0.10' HMA-A interlayer.
- Smoothness requirements: Smoothness requirements depends HMA thickness, these requirements are stated in 2015 standard specifications 39-2.01A(4)(iii) and 39-2.01A(4)(h)(ix), .in general; No area of localized roughness with an International Roughness Index greater than 160 in/mi and Mean Roughness Index of 60 in/mi (for HMA thickness greater than 0.20') or less within a 0.1 mile section is not acceptable.

10.0 CLOSURE

This report is based on the proposed project information provided by the designer. If any change (i.e., structure type, location, etc.) is implemented which materially alters the project, our recommendations may need to be revised again.

If you have any questions, you may call K. Mahmood Khan at 888-2090, or I can be reached at 888-2029.

11.0 REFERENCE

- As-builts.
- CalFP Version 1.1, a computer program for HMA pavement design.
- Caltrans website for Ground Penetrating Radar's (iGPR) pavement structure inventory.
- Final Geotechnical Design Report-Live Oak Canyon Road Improvement at i-10 (EA#08-433201) prepared by URS dated November 8, 2002
- Geotechnical Design Report for I-10 Westbound Mixed Flow lane addition, prepared by CH2MHILL dated December 19, 2008 (EA#0F150)
- Highway Design Manual – Sixth Edition 2006, California Department of Transportation.
- Materials Report for the construction of I-10, dated March 30, 1959.
- Materials Report for the construction of I-10, dated April 14, 1955.
- Materials Report for the construction of I-10, dated June 12, 2015 and November 19, 2015.
- Preliminary Materials Report for construction on I-10, dated September 8, 2003.
- 1971 United States Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey, location: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
- Western Regional Climate Center, Desert Research Institute. Website location: http://www.wrcc.dri.edu

BWK:KMK

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Serious drought.
Help Save Water!

To: GEORGE MORHIG
Office Chief
Design C, MS 1020

Date: April 21, 2015

File: SBd-10-PM R36.9/R39.1
EA 0K293
PN: 0812000100

From: MARIA 'SOLE' ARANGUIZ
Office Chief
Office of Traffic Forecasting, MS 726

Subject: Traffic Forecasting Data

The information you requested is included below:

SBd-10-PM R36.9/R39.1 (Live Oak Canyon Rd to County Line Road)

Traffic Data Information					
Mainline	**Year 2015** (existing)	**Year 2020** (opening year)	**Year 2030** (10-year)	**Year 2040** (20-year)	**Year 2060** (40-year)
Annual Average Daily Traffic (AADT)	110,000	117,800	135,300	157,300	207,000
Design Hour Volume (DHV)	8,740	9,370	10,770	12,540	16,500
One-Way Peak Hour Volume (PHV)	5,420	5,810	5,080*	6,180*	8,630*
Truck % in ADT	16%	16%	16%	16%	16%
Truck % in DHV	8%	8%	8%	8%	8%
Directional Split (DS)	62%	62%	62%	62%	62%

*Level of Service (LOS) is analyzed based on the Three mixed flow lanes. The HOV traffic volume is excluded.

20 Year (ESAL)	3,449,600	1,513,600	1,056,000	3,238,400
20 Year TI	10.5	9.5	9.0	10.5
40 Year (ESAL)	8,201,600	3,625,600	2,499,200	7,708,800
40 Year TI	11.5	10.5	10.0	11.5

If you have any questions regarding the information above, please contact me at (909) 388 7017 or you may reach Aung Naing at (909) 806 3930.

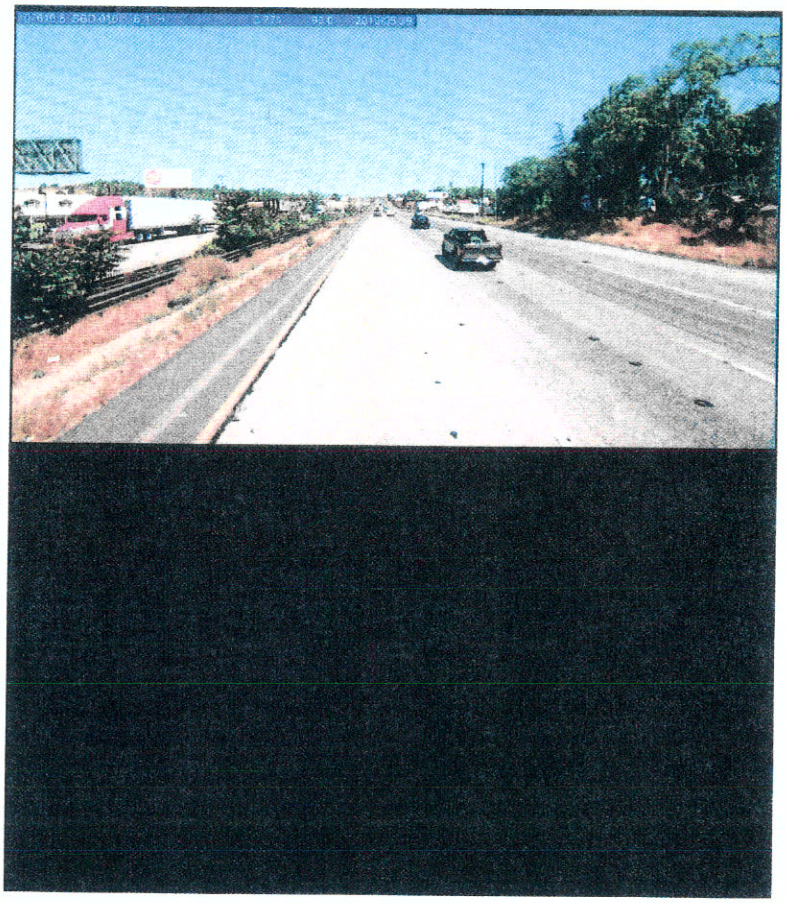
FINAL CORE LOG

05T03Y00_1

Batch:	19
County	SBD
Route	10
District	8
Post Mile Field	36.9
Direction	2
Lane: 1 OF	0
Latitude - Roadware	34.01860143
Longitude - Roadware	-117.09889597
GPSLatitude -post:	
GPSLongitude -post:	
ImageID aran field roadview pic:	Images\05T03Y00\0000037706

Group: 119

Date_Cored: 03/11/2011



Comments

Material Type Legend

HMA - hot mix asphalt surface (any seal coats or other surface treatments less than 30 mm in thickness can be included in the HMA layer)

ASURF - seal coats or other surface treatments greater than 30 mm in thickness

PCC - Portland cement concrete

AB & ASB - granular base & subbase below the surface (in cases where the AB & ASB cannot be differentiated the combined layer should be identified as AB)

ACB - Asphalt bound layers below the surface layer not continuous from asphalt bound surface

CTB - cement bound layers below the surface layer that are not PCC

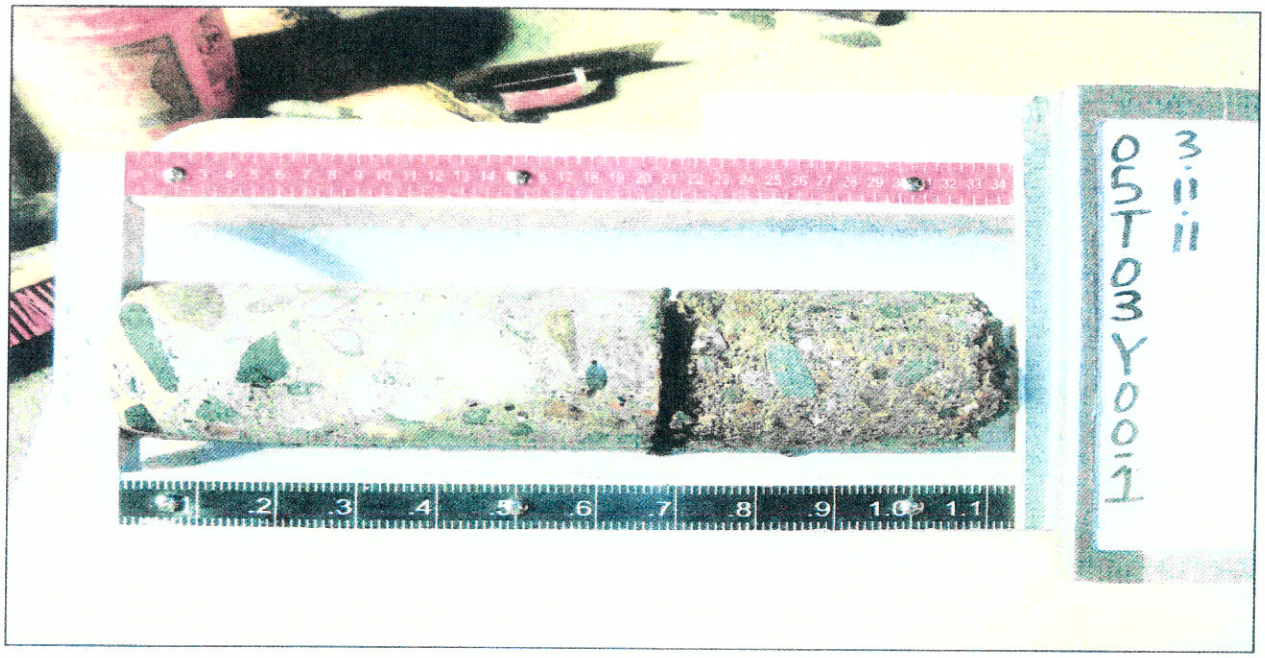
Non-Pavement Feature (NPF) - depth to the top of any culverts, pipes or other non-pavement features within the GPR profile

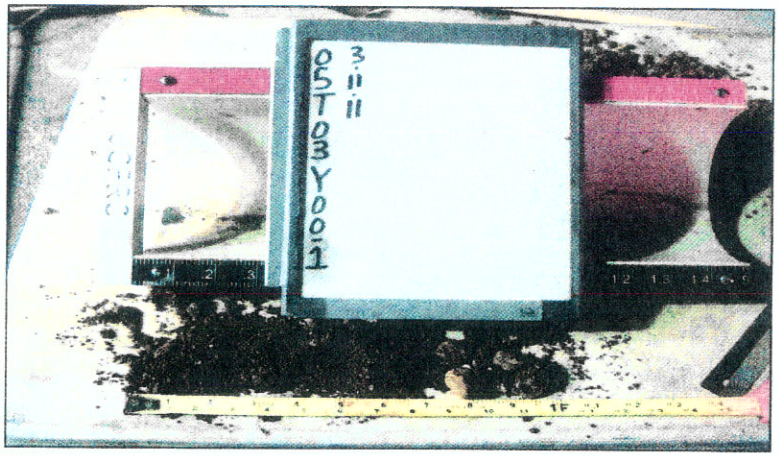
CORE LAYER DATA (from top to bottom)

		Layer Thickness				
Layer Type	Layer Characteristic	1	2	3	4	Avg
PCC	1-1/4" max	207				207
CTB	granular base, 3/4" max	137				137
AB	granular base, 3/4" max	80				80
SG	(SC) dark yellow brown	0				0
Sum		424				424

*Note: For bound core material need to measure the length of core material at 4 separate locations each 900 to each other

LocationID: 05T03Y00_1





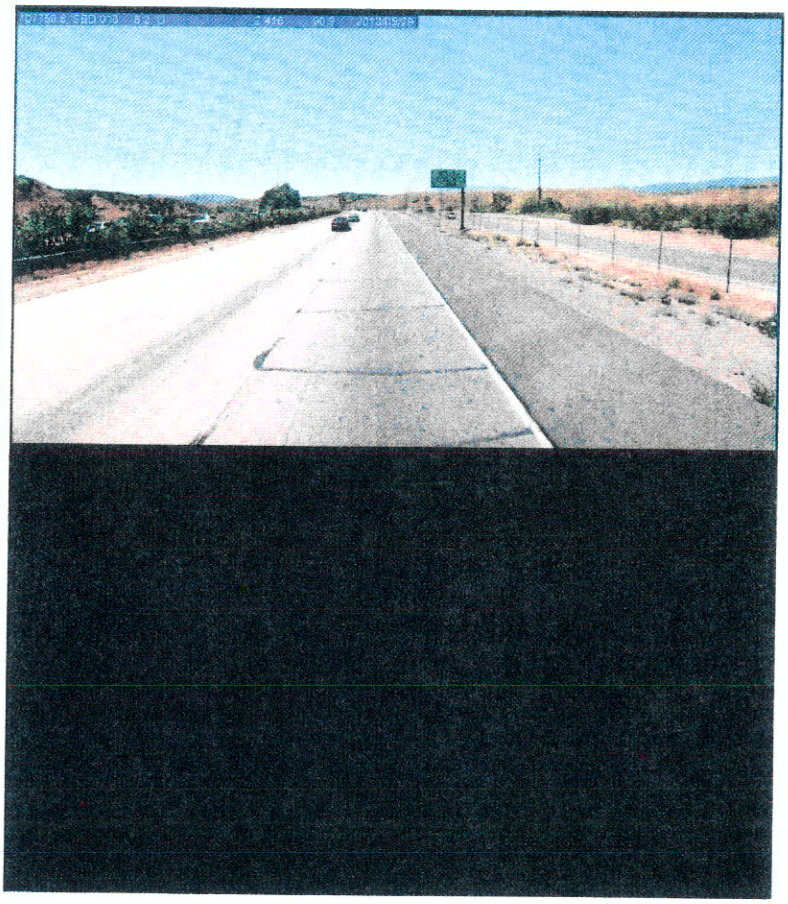
FINAL CORE LOG

05T0DY00_1

Batch:	19
County	SBD
Route	10
District	8
Post Mile Field	37.7
Direction	2
Lane: 3 OF	0
Latitude - Roadware	34.01493521
Longitude - Roadware	-117.08498385
GPSLatitude -post:	
GPSLongitude -post:	
ImageID aran field roadview pic:	Images\05T0DY00\000002415

Group: 120

Date_Cored: 03/11/2011



Comments

Material Type Legend

HMA - hot mix asphalt surface (any seal coats or other surface treatments less than 30 mm in thickness can be included in the HMA layer)

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CTB - cement bound layers below the surface layer that are not PCC

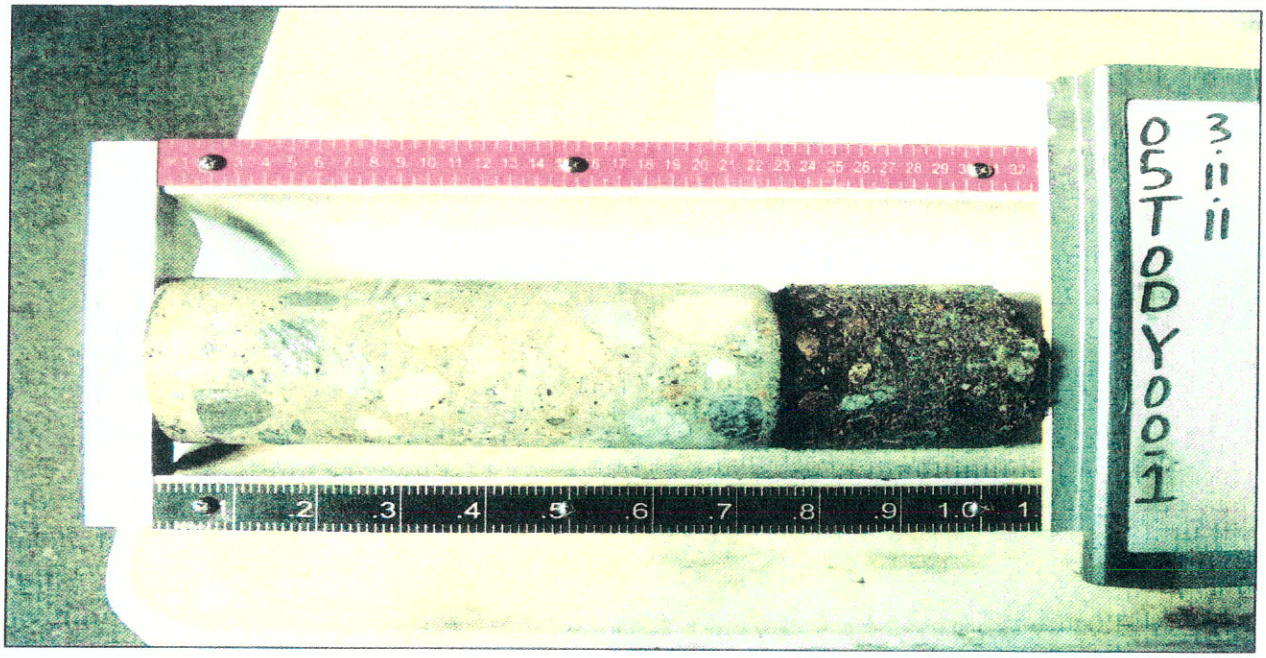
Non-Pavement Feature (NPF) - depth to the top of any culverts, pipes or other non-pavement features within the GPR profile

CORE LAYER DATA (from top to bottom)

Layer Type	Layer Characteristic	Layer Thickness 1	2	3	4	Avg
PCC	1-1/2" max	223				223
CTB	granular base, 3/4" max	102				102
SG	(SC)g, dark yellow brown, 3/8" max gravel	0				0
Sum		325				325

*Note: For bound core material need to measure the length of core material at 4 separate locations each 900 to each other

LocationID: 05T0DY00_1



STRUCTURAL SECTION DESIGN MATERIALS ENGINEERING BRANCH
QUALITY ASSURANCE CHECK-To Be Completed For ALL Materials Reports Incl. Permits

EA No. _0K293..... **Date: 11-03-2016**
Project Number: 0812000100
County-Route-Postmiles PM R36.9/R39.1_____

1. - Document Being Written or Reviewed:

Preliminary MR ☐ **MR** ☒ **MR Review** ☐ **Permit** ☐ **Other** ☐ _____

2.- Structural Section Designer/Reviewer_____
(The name of the Materials Engineering Staff member designing the structural sections.)
NOTE: If a design by a consultant is being reviewed, list name of firm.

3. - Materials Engineering Checker (print name): ~~Edgar Arevalo~~ FRANCISCO CORONA

4. - Is R-value reasonable or determined by actual test results? Yes ☑ **No** ☐

If not, please explain_____

_____

5. - Is Traffic Index (TI) reasonable or provided by Traffic Studies Branch? Yes ☑ No ☐

If not, please explain_____

_____

6. - Are Asphalt Concrete Designs verified with CalFP? Yes ☑ **No** ☐

If not, please explain_____

_____

6. - Are Portland Cement Concrete Designs verified using HDM Tables? Yes ☑ **No** ☐
If not, please explain_____

_____

Structural Section Designer's Signature* _____ **Date** 11/3/16

7. - Is this report ready for approval? Yes ☐ **No** ☐

If not, please explain

_____

_____

Checker's Signature_____ **Date** 11/3/16

Supervisor's Signature_____ **Date**_____

COMMENTS

_____

_____

DISTRIBUTION:
1) STRUCTURAL SECTION DESIGNER (Enclose in project file and update project status sheet.)
2) SCANNED COPY and saved to R:Drive (Responsibility of Designer/Reviewer.)
3) SUPERVISOR (Provide when requesting signature on report or comments. Place in central file.)
*** If available.**

Attachment (O)

Funding Details

The table below shows a breakdown of cost estimate for certain elements of the project:

No.	Element	Cost
1	Median Work Only	$11,833,000
2	EB (OS) Rehab for Detour	$1,295,400*
3	WB (OS) Rehab for Detour	$1,233,800**
4	Rehab EB (Lane #3)	$2,137,500
5	Rehab EB (Lane #2) + Random Slab Replacement (Lane #1)	$3,199,700

OS=Outside Shoulder

*This work is part of the EB Rehab project (EA 0K294) and should be completed by the time the TCL project goes to construction. This would give the TCL project some savings.

**This work is part of the WB Rehab project (EA 0K293) and should be completed by the time the TCL project goes to construction. This would give the TCL project some savings.

The above cost does not include the following:

- Environmental
- R/W
- Traffic Items
- Minor Items (10%)
- Mobilization (10%)
- Supplemental Work (4%)
- State Furnished Materials (2%)
- Time-Related Overhead (6%)
- Roadway Contingencies (25%)