

**The purpose of the Draft Project Report is to document preliminary design required by Caltrans for the Delta Conveyance Project, if approved, to realign State Route 160 while also staying in compliance with current Caltrans roadway geometric standards. It is important to note that the identification of any proposed project facilities in this report is preliminary and should not be construed as a decision by DWR regarding its preferred project. Rather, DWR is currently evaluating a range of alternatives, including the proposed project, in a Draft EIR released for public review on July 27, 2022, and will make a final determination regarding the alternative it approves at the close of the CEQA process once a sufficient record has been prepared.**

# Draft Project Report

## *To Authorize Public Release of the Draft Environmental Document*

On Route 160

Between 2.1 miles South of Hood Franklin Road

And 1.7 miles South of Scribner Road

APPROVAL RECOMMENDED:

Soka H. Soka.

Soka H. Soka, Project Manager

PROJECT APPROVED:

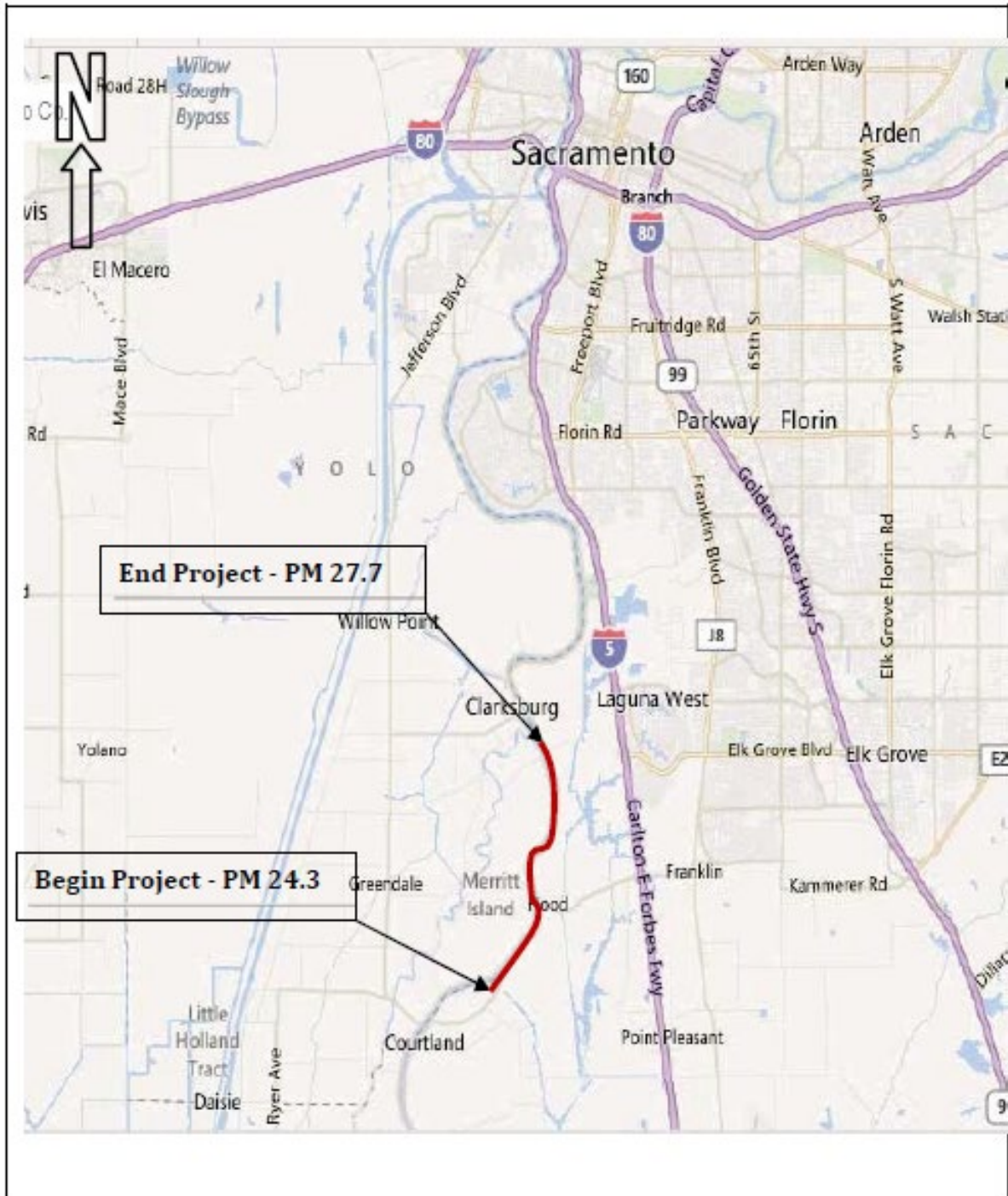
Karl S. Benipal for

Amarjeet S. Benipal, District Director

04/11/2022

Date

## Vicinity Map



This project 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.

*Scott W. Mann*

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**REGISTERED CIVIL ENGINEER**

03/24/2022

**DATE**



## Table of Contents

### Table of Contents

<b>1. INTRODUCTION</b> .....	<b>1</b>
<b>2. RECOMMENDATION</b> .....	<b>1</b>
<b>3. BACKGROUND</b> .....	<b>2</b>
<b>4. PURPOSE AND NEED</b> .....	<b>2</b>
Purpose: .....	2
Need:.....	3
4A. Regional and System Planning .....	3
4B. Traffic .....	3
<b>5. ALTERNATIVES</b> .....	<b>3</b>
5A. Viable Alternatives 1 .....	4
5B. Alternative 2 no-build alternative .....	5
5C. Rejected Alternatives .....	5
<b>6. CONSIDERATIONS REQUIRING DISCUSSION</b> .....	<b>6</b>
6A. Hazardous Waste .....	6
6B. Value Analysis .....	6
6C. Resource Conservation .....	6
6D. Right-of-Way Issues .....	6
6E. Environmental Compliance.....	6
6F. Title VI Considerations .....	7
6G. Noise Abatement Decision Report .....	7
6H. Life-Cycle Cost Analysis.....	7
<b>7. OTHER CONSIDERATIONS AS APPROPRIATE</b> .....	<b>7</b>
7A. Transportation Management Plan .....	7
7B. Hydraulics/Drainage .....	7
7C. Materials Recommendation .....	7
7D. Landscape Architect .....	8
<b>8. FUNDING, PROGRAMMING, AND ESTIMATE</b> .....	<b>8</b>
<b>9. DELIVERY SCHEDULE</b> .....	<b>8</b>
<b>10. RISKS</b> .....	<b>9</b>
<b>11. EXTERNAL AGENCY COORDINATION</b> .....	<b>9</b>
<b>12. PROJECT REVIEWS</b> .....	<b>9</b>
<b>13. PROJECT PERSONNEL</b> .....	<b>9</b>
<b>14. ATTACHMENTS (Number of Pages)</b> .....	<b>10</b>

## 1. INTRODUCTION

This Draft Project Report (DPR) is prepared by Caltrans (CT) as part of the Department of Water Resources (DWR) Delta Conveyance Project (DCP), which proposes to realign State (SR)160 at two locations between the town of Courtland and Freeport, in Sacramento County. The realignment of SR 160 at two locations will allow for the construction of two permanent Sacramento River Water Diversion Intake Facilities and provide access for its operations and maintenance. DWR will be responsible for constructing the levee (embankment) on which proposed permanent and temporary realignment will be placed. The preparation of this report is fully funded by DWR under Inter-Agency (IA) agreement 4600014111/03A3259 which was, executed on September 3, 2021.

As part of the DCP, DWR proposes to construct an approximately 45 mile long, 36-foot-diameter single-bore Tunnel/ Pipeline Conveyance Facility, which has two intakes. The intake facilities are located on SR 160 between the towns of Courtland and Freeport. The tunnel begins at the intake, extends in a southerly direction, and terminates in the southern Delta near the City of Tracy.

<b>Project Limits</b>	03- Sacramento -160 24.3/27.7	
<b>Number of Alternatives</b>	3	
	<b>Current Cost Estimate:</b>	<b>Escalated Cost Estimate:</b>
<b>Capital Outlay Construction</b>	19,700,000	24,550,000
<b>Capital Outlay Right-of-Way</b>	R/W Acquisition by DWR	
<b>Funding Source</b>	20.XX.400.100	
<b>Funding Year</b>	2029	
<b>Type of Facility</b>	<i>2-lane conventional highway</i>	
<b>Number of Structures</b>		
<b>Environmental Determination or Document</b>	<i>Environmental Impact Report (CEQA)/ Environmental Impact Statement (NEPA)</i>	
<b>Legal Description</b>	In Sacramento County on State Route 160 near Sacramento from 2.1 miles south of Hood Franklin Road to 1.7 miles south of Scribner Road	
<b>Project Development Category</b>	Category 2B	

## 2. RECOMMENDATION

It is recommended that this DPR is approved in order to publicly circulate the Draft Environmental Document (DED) of the Delta Conveyance Project.

### **3. BACKGROUND**

#### **A. Project History**

On April 29, 2019, Governor Newsom signed Executive Order N-10-19 directing the California Natural Resources Agency, California Environmental Protection Agency, and California Department of Food and Agriculture to develop a comprehensive strategy to build a climate-resilient water system and ensure healthy waterways through the 21<sup>st</sup> century. After a public comment period, Governor Newsom released the California Water Resilience Portfolio on July 28, 2020. The Water Resilience Portfolio identifies a suite of complementary actions to ensure safe and resilient water supplies, flood protection, and healthy waterways for the State's communities, economy, and environment. One of the projects identified in the portfolio is a new diversion and conveyance facility in the Sacramento–San Joaquin Delta to safeguard the State Water Project (SWP), which is now proposed as the Delta Conveyance Project.

DWR, as the owner and operator of the SWP, is proposing to design and construct two diversion facilities, each at 3,000 cfs capacity, on the Sacramento River, a single tunnel for conveyance, tunnel shafts, and a pumping plant and appurtenant facilities through which water would be discharged directly to the Bethany Reservoir along the California Aqueduct. As the project proponent, DWR is the lead agency responsible for preparing the Draft Environmental Impact Report (EIR) and complying with CEQA. DWR, as the responsible agency, is responsible for the circulation of the DRAFT EIR for public comment, addressing any agency and public comments, responding to the comments received and making/updating the DRAFT EIR that is necessary, in order for it to be certified as a FINAL EIR and approved for the project and proposed alternatives.

U.S. Army Corps of Engineers (USACE), as the regulatory agency with jurisdiction over aspects of the project under federal law (the Clean Water Act and Rivers and Harbors Act), is the federal lead agency responsible for preparing a separate Environmental Impact Statement (EIS) in compliance with NEPA and applicable regulations. The Draft EIS is expected to analyze DWR's proposed action and appropriate alternatives consistent with USACE's review authorities. Realignment of SR 160 will be required to facilitate the operation of the intakes, while construction of the detour roadways will accommodate vehicular traffic during the construction of the intakes.

### **4. PURPOSE AND NEED**

#### **Purpose:**

The purpose of this project is to accommodate the Delta Conveyance Project by realigning SR 160 while also staying in compliance with current Caltrans (CT) roadway geometric standards.

#### **Need:**

The DCP proposes to build two new intakes. The realignment of SR 160 at two locations is to allow for the construction of Sacramento River Water Diversion Intake Facilities and to provide access for its operation and maintenance.

#### 4A. Regional and System Planning

SR 160 is a state highway consisting of two sections. This project is located in the southern section, which is a scenic highway through the alluvial plain of the Sacramento River, linking SR 4 in Antioch to Sacramento, via the Antioch Bridge, and is a principal arterial classified as a two-lane conventional highway.

#### 4B. Traffic

Table 1 summarizes collision rates for the segment of the project on SR 160 mainline from postmile (PM) 24.1 to PM 27.7. Table 1 was generated on December 2, 2021 and depicts existing collision rates per million vehicle miles for the most recent 60-month period from January 1, 2017 to December 2, 2021, from the Traffic Accident Surveillance and Analysis System (TASAS).

TABLE 1  
TASAS Table 1 Collision Rates (01/01/2017 – 12/02/2021)

Segment	TOTAL No. of Collision	Fatal Collision	Injury Collision	ACTUAL (per million vehicle miles)			AVERAGE (per million vehicle miles)		
				Fatal Collision	Fatal + Injury Collision	Total*	Fatal Collision	Fatal+ Injury	Total *
SR-160 PM 24.1-27.7	16	0	9	0.000	0.66	1.17	0.023	0.40	0.93

\*All reported collisions (includes Property Damage Only (PDO) Collisions)

(Table 1 Collision Rates January 1, 2017–December 2, 2021) summarizes and compares the actual collision rates for the segment of SR 160 from PM 24.1 to PM 27.7 to the average rates for similar facilities throughout the State (see attachment K). The total collision rates include all reported collisions: fatal, injury, and property damage. Analysis of the TASAS Table 1 records shows a total of 16 collisions within the segment of SR-160 from PM 24.1 to PM 27.7. The study periods summarized above, show a total rate of fatal and injury-related collisions that is above the average for similar facilities statewide, and a total rate of collisions that is above the average for similar facilities statewide. Detailed analysis per the TASAS Selective Accident Retrieval (TSAR) generated on December 2, 2021, shows the primary collision factors in the segment). Based on this shoulder widening and guardrail upgrading are included in the road's realigned segments to improve safety.



## 5. ALTERNATIVES

### 5A. Viable Alternatives 1

#### **Alternative 1 – Permanent and Temporary (Detour) Realignment**

The preferred alternative is to construct permanent, and temporary realignments. This is the only alternative that will allow the construction of DCP's intakes, provide access during construction and maintenance. The proposed realignment offset from the current SR 160 location and the temporary road will detour traffic and allow to access the intake locations during construction. The offsets range from 0 to +/- 55 ft at Location 5 and 0 to +/- 45 ft at Location 3, measured from centerline to centerline. The lengths of the segment of SR 160 to be realigned are from approximately 1.0 mile at location 3 to 0.75 mile at location 5.

The construction of an embankment (levee) on these segments of SR 160 is not included in the contract with Caltrans. The detour alignments will incorporate earth-lined V and trapezoidal ditches. These ditches would be coordinated with the intake civil works on both sides of SR 160 and may not be necessary; however, all drainage would be properly managed to Caltrans' satisfaction. Temporary signals will be in place during construction in each intersection. DWR estimates that temporary realignment will be in effect for about four to five years.

#### Proposed Engineering Features

A typical section of the permanent and temporary alignments consists of two 12-foot (ft) lanes while widening the left and right shoulders to 8 ft. This will provide a 40-ft wide structural section from the edge of pavement (EP) to EP. This width will widen from 40 ft to 76 ft to accommodate left-turning movements at the four-leg intersections. The 65-foot (ft) California Legal Truck was the design vehicle chosen for the intersections; the design speed consists of 60 mph resulting in horizontal curve radii no less than 1,200 ft.

The proposed levee will be widened to accommodate the full extent of the permanent realignments, allowing SR 160 to maintain the required elevation for site and roadway drainage (30.8 ft at Location 5 and 31.8 ft at Location 3 at the center of SR 160). Temporary alignment levees would also be elevated to at least the same elevation as the existing levee (See Attachment A – Title Sheet and Attachment B Typical Cross Section). The profile of the temporary alignments was only elevated to heights, specified by the Hydraulics (floodplain analysis), to avoid localized flooding. (See Attachment H – Drainage Recommendations for Temporary Alignments).

#### Utility and Other Owner Involvement

DWR is going to handle the utilities along with the Right of Way (R/W) acquisition. The following utility companies may require relocation:

Delta Gas Gathering, Pacific Gas and Electric (PG&E), Sacramento Municipal Utility District (SMUD) for both gas and electric, and Frontier-Communications.

Non-Standard Mandatory and Advisory Features

An exception to the advisory standard, directing 4:1 embankment side slope for new construction, will be needed for all permanent alignments, which will incorporate 3:1 side slope based on USACE, levee standard requirements.

Other exception decisions including, stopping, corner, and passing sight distance will require further investigation once the exact driveway locations are determined.

<b>Design Standards Risk Assessment</b>		
Alternative	Design Standard from Highway Design Manual Tables 82.1A & 82.1B	Probability of Nonstandard Design Feature Approval (None, Low, Medium, High,)
1	Side Slopes 4:1 or Flatter	High
2	Side Slopes 4:1 or Flatter	High

**5B. Alternative 2 no-build alternative**

The no-build alternative does not provide DWR with the SR 160 realignments needed to construct and access their proposed intake facilities.

**5C. Rejected Alternatives**

**Alternative 3 – Permanent Realignments Only**

Alternative 3 assumes completion of the permanent realignments before the commencement of certain DWR intake activities, end eliminating the need for the detours. This assumption requires DWR to choose an intake construction sequencing option that allows for the detour elimination. Under this alternative, the DCP’s intakes could not be constructed, and do not differ from Alternative 1 with regards to permanent alignment location, geometric design, non-standard engineering features, R/W, and utility impacts and cost. The elimination of the detour alignments will significantly reduce the footprint of the project; however, the inclusion of the intake facility’s footprint offsets these reduced R/W and utility impacts. For this reason, only one R/W cost estimate was prepared even though two realignment alternatives were evaluated.

**6. CONSIDERATIONS REQUIRING DISCUSSION**

**6A. Hazardous Waste**

An Initial Site Assessment (ISA) dated February 14, 2022, has been completed, the *ISA* identified the potential for lead-contaminated soil within the project limits. In addition to identifying the potential for lead-contaminated soils within the project limits, the ISA

also addresses chemicals found in existing metal beam guard rail posts and chromium in existing yellow and white striping. All hazardous materials will be treated following our standards. A Site Investigation (SI) will be performed along with a required Aerially Deposited Lead (ADL) site investigation. This site investigation will determine if hazardous soils exist and what actions will need to occur during construction.

## **6B. Value Analysis**

A formal Value (VA) Analysis Study is not required, nor warranted for realigning SR 160 at the two locations due to low cost. A program requiring state departments of transportation to carry out VA study for all projects on the National Highway System (NHS) costing \$25 million or more. The two sections of roadway realignment are a part of a larger scope project to facilitate access to both intakes and DWR will do the Analysis for the overall project.

## **6C. Resource Conservation**

Measures taken to conserve energy and non-renewable resources have been considered, and resource conservation considerations would be applied when identifying materials where possible. Reuse of materials on site is encouraged where feasible.

## **6D. Right-of-Way Issues**

A Right of Way Datasheets is not part of this report as stated in the IA. Caltrans is not in charge of R/W acquisition. DWR will acquire the R/W and be responsible for producing the related documentation along with the Environmental Impact Report (EIR), with Caltrans acting as the oversight agency and working in coordination with DWR.

## **6E. Environmental Compliance**

A Draft (EIR) covering this project is being prepared by the (DWR), as the lead agency for the large DCP to comply with CEQA requirements. In a joint effort, the (USACE) is preparing an Environmental Impact Statement (EIS) to comply with NEPA requirements. The Draft EIR is scheduled to circulate in June 2022.

## **6F. Title VI Considerations**

This project has no identified adverse impacts on minority or low mobility groups. This project is not expected to result in any significant community or socio-economic impacts.

## **6G. Noise Abatement Decision Report**

Traffic volumes, composition, and speeds would remain the same in the build and nobuild conditions. Traffic noise impacts are not anticipated, and a detailed noise study report is not required. Noise abatement was not considered on this project and a noise abatement decision report is not required

## **6H. Life-Cycle Cost Analysis**

The need for a Life-Cycle Cost Analysis was considered, however, due to the quantity of asphalt and the proposed use of the new pavement areas, it was deemed not necessary.

## **7. OTHER CONSIDERATIONS AS APPROPRIATE**

### **7A. Transportation Management Plan**

A Transportation Management Plan was prepared on February 14, 2022, all traffic would use the detours route in place and would have no significant impact on traffic (See Attachment G).

### **7B. Hydraulics/Drainage**

A Floodplain Evaluation Report Summary is being prepared by DWR and will be part of the EIR. For Drainage recommendation for the temporary route See Attachment H.

### **7C. Materials Recommendation**

The project involves creating a new structural section. A Materials Recommendation was prepared on February 16, 2022 and recommends a new structural section) for Permanent Realignment and for Temporary (Detour) route that is going to be in place for about 5 years.

### **7D. Landscape Architect**

Due to the current conceptual level design, complications of the levee, and other uncertainties regarding intakes, as well as the extent of the right-of-way, the Landscape Architecture Assessment Study (LAAS), including erosion control measures, has been excluded from estimate considerations in both the temporary and permanent realignments. It will be finalized by DWR after coordination and approval of Caltrans at a later stage in the project's design development.

## **8. FUNDING, PROGRAMMING, AND ESTIMATE**

### Funding

The Project is funded by DWR, in conjunction with State Water Project participating water agencies through a joint exercise of powers agreement.

### Programming

This is a local project, and no programming is needed.

Estimate:

The estimated costs are \$24,550,000 for construction capital and are escalated to dollars to 2029.

**9. DELIVERY SCHEDULE**

Project Milestones		Milestone Date (Month/Day/Year)
PROGRAM PROJECT	M015	09/03/2021
BEGIN ENVIRONMENTAL	M020	05/02/2019
NOTICE OF PREPARATION (NOP)	M030	01/15/2020
NOTICE OF INTENT (NOI)	M035	08/20/2020
CIRCULATE DPR & DED EXTERNALLY	M120	04/08/2022
PA & ED	M200	10/01/2023

**10. RISKS**

Caltrans has not identified a risk in realigning SR 160 at the two locations. The risk register for this project is provided (See Attachment J).

**11. EXTERNAL AGENCY COORDINATION**

DWR will coordinate with external agencies, and Caltrans is being assigned by DWR to realign the two sections of highway 160.

Scoping team field review	<u>Scott, Mann</u>	Date	<u>02/22/22</u>
Scoping team field review attendance roster attached.			
District Program Advisor	<u>N/A</u>	Date	<u></u>
Headquarters SHOPP Program Advisor	<u>N/A</u>	Date	<u></u>
District Maintenance	<u>Greg Duffy/William Netto</u>	Date	<u></u>
Headquarters Project Delivery Coordinator	<u>N/A</u>	Date	<u></u>
Project Manager	<u>Soka, Soka</u>	Date	<u>02/23/22</u>
FHWA	<u>N/A</u>	Date	<u></u>
District Safety Review	<u>Fernando Rivera</u>	Date	<u></u>
Constructability Review	<u>Kevin Espinoza</u>	Date	<u></u>
Other	<u></u>	Date	<u></u>

### 13. PROJECT PERSONNEL

Name	Title	Phone Number
Soka Soka	District 3 Project Manager	(530) 682-6236
Scott Mann	North Region Design Branch Chief	(530) 821-3669
Naghma Hassan	North Region Project Designer	(530) 821-3159
Julia Green	North Region Environmental Branch Chief	(530) 933-9323
Bibiana Rodriguez	North Region Environmental Coordinator	(530) 720-9957
Frank Thomas	DES Architecture Design Branch Chief	(916) 227-6833
Jeff Juarez	North Region Landscape Architecture	(530) 821-8455
Karen Basra	North Region Senior Right of Way Agent	(530) 812-7143
Gina D Cuevas,	North Region Senior Right of Way Agent	(530) 821-8430
Joseph Farrow	District 3 Materials Engineering Coordinator	(530) 682-3707
Chris Rockey	North Region Hydraulics, Senior	(530) 812-6239
Jody Allen	North Region Traffic Operation Coordinator	(530) 821-8481
Alamjit Mangat	District 3 Hazardous Waste Coordinator	(530) 812-2422
Mary Bokova	District 3 Traffic Safety	(530) 741-5718

### 14. ATTACHMENTS (Number of Pages)

- A. Title sheet
- B. Typical Cross Sections (3)
- C. Layouts (12)
- D. Roadway Cost Estimate (10)
- E. Traffic Data and Designation
- F. Initial Site Assessment (2)
- G. Transportation Management Plan (4)
- H. Hydraulic Recommendation (12)
- I. Materials Recommendation (4)
- J. Risk Register (1)
- K. Traffic Safety Analysis (2)

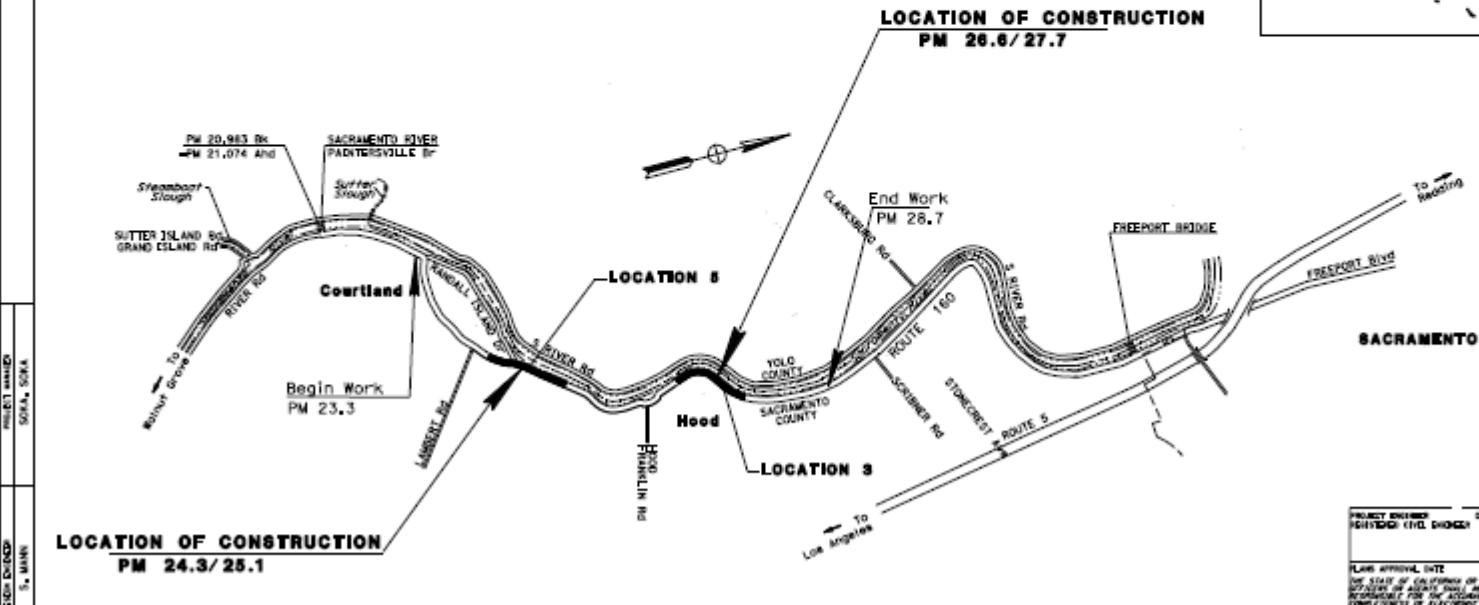
**Attachment A: Title Sheet**

INDEX OF PLANS

STATE OF CALIFORNIA  
 DEPARTMENT OF TRANSPORTATION  
**PROJECT PLANS FOR CONSTRUCTION ON  
 STATE HIGHWAY**  
**IN AND NEAR SACRAMENTO COUNTY**  
**ON ROUTE 160 FROM LAMBERT ROAD  
 TO 1.7 MILE SOUTH OF SCRIBNER ROAD**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2018

STATE	COUNTY	ROUTE	POST MILE	PROJECT	NO.	NO.
03	Sac	160	24.3/25.1, 26.6/27.7	1		



SHEET NUMBER  
 SHEET SIZE  
 SHEET DATE  
 SHEET TITLE

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

NO SCALE

PROJECT ENGINEER (PRINT NAME)	DATE
PROJECT APPROVAL DATE	
THE STATE OF CALIFORNIA OR ITS DEPARTMENT OF TRANSPORTATION SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.	
CONTRACT NO.	03-2J290
PROJECT ID	0321000210




## **Attachment B: Typical Cross Section**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	SAC	160	24.3/27.7		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	



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**NOTES:**

- DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
- GEOTEXTILE REINFORCEMENT SHALL WRAP BOTTOM LAYER OF AB. ALL SEAMS SHALL OVERLAP A MINIMUM OF 4 FEET.
- UTILITY INFORMATION IS INCOMPLETE. ALL EXISTING HIGH PRIORITY UTILITIES HAVE NOT BEEN POSITIVELEY LOCATED.
- IN SOME LOCATIONS THIS SIDE WOULD BE FILLED UPAGAINS THE OLD LEVEL.

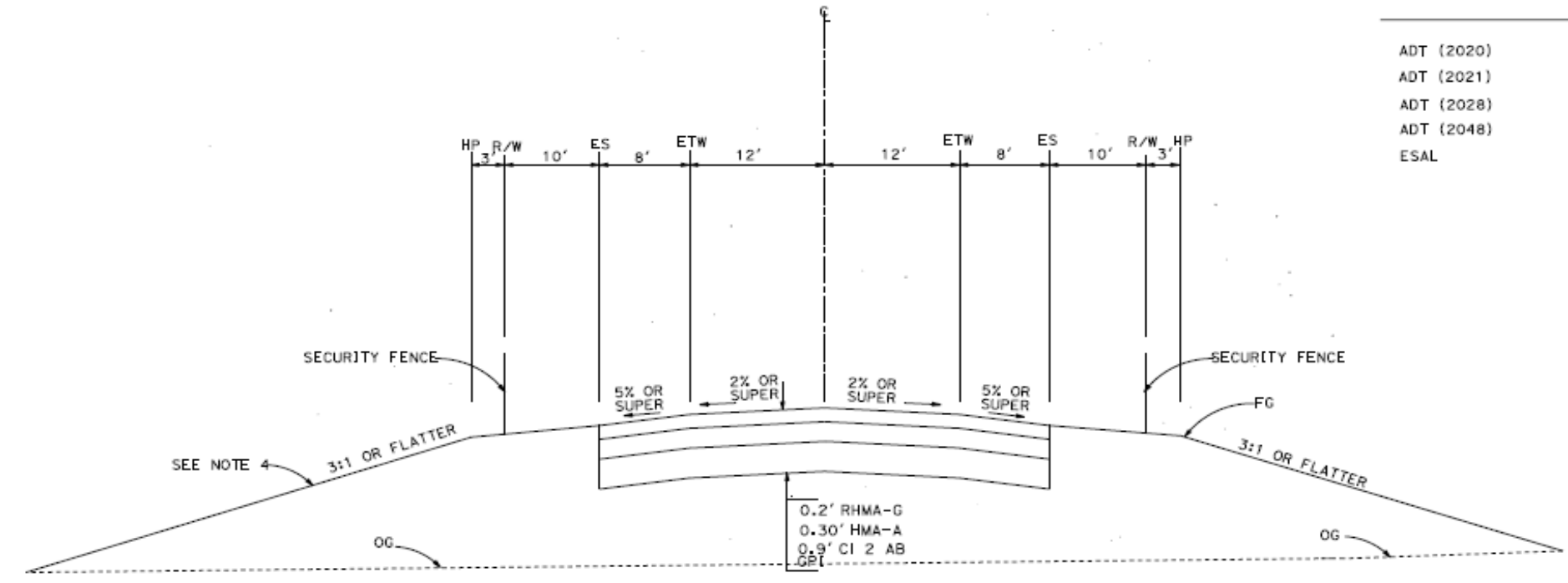
**ABBREVIATIONS:**

- RHMA-G RUBBERIZED HOT-MIX ASPHALT (GAP GRADED)  
 GPI GEOSYNTHETIC PAVEMENT INTERLAYER  
 HMA-A HOT MIX ASPHALT (TYPE A)

**DESIGN DESIGNATION**

**ROUTE 160**

ADT (2020)	2,650	D	63%
ADT (2021)	2,670	T	2.0%
ADT (2028)	2,840	V	60 mph
ADT (2048)	3,320	V	60 mph
ESAL	230,130	T <sub>20</sub>	7.5



**2-LANE SR 160**

Sta "P3"	"100+00.00	TO Sta "P3"	117+75.00
Sta "P3"	"135+15.00	TO Sta "P3"	142+23.16
Sta "P5"	"10+00.00	TO Sta "P5"	20+00.00
Sta "P5"	"43+00.00	TO Sta "P5"	50+68.36

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

**TYPICAL CROSS SECTIONS**

NO SCALE

**X-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**

REVISIONS: (Grid with 'x' marks)  
 REVISION BY: (Grid with 'x' marks)  
 DATE REVISION: (Grid with 'x' marks)  
 CALCULATED-DESIGNED BY: (Grid with 'x' marks)  
 CHECKED BY: (Grid with 'x' marks)

DATE PLOTTED => 6-APR-2022  
 TIME PLOTTED => 12:52

**NOTES:**


1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. GEOTEXTILE REINFORCEMENT SHALL WRAP BOTTOM LAYER OF AB. ALL SEAMS SHALL OVERLAP A MINIMUM OF 4 FEET.
3. THE ACTUAL SIDE SLOPE AND DRAINAGE CONFIGURATION IN THIS AREA WOULD NEED TO BE COORDINATED WITH FINAL INTAKE STRUCTURE SITE GRADING AND DRAINAGE.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	SAC	160	24.3/27.7		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

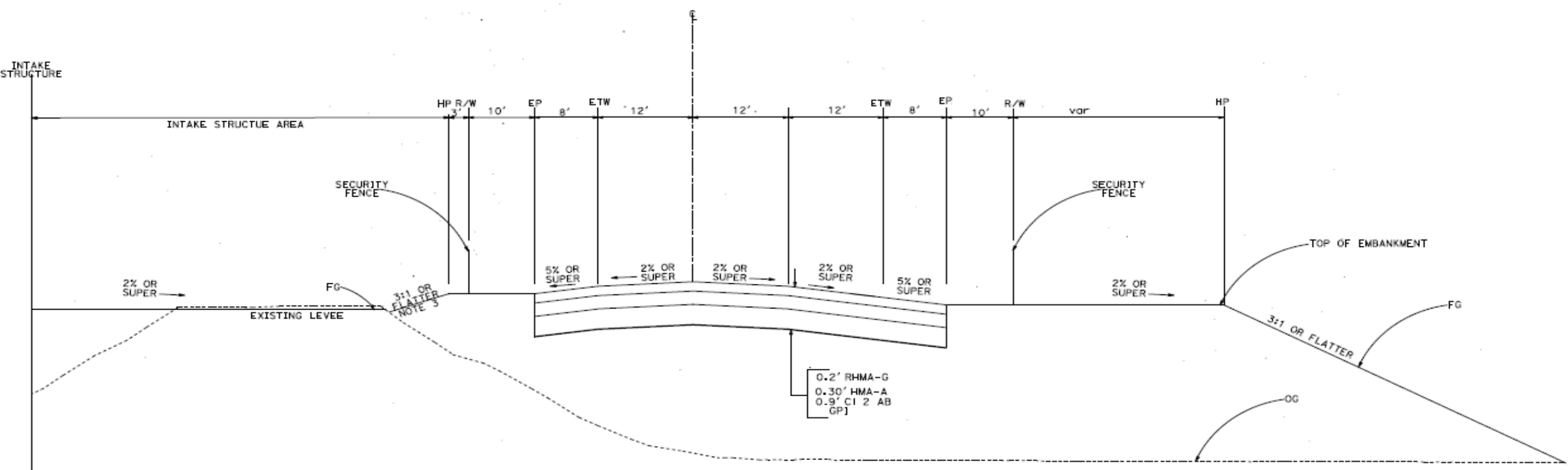
FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISOR BY

DATE REVISED



**3-LANE SR 160**

Sta "P3" 117+75.00 TO Sta "P3" 135+15.00  
 Sta "P5" 20+00.00 TO Sta "P5" 43+00.00

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

**TYPICAL CROSS SECTIONS**

NO SCALE

**X-2**

LAST REVISED DATE PLOTTED => 8-APR-2022 00-00-00 TIME PLOTTED => 12:54

**NOTES:**


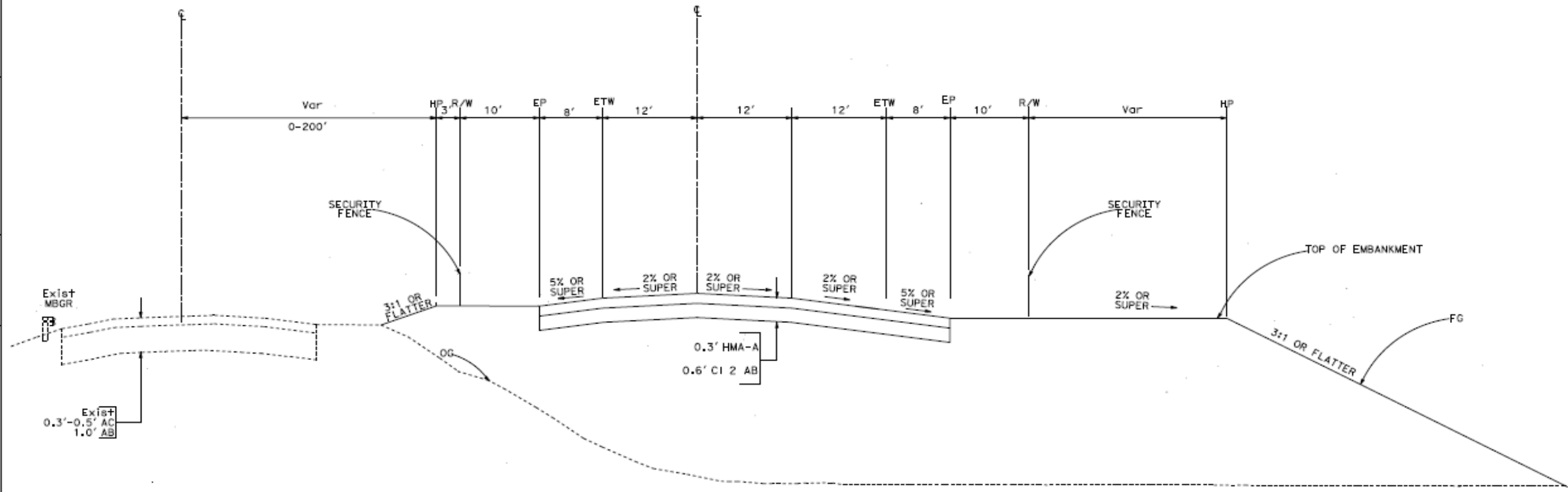
1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATIONS ARE SHOWN ON THE SUPERELEVATION DIAGRAMS.
3. GEOTEXTILE REINFORCEMENT SHALL WRAP BOTTOM LAYER OF AB. ALL SEAMS SHALL OVERLAP A MINIMUM OF 4 FEET.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	SAC	160	24.3/27.7		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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

**3-LANE DETOUR ROUTE 160**

Sta "T" 20+00.00 TO Sta "T" 43+71.20  
 Sta "T2" 109+50.00 TO Sta "T2" 129+19.56

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SHOWN

**TYPICAL CROSS SECTIONS**

NO SCALE **X-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  


REVISIONS:

NO.	DATE	REVISION

CALCULATED/DESIGNED BY \_\_\_\_\_  
 CHECKED BY \_\_\_\_\_  
 FUNCTIONAL SUPERVISOR \_\_\_\_\_  
 DEPARTMENT OF TRANSPORTATION

DATE PLOTTED => 6-MAR-2022  
 TIME PLOTTED => 12:49

## **Attachment C: Layouts**

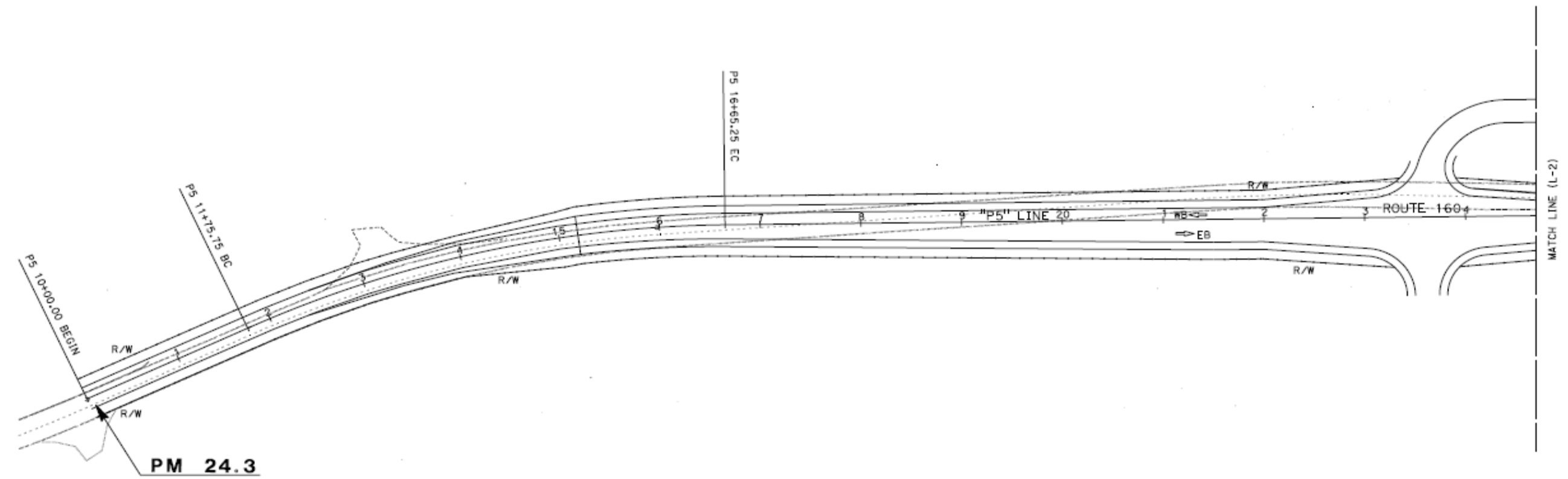
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 PLANS APPROVAL DATE \_\_\_\_\_  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

**LEGEND:**  
 PURPOSED ROADWAY = \_\_\_\_\_  
 EXISTING ROADWAY = \_\_\_\_\_  
 SECURITY FENCE = \_\_\_\_\_



PM 24.3

**LOCATION 5**

**LAYOUT**

SCALE: 1"=50'

**L-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
	SCOTT MANN	CHECKED BY	RALPH TOPHAM
			DATE REVISOR


LABELS/DATE PLOTTED => 6-jun-2022  
 00-00-00 TIME PLOTTED => 10:40

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	SAC	160	24.3/27.6		


REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

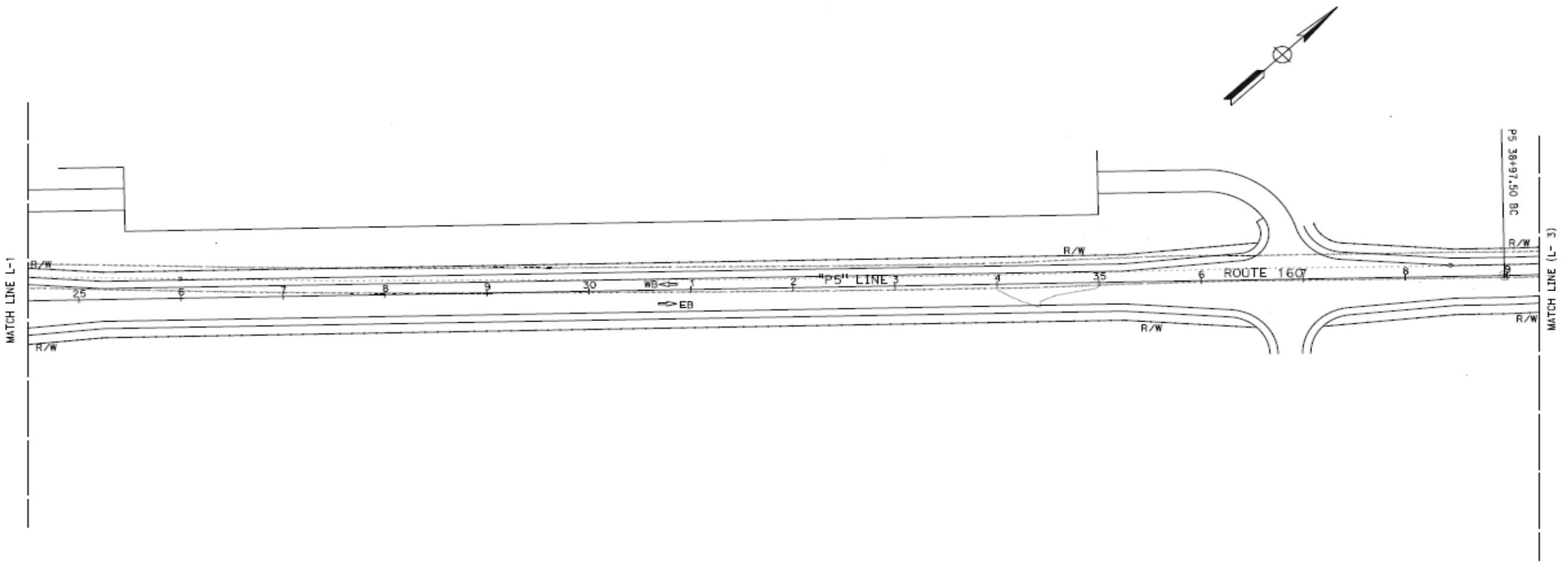
PLANS APPROVAL DATE \_\_\_\_\_

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



**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR
	SCOTT MANN	RALPH TOPHAM	NAGHMA HASSAN	



**LOCATION 5**

**LAYOUT**  
 SCALE: 1"=50'  
**L-2**

DATE PLOTTED => 6-APR-2022  
 TIME PLOTTED => 10:48

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR		CHECKED BY	CALCULATED-DESIGNED BY	REVISOR	DATE
	SCOTT MANN					

**NOTE:**

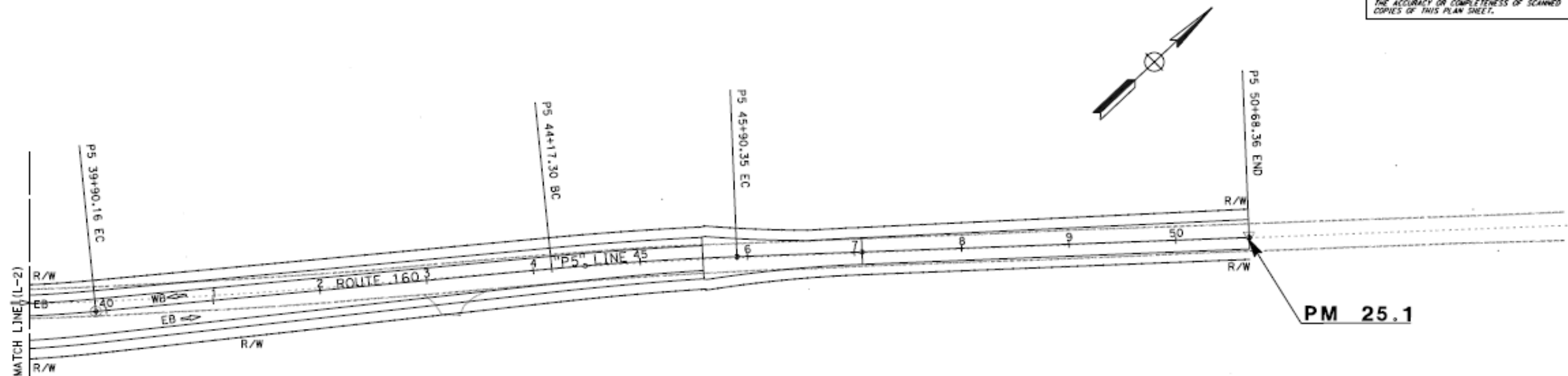
1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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



**LOCATION 5**

**LAYOUT**  
SCALE: 1"=50'  
**L-3**

DATE PLOTTED => 6-APR-2022  
TIME PLOTTED => 11:14



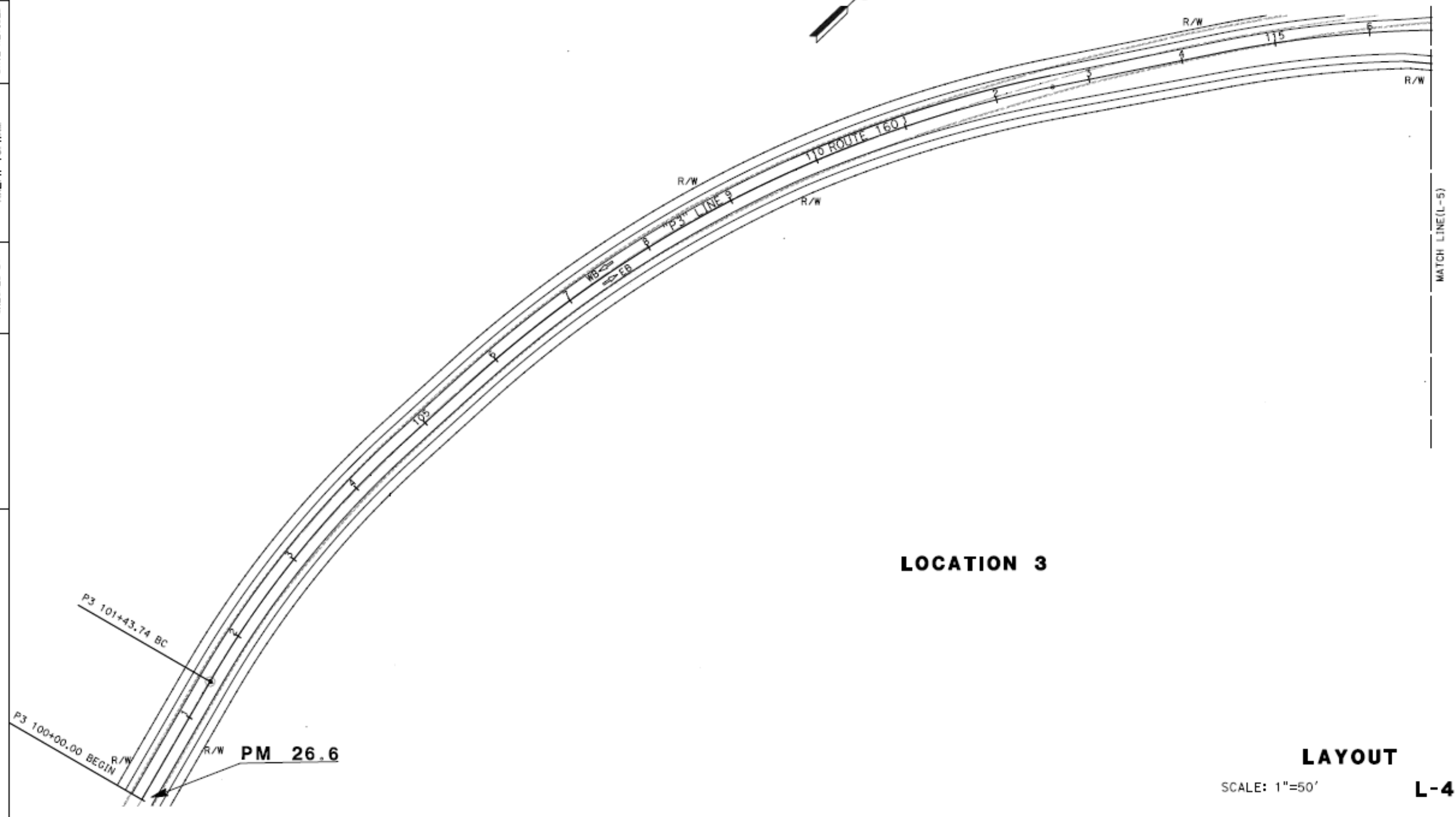
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR	DATE
<b>Caltrans</b>	SCOTT MANN		NACHMA HASSAN RALPH TOPHAM		

**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 PLANS APPROVAL DATE \_\_\_\_\_

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



**LOCATION 3**

**LAYOUT**  
 SCALE: 1"=50'  
**L-4**


LIST REVISION: DATE PLOTTED => 6-APR-2022  
 00-00-00 TIME PLOTTED => 11:01

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

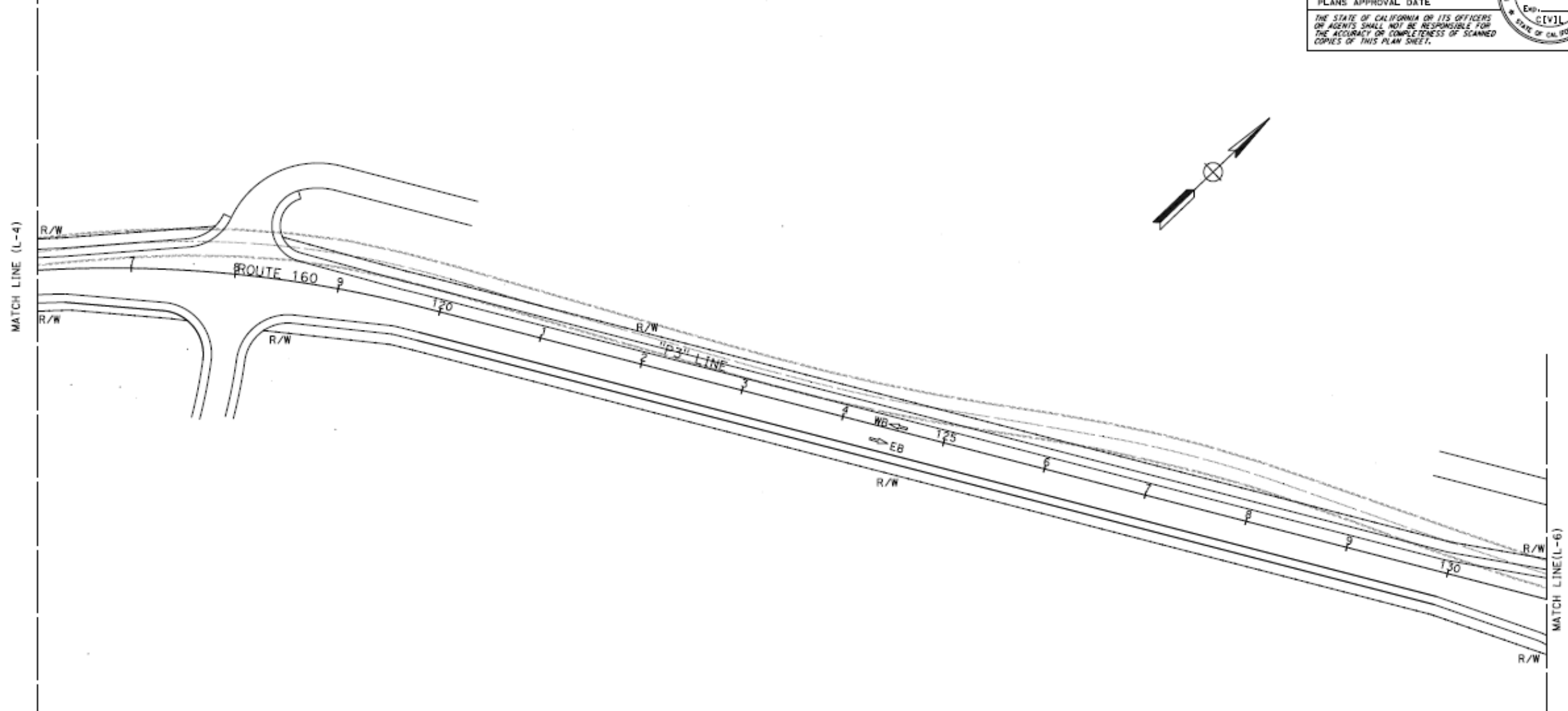
REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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



**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.



**LOCATION 3**

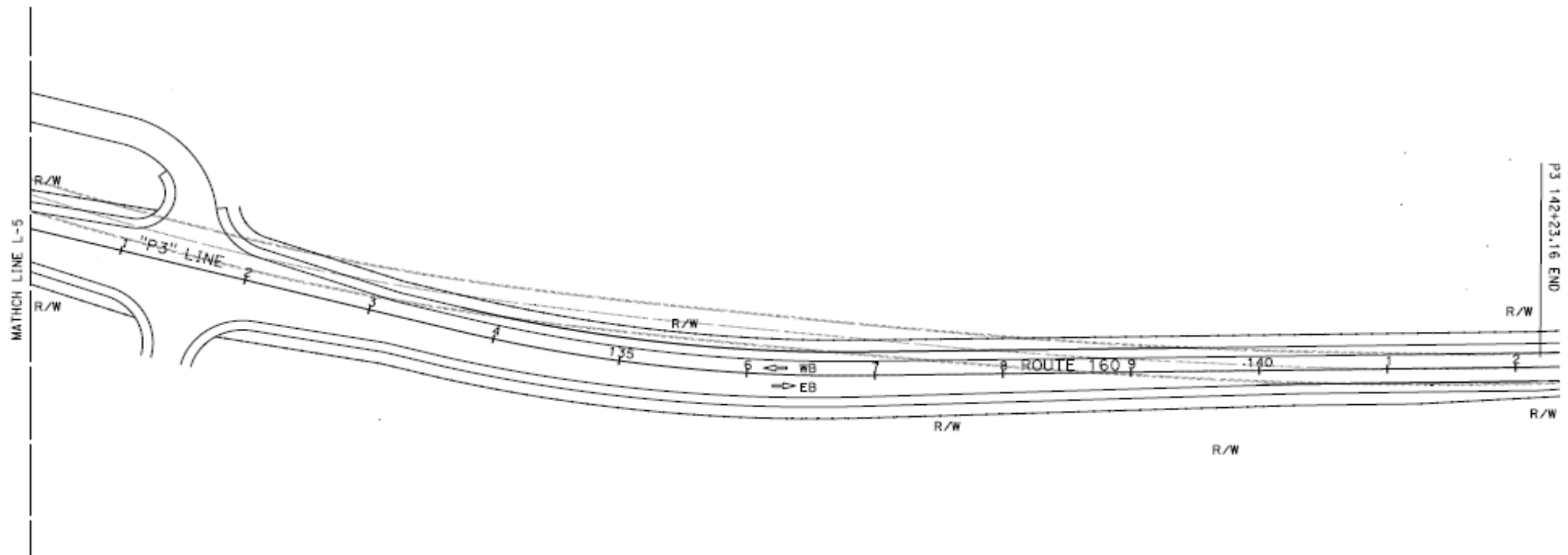
**LAYOUT**  
 SCALE: 1"=50'  
**L-5**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR	DATE
	SCOTT MANN	RALPH TOPHAM	NAGHMA HASSAN		

DATE PLOTTED => 6-APR-2022  
 TIME PLOTTED => 11:06

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
<b>Caltrans</b>	SCOTT MANN	CHECKED BY	DATE REVISED
		NAGHMA HASSAN	
		RALPH TOPHAM	

**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.



**LOCATION 3**

**LAYOUT**

SCALE: 1"=50'

**L-6**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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



LAST REVISION DATE PLOTTED => 6-APR-2022  
 00-00-00 TIME PLOTTED => 11:11

**NOTE:**

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

**LEGEND:**

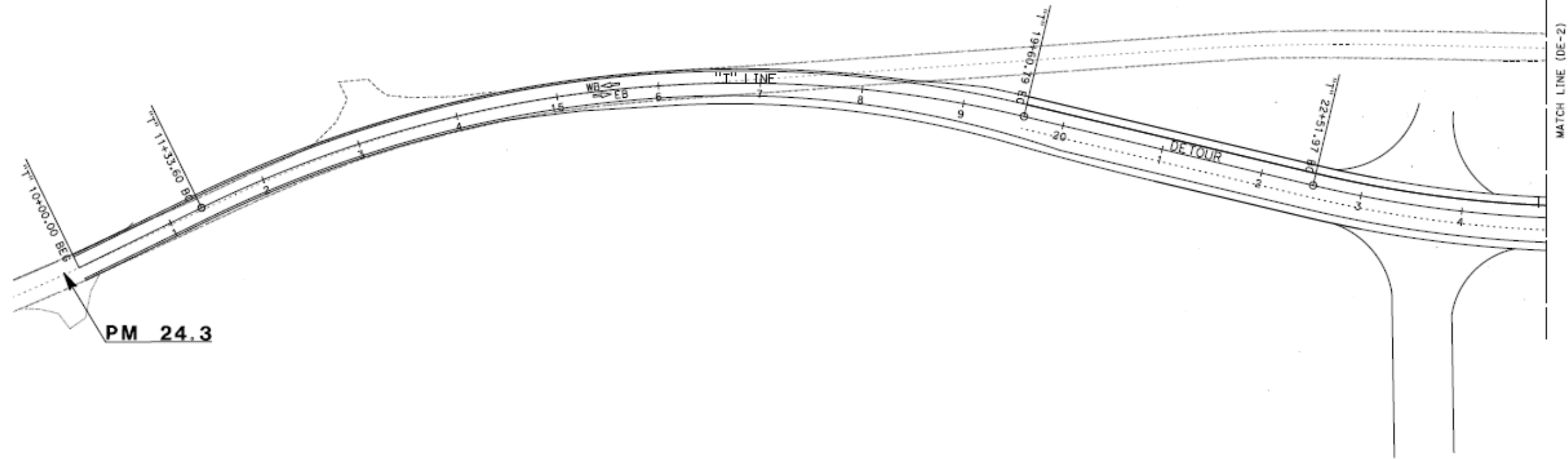
- TEMPORARY ROUTE = \_\_\_\_\_  
 EXISTING ROADWAY = - - - - -

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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



**LOCATION 5**

**DETOUR PLAN**

SCALE: 1"=50'

**DE-1**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR	REVISION
<b>Caltrans</b>	SCOTT MANN	CHECKED BY	NACHMA HASSAN	1
			RALPH TOPHAM	2

L00-CR000001 DATE PLOTTED => 6-APR-2022  
 00-00-00 TIME PLOTTED => 11:38

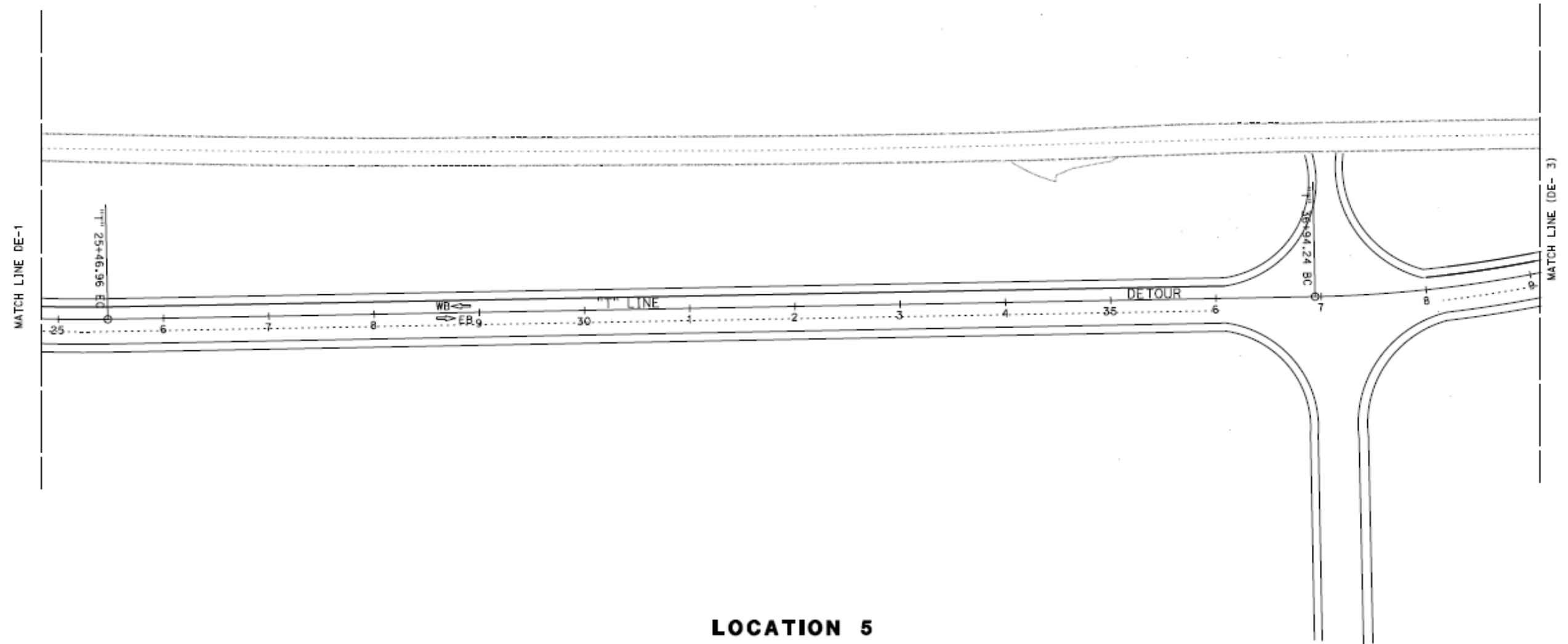
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION <b>Caltrans</b>	FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR
	SCOTT MANN		NAGHMA HASSAN	DATE

**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 PLANS APPROVAL DATE \_\_\_\_\_

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



**LOCATION 5**

**DETOUR PLAN**  
 SCALE: 1"=50'  
**DE-2**

DATE PLOTTED => 6-MAR-2022  
 TIME PLOTTED => 11:42





DT&#44;	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

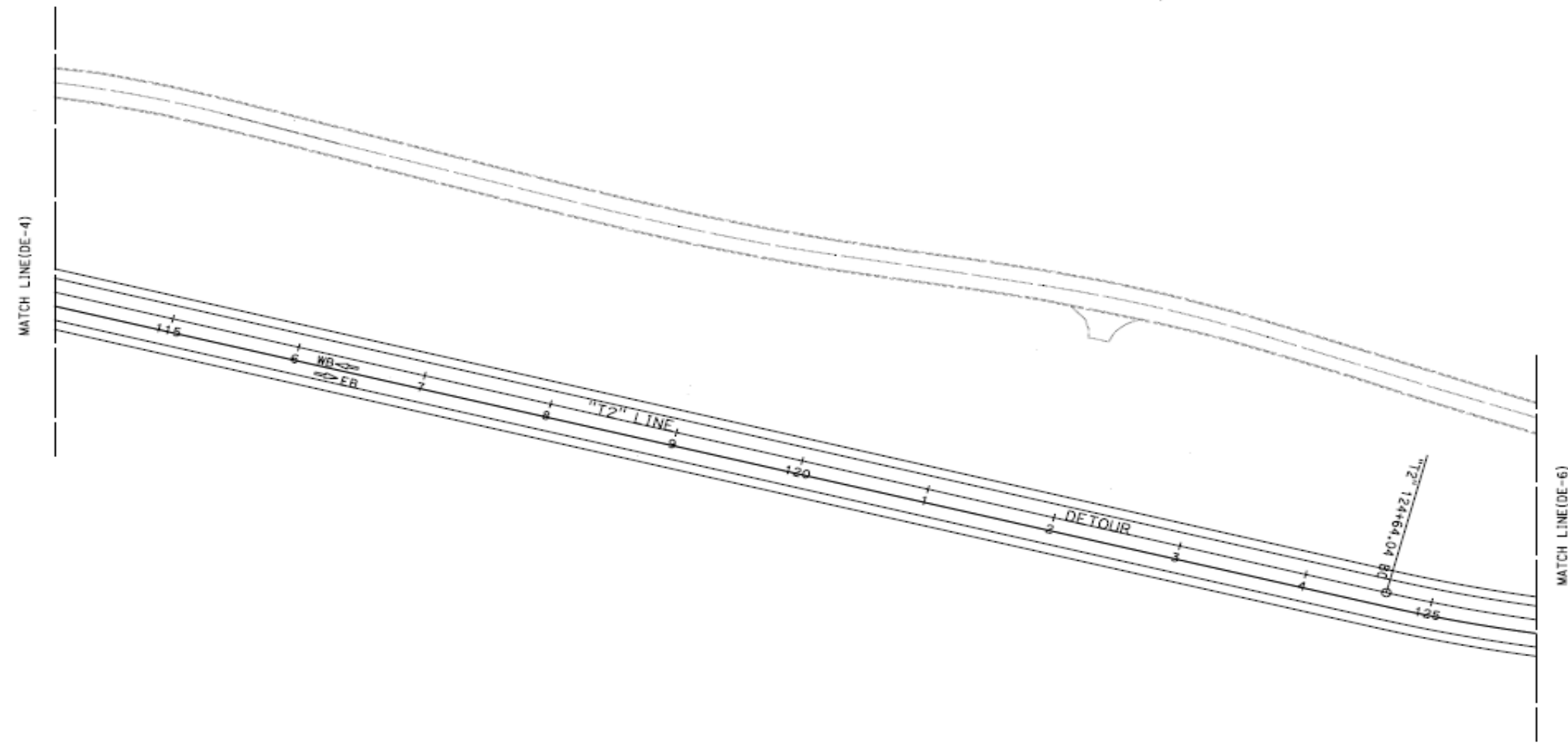
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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



**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.



**LOCATION 3**

**DETOUR PLAN**  
 SCALE: 1"=50'  
**DE-5**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
	SCOTT MANN	CHECKED BY	DATE REVISED
		NAGHMA HASSAN	
		RALPH TOPHAM	

DATE PLOTTED => 6-APR-2022  
 TIME PLOTTED => 11:58




STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	NAGHMA HASSAN	REVISED BY	
	SCOTT MANN	CHECKED BY	RALPH TOPHAM	DATE REVISED	

**NOTE:**  
 1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.  
 2. EXISTING UTILITY FACILITIES HAVE NOT BEEN PLOTTED ON THESE PLANS.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	SAC	160	24.3/27.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	



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



**LOCATION 3**

**DETOUR PLAN**  
 SCALE: 1"=50'  
**DE-6**

DATE PLOTTED => 6-APR-2022  
 TIME PLOTTED => 12:00

## **Attachment D: Roadway Cost Estimate**





## PROJECT COST ESTIMATE

EA 05-2J290 DPR 321000210

**SECTION 1: EARTHWORK**

Item code	Unit	Quantity	Unit Price (\$)	Cost
190101 Roadway Excavation	CY	18,000	x 40.00	= \$ 720,000
19010X Roadway Excavation (Insert Type) ADL	CY		x	= \$ -
19801X Imported Borrow	CY/TON		x	= \$ -
17010X Clearing & Grubbing				
100100 Develop Water Supply	LS	1	x 20,000.00	= \$ 20,000
600029 Remove Asphalt Concrete Surfacing	SF	57,600	x 10.00	= \$ 576,000
XXXXXX Some Item	Unit		x	= \$ -
				\$ -

<b>TOTAL EARTHWORK SECTION ITEMS</b>	<b>\$ 1,316,000</b>
--------------------------------------	---------------------

**SECTION 2: PAVEMENT STRUCTURAL SECTION**

Item code	Unit	Quantity	Unit Price (\$)	Cost
390132 Hot Mix Asphalt (Type A)	TON	6,500	x 150.00	= \$ 975,000
26020X Class 2 Aggregate Base	TON/CY	21,500	x 150.00	= \$ 3,225,000
390137 Rubberized Hot Mix Asphalt (Gap Graded)	TON	4,500	x 160.00	= \$ 720,000
374002 Asphaltic Emulsion (Fog Seal Coat)	TON		x	= \$ -
397005 Tack Coat	TON	20	x 1,600.00	= \$ 32,000
731502 Minor Concrete (Miscellaneous Construction)	CY		x	= \$ -
846051 12" Rumble Strip (Asphalt Concrete Pavement)	STA	30,000	x 40.00	= \$ 1,200,000
846052 12" Rumble Strip (Concrete Pavement)	STA		x	= \$ -
390136 Minor Hot Mix Asphalt	TON		x	= \$ -
XXXXXX Some Item	Unit		x	= \$ -
				\$ -

<b>TOTAL PAVEMENT STRUCTURAL SECTION ITEMS</b>	<b>\$ 6,162,000</b>
--	---------------------

PROJECT COST ESTIMATE

EA: 03-2J290 DPR: 321000210

**SECTION 3: DRAINAGE**

Item code	Unit	Quantity	Unit Price (\$)	Cost
7006XX XX" Corrugated Steel Pipe Inlet (0.XXX" Thick)	LF	x	- \$	-
7032XX 24" Corrugated Steel Pipe Riser (0.XXX" Thick)	LF			
7050XX XX" Steel Flared End Section	EA	x	- \$	-
<b>TOTAL DRAINAGE ITEMS</b>				<b>\$ -</b>

**SECTION 4: SPECIALTY ITEMS**

Item code	Unit	Quantity	Unit Price (\$)	Cost
80050 Progress Schedule (Critical Path Method)	LS			
839752 Remove Guardrail	LF	18,000	x 3.00	- \$ 54,000
710167 Remove Flared End Section	EA	x	- \$	-
8320XX Midwest Guardrail System (Insert Type)	LF	35,000	x 30.00	- \$ 1,050,000
839584 Alternative In-line Terminal System	EA	8	x 3,500.00	- \$ 28,000
83954X Transition Railing (Insert Type)	EA	x	- \$	-
129000 Temporary Railing (Type K)	LF			
839561 Rail Tensioning Assembly	EA	x	- \$	-
83958X End Anchor Assembly (Insert Type)	EA	8	1,000.00	\$ 8,000
<b>TOTAL SPECIALTY ITEMS</b>				<b>\$ 1,140,000</b>

Effective immediately, districts must input estimated item quantities in blue text above in the PRSM database for the pay items listed in the Design Memo, dated April 9, 2018, when Project Report is approved (Milestone 200). [Link to Design Memo](#)

1

129000

LF

Project Planning Cost Estimate Project Planning Cost Estimate

PROJECT COST ESTIMATE

EA: 03-2J290 DPR: 321000210

**SECTION 5: ENVIRONMENTAL**

**5A - ENVIRONMENTAL MITIGATION**

Item code	Unit	Quantity	Unit Price (\$)	Cost
Biological Mitigation (on-site)	LS	X	- \$	-
80010X Temporary Fence (Insert Type)	LF	X	- \$	-
130670 Temporary Reinforced Silt Fence	LF	X	- \$	-
<i>Subtotal Environmental Mitigation</i>				\$ -

**5B - LANDSCAPE AND IRRIGATION**

Item code	Unit	Quantity	Unit Price (\$)	Cost
20XXXX Highway Planting	LS	X	- \$	-
20XXXX Irrigation System	LS	X	- \$	-
<i>Subtotal Landscape and Irrigation</i>				\$ -

**5C - EROSION CONTROL**

Item code	Unit	Quantity	Unit Price (\$)	Cost
211111 Permanent Erosion Control Establishment Work	LS	X	- \$	-
210010 Move-In/Move-Out (Erosion Control)	EA	X	- \$	-
210350 Fiber Rolls	LF	X	- \$	-
210360 Compost Sock	LF	X	- \$	-
2102XX Rolled Erosion Control Product (Insert Type)	SQFT	X	- \$	-
21025X Bonded Fiber Matrix	SQFT/ACRE	X	- \$	-
210300 Hydromulch	SQFT	X	- \$	-
210420 Straw	SQFT	X	- \$	-
210430 Hydroseed	SQFT	X	- \$	-
210610 Compost	CY	X	- \$	-
210630 Incorporate Materials	SQFT			
<i>Subtotal Erosion Control</i>				\$ -

**5D - NPDES**

Item code	Unit	Quantity	Unit Price (\$)	Cost
130300 Prepare SWPPP	LS	1	X 2,800.00	- \$ 2,800
130200 Prepare WPCP	LS	X	- \$	-
130610 Temporary Check Dam	LF	X	- \$	-
130620 Temporary Drainage Inlet Protection	EA	X	- \$	-
130730 Street Sweeping	LS	X	- \$	-
<i>Subtotal NPDES</i>				\$ 2,800

<b>TOTAL ENVIRONMENTAL</b>	<b>\$ 2,800</b>
----------------------------	-----------------

**Supplemental Work for NPDES**

066595 Water Pollution Control Maintenance Sharing*	LS	X	- \$	-
066596 Additional Water Pollution Control**	LS	X	- \$	-
066597 Storm Water Sampling and Analysis***	LS	X	- \$	-
XXXXXX Some Item	LS	X	- \$	-
<i>Subtotal Supplemental Work for NDPS</i>				\$ -

\*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.

PROJECT COST ESTIMATE

EA: 03-2,290 DPR: 321000210

**SECTION 6: TRAFFIC ITEMS**

**6A - Traffic Electrical**

Item code	Unit	Quantity	Unit Price (\$)	Cost
87011X Inductive Loop Detector	EA/LS	x	= \$	-
870009 Maintaining Existing Traffic Management System Elements During Construction	LS	x	= \$	-
86000X Fiber Optic Conduit System	LS	x	= \$	-
X0000X Some Item	Unit	x	= \$	-
<b>Subtotal Traffic Electrical</b>				<b>\$ -</b>

**6B - Traffic Signing and Striping**

Item code	Unit	Quantity	Unit Price (\$)	Cost
xxxxxx Roadside Sign	LS	1 x	45,000.00	\$ 45,000
820840 Roadside Sign - One Post	EA	x	= \$	-
820850 Roadside Sign - Two Post	EA	x	= \$	-
810210 Remove Pavement Marker	EA	x	= \$	-
56020X Furnish Sign Structure (Insert Type)	SQFT	x	= \$	-
820890 Install Sign Panel on Existing Frame	SQFT	x	= \$	-
xxxxxx Final Striping	LS	1	126,000.00	\$ 126,000
120090 Construction Area Signs	LS	x	= \$	-
84000X Permanent Pavement Delineation	LS	x	= \$	-
<b>Subtotal Traffic Signing and Striping</b>				<b>\$ 171,000</b>

**6C - Traffic Management Plan**

Item code	Unit	Quantity	Unit Price (\$)	Cost
12865X Portable Changeable Message Sign	EA/LS	4 x	\$ 15,000	= \$ 60,000
<b>Subtotal Traffic Management Plan</b>				<b>\$ 60,000</b>

**6C - Stage Construction and Traffic Handling**

Item code	Unit	Quantity	Unit Price (\$)	Cost
129100 Temporary Crash Cushion Module	EA	x	= \$	-
120100 Traffic Control System	LS	1 x	308,000.00	= \$ 308,000
129110 Temporary Crash Cushion	EA	x	= \$	-
129000	LF	x	= \$	-
<b>Subtotal Stage Construction and Traffic Handling</b>				<b>\$ 308,000</b>

<b>TOTAL TRAFFIC ITEMS</b>	<b>\$ 688,000</b>
----------------------------	-------------------



PROJECT COST ESTIMATE

EA: 03-2J290 DPR: 321000210

**SECTION 7: DETOURS**

Includes constructing, maintaining, and removal

Item code	Unit	Quantity	Unit Price (\$)	Cost
190101 Roadway Excavation	CY		x - \$	-
19801X Imported Borrow	CY/TON			
390132 Hot Mix Asphalt (Type A)	TON	6,800	x 150.00 - \$	1,020,000
26020X Class 2 Aggregate Base	CY/TON	21,500	x 80.00 - \$	1,720,000
128601 Temporary Signal System	LS	2	x 200,000.00 - \$	400,000
120149 Temporary Pavement Marking (Paint)	SQFT		x - \$	-
80010X Temporary Fence (Insert Type)	LF		x - \$	-
128652 Changeable Message Signs (portable)	LS	1	x 15,000 - \$	15,000
<b>TOTAL DETOURS</b>				<b>\$ 3,155,000</b>

**SUBTOTAL SECTIONS 1 through 7 \$ 12,304,800**

**SECTION 8: MINOR ITEMS**

8A - Americans with Disabilities Act Items

ADA Items 1.0% \$ 123,048

8B - Bike Path Items

Bike Path Items 0.0% \$ -

8C - Other Minor Items

Other Minor Items 3.0% \$ 369,144

Total of Section 1-7 \$ 12,304,800 x 4.0% - \$ 492,192

**TOTAL MINOR ITEMS \$ 492,200**

**SECTIONS 9: ROADWAY MOBILIZATION \***

Item code	Total Section 1-8	\$ 12,797,000	x 10%	- \$ 1,279,700
<b>TOTAL ROADWAY MOBILIZATION</b>				<b>\$ 1,279,700</b>

**SECTION 10: SUPPLEMENTAL WORK**

Item code	Unit	Quantity	Unit Price (\$)	Cost
066670 Payment Adjustments For Price Index Fluctuations	LS	105,309	x 1.00 - \$	105,309
066094 Value Analysis	LS	1	x 10,000.00 - \$	10,000
066070 Maintain Traffic	LS	210	x 800.00 - \$	168,000
066919 Dispute Resolution Board	LS	1	x 15,000.00 - \$	15,000
066921 Dispute Resolution Advisor	LS		- \$	-
066015 Federal Trainee Program	LS		x - \$	-
066610 Partnering	LS	1	x 35,000.00 - \$	35,000
<i>Cost of NPDES Supplemental Work specified in Section 5D</i>				<i>- \$ -</i>
<b>Total Section 1-8</b>		<b>\$ 12,797,000</b>	<b>4%</b>	<b>- \$ 511,880</b>
<b>TOTAL SUPPLEMENTAL WORK</b>				<b>\$ 845,200</b>

PROJECT COST ESTIMATE

EA: 03-2J290 DPR: 321000210

**SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES**

Item code	Unit	Quantity		Unit Price (\$)		Cost
066105 Resident Engineers Office	LS	1	x	10,000.00	=	\$10,000
066063 Traffic Management Plan - Public Information	LS		x		=	\$0
066062 C-OZEEP Contract	LS	220	x	2,000.00	=	\$440,000
Total Section 1-8		\$ 12,797,000		2%	= \$	255,940

<b>TOTAL STATE FURNISHED</b>	<b>\$708,000</b>
------------------------------	------------------

**SECTION 12: TIME-RELATED OVERHEAD**

Total of Roadway and Structures Contract Items excluding Mobilization \$12,797,000 (used to calculate total TRO)

Estimated Time-Related Overhead (TRO) Percentage (0% to 10%) =

Item code	Unit	Quantity		Unit Price (\$)		Cost
090100 Time-Related Overhead	WD	220	x	\$3,490	=	\$767,800

<b>TOTAL TIME-RELATED OVERHEAD</b>	<b>\$767,800</b>
------------------------------------	------------------

**SECTION 13: ROADWAY CONTINGENCY\***

Risk Amount from Risk Register Additional or Residual Contingency	(for Unknown/Undefined Risks)	(for Known Risks)			
Total Section 1-12	\$ 16,395,800	x	<input type="text" value="20%"/>	=	\$3,279,160

<b>TOTAL CONTINGENCY*</b>	<b>\$3,279,200</b>
---------------------------	--------------------

# **Attachment E: Traffic Data and Designation**



**M e m o r a n d u m**

*Serious drought!  
Help Save Water!*

To: **Scott Mann**  
Design

Date: 1/12/2021  
File: 03-SAC-160 PM 24.1/29  
EA: 03-2J290  
EFIS: 0321000210

From: *Raju Porandla*  
**Raju Porandla, Chief**  
Office of Transportation Analytics, Modeling & Forecasting

Re: **TRAFFIC DATA & DESIGNATION REQUEST**

The traffic data that you requested via email on 11/10/2021 is listed below. The Traffic Index (TI) design periods are 20-year projections.

County Highway Post Mile	SAC
	160 24.1/29
<b>Annual ADT</b>	
Base Year 2020	2,650
2021	2,670
2028	2,840
2048	3,320
<b>Peak Hour</b>	
Base Year 2020	410
2021	410
2028	440
2048	510
<b>Annual ADTT</b>	
Base Year 2020	84
2021	85
2028	90
2048	106
Directional %	63
DH Truck %	2

County Highway Post Mile	SAC
	160 24.1/29.0
<b>ESAL</b>	
Base Year 2020	12,462
Current Year 2021	12589
Construction Yr. 2028	13,007
20-Year	260,130
<b>Mainline TI</b>	
Base Year 2020	5.5
Current Year 2021	5.5
Construction Yr. 2028	5.5
20-Year	7.5
<b>Shoulder TI</b>	
Base Year 2020	4
Current Year 2021	4
Construction Yr. 2028	4
20-Year	5

If you have any questions or need additional information, please contact Ehsan Beheshtitabar at [Ehsan.beheshtitabar@dot.ca.gov](mailto:Ehsan.beheshtitabar@dot.ca.gov).

# **Attachment F: Initial Site Assessment**

# Memorandum

**Date:** February 14, 2022

**File:** 03-Sac-160  
PM 24.3 - 27.7  
EA 03-2J290

**To:** Nagma Hassan  
Design Engineer

**From:** Rajive Chadha  
North Region Office of Environmental Engineering (NROEE) - South

**Subject:** Initial Site Assessment

It is understood that this project proposes to realign state route 160 at two in-take locations and includes 3 alternative alignments as detailed in your study request. Some of the excavated material will be reused within the project limits (if feasible) and the balance of this material will be relinquished to the contractor. The existing yellow and white traffic stripes will be cold planed along with the road surface and guardrail replacement will occur. It is understood that new right of way will be required for this project.

The review for potential hazardous waste impacts involved the following;

1. A review of the project plans and aerial mapping;
2. Discussions with the design engineer;
3. Review of the Geotracker database (a database of hazardous waste sites).

Based on this review, the potential for hazardous waste exists with respect to the following.

1) Lead-contaminated soil may exist within and near our R/W due to the historical use of leaded gasoline, leaded airline fuels, waste incineration, and et-cetera. The areas of primary concern in relation to highway facilities are soils along routes with historically high vehicle emissions due to large traffic volumes, congestion, or stop and go situations. Since soil disturbance, relinquishment and re-use will occur, an Aerially Deposited Lead (ADL) site investigation is required. This site investigation will determine if hazardous soils exist and what actions, if any, will need to occur during construction.

2) Hazardous levels of lead and chromium are known to exist in the yellow color traffic stripes. Since these traffic stripes will be grinded off along with the roadway, the levels of lead and chromium will become non-hazardous. These grindings (which consist of the roadway material and the yellow color traffic stripes) shall be removed and disposed of in accordance with Standard Special Provision 36-4 (Residue Containing High Lead Concentration Paints) which requires a Lead Compliance Plan (LCP). Non-hazardous levels of lead are known to exist in the white traffic striping. As such, these grindings shall

be removed and disposed of in accordance with the same specification. For budgetary purposes, you can assume a cost of \$ 2,000 (Use BEES item code 070030).

3) Hazardous chemicals are known to exist in the wood posts associated with the MBGR. As such, if wood posts are removed, they shall be disposed of in accordance with Standard Special Provision 14-11.14 (Treated Wood Waste).

4) A Hazardous Materials Disclosure Document (HMDD) will be required for attachment to the Certificate of Sufficiency (COS) before any new Right of Way can be acquired. Please submit final R/W mapping to the NROEE so that our office can provide the HMDD.

Since the construction of the proposed project cannot avoid disturbing soils, a Site Investigation (SI) is required. A SI needs to be requested by the PE or PM and takes 2 to 5 months to complete since a task order has to be prepared, approved, and issued to a contractor. The contractor is then required to prepare work plans, health and safety plans, conduct site investigations, and prepare site investigation reports for Caltrans review and approval.

The following support costs will be needed for this project;

<b>Unit 349 NROEE (Hazardous Waste) Resource Hour Needs</b>				
<b>ISA</b>	<b>Site Investigation</b>	<b>HMDD</b>	<b>Specs Prep</b>	<b>Functional Support</b>
<b>165.10</b>	<b>235</b>	<b>235.30</b>	<b>230.35</b>	<b>285.10</b>
<b>8</b>	<b>80</b>	<b>16</b>	<b>8</b>	<b>12</b>

Should the project take place at locations other than those specified, another review will be required. Should you require further information or have any questions, I can be reached at (530) 720-4250.

c.c. Julia Green, Environmental Co-ordinator  
 Soka Soka, Project Manager  
 Douglas Coleman, NROEE – South

# **Attachment G: Transportation Management Plan**



## Memorandum

*Seriouzdrought.  
Help Save Water!*

**To:** Naghma Hassan  
Project Engineer

**Date:** Feb 14, 2022

**File:** 03-2J290  
03-Sac-160-PM-  
24.3/25.1 & 26.6/27.7

**From:** Nhan Bui  
TMP Coordinator  
D3-Transportation Management Planning Office

**Subject:** **Transportation Management Plan (TMP) Data Sheet**

### Background

- This project is located on a two-lane, two-way highway, with a daily peak-hour volume (in both directions) of 250 vph. This project proposes to realign State Route (SR) 160 at two intake locations 3 & 5. The volumes within the project limits are low and the impacts on the mainline is minimal.
- For traffic volumes refer to Table-1.

Location Description	Type of Roadway	Peak-Hour (both directions combined) (vph)	% Truck Traffic	AADT (vpd)
03-Sac-160 PM 24.3/25.1	2-Lane, 2-Way	250	3.2	1,900
03-Sac 160 PM 26.6/27.7	2-Lane, 2-Way	130	3.2	1,200

### Recommendations

- On Route 160, lane and shoulder closure will be allowed any time during the day with no restriction
- Whenever one-way traffic control is maintained, traffic should be stopped for periods not to exceed 10 minutes, after which accumulated traffic shall pass through before another closure is made.
- On 2-lane, 2-way roadway, a minimum of one paved traffic lane, not less than 11 feet wide, shall be open for use by public traffic.

- When closures occur within 200 feet of an intersection, flaggers shall be deployed to control all legs of the intersection.
- Lane closures on the two-lane, two-way roadway will be performed with reversible traffic control using flaggers, in accordance with Revised Standard Plan sheet T13.
- The maximum length of any lane closure shall be limited to 1.1 mile
- Portable changeable message signs (PCMS) will be required in direction of traffic during construction for each lane or shoulder closure.
- No lane closures, shoulder closures, or other traffic restrictions will be allowed on Special Days, designated legal holidays and the day preceding designated legal holidays, and when construction operations are not actively in progress.
- Work at these locations may require the assistance of COZEEP, but a full time COZEEP presence is not anticipated.
- Coordination with projects within, or nearby the project limits will be required to avoid conflicts.
- Lane closure charts will have to be developed prior to P&E

### **Cost**

- For estimating purposes, use \$3,500 per working day to estimate the costs that are required for the Traffic Management Plan (TMP) items. These items include Traffic Control System, Portable Changeable Message Signs, Automated Flagger Assistance Device Day, Maintain Traffic, and TMP-Public Information.
- COZEEP is estimated at \$1,150 per working day and \$2,300 per working night whenever CHP involvement is needed during construction. COZEEP estimate should include 2 officers per vehicle when performing night work.
- If there is a change in the scope of the project or the order of work (schedule), please advise the TMP unit, as this may affect the TMP estimate

### **P & E Requirement**

To complete a TMP for this project, please provide the following to the Office of Traffic Management Planning at least three months prior to P&E: project description, title sheet, typical cross sections, layout sheets, stage construction and traffic handling plans, detour plans, construction cost estimates, number of traffic controlling days, project schedule, and a contact person.

### **List of Attachments:**

- TMP Checklist

**D-3 TRANSPORTATION MANAGEMENT PLAN CHECKLIST**

District / EA: 03-2J290  
 Date Prepared: February 14, 2022  
 Prepared By: Nhan Bui

Co.Rte.-PM. Sac- 160 PM 24.3/25.1 & 26.6/27.7  
 Location Sacramento County

Stage of Project (X box)  PIR  PSR  PR  PS&E

Description: Realign SR 160

**1.0 Public Information Strategies**

- 1.1 Brochures and Mailers
- 1.2 Media Releases (& minority media sources)
- 1.3 Paid Advertising
- 1.4 Public Information Center
- 1.5 Public Meetings/Speakers Bureau
- 1.6 Project Telephone Hotline
- 1.7 Internet, E-Mail
- 1.8 Local cable TV and News
- 1.9 Notification to Impacted groups  
(i.e. bicycle users, pedestrians with disabilities, others)
- 1.10 Project Web Page
- 1.11 Caltrans Public Information Office
- 1.12 Consultant Public Information Office
- 1.13 Other items

REQUIRED	RECOMMENDED	NOT APPLICABLE	BEEB Item No.	COMMENTS	UNIT COST	REQUIRED IN SPEC.
	X					
		X				
		X				
		X				
		X	066063			
		X				
		X				
		X				
		X				
		X				
		X				
		X	066063			
		X				
		X				

**2.0 Traveler Information Strategies**

- 2.1 Changeable Message Signs (permanent)
- 2.2 Changeable Message Signs (portable)
- 2.3 Special Construction Signs
- 2.4 Traveler Information Systems (CHIN/Internet)
- 2.5 Highway Advisory Radio "HAR" (fixed or mobile)
- 2.6 Radar Speed Sign
- 2.8 Revised Transit Schedules/ Maps
- 2.9 Bicycle community information
- 2.10 Other item

		X				
X			128652			
		X	120690			
		X	861985			
		X	860520			
		X	120201			
		X				
		X				
		X				

**3.0 Incident Management**

- 3.1 COZEEP
- 3.2 Freeway Service Patrol (tow truck service patrol)
- 3.3 Traffic Surveillance Stations (loops or CCTV)
- 3.4 Transportation Management Center
- 3.5 Traffic Control Inspector (Caltrans)
- 3.6 Traffic Management Team
- 3.7 On-site Traffic Advisor (contractor)
- 3.8 Other Items

	X		066062			
		X	066065			
		X	066876			
		X				
	X					
		X				
		X				
		X				

**4.0 Construction Strategies**

- 4.1 Delay damage clause
- 4.2 Night work
- 4.3 Weekend Work
- 4.4 Extended Weekend Closures
- 4.5 Planned Lane Closures
- 4.6 Planned Ramp/Connector Closures
- 4.7 Total Facility Closure
- 4.8 Project Phasing
- 4.9 Truck Traffic Restrictions
- 4.10 Reduced Lane Widths

		X				
		X				
		X				
		X				
		X				
		X				
		X				
		X				
		X				
		X				

**4.0 Construction Strategies (Continued)**

- 4.11 Temporary K-Rail
- 4.12 Temporary Traffic Screens
- 4.13 Reduced Speed Zones
- 4.14 Traffic Control Improvements
- 4.15 Contingency Plans
  - 4.15.1 Material Plant on standby
  - 4.15.2 Extra Critical Equipment on site
  - 4.15.3 Material Testing Plan
  - 4.15.4 Alternate Material on site  
(In case of failure or major delays)
  - 4.15.5 Emergency Detour Plan
  - 4.15.6 Emergency Notification Plan
  - 4.15.7 Weather Conditions Plan
  - 4.15.8 Delay Timing and Documentation Plan
  - 4.15.9 Late Closure Reopening Notification
- 4.16 Signal timing modification
- 4.17 Coordination with adjacent construction
- 4.18 Right of Way Delay
- 4.19 Other Items

REQUIRED	RECOMMENDED	NOT APPLICABLE	BEEES Item No.	COMMENTS	UNIT COST	REQUIRED IN SPEC.
		X	129000			
		X	129150			
		X				
		X				
X						
		X				
X						
		X				
		X				
		X				
		X				
X						
		X				
		X				
X						
		X	066022			
		X				

**5.0 Demand Management**

- 5.1 HOV Lanes/Ramps
- 5.2 Ramp metering
- 5.3 Park-and-Ride Lots
- 5.4 Parking Management/Pricing
- 5.5 Rideshare Incentives
- 5.6 Rideshare Marketing
- 5.7 Transit, Train, or Light-Rail Incentives
- 5.8 Transit Service Modification
- 5.9 Variable Work Hours
- 5.10 Telecommute
- 5.11 Other Items

		X				
		X				
		X				
		X				
		X				
		X	066069			
		X	066066			
		X				
		X				
		X				
		X				

**6.0 Alternate Route Strategies**

- 6.1 Ramp Closures
- 6.2 Street Improvements
- 6.3 Reversible Lanes
- 6.4 Temporary Lanes or Shoulders Use
- 6.5 Freeway to freeway connector closures
- 6.6 Encroachment Permit from City/County

		X				
		X				
		X				
		X				
		X				
		X				

**7.0 Other Strategies**

- 7.1 Application of new technology
- 7.2 Other Items

		X				
		X				

Comments:

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# **Attachment H: Hydraulic Recommendation**

## Memorandum

*Flex your power!  
Be energy efficient!*

**To:** MS. NAGHMA HASSAN  
Transportation Engineer  
Office of Design, M9  
North Region Division of Project Development

**Date:** March 15, 2022

**File:** LOC: 03-SAC-160  
PM: 24.3 – 27.7  
EA: 03-2F290

**From:** MR. GURPAL BHATTAL  
Transportation Engineer  
Hydraulics Branch, District 3  
Office of Engineering Services  
North Region Division of Project Development

**Subject:** Drainage Recommendations for Temporary Route on SR-160

State Route (SR) 160 is a conventional two-lane highway constructed on the east levee of the Sacramento River within project limits. The proposed project is part of a larger project which includes realignment at two locations along the Sacramento River. The realignment is due to a project, by the Department of Water Resources (DWR), in compliance with the Bay Delta Conservation Plan (BDCP), to construct intake pumping plants on the east levee of the Sacramento River.

The scope of this memo is limited to providing drainage recommendations for temporary roadway alignments at the two locations. The temporary roadway alignments are proposed at the following locations: Location 5 (PM 24.3 – 25.1) and Location 3 (PM 26.7 – 27.7).

Hydrology and hydraulic calculations will be performed to determine the runoff directed towards the proposed temporary alignment segments. Existing drainage flow patterns are to be perpetuated where possible.

### **Segment 5 – PM 24.3 / 25.1**

Runoff within this proposed new segment generally flows from west to east. The contributing watershed is approximately 13 acres, with runoff flowing from the levee towards the alignment of the temporary roadway segment. Using the Rational Method, it is estimated that the watershed will generate a 100-year runoff volume of 8.0 cfs and a 25-year runoff volume of 4.8 cfs.

This runoff from the watershed located between the existing alignment and the temporary detour route will need to be accounted for in order to prevent objectionable backwater from encroaching upon the travelled way. One recommended method is through roadside ditches. From the topo map a longitudinal slope of 0.003 ft/ft was estimated, going from the NE to the SW. Using Haestad Methods Flowmaster program, a roadside triangular ditch was sized. With 2:1 (H:V) side slopes, the width of the ditch at the top should be 6 feet and a depth of 1.5 feet. DWR will properly manage the runoff before discharging from the site back to another receiving body of water.

### **Segment 3 – PM 26.7 / 27.7**

The approximately 16-acre area enclosed within the proposed temporary alignment and the existing levee generally slopes from west to east at an approximate slope of 0.68%. The 25-year runoff from this site is expected to be 6.3 cfs and the 100-year runoff is expected to be 10.7 cfs. A triangular ditch is recommended on both sides of the proposed temporary alignment with a top width of 6-feet, side slopes 2:1 (H:V) and at a depth of 1.5 feet.

Contact Gurpal Bhattal at 530-821-3954 or by email at [Gurpal.bhattal@dot.ca.gov](mailto:Gurpal.bhattal@dot.ca.gov) regarding any questions or concerns.

### **Attachments**

Design Discharge, Rational Method  
FlowMaster Ditch Calculation Report  
NOAA Atlas 14, Precipitation Intensity Table

**Rational Method**

**IMPERIAL**

Project	<b>03-SAC-160</b>	EA: <b>03-2J290</b>	By	<b>Gurpal Bhattal</b>	Date	<b>04-11-2022</b>
Location	DS	PM	<b>24.3 / 25.1</b>	Checked		Date
Check one: <input checked="" type="checkbox"/> Present <input type="checkbox"/> Developed						

**Runoff Coefficient** HDM Topic 819.2 (1)

Type of Drainage Area	Area (acre)	
Undeveloped	10.500	A <sub>1</sub>
Developed	2.400	A <sub>2</sub>
<b>Total:</b>	<b>12.900</b>	

Rational Method should be used for small watersheds only. Preferably no greater than:

320 ac

**Watershed Size OK**

**UNDEVELOPED**

Runoff Coefficients for UNDEVELOPED Areas HDM Figure 819.2A		
	Description	Coefficient
Relief	Normal	0.20
Soil Infiltration	Normal	0.08
Vegetal Cover	Normal	0.08
Surface Storage	Normal	0.08
<b>C<sub>1</sub> =</b>		<b>0.44</b>

**DEVELOPED**

Runoff Coefficients for DEVELOPED Areas HDM Figure 819.2B	
Type of Drainage Area	Coefficient
Streets:	
Asphaltic	0.85
<b>C<sub>2</sub> =</b>	<b>0.85</b>

**WEIGHTED RUNOFF COEFFICIENT FOR BASIN**

$$C = \frac{C_1 A_1 + C_2 A_2}{A_1 + A_2} = \frac{0.44 \cdot 10.50 + 0.85 \cdot 2.40}{10.50 + 2.40} = \boxed{0.52}$$

**Discharge** HDM Topic 819.2 (1)

**Q = C I A C(f)**

	Storm #1	Storm #2	Storm #3	Storm #4
1. Frequency ..... yr	<b>10-year</b>	<b>25-year</b>	<b>50-year</b>	<b>100-year</b>
2. Runoff Coefficient, C .....	0.52	0.52	0.52	0.52
3. Time of Concentration, T <sub>c</sub> ..... min	74.5	74.5	74.5	74.5
4. Intensity, I <sub>2</sub> ..... in/hr	0.58	0.71	0.83	0.96
5. Drainage Area, A ..... acre	12.90	12.90	12.90	12.90
6. Frequency Factor, C(f) .....	1.00	1.00	1.10	1.25
7. Discharge, Q ..... ft <sup>3</sup> /sec	<b>3.83</b>	<b>4.74</b>	<b>6.07</b>	<b>7.99</b>
8. C(f) times C shall not exceed 1.0 ..... C(f)C = If necessary adjust C(f).	0.52	0.52	0.57	0.65



**Rational Method**

**IMPERIAL**

Project	<b>03-SAC-160</b>	EA: <b>03-2J290</b>	By	<b>Gurpal Bhattal</b>	Date	<b>04-11-2022</b>
Location	DS	PM	<b>26.7 / 27.7</b>	Checked		Date

Check one:  Present  Developed

**Runoff Coefficient** HDM Topic 819.2 (1)

Type of Drainage Area	Area (acre)	
Undeveloped	12.500	A <sub>1</sub>
Developed	3.630	A <sub>2</sub>
<b>Total:</b>	<b>16.130</b>	

Rational Method should be used for small watersheds only. Preferably no greater than:

320 ac

**Watershed Size OK**

**UNDEVELOPED**

Runoff Coefficients for UNDEVELOPED Areas HDM Figure 819.2A		
	Description	Coefficient
	Relief	Normal 0.20
	Soil Infiltration	Normal 0.08
	Vegetal Cover	Normal 0.08
	Surface Storage	Normal 0.08
		<b>C<sub>1</sub> = 0.44</b>

**DEVELOPED**

Runoff Coefficients for DEVELOPED Areas HDM Figure 819.2B	
Type of Drainage Area	Coefficient
Streets:	
Asphaltic	0.85
<b>C<sub>2</sub> = 0.85</b>	

**WEIGHTED RUNOFF COEFFICIENT FOR BASIN**

$$C = \frac{C_1 A_1 + C_2 A_2}{A_1 + A_2} = \frac{0.44 \cdot 12.50 + 0.85 \cdot 3.63}{12.50 + 3.63} = \boxed{0.53}$$

**Discharge** HDM Topic 819.2 (1)

$$Q = C I A C(f)$$

	Storm #1	Storm #2	Storm #3	Storm #4
1. Frequency ..... yr	<b>10-year</b>	<b>25-year</b>	<b>50-year</b>	<b>100-year</b>
2. Runoff Coefficient, C .....	0.53	0.53	0.53	0.53
3. Time of Concentration, T <sub>c</sub> ..... min	74.5	74.5	74.5	74.5
4. Intensity, I <sub>2</sub> ..... in/hr	0.60	0.74	0.86	1.00
5. Drainage Area, A ..... acre	16.13	16.13	16.13	16.13
6. Frequency Factor, C(f) .....	1.00	1.00	1.10	1.25
7. Discharge, Q ..... ft <sup>3</sup> /sec	<b>5.13</b>	<b>6.34</b>	<b>8.12</b>	<b>10.70</b>
8. C(f) times C shall not exceed 1.0 ..... C(f)C = If necessary adjust C(f).	0.53	0.53	0.59	0.67

## Roadside Ditch PM 24.3 - 25.1

Project Description	
Friction Method	Manning
Solve For	Formula Normal Depth

---

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.003 ft/ft
Left Side Slope	2.000 H:V
Right Side Slope	2.000 H:V
Discharge	8.00 cfs

---

Results	
Normal Depth	18.0 in
Flow Area	4.5 ft <sup>2</sup>
Wetted Perimeter	6.7 ft
Hydraulic Radius	8.0 in
Top Width	5.99 ft
Critical Depth	12.0 in
Critical Slope	0.026 ft/ft
Velocity	1.78 ft/s
Velocity Head	0.05 ft
Specific Energy	1.55 ft
Froude Number	0.363
Flow Type	Subcritical

---

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

---

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	18.0 in
Critical Depth	12.0 in
Channel Slope	0.003 ft/ft
Critical Slope	0.026 ft/ft

## Roadside Ditch PM 26.7 - 27.7

---

### Project Description

---

Friction Method	Manning
Solve For	Formula Normal Depth

---

### Input Data

---

Roughness Coefficient	0.035
Channel Slope	0.007 ft/ft
Left Side Slope	2.000 H:V
Right Side Slope	2.000 H:V
Discharge	10.70 cfs

---

### Results

---

Normal Depth	17.1 in
Flow Area	4.1 ft <sup>2</sup>
Wetted Perimeter	6.4 ft
Hydraulic Radius	7.7 in
Top Width	5.70 ft
Critical Depth	13.5 in
Critical Slope	0.025 ft/ft
Velocity	2.63 ft/s
Velocity Head	0.11 ft
Specific Energy	1.53 ft
Froude Number	0.549
Flow Type	Subcritical

---

### GVF Input Data

---

Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

---

### GVF Output Data

---

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	17.1 in
Critical Depth	13.5 in
Channel Slope	0.007 ft/ft
Critical Slope	0.025 ft/ft

---



**NOAA Atlas 14, Volume 6, Version 2**  
**Location name: Courtland, California, USA\***  
**Latitude: 38.3488°, Longitude: -121.5344°**  
**Elevation: 19.07 ft\*\***  
 \* source: ESRI Maps  
 \*\* source: USGS



**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitani, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Uhrh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

**PF tabular**

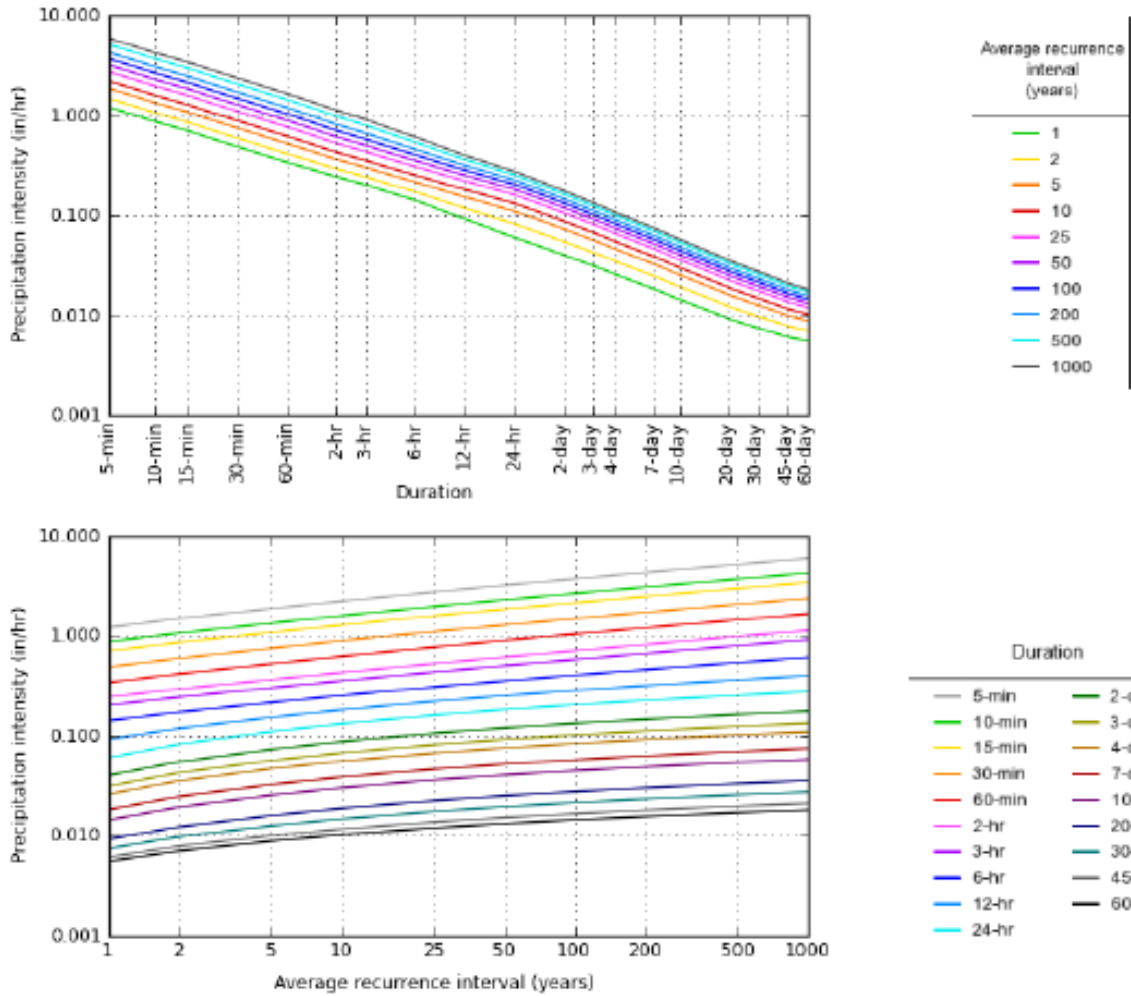
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.21 (1.08-1.38)	1.49 (1.32-1.68)	1.87 (1.66-2.12)	2.22 (1.96-2.54)	2.75 (2.34-3.26)	3.20 (2.66-3.89)	3.71 (3.01-4.61)	4.28 (3.37-5.48)	5.15 (3.90-6.89)	5.92 (4.31-8.18)
10-min	0.870 (0.780-0.990)	1.06 (0.948-1.21)	1.34 (1.19-1.52)	1.59 (1.40-1.82)	1.97 (1.67-2.34)	2.29 (1.91-2.78)	2.66 (2.15-3.31)	3.07 (2.42-3.93)	3.69 (2.79-4.94)	4.24 (3.09-5.87)
15-min	0.704 (0.628-0.795)	0.856 (0.764-0.972)	1.08 (0.960-1.23)	1.28 (1.13-1.47)	1.59 (1.35-1.88)	1.85 (1.54-2.24)	2.14 (1.74-2.66)	2.47 (1.95-3.17)	2.98 (2.25-3.98)	3.42 (2.49-4.73)
30-min	0.488 (0.436-0.554)	0.594 (0.530-0.674)	0.750 (0.666-0.854)	0.890 (0.782-1.02)	1.10 (0.936-1.31)	1.28 (1.07-1.56)	1.49 (1.21-1.85)	1.72 (1.35-2.20)	2.07 (1.56-2.76)	2.37 (1.73-3.28)
60-min	0.342 (0.304-0.387)	0.416 (0.370-0.472)	0.525 (0.465-0.597)	0.622 (0.547-0.714)	0.770 (0.655-0.915)	0.897 (0.747-1.09)	1.04 (0.844-1.29)	1.20 (0.947-1.54)	1.45 (1.09-1.93)	1.66 (1.21-2.30)
2-hr	0.244 (0.218-0.278)	0.294 (0.262-0.334)	0.365 (0.324-0.416)	0.430 (0.378-0.493)	0.528 (0.448-0.626)	0.612 (0.510-0.743)	0.708 (0.574-0.880)	0.816 (0.644-1.05)	0.984 (0.743-1.31)	1.13 (0.824-1.57)
3-hr	0.203 (0.181-0.230)	0.243 (0.217-0.275)	0.302 (0.268-0.344)	0.355 (0.312-0.407)	0.434 (0.369-0.516)	0.502 (0.418-0.610)	0.578 (0.470-0.720)	0.665 (0.524-0.852)	0.797 (0.602-1.07)	0.912 (0.665-1.26)
6-hr	0.142 (0.126-0.161)	0.173 (0.153-0.195)	0.216 (0.191-0.246)	0.253 (0.223-0.291)	0.308 (0.262-0.366)	0.354 (0.295-0.430)	0.404 (0.328-0.503)	0.459 (0.362-0.588)	0.540 (0.408-0.721)	0.608 (0.444-0.842)
12-hr	0.092 (0.082-0.105)	0.118 (0.105-0.134)	0.153 (0.136-0.174)	0.182 (0.160-0.209)	0.222 (0.188-0.263)	0.252 (0.210-0.306)	0.284 (0.231-0.354)	0.317 (0.250-0.407)	0.363 (0.274-0.485)	0.399 (0.291-0.553)
24-hr	0.061 (0.055-0.068)	0.082 (0.074-0.093)	0.110 (0.099-0.125)	0.132 (0.118-0.151)	0.161 (0.140-0.190)	0.183 (0.155-0.220)	0.204 (0.169-0.252)	0.226 (0.182-0.286)	0.255 (0.197-0.335)	0.276 (0.207-0.376)
2-day	0.040 (0.036-0.045)	0.055 (0.050-0.062)	0.073 (0.066-0.083)	0.088 (0.078-0.100)	0.106 (0.092-0.125)	0.120 (0.102-0.144)	0.133 (0.110-0.164)	0.147 (0.118-0.185)	0.164 (0.127-0.216)	0.176 (0.132-0.240)
3-day	0.031 (0.028-0.036)	0.043 (0.039-0.048)	0.057 (0.051-0.064)	0.068 (0.060-0.077)	0.082 (0.071-0.096)	0.092 (0.078-0.111)	0.102 (0.084-0.126)	0.112 (0.090-0.141)	0.124 (0.096-0.164)	0.134 (0.100-0.182)
4-day	0.026 (0.024-0.030)	0.035 (0.032-0.040)	0.047 (0.042-0.053)	0.056 (0.050-0.064)	0.067 (0.058-0.079)	0.076 (0.064-0.091)	0.084 (0.069-0.103)	0.092 (0.074-0.116)	0.102 (0.079-0.134)	0.110 (0.082-0.149)
7-day	0.018 (0.017-0.021)	0.025 (0.022-0.028)	0.033 (0.029-0.037)	0.039 (0.035-0.044)	0.046 (0.040-0.055)	0.052 (0.044-0.063)	0.058 (0.048-0.071)	0.063 (0.051-0.080)	0.070 (0.054-0.092)	0.075 (0.056-0.102)
10-day	0.014 (0.013-0.016)	0.019 (0.018-0.022)	0.026 (0.023-0.029)	0.030 (0.027-0.035)	0.036 (0.031-0.043)	0.041 (0.034-0.049)	0.045 (0.037-0.055)	0.049 (0.040-0.062)	0.054 (0.042-0.072)	0.058 (0.044-0.079)
20-day	0.009 (0.008-0.010)	0.012 (0.011-0.014)	0.016 (0.014-0.018)	0.019 (0.017-0.022)	0.023 (0.019-0.027)	0.025 (0.021-0.030)	0.028 (0.023-0.034)	0.030 (0.024-0.038)	0.033 (0.026-0.044)	0.036 (0.027-0.049)
30-day	0.007 (0.007-0.008)	0.010 (0.009-0.011)	0.013 (0.011-0.014)	0.015 (0.013-0.017)	0.018 (0.015-0.021)	0.020 (0.017-0.024)	0.022 (0.018-0.027)	0.023 (0.019-0.030)	0.026 (0.020-0.034)	0.027 (0.021-0.037)
45-day	0.006 (0.006-0.007)	0.008 (0.007-0.009)	0.010 (0.009-0.011)	0.012 (0.010-0.013)	0.014 (0.012-0.016)	0.015 (0.013-0.018)	0.017 (0.014-0.021)	0.018 (0.015-0.023)	0.020 (0.015-0.026)	0.021 (0.016-0.029)
60-day	0.006 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.012 (0.010-0.014)	0.013 (0.011-0.016)	0.015 (0.012-0.018)	0.016 (0.013-0.020)	0.017 (0.013-0.023)	0.018 (0.014-0.025)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

**PF graphical**

PDS-based intensity-duration-frequency (IDF) curves  
Latitude: 38.3488°, Longitude: -121.5344°

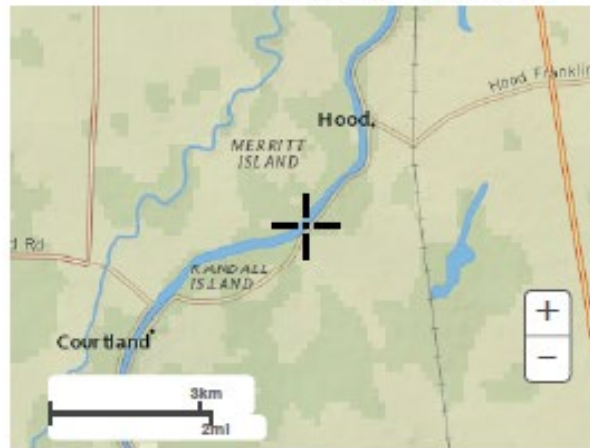


[Back to Top](#)

### Maps & aerials

Small scale terrain





Large scale terrain



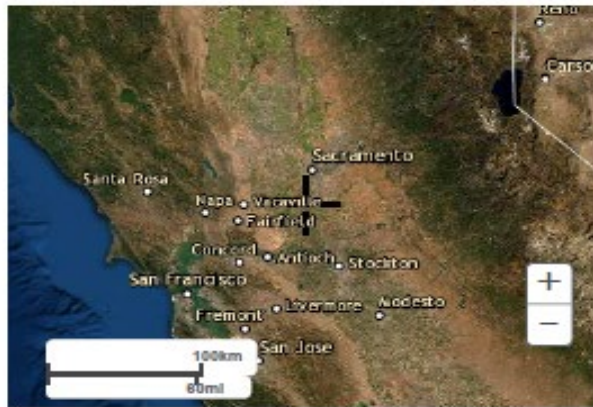
Large scale map



Large scale aerial

3/16/22, 10:05 AM

Precipitation Frequency Data Server



[Back to Top](#)

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[US Department of Commerce](#)  
[National Oceanic and Atmospheric Administration](#)  
[National Weather Service](#)  
[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)

# **Attachment I: Materials Recommendation**



## Memorandum

*Serious drought.  
Help Save Water!*

**To:** Ms. Naghma Hassan  
Office of Design, S09  
NR Division of Project Development

**Date:** February 16, 2022  
**File:** 03-SAC-160  
PM 24.3-27.7  
03-2J290

**From:** Addisu Workineh, District 3 Materials Engineer  
Joseph Farrow, Assistant DME  
North Region – Materials Laboratory

**Subject: Structural Section Recommendation**

As requested to Addisu Workineh, dated November 30th, 2021, a structural section recommendation has been made for the above referenced project. The following assumptions have been made:

TI20 = 7.5 (Traffic Data)  
R-Value = 7 (Historical)  
Design R-Value = 25 (Geo-Grid)  
Pavement Climate Region = Inland Valley  
Elevation = 30'

**Note:** Following the guidelines in the Crumb Rubber Usage in Hot Mix Asphalt Pavements memo signed in March 2020 by Micheal D. Keever and Cory Binns. Rubberized hot mix asphalt (RHMA) is included in the structural section recommendation as all projects with estimated HMA quantity greater than 1,000 tons shall include RHMA.

**Note:** Per HDM section 614.5.2 for imported borrow material the minimum R-value specified should be at least 20 or the R-value for the native soil, whichever is greater.

**STRUCTURAL SECTION RECOMMENDATIONS**

**Realignment for Mainline and Shoulder: -**

**TI=7.5**

**Option 1:**

0.20' RHMA-G  
0.20' HMA-A  
0.90' AB (Class II)  
(SEG<sub>G</sub>)  
-----  
1.30' Total Structural Section

**Option 2:**

0.20' RHMA-G  
0.25' HMA-A  
0.80' AB (Class II)  
(SEG<sub>G</sub>)  
-----  
1.25' Total Structural Section

**Option 3:**

0.45' HMA-A  
0.80' AB (Class II)  
(SEG<sub>G</sub>)  
-----  
1.25' Total Structural Section

**Rehabilitation for existing roadway :**

Mill the existing roadway 0.20', after milling cracks wider than 0.25 inch should be sealed; loose and spalling pavement removed; potholes and localized failures should be repaired. Routing the cracks before applying crack sealant. The width of the routing should be 0.25 inch wider than the crack width. The depth should be equal to the width of the routing plus 0.25 inch. In order to alleviate the potential bump in the overlay from the crack sealant, leave the crack sealant 0.25 inch below grade to allow for expansion and replace with 0.20' RHMA-G or HMA-A based on the chosen option of the realignment.

**Detour for Mainline and Shoulder: -**

**TI=5.5**

**Option 1:**

0.25' HMA-A  
0.75' AB (Class II)  
1.30' Total Structural Section

**Option 2:**

0.30' HMA-A  
0.60' AB (Class II)  
1.25' Total Structural Section

**MATERIALS SPECIFICATIONS**

Hot Mix Asphalt (HMA) Type A – Shall conform to section 39 of the Standard Specifications and the Special Provisions.

Hot Mix Asphalt (HMA) Type O – Shall conform to section 39 of the Standard Specifications and the Special Provisions.

Rubberized Hot Mix Asphalt (RHMA) Type G – Shall conform to section 39 of the Standard Specifications and the Special Provisions.

Rubberized Hot Mix Asphalt (RHMA) Type O – Shall conform to section 39 of the Standard Specifications and the Special Provisions.

Aggregate Base (AB) – Class 2 – shall conform to section 26 of the Standard Specifications and the Special Provisions.

Asphalt Binder – Asphalt binder used for HMA-A shall be grade PG 64-16 or as specified and shall conform to sections 39 and 92 of the Standard Specifications and Special Provisions.

Asphalt Treated Permeable Base (ATPB) – Shall conform to section 29 of the Standard Specifications and the Special Provisions.

Paint Binder – shall conform to sections 39, 92 and 94 of the Standard Specifications and the Special Provisions.

03-2J290

February 16, 2022

Page 4

Subgrade Enhancement Geotextile (SEGT) – shall conform to section 96 of the Standard Specifications and the Special Provisions.

Subgrade Enhancement Geogrid (SEGG) – shall conform to section 96 of the Standard Specifications and the Special Provisions.

Lean Concrete Base (LCB) – Shall conform to section 28.2 of the Standard Specifications and the Special Provisions.

Jointed Plain Concrete Pavement (JPCP) – Shall conform to section 40 and 90 of the Standard Specification and the Special Provision.

Continuously Reinforced Concrete Pavement (CRCP) - Shall conform to section 40 and 90 of the Standard Specification and the Special Provision.

Base Bond Breaker (BB) – Shall conform to section 36-2 of the Standard Specification and the Special Provision.

If you have any questions or concerns, please contact Joseph Farrow at (530) 682-3707 or myself at (530) 682-5504.

## **Attachment J: Risk Register**

### Qualitative Risk Register

**District:** 03 ▾

**EA:**

**EFIS:**

**Project Nickname:** SR 160 DWR Delta Conveyance Intakes

**District:** 03

**EA:** 2J290

**EFIS:** 0321000210

**Status:** APL

**County:** SAC

**Route:** 160

**Program:** OTHER-LOCAL

**PM:** SOKA, SOKA H

**Sort By:** Probability/Impact Score ▾ ⓘ

**Risk Status:** Active ▾

**Risk Owner:** All ▾



No risks associated with this project.

Site managed by North Region Data Management Unit. Contact [david.long@dot.ca.gov](mailto:david.long@dot.ca.gov) for support.

# **Attachment K: Traffic Safety Analysis**

## Memorandum

**To:** NAGHMA HASSAN  
Project Delivery Branch

**Date:** April 13, 2022

**File:** 03-2J290  
SAC 160 PM 24.1-27.7  
SR 160 Delta Conveyance Intakes

**From:** Mary Bokova  
District 3 Office of Traffic Safety

**Subject:** REQUEST FOR 3-YEAR COLLISION ANALYSIS

The contents of these reports shall be considered confidential and may be privileged pursuant to 23 U.S.C. Section 407 and are for the sole use of the intended recipient(s). Any unauthorized review, use, disclosure, or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message.

Table 1 summarizes collision rates for the segment of the project on State Route 160 (SR-160) mainline from postmile (PM) 24.1 to PM 27.7. The Table B report was generated on April 13, 2022, and it depicts existing collision rates per million vehicle miles for the most recent 59-month period from 01/01/2017 to 12/02/2021 from the Traffic Accident Surveillance and Analysis System (TASAS).

TABLE 1

TASAS Table B Collision Rates (01/01/2017 – 12/02/2021)

Segment	TOTAL No. of Collisions	Fatal Collisions	Injury Collisions	ACTUAL (per million vehicle miles)			AVERAGE (per million vehicle miles)		
				Fatal Collisions	Fatal + Injury Collisions	Total*	Fatal Collisions	Fatal + Injury Collisions	Total*
SAC 160 PM 24.1-27.7	16	0	9	0.000	0.66	1.17	0.023	0.40	0.93

\*All reported collisions (includes Property Damage Only (PDO) Collisions)



Table 1 (TASAS Table B Collision Rates (01/01/2017 – 12/02/2021)) summarizes and compares the actual collision rates for the segment of SR-160 from PM 24.1 to PM 27.7 to the average rates for similar facilities throughout the State. The Total collision rates include all reported collisions: Fatal, Injury, and Property Damage.

Analysis of the TASAS Table B records shows a total of 16 collisions within the segment of SR-160 from PM 24.1 to PM 27.7 and study periods summarized above, with a total rate of fatal and injury related collisions that is above the average for similar facilities statewide, and a total rate of collisions that is above the average for similar facilities statewide.

Detailed analysis per the TASAS Selective Accident Retrieval (TSAR) generated on April 13, 2022 shows that the primary collision factors in the segment were:

- 9 “Improper Turn,”
- 2 “Failure to Yield,”
- 2 “Speeding,”
- 1 “Influence of Alcohol,”
- 1 “Other than Driver,” and
- 1 “Other Violations”

The types of collisions included:

- 6 “Hit Object,”
- 4 “Overturn,”
- 2 “Broadside,”
- 2 “Head-on,”
- 1 “Read End,” and
- 1 “Other”

Analysis Conducted By:

Mary Bokova

Date: April 13, 2022

Approved for Release:

Fernando Rivera

Date: April 13, 2022