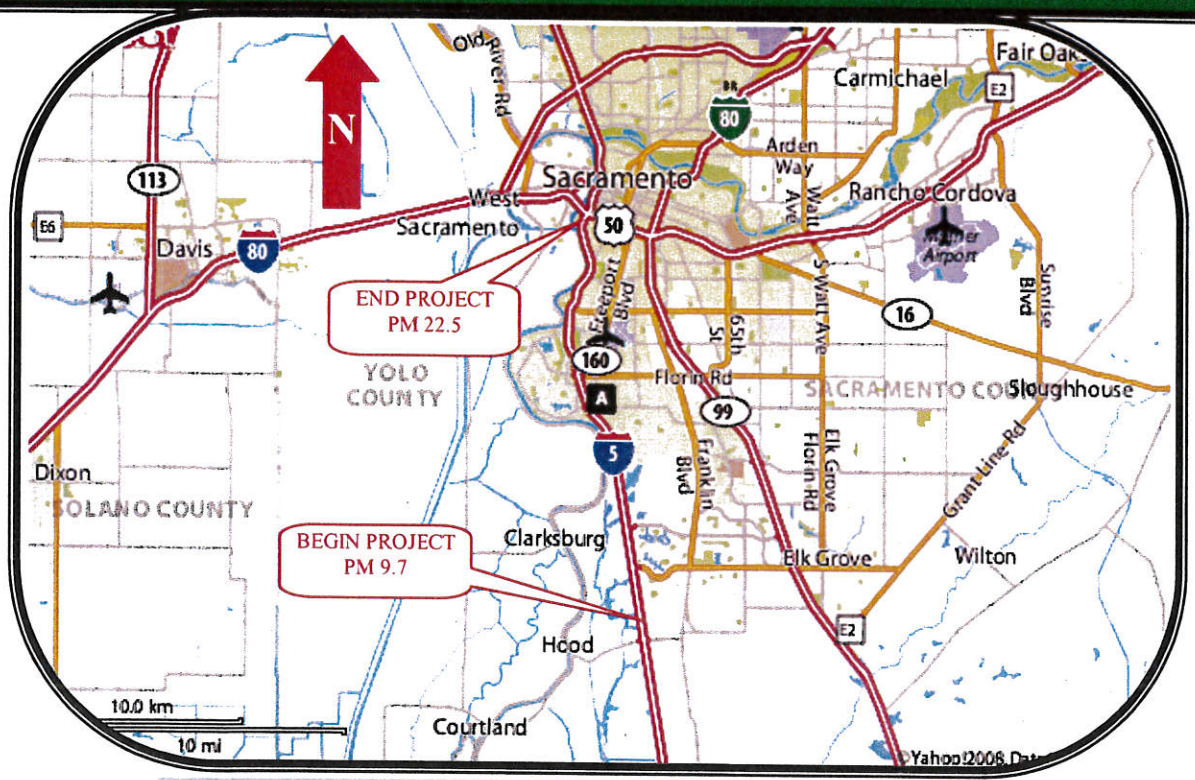
State of California
Department of Transportation
District 3 – NR Division of Project Development
Design Branch S-7

03-SAC-005, PM 9.7/22.5
EA: 03-3C0000
Project ID: 0300000454
Program-
Local Transportation Fund (LTF)
June , 2013

PROJECT REPORT

HOV LANES ON INTERSTATE 5



Interstate 5 in Sacramento County from 1.1 miles south of Elk Grove Blvd to United States 50

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

Gregg J Corey
FOR John Ballantyne, *DISTRICT DIVISION CHIEF – RIGHT OF WAY*

APPROVAL RECOMMENDED:

Samuel Jordan
Sam Jordan, *PROJECT MANAGER*

APPROVED:

for Steven C. Kirkpatrick 6/27/13
Jody Jones, *DISTRICT DIRECTOR* DATE

EL GROVE TO DOWNTOWN
I-5 HOV LANES PROJECT
EA: 03-3C0000

DRAFT PROJECT REPORT FOR
HOV LANES ON INTERSTATE 5

Executive Summary

The project proposes to construct northbound and southbound High Occupancy Vehicle lanes in the median of Interstate 5 in Sacramento County from 1.1 miles south of Elk Grove Blvd. to United States 50. The project also includes: New sound walls, median barrier upgrade, structure widening, and replacement of the Casilada pedestrian over-crossing.

Capital Costs for 2013:	$ 115 million
Structures:	$ 15.1 million
Roadway:	$ 98.1 million
Right of Way Costs:	$ 1.8 million
Funding Source:	50% New Measure "A" 50% From other sources.
Type of Facility:	Interstate Multi-lane Freeway
Project Program:	Sacramento Region Measure "A" Program
Anticipated Environmental Clearance Document:	EIR/Finding of No Significant Impact
Construction Year:	2018
PM Limits:	03-Sac-5-PM 9.7/22.5
Legal Description:	In and near Sacramento on Interstate 5, from 1.1 miles south of Elk Grove Blvd. Overcrossing 24-277 to United States 50. Construct HOV Lanes.

From Pocket Road Overcrossing - Looking southbound showing truck traffic in the northbound lanes on the left.

View of Interstate 5 looking northerly from the Florin Road Interchange.

EL GROVE TO DOWNTOWN
I-5 HOV LANES PROJECT
EA: 03-3C0000

Project Signature Sheet

This Draft 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.

G R Cagle 6/20/13

GERALD R. CAGLE, P.E. Date
Registered Civil Engineer

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1. INTRODUCTION

It is proposed to widen Interstate 5 (I-5) to construct High Occupancy Vehicle (HOV) lanes to reduce congestion from 1.1 miles south of Elk Grove Blvd. to United States 50 (US 50) in Sacramento County. Mainline structures will be widened at Beach Lake Bridge and the Rte 5/160 Separation to accommodate the roadway widening. Casilada Pedestrian Over-Crossing (POC) will be replaced to meet the Americans with Disabilities Act (ADA) requirements. New soundwalls are proposed to mitigate freeway noise. Due to minimum social, economic and environmental significance to increase capacity, this project has been assigned Project Development Category 5. Four alternatives were studied for this project. Two other options were evaluated but found infeasible.

District 3 has secured CMAQ and STIP (RIP) funding from SACOG to commence design and right-of-way activities on the project. Available funding is only sufficient to design and acquire part of the project scope and it was decided to split the project into two phases.

3C001 Design Phase 1 – In and near Sacramento from just north of Beach Lake Bridge 24-262 (PM9.7-13.0) (Morrison Creek) to route 50 (PM 13.0-22.5)

3C002 Design Phase 2 – Near Sacramento on route 5 from 1.1 miles south of Elk Grove Blvd (0.3 Mile North Of Stone Lake Bridge 24-0346) to just north of Beach Lake Bridge 24-262 (PM 9.7-13.0) (Morrison Creek).

2. RECOMMENDATION

Caltrans recommends that this Project Report and the accompanying Environmental Document be approved. It is recommended that Alternative 1, HOV Lanes, be selected as the preferred alternate.

There has been open communication with our local partners regarding the scope and potential impacts of this project. A public hearing was conducted during Draft Environmental Document (DED) circulation to provide an opportunity for public to provide their input. The public comments were addressed in the final Environmental Document.

3. BACKGROUND

3A. PROJECT HISTORY

This segment of I-5 within the project limits is designated as part of the National Network for large commercial vehicles and serves interstate travel, recreational traffic, as well as daily commuters into and out of Sacramento from Elk Grove and

south Sacramento. This corridor has experienced substantial growth during the past few years. Growth is expected to continue as planned suburban development continues in both Elk Grove and the southern portion of the City of Sacramento. The anticipated growth will contribute to the existing congested freeway conditions between the cities of Elk Grove and Sacramento.

Initially, a project scoping study EA 03-39170K was started in 2001 to add HOV lanes from Elk Grove Blvd to US 50 but the project was shelved due to lack of funding. The I-5 HOV lanes project (03-3C000K) was introduced in December 2004 with project limits of Hood Franklin Rd. and US 50; and the Project Study Report (PSR) was approved in February 2007. During preliminary project studies, the beginning and termination of the HOV lanes and the scope of the project has been modified several times. The proposed project was to commence south of Elk Grove Blvd. and terminate at the I-5/US 50 Interchange (see Attachment 1). The northbound HOV lane will terminate, as it becomes a mixed flow lane with the number 4 lane exiting at the Q Street off ramp near I-5/US50 IC. In the southbound direction, the HOV lane will begin prior to the southbound I-5/US 50 connector and end south of Elk Grove Blvd. The project originally provided for the addition of HOV lanes at Hood Franklin Overcrossing and continuing north through the I-5/US 50 IC. The starting point of the project was revised from Hood Franklin Rd. to south of Elk Grove Blvd. to encompass the Measure "A" project limits. The northern termination point was revised due to the extent of modifications needed at the I-5/US50 interchange to facilitate the HOV lane, and another programmed project to modify portions of the I-5/US 50 IC (EA 03-1E610K). The current project scope allows for the HOV lane to extend to a point just south of the I-5/US 50 IC.

3B. COMMUNITY INTERACTION

Several meetings have been held with Sacramento City Council members, Sacramento Transportation Authority (STA), and other stakeholders to define the scope and potential impact of this project.

Public Outreach

Notice of Preparation

Two Open House/Scoping Meetings were held following the publication of the Notice of Preparation (NOP). The first meeting was held October 24, 2007 at Joseph Sims Elementary School, located at 3033 Buckminster Dr. in Elk Grove. The second meeting was held October 25, 2007 at the Belle Cooledge Branch of the Sacramento Public Library, located at 5600 South Land Park Dr. in Sacramento.

The purpose of the open house/scoping meetings was to inform the public, local officials, and all interested parties of the current status of the project. In addition to

including notice of the open house/scoping meetings in the NOP and the notices of availability of the NOP, the open houses were advertised in the North/City and Elk Grove/Laguna regional sections of the *Sacramento Bee,* and the *Elk Grove Citizen*. A press release was also issued by the Caltrans District 3 Office of Public Affairs and the project website was posted to the Internet on October 15, 2007.

Public Workshops Conducted During the 2011 Circulation of the DEIR/EA

On April 8, 2011, Caltrans and FHWA released a Draft Environmental Impact Report/Environmental Assessment (DEIR/EA) for the I-5 Bus/Carpool Lanes Project. The public review period extended for 60 days, from April 8 to June 10, 2011. Caltrans sent a notice of availability of the DEIR/EA to nearly 26,000 adjacent property owners within one mile from the project. The notice also appeared in the Sacramento Bee on April 18, 2011. A copy of the DEIR/EA was sent to approximately 130 agencies and organizations, as well as 8 public libraries. There were two public open house workshops, one on May 4, 2011 at Belle Cooledge Library and the other on May 4, 2011 at Joseph Sims Elementary School. Approximately 40 members of the public attended the workshops.

Public Workshops Conducted During the 2013 Re-circulation of the DEIR/EA

On January 15, 2013, Caltrans and FHWA re-circulated the Draft Environmental Impact Report/Environmental Assessment (DEIR/EA) for the I-5 Bus/Carpool Lanes Project. The public review period ended on March 1, 2013. Caltrans sent a notice of availability of the DEIR/EA to nearly 26,000 adjacent property owners within one mile from the project. The notice also appeared in the Sacramento Bee on January 11, 2013. A notice regarding the availability of the DEIR/EA was sent to approximately 130 agencies and organizations. A copy of the DEIR/EA was also sent to six public libraries. There were two public open house workshops, one on January 30, 2013 at Joseph Sims Elementary School and the other on May 4, 2011 at the Robbie Waters Pocket-Greenhaven Public Library. Approximately 20 members of the public attended the workshops.

3C. EXISTING FACILITY

I-5 is a national south-north route that connects California to Oregon to the north and Mexico to the south. As such, this interregional route serves as an important corridor for freight trucks. In the Sacramento area, I-5 is also a vital commuter route for residents traveling into the central business district of the City of Sacramento from south Sacramento and from the City of Elk Grove. Other commuters travel into Sacramento from San Joaquin County or out to the San Francisco Bay area via I-205 and I-580.

Beginning at PM 9.7 to just south of Elk Grove Blvd., I-5 is a 4-lane facility with a wide median that becomes 6-lanes until the Florin Road IC. It remains an 8-lane facility until the terminus of the project. Currently there are existing auxiliary lanes between the 43rd Ave Undercrossing (UC) and the 35th Ave UC. The existing median thrie beam barrier starts at PM 11.78 and ties into the median concrete barrier (Type 50) at PM17.12, which continues to the limit of the project.

I-5 was originally constructed using Portland Cement Concrete (PCC) pavement, with two lanes in the northbound direction and three southbound lanes extending from south of Laguna Blvd. to the south of Florin Road. A subsequent project resulted in the construction of an additional northbound lane from south of Florin Road IC to south of Laguna Blvd. Two additional widening projects resulted in the construction of one additional lane in each direction from the vicinity of Florin Rd. to the north, using Asphalt Concrete (AC) pavement. These projects also included paving of the median with AC and construction of a concrete median barrier.

Existing structures within the project limits are shown in Table 3.1. The minimum vertical clearances are approximate values that were obtained from structure inspection reports.

Table 3.1 – Existing Structures

Bridge Name	Bridge No.	PM	Minimum Vertical Clearance (ft)
ELK GROVE BLVD OC	24-0277	10.830	16'10"
LAGUNA BLVD OC	24-0359	12.040	17'10"
BEACH LAKE	24-0262	12.920	---
RIVER BEND OC	24-0305	14.900	16'6"
ROUTE 5-160 SOH	24-0296	15.590	---
POCKET ROAD OC	24-0263	16.150	16'5"
SOUTH LAND PARK DRIVE OC	24-0259	16.700	16'7"
FLORIN ROAD OC	24-0264	17.180	16'7"
56TH AVENUE UC	24-0265	17.580	---
GLORIA DRIVE OC	24-0258	18.190	16'7"
43RD AVENUE UC	24-0251	18.650	---
35TH AVENUE UC	24-0252	19.130	---
SEAMAS AVENUE UC	24-0253	19.300	---
CASILADA WAY POC	24-0254	19.580	Reconstruct
RIVERSIDE BLVD UC	24-0255	19.950	---
SUTTERVILLE ROAD OC	24-0256	20.530	16'9"
LAND PARK UP	24-0226	20.820	17'7"

4. Need and Purpose

4A - Problems, Deficiencies, Justification

I-5 is designated as part of the "National Network" for trucks and as the primary south-north route in California, serving interregional and interstate travel. The segment of the I-5 corridor within our project limits also serves daily commuters from Elk Grove and south Sacramento. I-5 plays a critical role in California's economy by supporting a high volume of commuter and interregional traffic, as well as trucks moving goods to destinations in and out of the State.

Overall ease of mobility and traffic flow is being hindered in this segment of the corridor due to increase in traffic congestion. Traffic volumes have steadily increased due to a rise in development along this segment of the I-5 corridor. Monitoring of traffic conditions during the peak commute periods has shown a steady increase in both the duration and the length of congestion. The congestion primarily occurs in the northbound direction during the morning commute hours and the southbound

direction during the afternoon commute hours. Traffic volumes are near capacity during these peak periods with some portions of this segment exceeding capacity as shown in Table 4.1 below.

Table 4.1 – Peak Period Network Summary for Existing Conditions

Performance Measure	Northbound (AM)	Southbound (PM)
Number of Vehicles Served	49,300	56,000
Number of Persons Served[1]	60,300	69,000
Travel Distance (vehicle-miles)	303,200	409,400
Travel Time (vehicle-hours)	10,400	10,600
Average Speed – All vehicles (mph)	29.2	38.6
Average Speed – HOVs (mph)	28.7	37.9
Travel Delay[2] (vehicle-hours)	**5,300**	**4,100**
Average Delay[2] (seconds per vehicle)	380	260

1. Based on traffic counts, HOVs, trucks, and other vehicles are assumed to have vehicle occupancies of 2.35, 1.2, and 1.0 persons per vehicle, respectively.
2. Delay is measured as the additional travel time when a vehicle travels less than its desired free-flow speed.

Table 4.2 below presents observed travel time and speed for existing conditions. Travel time and speed for free-flow conditions is compared with middle two hours of the four-hour peak periods. The average travel speed in the northbound direction during the AM peak period is between 28 and 41 mph. In the southbound direction during the PM peak period, the average speed is similar, between 30 and 41 mph.

Caltrans traffic forecast data indicates the demand exceeding capacity in both directions before the year 2014. Population in the region is expected to grow by over 1,000,000 people, from 2.3 million in 2005 to 3.4 million in 2035, according to data provided in Metropolitan Transportation Plan 2035. Congestion is expected to worsen if no improvements are made to corridor capacity.

The City of Sacramento is planning to extend Cosumnes River Boulevard from its current terminus at Franklin Boulevard to Freeport Boulevard along with plans to construct an interchange at I-5. There are plans for substantial growth in this area as soon as the construction of the new interchange is complete.

Table 4.2 – Design Year 2033 Northbound/Southbound AM/PM Peak-Hour Travel Time and Speed

Northbound AM Peak-Hour Travel Time and Speed		Southbound PM Peak-Hour Travel Time and Speed	
Route	**Time/ Speed**	**Route**	**Time/ Speed**
Hood Franklin Rd EB On-ramp to Pocket Road Off-Ramp	34.1 min / 13.5 mph	US-50 WB On-Ramp to Pocket Rd WB Off-Ramp	23.3 min / 15.2 mph
Pocket Rd On-Ramp to US-50 Off-Ramp	19.2 min / 18.2 mph	Pocket Rd WB On-Ramp to Hood Franklin Rd WB Off-Ramp	7.8 min / 45.7 mph
Hood Franklin Rd EB On-ramp to US-50 Off-Ramp	53.3 min / 15.5 mph	US-50 WB On-Ramp to Hood Franklin Rd WB Off-Ramp	31.0 min / 32.2 mph

The construction of this project will be vital to maintain the corridor mobility, given the projected population growth.

The purpose of this project is to:

- Promote ride sharing and the use of high occupancy vehicles, such as carpools, vanpools, and express bus services.
- Provide congestion relief in order to improve traffic flow and mobility on this section of I-5 by carrying more people in fewer vehicles during peak periods.
- Improve traffic operations and safety.
- Provide an option for more consistent and predictable travel time for carpools, vanpools, buses, paratransit services, and emergency vehicles during peak periods.
- Use the highway facilities as efficiently as possible.
- Help achieve the goals of the current Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan (MTP 2035).

4B - Regional System Planning

The proposed project is an essential component of the District System Management Plan, the Transportation Concept Report for the I-5 corridor and the SACOG's Metropolitan Transportation Plan. This project is part of the metropolitan region's planned HOV system under the Measure "A" program sponsored by the County of Sacramento. The Measure "A" projects also include direct HOV connectors to Interstate 80 and US 50 at their respective interchanges from I-5. Another project north of downtown Sacramento (I-5/I-80 interchange project, EA 03-2C990) will provide HOV lanes on I-5 from I-80 north most of the way to downtown Sacramento.

4B.1 - Identify Systems

I-5 extends from the California/Mexico border in San Diego County to the California/Oregon border in Siskiyou County and is legislatively designated as an Interregional Road System (IRRS) route. This major south-north facility provides access to a multitude of state and interstate routes. I-5 also plays a critical role in California's economy by providing the throughput and infrastructure to support a high volume of commuter and interregional traffic as well as trucks carrying goods to destinations in and outside the state.

Within District 3, I-5 extends 127 miles through Sacramento, Yolo, Colusa, and Glenn Counties. I-5 provides access to a series of rural and urban communities. In Sacramento County, it serves the two urban centers; City of Elk Grove and City of Sacramento. In Yolo County, I-5 passes through the City of Woodland, an urbanized community surrounded by agricultural land uses; and three rural communities of Yolo, Zamora, and Dunnigan.

Over the next 20 years, the Cities of Elk Grove, Sacramento, and Woodland will experience high rates of development, which will enormously impact the I-5 corridor within Sacramento and Yolo Counties.

4B.2 - State Planning

The Transportation Concept Report (TCR) consistent with other planning agencies recommends a 6-lane freeway facility with HOV lanes for Segment 2, which stretches from Hood Franklin Boulevard to Laguna Boulevard ICs. The TCR recommends that Segment 3 and 4 from Laguna Boulevard to US 50 consist of an 8-lane freeway facility with HOV lanes in each direction. The following is a list of projects in various planning, programming or conceptual stages for Segment 2,3 and 4:

EA 03-0F5901

This project is currently in construction. It will rehabilitate the existing PCC and AC pavement from San Joaquin County Line to Florin Road IC (PM 0.0/17.2). This project will also pave the median from north of Stone Lake/Morrison Creek Bridge to

Florin Road IC, and upgrade the existing median barrier. Median widening will be utilized to stage traffic for the proposed Sac-5, HOV Lanes Project.

EA 03-3E580K
This project will modify the freeway to freeway connectors at US 50 and I-5. This project is currently in the planning phase. Milestones for this project have not yet been established.

EA 03-1F160K
This project will add two auxiliary Lanes at Interstate 5 in the northbound and southbound directions between Pocket Rd and Florin Rd. It includes bridge abutment fill modifications to provide new lanes for the new auxiliary lanes, by installing tie-back walls and widening both freeway sections. This project is currently in the planning phase.

4B.3 - REGIONAL PLANNING
The Sacramento Area Council of Governments (SACOG) is the Metropolitan Planning Organization responsible for developing the federally required MTP every four years in coordination with the 22 cities, six counties, and other partner agencies in the greater Sacramento region.

4B.4 - LOCAL PLANNING
Many projects are being developed by various local agencies within the limits of this project. Some of these projects will go into construction before this project. Cosumnes Blvd IC, Hood-Franklin, Kammerer Road and Grant Line Road were incorporated in the traffic forecast model. Coordination with local agencies is required on an ongoing basis to ensure the compatibility of all the projects listed below:

EA 03-1C520
The City of Sacramento identified, in the East Franklin Specific Plan, the need for a new interchange between the Beach Lake Bridge and the I-5/SR160 structure, in the vicinity of River Bend OC. The Project proposes to construct the new "Cosumnes Boulevard" interchange, including ramp metering with HOV bypass lanes. The existing River Bend OC will be removed after the new interchange is operational. Environmental clearance for this special funded project was achieved in 2007. Construction of this project has been delayed indefinitely due to funding problems. The new interchange will be in place before the HOV project goes to construction.

SACOG's Metropolitan Transportation Plan (MTP) for 2035 includes a multimodal transportation corridor that connects Elk Grove, Rancho Cordova and El Dorado Hills. The current alternatives include alignments, which follow Hood-Franklin, Kammerer and Grant Line Roads and a four-lane parkway that connects I-5 with

State Route 99. The proposal would include modifications to the Hood Franklin Interchange. Currently there is no estimated time of project completion for this project.

4B.5 - Transit Planning

The proposed HOV lanes would benefit transit routes that would use I-5 in the project limits. HOV lanes would provide reduced travel time and improved travel time reliability due to reduced congestion in comparison to less congestion than the adjacent mixed-flow lanes. The following transit agencies have routes that use I-5 in the study area.

eTran – The City of Elk Grove transit agency has four routes that take 32 trips per day during the morning and afternoon peak periods from Laguna Blvd. to downtown Sacramento. Average daily rider-ship for these routes is 750 passengers.

Regional Transit – The Sacramento area transit agency operates two routes that take 14 trips per day during the morning and afternoon peak periods from 43rd Ave. to downtown Sacramento. Average daily rider-ship on these routes is 330 to 380 passengers.

San Joaquin Regional Transit District – San Joaquin regional transit district provides one route that takes two trips per day (one northbound in the morning and one southbound in the afternoon) from Stockton to downtown Sacramento. Average daily rider-ship is 130 passengers.

HOV lanes along I-5 will provide a travel time advantage during peak periods. Other bus services that could take advantage of the bus/carpool lanes include school buses and recreational tours, such as those that travel to and from the Reno/Lake Tahoe area.

4C – Traffic Forecast and Accidents

Traffic forecast model and accident analysis have been performed for the three alternatives as discussed in the subsections below:

4C.1 – Traffic Analysis

Traffic forecasting model for the base year 2006 was developed using the SACMET regional Travel Demand Forecasting (TDF) model, which is prepared by SACOG. Substantial adjustments were made to the TDF model to accurately reflect the existing IC geometries, and land uses. Traffic flows generated from the modified model were compared to actual counts to validate the modified model. The adopted modified model produced traffic flows nearly identical to the actual traffic counts.
Traffic volume forecasts were produced for No Build, Mixed Flow, and HOV Lanes alternatives using the adopted modified model. Future year traffic volume forecasts

were based on the SACOG land use and roadway network projections for year 2035 conditions. New land use and roadway network projects were incorporated into the modified model to forecast changes in future travel demands and travel patterns. Linear interpolation was used to develop traffic forecasts for all three alternatives under the construction (2013), interim (2023), and design (2033) years (see Traffic Report).

The tables below compare performance measures for three alternatives for both directions. Table 4.3 shows the average peak-hour travel time and speed for the project alternatives in the northbound direction. Under the No Build Alternative, the commute time from Hood Franklin Road to US-50 would be similar to 2023 conditions – about 55 minutes. For the build alternatives, travel times would improve to about 41 and 49 minutes for the Mixed Flow and Bus/Carpool Alternatives, respectively. Under the Bus/Carpool Alternative, the average travel time for HOVs would be 28 minutes.

Table 4.3 – Design Year 2033 Northbound AM Peak-Period Network Summary

Performance Measure	Alternative		
	No Build	Mixed Flow	Bus/Carpool
Number of Vehicles Served	60,000	65,100	64,900
Number of Persons Served[1]	78,700	84,300	91,300
Travel Distance (vehicle-miles)	470,000	540,300	537,900
Travel Time (vehicle-hours)	31,900	29,200	31,100
Average Speed – All vehicles (mph)	14.7	18.5	17.3
Average Speed – HOVs (mph)	18.1	21.7	23.3
Travel Delay[2] (vehicle-hours)	24,300	20,500	22,500
Average Delay[2] (seconds per vehicle)	1,320	1,050	1,150

Table 4.4 shows the average peak-hour travel time and speed for the project alternatives in the southbound direction. Under the No Build Alternative, the average travel time from US 50 to Hood Franklin Road would be 31 minutes. The average travel time for the Mixed Flow and Bus/Carpool Alternatives would be 17 and 27 minutes, respectively. South of Pocket Road, travel times are similar under all three alternatives. Under the Bus/Carpool Alternative, HOVs would have a shorter travel time, 15 minutes, than under either the No Build or Mixed Flow Alternatives.

Table 4.4 – 2033 Southbound PM Peak-Period Network Summary

Performance Measure	Alternative		
	No Build	Mixed Flow	Bus/Carpool
Number of Vehicles Served	65,000	78,700	76,000
Number of Persons Served[1]	86,900	99,000	103,400
Travel Distance (vehicle-miles)	457,200	576,300	551,300
Travel Time (vehicle-hours)	19,500	14,800	17,100
Average Speed – All vehicles (mph)	23.4	39.0	32.2
Average Speed – HOVs (mph)	25.9	41.2	41.1
Travel Delay[2] (vehicle-hours)	12,300	5,700	8,400
Average Delay[2] (seconds per vehicle)	640	250	380

The No Build Alternative would serve fewer vehicles than the build alternatives. The Mixed Flow Alternative would serve more vehicles at a higher speed, but the Bus/Carpool Alternative would serve more persons. The average speed for HOVs would be about the same under both build alternatives (See Traffic Report, Attachment 7).

4C.2 – Accident History and Safety

Accident rates were obtained from the Traffic Accident Surveillance and Analysis System (TASAS) also known as TASAS Table B for a three-year period from July 2008 to June 2011. The results are summarized in the Table 4.5 below.

Table 4.5 – Accident History

Location	Total Accidents	Total Fatalities	Actual Accident Rate[1]	Average Accident Rate[1]
Northbound I-5 (PM 9.7 to 22.5) Hood Franklin Rd to US-50	356	0	0.48	0.66
Southbound I-5 (PM 22.5 to 9.7) US-50 to Hood Franklin Rd	278	3	0.38	0.66

Note: 1. The accident rate is accidents per million vehicle-miles.

I-5 within the study area had 634 accidents, three of which were fatality-related accidents. The actual accident rate for the project area (Hood Franklin Road to US-50) was lower than the average accident rate for similar freeway facilities. The fatal

accidents did not occur in any one specific section of the freeway but were spread over its entire length.

Table 4.6 categorizes the accidents within the three-year period according to peak period and accident type. The AM and PM four-hour peak periods (one-third of the day) accounted for majority of the accidents (59 percent). More accidents occurred during the AM peak period than the PM peak period, which is consistent with the higher level of congestion during the morning peak period. Rear-end collisions, which are associated with congested conditions, were the most frequent type of accident and accounted for 34 percent of all accidents.

TABLE 4.6 – ACCIDENTS BY PEAK PERIOD AND ACCIDENT TYPE

Statistic	Peak Period			Accident Type				Total
	6 to 10 AM	3 to 7 PM	Off-peak	Rear End	Hit Object	Sideswipe	Other[1]	
Northbound	157	65	134	140	112	66	38	356
Southbound	45	108	125	78	94	66	40	278
Total	202	173	259	218	206	132	78	634
Percentage	32%	27%	41%	34%	33%	21%	12%	100%

Note: 1. The "Other" category includes head-on, broadside, overturn, and other accident types.

Because I-5 is a major interstate truck route, the accident rate according to vehicle type was reviewed. The data revealed that 89 percent of all collisions involved a passenger car. Large trucks and/or tractor-trailers were involved in 10.7 percent of the northbound collisions and 13.7 percent of the southbound collisions. Since trucks make up 10 to 15 percent of peak period volume, they are involved in a disproportionately high number of accidents.

5. ALTERNATIVES

5A ALTERNATIVES UNDER CONSIDERATION

This document will discuss four alternatives to be consistent with previous discussion. The four alternatives under consideration are:

- HOV Lanes (Preferred Alternative)
- Mixed Flow Lanes Alternative
- Mixed Flow to Bus/Carpool Conversion ("Take-a-lane")
- No Build Alternative

ALTERNATIVE 1 – HOV LANES (PREFERRED ALTERNATIVE)

The proposed alternative will add HOV lanes in the median from 1.1 mile south of Elk Grove Blvd. (PM 9.7) to US 50/I-5 junction (PM 22.5). The total construction cost for this alternative (Phase 1 and Phase 2) estimated at $115 million for year 2013. Phase 1 is estimated to be 84.4 million and Phase 2 is estimated to be 30.6 million (See Cost Estimate, Attachment 4). This alternative will have the lowest air quality impact and conforms to current air quality standards. Proposed HOV lanes will improve the efficiency of this freeway by moving more people per vehicle, thus reduce the congestion and improve safety by reducing congestion related accidents. Fewer cars to move more people will also improve overall air quality. This alternative is an integral south-north component of the planned HOV system, which will ultimately connect to the HOV lanes on I-80 (east-west). HOV lanes will provide more predictable trip travel times and help reduce the number of trip cycles by integrating the available transit systems in the area. Data collected from State Route 99 HOV lanes show steady increase over the years in HOV lane usage both by cars and commuter buses. Therefore, HOV lanes will provide efficient use of additional capacity enhancement over many years and move more people in fewer vehicles. This preferred alternative will have a smaller carbon footprint compared to mixed flow alternative according to air quality analysis.

The proposed improvements are following:

- Beginning of project to just south of Laguna Blvd.: Construct HOV lanes by widening into the existing median in each direction. Provides an HOV lane in addition to the two existing mixed flow lanes for a total of three lanes in each direction.

- South of Laguna Blvd to Florin Road: Restripe the existing paved median to accommodate the HOV lane addition in each direction. Provides an HOV lane in addition to the three existing mixed flow lanes for a total of four lanes in each direction.

- Florin Road to just south of US 50: Provide an HOV lane in each direction by a combination of reconstructing the existing median and outside shoulders, and in some sections widening the outside shoulder area. Provides an HOV lane in addition to the four existing mixed flow lanes for a total of five lanes in each direction.

- Thrie beam barrier will be placed in the median from the beginning of the project to south of Laguna Blvd (PM 11.8). The existing median thrie beam barrier will be upgraded to concrete barrier (Type 60) from south of Laguna Blvd (PM 11.8) to the north of Morrison Creek Bridge where existing concrete barrier starts under the SAC-5, Rehabilitation project. The remainder of existing concrete barrier

(Type 50) will be upgraded to standard median concrete barrier (Type 60).

View of Interstate 5 looking north from the Pocket Road Interchange towards the Florin Road Interchange.

- The existing median and outside shoulders from south of Florin Road IC to Hood Franklin IC will be replaced with full-depth structural section to accommodate the addition of HOV lanes in the median under SAC-5, Rehab project(See Typical Cross-sections, Attachment 2).

- To avoid impacts to adjacent infrastructure, the width of the median and the roadway will be reduced from Florin Road to Route 50. Inside shoulder widths will vary from 2' to 10', outside shoulder widths will vary from 8' to 10' and lane widths will vary from 11' to 12' in order to avoid right-of-way impacts to adjacent properties. Standard lane and shoulder widths would require acquisition of multiple properties and jeopardize the funding and schedule of this project.

- New aesthetically treated masonry block soundwalls will be constructed at two locations. No Temporary Construction Easements (TCEs) or acquisition of right-of-way is required to construct the new sound walls. The proposed locations shown on the preliminary layout plans were based on noise studies.

- Safety shape barriers will be added to the existing soundwalls within the clear recovery zone at various locations.

- Proposed drainage design will perpetuate the existing drainage patterns. Additional drainage features will be required to

accommodate flow to reduced shoulder widths and temporary drainage.

- The existing Casilada Way Pedestrian Over-Crossing (POC) will be replaced to meet the ADA requirements. Proposed POC will incorporate architectural treatments, which are context sensitive to local architecture. The existing POC will be demolished after the newly built POC is in service. Access to the ramps will be within the vicinity of the existing ramps.

Casilada POC, illustrating profile of pedestrian walkway.

- The following structures will be modified to accommodate the addition of HOV lanes:

TABLE 5.1 – PROPOSED STRUCTURE MODIFICATIONS

Structure Name	Post Mile	Structure Number	Description of Work
Beach Lake	12.93	24-0262L/R	Widen structures in the median
Route 5/160 SOH	15.58	24-0296L/R	Widen structures in the median
Gloria Dr OC	18.19	24-0258	Remove abutment slope
Sutterville Road OC	20.53	24- 0256	Remove abutment slope
Land Park UP	20.82	24-0226	Modify slope paving
Casilada Way POC	19.58	24-0254	Replace Structure (ADA Requirement)

- The following Traffic Operations System (TOS) elements are recommended by traffic study to be constructed by this project or a separate TOS element project to enhance the efficiency of this facility.

Table 5.2 – Traffic Operations System Elements

Element	Project	Location	Post Mile
CCTV	I-5 Bus/Carpool Lanes (EA 3C0000)	Elk Grove Boulevard	10.8
		Laguna Boulevard	12.2
TMS	Sacramento TOS Elements (EA 4C0301)	South of Elk Grove Boulevard	10.0
		South of Laguna Boulevard	11.7
		Beach Lake Bridge	12.7
		North of Beach Lake Bridge	13.2
		South of River Bend Overcrossing	14.5
		Route 160 Overhead	15.5

- The table below shows the existing and proposed ramp meters for the entire length of the project. Most ramp metering will be constructed under previously mentioned project. Remaining will be incorporated into this project as recommended by the traffic study.

TABLE 5.3 – Assumed Number of Lanes at Ramp Meters

Location	Northbound		Southbound	
	Mixed Flow	HOV	Mixed Flow	HOV
Hood Franklin Rd EB	1	0	-	-
Hood Franklin Rd WB	**2**	**1**	-	-
Elk Grove Blvd	**2**	1	-	-
Laguna Blvd	2	1	-	-
Cosumnes River Blvd EB	**1**	**1**	**1**	**1**
Cosumnes River Blvd WB	**2**	**1**	**1**	**1**
Pocket Rd EB	1	1	1	**1**
Pocket Rd WB	2	0	1	**1**
Florin Rd EB	1	0	1	**1**
Florin Rd WB	1	0	1	0
43rd Ave	2	0	n/a	
Seamas Ave	1	1	1	1
Sutterville Rd	1	1	1	1
5th St / W St	1	0	-	-

- An updated Landscape Architecture Assessment Sheet (LAAS) was prepared for this phase to include the aesthetic treatment to the median concrete barrier. Highway planting, erosion control and aesthetic treatment will be included and a 3-year Plant Establishment period will be required and is included in the estimate (See LAAS, Attachment 6). A detailed Storm Water Data Report (SWDR) was prepared for this project to incorporate the Best Management Practices (BMPs) and to identify all the required permits (See SWDR, Attachment 5).

- The waterline owned by the City of Sacramento located under the I-5/SR160 OH separator may need re-location because of potential conflict with footings of proposed structure widening.

- Coordination with State Parks will be required to avoid any impact to existing railroad tracks under the I-5/SR160 OH separator (Bridge # 24-0296).

- The proposed alternative has following non-standard features. John Steele, Geometric Reviewer from HQ Division of Design, approved exceptions to these non-standard mandatory features in the Project Study Report (PSR) phase in 2007.

  - Traveled way lane width

- Inside/Outside shoulder widths
- Median width
- Vertical clearances

All of the above non-standard features are intertwined due to the right-of-way constraints. These non-standard features are applicable north of Florin Road IC where the freeway is flanked between Sacramento River Levee and established residential neighborhoods. These exceptions were based on preliminary survey data and field measurements. Proposed non-standard features will be re-visited in the design phase for additional engineering to verify and improve the widths to the maximum extent possible when more accurate survey data is available.

ALTERNATIVE 2 – MIXED FLOW LANES

Mixed Flow Lanes alternative proposes the same design features but proposes to utilize the additional lanes as mixed flow vehicle lanes. The addition of mixed flow lanes in the median will eliminate the need of sliver widening at Elk Grove Blvd IC that was needed for standard HOV lane drop.

While the construction of the mixed flow lanes on I-5 corridor would help alleviate some of the congestion issues, the SACOG Regional Metropolitan Transportation Plans identifies HOV lanes as having both superior air quality benefits and superior mobility benefits. The HOV System Planning Study for the Sacramento Metropolitan Area concluded that HOV lanes of two or more passengers per vehicle provided a better solution to traffic congestion and air pollution than if mixed flow lanes were added. In addition, mixed flow lanes do not promote carpooling; rather, this alternative could actually encourage more commuters to drive alone. Therefore, this alternative is not the most prudent and a viable option.

ALTERNATIVE 3– MIXED FLOW TO HOV LANE CONVERSION ("TAKE-A-LANE")

The Bus/Carpool Conversion or "take-a-lane" Alternative (Alternative 3) converts an existing lane for HOV use. Under this alternative, the existing inside shoulder lane (the leftmost lane) would be re-striped and signed to prohibit non-HOV traffic during peak periods.

This alternative was evaluated in Air Quality Analysis Report, Traffic Report, and the Travel Demand Forecast Report. The "take-a-lane" alternative would significantly *reduce* mixed flow lane capacity.

As shown by Table 5.4, in the northbound (AM) direction, the Bus/Carpool Conversion Alternative would serve less people than any of the other build alternatives and at much slower speeds. This alternative would serve fewer vehicles than under existing conditions. The average speed for all vehicles would be considerably slower, including high-occupancy vehicles. The same would also be

true for the southbound (PM) direction, with fewer vehicles and persons served than any of the other build alternatives, and with speeds only slightly higher than the No Build Alternative.

TABLE 5.4 – PEAK-PERIOD NETWORK SUMMARY FOR 2033 CONDITIONS

Direction & Peak Period	Alternative	Vehicles Served	Persons Served1	Average Speed (All)2	Average Speed (HOV)2
Northbound AM Peak	Existing (2005)	49,300	58,900	29.2	28.7
	No Build	60,000	78,700	14.7	18.1
	Mixed Flow	65,100	84,300	18.5	21.7
	Bus/Carpool Addition	64,900	91,300	17.3	23.3
	Bus/Carpool Conversion	41,500	59,800	8.7	11.5
Southbound PM Peak	Existing (2005)	56,000	69,000	38.6	37.9
	No Build	65,000	86,900	23.4	25.9
	Mixed Flow	78,700	99,000	39.0	41.2
	Bus/Carpool Addition	76,000	103,400	32.2	41.1
	Bus/Carpool Conversion	59,200	77,900	22.1	29.6

Notes: 1. Based on traffic counts, HOVs, trucks, and other vehicles are assumed to have vehicle occupancies of 2.35, 1.2, and 1.0 persons per vehicle, respectively.

Alternative 3 includes the Traffic Operations System (TOS) improvements of Alternative 1 (close circuit television, highway advisory radio, changeable message sign, ramp metering) and the replaced Casilada POC , but not roadway widening, bridge and drainage improvements, or utility relocations. No additional right of way is required. The total estimated cost of Alternative 3 is approximately $22 million.

For more information on this alternative, please see sections 2.5 and 2.12 of Traffic Report.

ALTERNATIVE 4 – NO BUILD ALTERNATIVE

This alternative is not considered to be a viable alternative due to the traffic congestion along this portion of I-5. However, other planned projects in this corridor will be constructed, contributing higher volumes of traffic to this segment. In particular, the I-5/Cosumnes River Boulevard IC project will add significant volume of traffic to AM peak-hour, thus worsening the congestion in the northbound direction. Doing nothing will not relieve congestion, therefore, not a viable option.

5B – Other Options Evaluated But Infeasible

Ultimate Standard Corridor

A study was conducted to determine the feasibility of constructing the HOV lanes while maintaining a standard width roadway with metered northbound and southbound on ramps. This option would require broad ranging impacts to existing facilities north of Florin Rd. including soundwall relocation, impacting vertical clearances to local roads, retaining wall construction, and potential impacts to parallel local roads, structure replacement and abutment widening, ramp reconfiguration, landscape re-establishment and increased disturbed soil areas. It was decided that this option would not be viable due to the significant and permanent community impacts, landscape impacts, prohibitive cost and vertical clearance reduction for local roads crossing under the mainline structures. As a result of these impacts, it was collectively decided by the project development team not to pursue widening to the outside as an alternative.

HOT Lanes

High-occupancy toll (HOT) lanes allow single-occupant vehicles to use the bus/carpool lane for a fee that is based on the value of travel time savings and on the amount of congestion in the mixed-flow lanes (HOVs can still use the lane for free). An analysis of the proposed US-50 bus/carpool lanes in Sacramento concluded that HOT lanes would be infeasible (*US-50 High Occupancy Toll (HOT) Lane Strategy Evaluation*, Dowling Associates, 2005). As conceived in that study, the HOT lane would be a barrier or buffer-separated facility with limited access points so that toll collection and enforcement could be performed. The limited access points would prevent high occupancy vehicles from using the lane as easily as compared to a contiguous bus/carpool lane. The barrier-separated design may have right-of-way impacts, would have higher construction costs, and may have higher accident rates.

Other states have recently started HOT lane facilities that do not have barrier separation. In Utah, stickers have been sold to single-occupant drivers to allow access to the I-15 HOV lane. In Washington State, the State Route 167 HOT lane uses electronic tolling for a painted buffer-separated facility, where the width of the buffer is effectively zero feet. Advances in electronic tolling technology may allow HOT lanes to operate on contiguous lane facilities in the future. Caltrans provided funding in 2010 for a feasibility study (co-sponsored by SACOG and the Placer County Transportation Planning Agency) of HOT lanes on the I-80 corridor between I-5 in Sacramento County and State Route (SR) 65 in Placer County. The study was presented to the Agency in July 2010. Based on the policy guidance and technical information, the study concluded that the revenues generated would unlikely be enough by 2035 to both construct and operate a HOT lane on the I-80 corridor. The Agency voted down HOT lanes along I-80. A copy of the report is located on the SACOG website at www.sacog.org/calendar/2010/10/07/transportation/.

Based on these studies, the Project Development Team determined that the HOT lane option for this I-5 HOV lane project was not feasible.

TRANSIT ONLY ALTERNATIVE

Although a "transit only" alternative would meet some of the project objectives, such an alternative would not be consistent with the goals of SACOG's current MTP. The proposed project is part of a larger network of existing and planned bus/carpool or high occupancy vehicle lanes in the Sacramento region. A map of existing bus/carpool lanes is available at www.dot.ca.gov/hq/traffops/systemops/hov/HOV_Map_0609.pdf.
A list of planned bus/carpool lane projects in the area are included in the MTP on the SACOG website (www.sacog.org/mtp/). The MTP 2035 acknowledges the need for highway expansion to keep pace with the region's growing population and increasingly congested roadway system, noting:

> With more than a million empty seats in autos, but fewer than 10,000 empty seats in buses every morning and afternoon, carpools clearly have a place in the picture. Regardless, a large increase in the amount of travel by 2035 means that, even if transit use could be increased tenfold and bicycle/walk trips tripled, the region still would face a large increase in travel by auto. At least in some places the road system must be expanded too, and if planned comprehensively, road expansions can improve bicycle and bus circulation (SACOG 2008a).

The MTP 2035, and the preferred Blueprint scenario on which it is based, focuses upon providing a balance of transportation investments in order to provide choices and alternatives for travelers. As Table 1-5.2 shows, the proposed project is expected to improve travel time for high occupancy vehicles including carpools and commuter buses, and is expected to have a positive increase in commuter transit usage. Previous HOV lane projects have shown a positive correspondence between carpooling and bus ridership after implementation (Caltrans 2008). Information on HOV lanes can be found at www.dot.ca.gov/hq/traffops/systemops/hov/hov_sys/index.html.

The Transit Only Alternative was considered because of the regional air quality benefits. It was rejected and not brought forth as a legitimate alternative because the microsimulation traffic model showed it could not compete with other alternatives (even in a low growth scenario).

6. Other Considerations

6A – Hazardous Waste

An Initial Site Assessment (ISA) for Hazardous Waste was prepared for the PSR. A review of the project site and investigations done for a recent I-5, Rehabilitation Project within the project limits reveal that the potential for contamination will be minimal in this area. It is anticipated that the excavated material could be used as embankment. Although anticipated levels of contamination are minimal, the potential for hazardous waste still exists and will need to be addressed in the Plans, Specifications and Estimate (PS&E) phase of the project as follows:

- Impacted bridges will need to be surveyed for asbestos and lead paint.
- Yellow traffic stripe grindings will need to be disposed of at a Class 1 disposal facility.
- A Preliminary Site Investigation (PSI) will need to be performed during the PS&E phase to determine if aerially deposited lead (ADL) is present in the soil for the areas not tested under I-5, Rehabilitation Project. If the concentration of lead in the soil exceeds the allowed threshold, the soil will need to be hauled to an appropriate disposal facility.
- If the need for further studies is revealed during the PSI, a Site Investigation (SI) will also be performed to do a more in depth analysis within the project limits.

6B - Transportation Management Plan (TMP)

A TMP is required for this project. An updated TMP Data Sheet was prepared for PA&ED phase (See TMP Data Sheet, Attachment 8). Following TMP requirements will need to be incorporated in to the project design during PS&E phase.

- Due to the demolition of the existing Pedestrian Overcrossing at PM 19.58, a freeway crossover will be required. A median crossover will allow structure removal to take place during weekend night work. It is anticipated that at most a one-day traffic diversion will be needed in each direction to accomplish the demolition. The median crossovers will also be utilized to erect the falsework for the proposed POC. Table below shows the traffic volumes at all the interchanges within the project limits.

TABLE 6.1 - TRAFFIC VOLUMES
(2006 Traffic Volumes on California State Highways)

Location Description	Type of Roadway	Peak-Hour (both directions combined)	AADT
03-SAC-05-PM 8.49 Hood-Franklin Road	Multilane	6,800 vph	60,000 vpd
03-SAC-05-PM 10.83 Elk Grove Boulevard	Multilane	6,500 vph	74,000 vpd
03-SAC-05-PM 12.04 Laguna Boulevard	Multilane	9,300 vph	103,000 vpd
03-SAC-05-PM 16.35 Pocket/Meadowview Roads	Multilane	9,700 vph	108,000 vpd
03-SAC-05-PM 17.19 Sacramento, Florin Road	Multilane	11,200 vph	125,000 vpd
03-SAC-05-PM 18.65 Sacramento, 43rd Avenue	Multilane	11,900 vph	147,000 vpd
03-SAC-05-PM 19.30 Sacramento, Seamas Avenue	Multilane	12,000 vph	150,000 vpd
03-SAC-05-PM 20.53 Sacramento, Sutterville Road	Multilane	13,900 vph	153,000 vpd
03-SAC-05-PM 22.57 Sacramento, Jct. Rte. 50	Multilane	17,100 vph	185,000 vpd

- Truck traffic on this section of I-5 averages 11.4% of the total ADDT.
- Staging and traffic handling plans will be required.
- Detour Plans will be required for ramp closures.
- No two consecutive on-ramps or off-ramps will be closed at the same time.
- Median crossover for pedestrian bridge demolition will be allowed as weekend night work.
- Median crossovers will be required for the removal and construction of the POC and full-width sign structures.
- No lane closures will be allowed during peak hours on weekdays.
- Lane closures for NB and SB I-5 will be allowed for night work. All lanes will be re-opened to traffic by 5:00 AM.
- Median work should be done behind K-rail barrier with traffic screens.

- For traffic control on city streets, flaggers and advance flaggers are recommended in areas where there is insufficient sight distance.
- Coordination of projects within and nearby the project limits will be required to avoid conflicts.
- Coordination with the City of Sacramento and City of Elk Grove may be needed for any traffic impact concerns within the vicinity.
- No lane closures will be allowed on legal holidays, the day before and after most legal holidays, and during Special Days.
- All lanes will remain open at all times when construction operations are not actively in progress.
- Portable changeable message signs will be required in the direction of traffic during construction for each lane or shoulder closure.
- Lane closure charts will be developed prior to P&E.

6C - ENVIRONMENTAL DOCUMENTATION

Based on current information, the environmental document is an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) and a Finding of No Significant Impact (FONSI) pursuant to the National Environmental Policy Act (NEPA). Copies of the Final EIR/EA are located at the Caltrans District 03 Sacramento office (2370 Gateway Oaks Drive, Suite 150, Sacramento, CA 95833) and available on the project website (www.dot.ca.gov/dist3/Projects/00165/prjindex.htm).

This project has the potential to effect biological resources within the proposed project area. Mitigation cost for potential environmental impacts identified in this study area are estimated to be $753,207 (See Cost Estimate, Attachment 4). Riparian impacts will likely be compensated through the purchase of credits at an approved mitigation bank, if available, or through the use of existing credits that are available to Caltrans at the Beach Lake Mitigation Bank. Impacts to Giant Garter Snake (GGS) habitat will likely be mitigated through the purchase of credits at a US Fish and Wildlife Service (USFWS) approved mitigation bank.

The following permits and approvals will be required for the proposed project:

- U. S. Army Corps of Engineers (USACE) 404

- Regional Water Quality Control Board (RWQCB) 401 permit
- Central Valley Flood Protection Board (CVFPB) Encroachment Permit
- California Department of Fish and Game (CDFG) 1602
- California Department of Fish and Game 2081.1 Consistency Determination
- State Water Resources Control Board (SWRQB)—National Pollutant Discharge Elimination System Permit (NPDES)
- USFWS formal consultation under Section 7 of the Federal Endangered Species Act
- NOAA Fisheries formal consultation under Section 7 of the Federal Endangered Species Act and for potential impacts to Essential Fish Habitat (EFH) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act

All areas of riparian habitat, GGS habitat, wetlands and other waters of the U.S., and native oak trees and elderberry bushes that are to remain within and adjacent to the project limits will be designated as Environmentally Sensitive Areas (ESA) and will be shown on the project plans, fenced, and signed to prevent inadvertent damage. A qualified biologist will determine the exact placement of the fencing.

Vegetation and tree removal is required for this project. To eliminate the risk of birds nesting within the Environmental Study Limits (ESL) close to the time of construction, it is recommended that trees and other vegetation be cut down to ground level the year before. Preconstruction clearing and grubbing is also recommended. If trees and other vegetation are not removed the year before construction, further preconstruction surveys for native and migratory birds nesting in trees will be required. Tree and vegetation removal must occur outside the nesting season (February 16 to August 31).

Work within 200 feet of GGS habitat will likely be limited to May 1 through October 1. Preconstruction surveys will be required for bats, and the use of exclusionary devices may be required. Preconstruction surveys for swallows will also be required and the use of exclusionary devices or nest prevention/nest removal measures may be required.

The railroad tracks owned by State Parks has been identified as eligible for listing on the National Register of Historic Places, as have the "Victory Trees" that line SR 160. These abandoned tracks cross the freeway under the I-5/SR 160 OH Separator. This area will be marked on the plans to avoid any disturbance during construction.

6D - Storm Water Management Plan (SWMP)

The Caltrans' Storm Water Management Plan (SWMP) requires this project to comply with Caltrans' statewide National Pollution Discharge Elimination System (NPDES) permit. Approved treatment Best Management Practices shall be considered as a part of this project, per the May 2005 revision of the Storm Water Planning and Design Guidelines.

The Central Valley Regional Water Quality Control Board has jurisdiction within the project limits. A portion of this project is within the City of Sacramento Municipal Separate Storm Sewer System (MS4) permit area.

A Storm Water Pollution Prevention Plan (SWPPP) shall be submitted by the contractor and reviewed and approved by Caltrans Construction.

A Storm Water Data Report (SWDR) has been completed. Approximately 93 acres of existing ground cover will be affected by this project. An additional 38 acres of impermeable surface will be added with this project (See SWDR, Attachment 5).

6E - Right of Way

Separate Right of Way Data Sheets (RWDS) for Phase 1 and Phase 2 were prepared for this project (See RWDS, Attachment 11). There are two TCEs necessary to facilitate construction of this project located at the Beach Lake Bridge and the I-5/160 SOH Bridge.

There are utilities within the project limits but it is unknown at this time whether their relocation will be necessary with the exception of call boxes within the project limits owned by SACOG.

There are three structures at two locations within the project limits possibly involving railroad rights of way. The I-5/160 SOH (Br. No. 24-0296 R/L) will be widened to close the gap between them. The Land Park Underpass (Br. No. 24-0226) abutment fill will be modified to accommodate the increased roadway width by slope paving and placement of barrier to protect the abutment of the bridge. Although it appears that the tracks are not in use, there are plans for future limited use. Contact should be maintained with the R/W Railroad Coordinator through project development to address any issues that may arise.

7. Other Considerations (Viable Alternative)

7A – Value Analysis

Value Analysis studies as mandated by federal law (Title 23 USC 106) and DP-07

and DD-92 for all projects on the federal-aid system (Interstate and the National Highway System) with a total project cost (right-of-way, construction and support) of $25 million or higher were performed for this project. The recommended improvements include the overlay of seven structures with polyester. The acceptance of this improvement will greatly increase the useful life of the structures and reduce overall maintenance costs while improving mainline operations and reducing noise by providing a smoother ride and eliminating the sag in the bridge surfaces. The accepted improvement is discussed below. The suggested improvement number, title, and cost savings (or increase) and performance validated by the Project Design Team after the VA study are indicated below. The rejected improvements, and their respective reasons for rejection, can be found following the descriptions of accepted improvements.

Improvement Number and Title	Initial Cost Savings (or increase)	Performance Change
4.0 Overlay All Bridges with Polyester	($2,623,000)	+13%

The original concept did not include a polyester overlay of the bridge deck structures. The improvement concept is to install a .75-inch polyester overlay on all bridge structures (a total of seven). In validating the scope of this project, the VA team found that a final overlay was not being anticipated. Therefore, we have recommended a complete asphalt overlay of the project (VA Alternative 1.0), which was conditionally accepted pending funding alignment. In conjunction with this overlay, the polyester should be applied to the bridges. Most of the bridges on this project are in need of rehabilitation. By doing so the useful life of the deck is prolonged for several years.

7A.1 – Performance Attributes

- Mainline Operations
- Local Operations
- Maintainability
- Environmental Impacts
- Construction Impacts
- Project Schedule
- Phaseability

7A.2 – Accepted VA Improvements

- 4.0 Overlay All Bridges With Polyester
- *D-3 I-5-Hov Lane South of Elk Grove VA Study Summary Report 1.4*

Table 7.1 – Net Effect of Accepted VA Alternatives

Accepted Improvement	Initial Cost Savings	Present Value Subsequent Cost	Present Value Highway User Cost	Performance Change	Value Change
4.0	($2,623,000)	$0	$0	+13%	+11%

7A.3 – CONDITIONALLY ACCEPTED VA IMPROVEMENTS

Improvement Number and Title	Initial Cost Savings (or increase)	Performance Change
1.0 Overlay Entire Roadway	$3,876,000	+13%

The original concept is to install the HOV lanes and auxiliary lanes and leave the existing lanes in their present condition. It is proposed to overlay the entire roadway with 1 inch of rubberized AC Type O and 4 inches of hot mix asphalt (HMA). This overlay project was originally intended to go to construction earlier, but was deleted from that active contract (03-3A0104). This proposal requires further study, as the rehabilitation project in which this overlay is presently included and it may have to be constructed before funding is available for this project.

7A.4 – REJECTED VA ALTERNATIVES – Reason for Rejection

2.0 From the Vicinity of River Bend Road South, Eliminate the Southbound HOV Lane and Share a Single Northbound HOV Lane Based Upon Peak Traffic, Station 160+00 to Station 440+00

This alternative was rejected as too experimental. Operating costs for reversal procedures, including gates and visual inspection of traffic evacuation, were also cited as too high to justify this alternative.

3.0 Use Aggregate Instead of Asphalt for Maintenance Access Roadway behind the Sound walls

This alternative was rejected because it was concluded that Caltrans Maintenance would not accept this option.

5.1 Leave POC in Place; Take No Action

This alternative was rejected because it does not address the ADA compliance issues. It was believed that this approach had the potential to cause litigation and political issues.

5.2 Close and Demolish POC; Provide Signage Directing Pedestrians to the Seamas Avenue Undercrossing for Pedestrian Crossing

This alternative was rejected due to the uncontrolled nature of the access for school children needing to go to school across the freeway on the east side.

5.3 Leave Existing POC; Provide Signage Directing Pedestrians to the Seamas Avenue Undercrossing for Pedestrian Crossing

This alternative was rejected because it does not provide equal access for people with disabilities.

7B – Life Cycle Cost Analysis

The Life Cycle Cost Analysis (LCCA) was conducted for the SAC-5, Rehabilitation Project to select the most prudent structural section. One of the most important elements of LCCA was to choose the structural section that would not require reconstruction of paved median which will be utilized for HOV lane addition. Per Caltrans policy, LCCA will be conducted with consultation from District Materials Engineer to choose the most feasible structural section design for remaining widening needed to accommodate the HOV lanes

7C – Stage Construction

Stage construction plans will be required to construct the viable alternative. Median crossovers in the tangent sections will be designed to shift the traffic for PED Overcrossing demolition. TMP allows the use of K-rail barrier for the median reconstruction and outside widening. Existing lane lines will be re-striped to accommodate the k-rail in the median and for the outside widening consecutively. The bridge widening at SR160 and Morrison Creek will be accomplished in two construction seasons. A temporary stream crossing will be constructed at Morrison Creek to widen the bridge. The viable alternative will require an estimated 360 working days.

8. Programming

8A - Funding

The Measure A half-cent sales tax approved by the voters in Sacramento County included funding for a portion of the Interstate 5 (I-5) and Interstate (I-80) Bus/Carpool lanes projects. Subsequently, the Sacramento Transportation Authority (STA) agreed to entirely fund the I-5 project with Measure A funding after

alternative financial means to the use of Measure A funds were used to fully fund the I-80 Bus/Carpool lanes "Across the Top" project. However, since the latest STA projections indicate that most of the funding for the I-5 project will not be available until approximately 2030, Caltrans will seek opportunities to advance construction of the project by, including but not limited to, pursuing federal, State, and/or local funds. This may include some sort of future reimbursement from Measure A funds, when they are available.

8B - SCHEDULE AND CAPITAL SUPPORT RESOURCES

The schedule and required Capital Outlay Support resources assume that Caltrans staff will perform the project development functions. Potential funding sources include the following:

1. Regional Surface Transportation Program (RSTP)
2. Congestion Mitigation and Air Quality Improvement Program (CMAQ)
3. Regional Improvement Program (RTIP) – part of the State Transportation Improvement Program (STIP)
4. I-5 Sub-regional Mitigation Working Group and several Sacramento area jurisdictions are working to develop a sub-regional transportation impact development fee program for the Interstate 5 corridor. The fee is intended to help mitigate local development impacts to the State Highway System. If this fee program is enacted, this project may receive funds from the program

The construction capital cost estimate for this project is currently $111 M. During PS&E phase, the PDT will continue to work with functional units to fulfill project need, to keep all improvements within project scope and to prioritize work in order to keep total project cost within allocated amount.

TABLE 8.1 – - PROGRAMMING SHEET

PROGRAMMING SHEET

06/20/2013

EFIS ID: 0300000454 EA:03-3C000 County: SAC Route: 005 PostMile: 9.70/22.50

Project Manager: JORDAN, SAMUEL T PM Assistant: ARK, MANPREET K Project Nickname: Measure A HOV I-5, South of Sacramento
Project Description - Long: IN AND NEAR SACRAMENTO, FROM 1.1 MILE SOUTH OF ELK GROVE BLVD OVERCROSSING #24-277 TO ROUTE 50
Work Description - Long: CONST HOV LANES
PPNO: 5813 Program: cmia RTP: No Funding Candidate: No PROGRAM YR: 2015 Working Days:
Open for Time: Yes Subprogram: Corridor Mobility Improvement Account CT Status: APL RMP: RMP Date:
10 Yr SHOPP: No AADD: No Dist Category: CMIA FED Aid Eligible: 12/30/1899 12:00:00AM

MS	MS Description	MS Date	
M000	ID NEED	08/14/2001	(A)
M010	APPROVE PID	02/02/2007	(A)
M015	PROG PROJ	11/01/2008	(A)
M020	BEGIN ENVIRO	07/01/2006	(A)
M040	BEGIN PROJ	07/01/2006	(A)
M120	CIRC DPR & DED EXT	01/11/2013	(A)
M200	PA & ED	06/15/2013	(T)
M800	END PROJ	07/01/2014	(T)

Capital Cost Estimates

	Amount $k	EST Date
Roadway	98,100	03/06/13
Structures	15,100	03/06/13
Const Total	113,200	
ROW	1,842	06/19/13
Total	115,042	

Env Doc: CE (CEQA),

Funding Info ($k)

Fund Source	PA&ED	PS&E	ROW	CON	ROW Cap	CON CAP
2010400.000	1,446	0	0	0	0	0
2010400.142	201	0	0	0	0	0
2010400.210	865	0	0	0	0	0
2030010.820	3,783	0	0	0	0	0
Grand Total:	6,295	0	0	0	0	0

Capital Cost Estimates

	0
CC Escalation %:	3.50%
CC Escalated $:	113,200
ROW CAPITAL:	1,842
TOTAL:	115,042

PROJECT SUPPORT COSTS

Phase / Escalation Rate	PRIOR ACT $	2013 ETC	2014 (1.50%)	2015 (1.50%)	2016 (1.50%)	2017 (1.50%)	Future (1.50%)	Total	Sup/Cap
0	4,765	0	0	0	0	0	0	4,765	4.14%
1	2	0	0	0	0	0	0	2	0.00%
2	0	0	0	0	0	0	0	0	0.00%
3	0	0	0	0	0	0	0	0	0.00%
						TOTAL SUPPORT COSTS		4,767	4.14%
						TOTAL PROJECT COSTS		119,809	

PROJECT SUPPORT PYs

Division		PRIOR ACT PYs	2013 ETC PYs	2014 ETC PYs	2015 ETC PYs	2016 ETC PYs	2017 ETC PYs	Future ETC PYs	Total PYs
		47.96	0.00	0.00	0.00	0.00	0.00	0.00	47.96
	TOTALS:	47.96	0.00	0.00	0.00	0.00	0.00	0.00	47.96
03	ADMN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03	CONS	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02
03	ENVM	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.55
03	ESRV	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
03	PPM	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.11
03	PRJD	1.24	0.00	0.00	0.00	0.00	0.00	0.00	1.24
03	RWLS	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.07
03	SURV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03	TPLN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03	TROP	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.06
03	**TOTALS:**	2.05	0.00	0.00	0.00	0.00	0.00	0.00	2.05
56	MTCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	**TOTALS:**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	GS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	METS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	PPM	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
59	SCON	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	SDSN	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
59	SP&I	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
59	**TOTALS:**	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02
PROJECT TOTALS:		**50.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**50.03**

9. PROJECT PERSONNEL

Project Manager	Sam Jordan	(530) 740-4920
Design Engineer	Nasar Formoli	(530) 741-4462
Project Engineer	Jerry Cagle	(530) 741-4534
TMP Manager	Arshad Iqbal	(530) 741-5411
TMC Manager	Paul Wilkinson	(916) 859-7978
Traffic Operations	Jim Calkins	(916) 859-7940
Environmental Coordinator	Ken Lastufka	(916) 274-0586
Environmental Branch Chief	Kendall Schinke	(916) 274-0610
Right of Way	Lee Ann Lambirth	(530) 741-5140
Landscape Architecture	T Chris Johnson	(530) 741-4436
Hydraulics Engineer	Dennis Jagoda	(530) 741-4517
Project Engineer (Structures)	Eric Burgeson	(916) 227-8446
Engineering Services	John Cosmez	(916) 227-8434
Construction	Kim Noonan	(916) 263-4913
Railroad Coordinator	Tadj Ratajczak	(530) 741-4557

10. ATTACHMENTS

1. LOCATION MAP
2. TYPICAL CROSS SECTIONS
3. LAYOUT SHEETS
4. COST ESTIMATE
5. STORM WATER DATA REPORT
6. LANDSCAPE ARCHITECTURE ASSESSMENT SHEET
7. TRAFFIC REPORT
8. TMP DATA SHEET
9. TRAFFIC DATA SHEET
10. FINAL ENVIRONMENTAL DOCUMENT APPROVAL
11. RIGHT OF WAY DATA SHEET
12. ADVANCED PLANNING STUDY (STRUCTURES)