

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

To

**Request Approval of a Locally Funded Project
to Proceed to the Project Approval
and Environmental Document (PA&ED) Phase**

And

Authorize Preparation of a Cooperative Agreement

On Route Interstate 80

Between West of Red Top Road (Post Mile 11.2)

And East of Interstate 505 (Post Mile 29.3)

APPROVAL RECOMMENDED:



JANET ADAMS, SOLANO TRANSPORTATION AUTHORITY
PROJECT SPONSOR, Accepts Risks Identified in
This PSR-PDS and Attached Risk Register



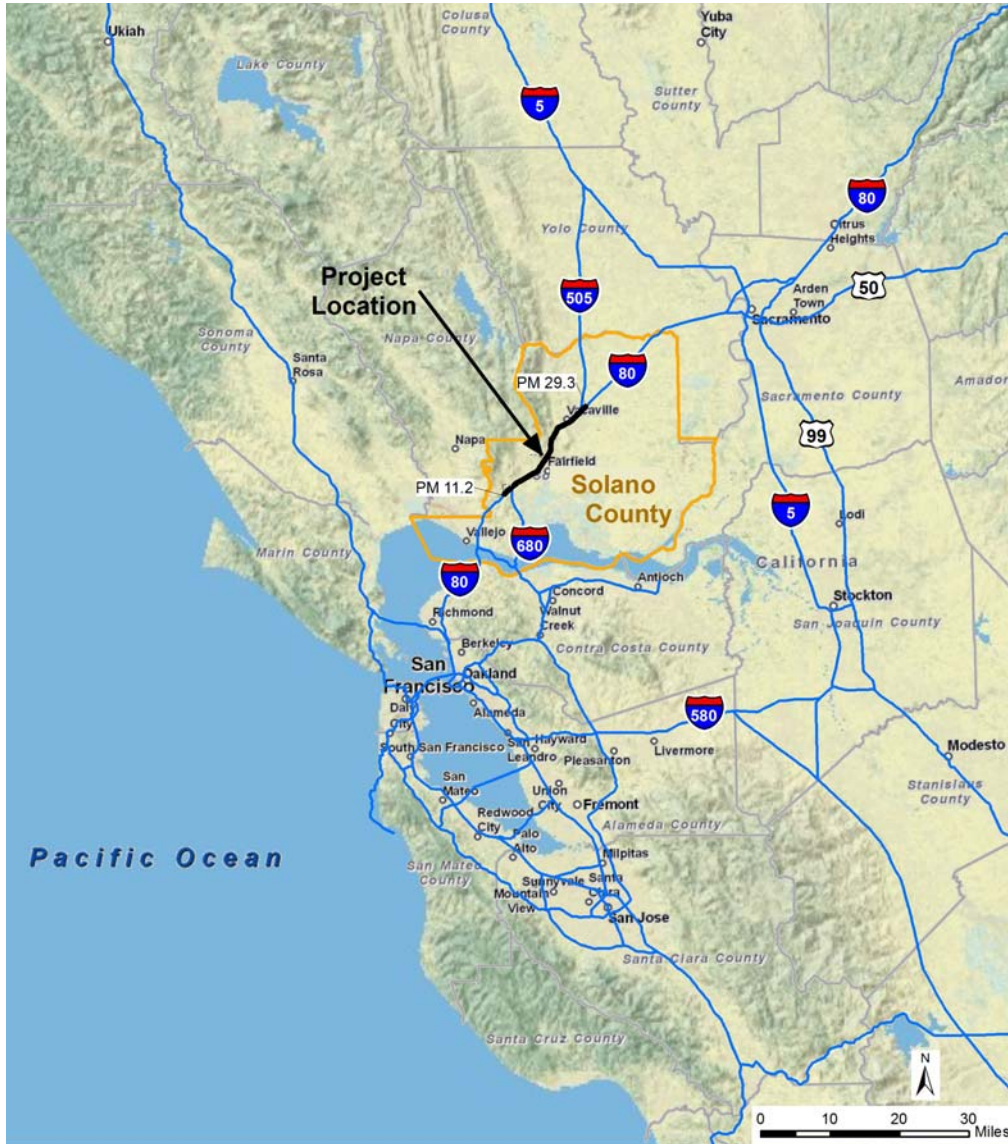
NICOLAS ENDRAWOS, CALTRANS PROJECT MANAGER

APPROVED:



BIJAN SARTIPI, DISTRICT DIRECTOR (or delegated authority)

4/4/12
DATE



Vicinity Map

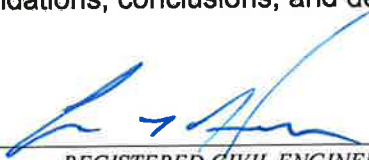
On Route Interstate 80

Between West of Red Top Road (Post Mile 11.2)

And East of Interstate 505 (Post Mile 29.3)

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


REGISTERED CIVIL ENGINEER

3/27/12
DATE



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1. INTRODUCTION

The Solano County Transportation Authority (STA) and Metropolitan Transportation Commission (MTC), in cooperation with the California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) propose to provide express lanes in both westbound (WB) and eastbound (EB) directions on Interstate 80 (I-80) from west of Red Top Road to east of Interstate 505 (I-505), within Solano County with portions in the cities of Fairfield and Vacaville. The project would construct approximately eighteen (18) miles of express lanes to the I-80 corridor through conversion of existing HOV lanes, and widening for new express lanes.

I-80 is a major commuter route for people in Solano, Contra Costa, and Alameda counties to jobs in San Francisco and Oakland. Within the project limits, I-80 is heavily traveled by commuters living in Solano County, interregional traffic to and from the Sacramento area, and recreational travelers to and from the Lake Tahoe area in Nevada on the weekend. This portion of I-80 is also a major freight and goods movement corridor between the Port of Oakland and points east, and to commerce centers from the Canadian border to the Mexican border via I-505 and Interstate 5 (I-5). Heavy traffic volumes are experienced on both weekdays and weekends resulting in delays and congestion throughout the I-80 corridor.

The project is consistent with MTC's Transportation 2035 Plan for the San Francisco Bay Area, adopted in April 2009 and is an element of MTC's 533-mile "backbone" network for express lanes in the San Francisco Bay Area as described in the programmatic Project Study Report (PSR) to Support the Bay Area Express Lane Backbone Network approved in September 2011. The project would further implement the overall plan for a regional express lanes network, and would begin implementation of express lanes on I-80 to improve throughput, reduce delay and relieve congestion.

See Attachment C, Preliminary Cost Estimate for specific work items included in this project.

Project Limits (Dist., Co., Rte., PM)	District 04; Solano County; I-80; PM 11.2 / 29.3
Number of Alternatives:	2 Alternatives
Capital Outlay Support for PA&ED	\$8 to \$12 million
Capital Construction Cost Range	\$146 million to \$990 million
Right of Way Cost Range	\$4.5 million to \$75 million
Funding Source:	MTC Enterprise Funds / Regional Measure 2
Type of Facility (conventional, expressway, freeway):	Freeway: express lanes widening and/or HOV lane conversion to existing I-80
Number of Structures:	31 structures, sound walls at various locations
Anticipated Environmental Determination or Document:	EIR/EIS PA&ED – March 2014
Legal Description	In Solano County in Fairfield and Vacaville from 0.2 miles west of Red Top Road Undercrossing to 0.9 miles east of E80-N505 Connector Separation
Approximate Schedule	PA&ED – Mar 2014, Construction - 2015
Project Category	3

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

2. BACKGROUND

A. Existing Facility

Within the project study limits, I-80 is an eight to twelve lane east-west freeway passing through Solano County and the cities of Fairfield and Vacaville connecting the San Francisco Bay Area and Port of Oakland to the Central Valley, as well as the eastern United States. The existing facility is described further under the “West Segment” heading in which HOV conversion to express lanes is proposed, and under the “East Segment” heading in which widening for new express lanes is proposed. A project location map showing each segment is shown on Figure 1.

WEST SEGMENT: the limits of this segment are from west of Red Top Road to Air Base Parkway. This segment is approximately eight miles long and is located within Solano County and the City of Fairfield. Within this segment, I-80 has five general purpose lanes and one HOV lane in each direction between Interstate 680 (I-680) and State Route 12 (SR 12) East, and the remainder of this segment is four general purpose lanes plus one HOV lane in each direction. The general purpose lanes vary from 10.8 to 11.8-feet wide. The HOV lane is from 11.8 to 14-feet wide. The outside shoulder varies from 6.5 feet to 9.8-feet, and the inside shoulder varies from 1-foot to 9.8-feet. The eastbound and westbound lanes are separated by a concrete median barrier except for the segment of thrie-beam barrier from approximately PM 14.79 to PM 15.12. The median ranges from 5-feet to 22-feet. Both the eastbound and westbound I-80 Cordelia Commercial Vehicle Enforcement facilities (CVEF) are within the West Segment on I-80, located between the I-680 Interchange and the SR-12 East Interchange. In addition, several auxiliary lanes and interchanges, including the I-80/I-680/ and I-80/SR-12 (East and West) interchange, are located within this segment as described in Tables 1 and 2 below.

Table 1 – West Segment Interchange Locations

PM	Interchange	No. of Ramps			
		WB-On	WB-Off	EB-On	EB-Off
11.39	Red Top Road	1	1	1	1
11.98	I-80/ SR 12 West		1	1	
12.74	Green Valley Road	1		1	1
12.84	I-80/ I-680	1	1	1	1
13.49	Suisun Valley Road		1	1	1
15.81	I-80/ SR 12 East	1			1
16.17	Suisun Parkway	1	1	1	1
17.20	West Texas Street	1	1	2	1
17.92	Travis Boulevard	2	1	1	2
19.18	Air Base Parkway	1	2	1	1

Table 2 – West Segment Auxiliary Lanes Locations

Direction	Auxiliary Lane
EB	SR 12 West On-Ramp to Green Valley Road Off-Ramp
EB	I-680 North On-Ramp to SR 12 East Off-Ramp
EB	Suisun Parkway On-Ramp to Auto Mall Parkway Off-Ramp
EB	Beck Avenue On-Ramp to Travis Blvd Off-Ramp
EB	Air Base Parkway Off-Ramp (1200-feet long)
WB	Air Base Parkway On-Ramp (1500-feet long)
WB	Travis Blvd On-Ramp to Oliver Road Off-Ramp
WB	SR 12 East On-Ramp to I-680 South Off-Ramp

EAST SEGMENT: the limits are from Air Base Parkway to east of I-505. This segment is approximately ten miles long and is located within Solano County and the cities of Fairfield and Vacaville. I-80 has four general purpose lanes in each direction. The general purpose lanes are 12-feet wide, the outside shoulder varies from 8-feet to 10-feet, and the inside shoulder varies from 4-feet to 10-feet. The median width varies from 36-feet to 99-feet with temporary railing (Type-K) and thrie-beam barrier in the areas of grade differential between the eastbound and westbound lanes. The barriers are placed at the edge of the inside shoulder in both directions. Several interchanges and auxiliary lanes are located within the segment as described in Table 3 and 4 below.

Table 3 – East Segment Interchange Locations

PM	Interchange	No. of Ramps			
		WB-On	WB-Off	EB-On	EB-Off
20.93	North Texas St. / Manual Campus Parkway	1	1	1	1
23.13	Cherry Glen Road / Lagoon Valley Rd	1	1	1	1
23.96	Rivera Road	1	2	1	1
25.31	Alamo Drive	1	1	1	1
26.00	Davis Street	1	1	1	1
26.46	Mason Street	1	1	1	1
27.20	Allison Drive	1	1	1	1
28.01	Nut Tree Road			1	
28.15	I-80/ I-505 North	1	1	2	1

Table 4 – East Segment Auxiliary Lanes Locations

Direction	Auxiliary Lane
EB	Allison Street On-Ramp to Nut Tree Blvd Off-Ramp
WB	Alamo Street On-Ramp to Davis Street Off-Ramp

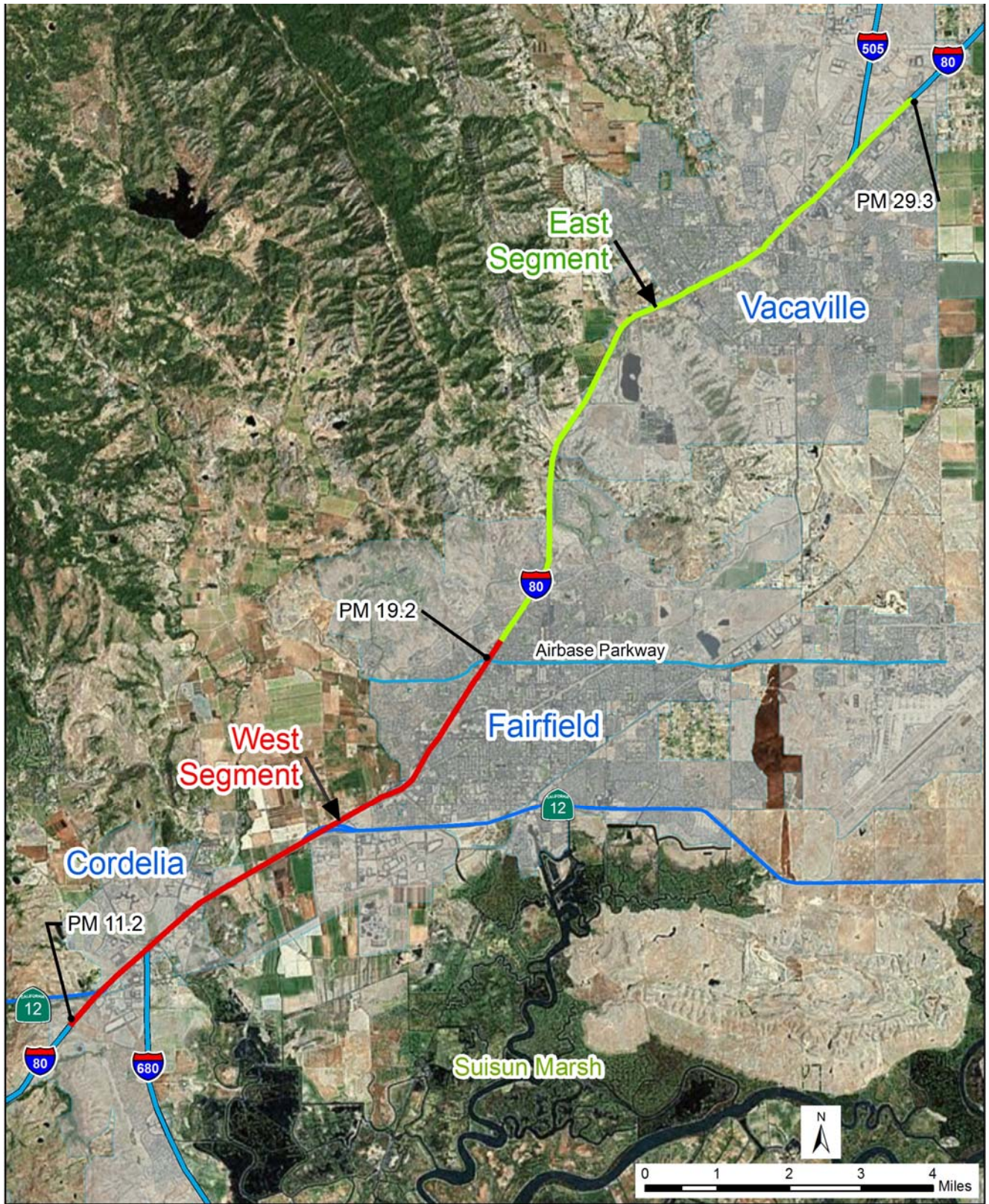


Figure 1: Project Location Map

B. Project Development History

In early 2006 the MTC began study efforts to determine the feasibility of a Regional High Occupancy Toll (HOT) Lane Network in the Bay Area. HOT lanes, also known as Express Lanes, would allow single occupancy vehicles to use the carpool lanes by paying a toll, adjusted dynamically based on congestion. The study examined the institutional, financial, and technical merits of implementing an express lane network, including cost and revenue estimates, as well as design approaches. The corridor analyses found that express lanes over the majority of the identified network were feasible provided some flexibility in the design approach for areas with significant physical, environmental or financial challenges.

In 2009, the MTC adopted the Transportation 2035 Plan for the San Francisco Bay Area which sets forth the agency's vision of "an integrated, market-based pricing system for the region's carpool lanes (via a regional express lane network), bridges and roadways" to help manage the demand on mature transportation systems and, as a source of revenue, to fund infrastructure improvements.

The MTC completed the programmatic Project Study Report (PSR) To Support the Bay Area Express Lane Backbone Network in September 2011. As part of that study, express lanes on the I-80 corridor from the Yolo County Line to I-680 were studied. The findings from that study concluded that implementation of express lanes within the corridor was feasible.

The proposed project study limits are within the limits of the MTC's Express Lane Backbone Network PSR. The project would include both the conversion of existing high occupancy vehicle (HOV) lanes to express lanes from Red Top Road to Air Base Parkway (West Segment) and the construction of new express lanes from Air Base Parkway to I-505 (East Segment).

STA initiated the project in 2010 and began preliminary studies, including coordination with Caltrans and MTC on the project delivery approach and project features. Originally the first phase of project development was anticipated to be a Project Study Report / Project Report (PSR/PR). However, the passage of the 2011/2012 State budget required changes to Caltrans' procedures for locally funded projects in the project initiation phase and STA elected to enter into a cooperative agreement with Caltrans to prepare a PSR-PDS. Cooperative Agreement 04-2429 between Caltrans and STA was executed November 28, 2011 for the reimbursed oversight work of this PSR-PDS. Approval of this PSR-PDS will be the authorizing document for the PA&ED cooperative agreement between Caltrans and STA.

Prior to that change, several actions were taken regarding the proposed project as noted below:

- The type of managed lane envisioned for this express lane is a continuous and unrestricted access approach as identified in the April 2011 Caltrans Traffic Operations Policy Directive (TOPD) for Updated Managed Lane Design. This approach was presented by STA and concurred by Caltrans and MTC in March 2011 provided that safety and operational analyses are conducted consistent with the TOPD.
- A Continuous Access White Paper describing the issues influencing continuous access and recommending a continuous access approach for the I-80 Express Lanes was prepared by STA and presented to Caltrans Traffic Operations and MTC in March 2011.
- Digital Mapping has been prepared for the project limits.

- A Traffic Methodology Memorandum presenting the proposed traffic analysis methodologies was approved by Caltrans on May 26, 2011.
- Existing Traffic Condition Analysis was submitted to Caltrans on June 10, 2011.

3. PURPOSE AND NEED

I-80 is the main east-west interregional freeway that connects the San Francisco and Sacramento metropolitan areas, passing through the counties of Alameda, Contra Costa, Solano, and Yolo. The portion of I-80 through the cities of Fairfield and Vacaville is the most heavily-traveled segment of the I-80 corridor within Solano County as it is utilized by commuters, recreational travelers, public transit services, and for interstate and interregional goods movement.

The MTC's Transportation 2035 Plan establishes the implementation of a Bay Area Express Lanes Network to effectively improve throughput and reduce delays and congestion on the major travel corridors within the San Francisco Bay Area, including I-80 in Solano County.

Recognizing the importance of I-80 as part of the Bay Area Express Lanes Network, and as a corridor for the movement of people and goods within Solano County, and between the San Francisco Bay Area and the Central Valley, the Solano Transportation Authority proposes a project that would:

A. Purpose

- Optimize capacity in the existing I-80 corridor to better meet current and future traffic demands.
- Close the gaps within the existing HOV lanes on I-80, increasing travel time savings and reliability for all users including HOVs and transit.
- Maximize the efficiency of freeway facilities by better utilizing available unused capacity in the existing HOV lanes.
- Provide a funding mechanism through express lanes¹ to accelerate implementation of the regional network of HOV and express lanes.

¹The State has authorized the implementation of express lanes as a way to implement the regional carpool lane system faster than traditional state and local funding sources.

B. Need

- Congestion currently exists in the general purpose lanes during peak periods on the I-80 corridor in Solano County and this level of congestion will continue to worsen as traffic demand increases.
- The existing HOV lane system on the I-80 corridor is characterized by gaps, limiting travel time savings and trip reliability for cars and transit vehicles.
- Available unused capacity in the existing HOV lane system needs to be utilized to enhance transportation system efficiency.
- There is limited funding available to close gaps in the existing HOV lane system without utilizing alternative financial mechanisms such as express lane tolling.

4. TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT

A Preliminary Traffic Engineering Assessment (PTEA) was conducted for the project limits utilizing readily available information and applying macro-level analysis and evaluation techniques. The PTEA focused on planning level analyses of mainline operations under current and forecasted conditions. A more detailed assessment of system components will be addressed in the subsequent Project Approval and Environmental Document (PA&ED) phase of project development. The key findings of the PTEA include:

A. Current Operating Conditions

Under current conditions, the peak directions of travel are westbound during the morning period and eastbound during the afternoon period. During the morning peak hour (7:00 to 8:00 AM), the westbound mixed-flow lanes operate at LOS D conditions along most of the study corridor, while the eastbound mixed-flow lanes operate at LOS B or C. During the afternoon peak hour (5:00 to 6:00 PM), the eastbound mixed-flow lanes operate at LOS D conditions from just east of Air Base Parkway, where the existing HOV lane ends in Fairfield, to Alamo Drive in Vacaville, while the westbound lanes operate at LOS B or C.

On the weekends the traffic volumes along the corridor are generally similar to or slightly higher than the volumes observed during the weekday peak hours. In cases where the weekend volumes are somewhat higher than the weekday volumes, the differences are not great enough to cause the operations of any of the study segments to degrade below the observed weekday peak hour conditions.

The HOV lanes between Red Top Road and Air Base Parkway operate at free flow (LOS B or better) conditions in both directions during both of the weekday peak hours. The relatively low utilization currently observed in the HOV lanes creates a substantial amount of available capacity. Depending on the peak hour studied, between 60% and 84% of the HOV lane capacity is not currently used.

B. Accident Data

Collision data for the corridor was provided by Caltrans via their Traffic Accident Surveillance and Analysis System (TASAS). Table 5 summarizes the TASAS data for the entire study corridor.

**TABLE 5
COLLISION DATA
JULY 1, 2007 TO JUNE 30, 2010**

Location	Post Mile	Number of Accidents			Actual Accident Rate (acc/million veh miles)			Average Accident Rate (acc/million veh miles)		
		Total	Fatal	F + I	Total	Fatal	F + I	Total	Fatal	F + I
EB I-80	8.00 to 31.40	1,555	8	493	0.80	0.004	0.26	0.88	0.009	0.28
WB I-80	31.40 to 8.00	1,513	3	486	0.77	0.002	0.25	0.88	0.009	0.28
EB/WB I-80 Between Projects Limits	8.00 to 31.40	3,068	11	979	0.79	0.003	0.25	0.88	0.009	0.28

Notes: Limits are from west of American Canyon Road to east of Meridian Road.
Source: Caltrans TASAS data, 2007-2010

As indicated in Table 5, there were a total of 3,068 accidents along the I-80 corridor between American Canyon Road and Meridian Road in the three-year period summarized. Actual accident rates averaged for the entire segment are less than the average statewide rate for comparable facilities. The corridor summarized here is slightly longer than the project limits and does not break down the data by segment. In order to do a more detailed comparison of actual accident rates with the statewide average rates it would be necessary to obtain recent collision data for the individual freeway segments within the project limits. Such analysis will be conducted at the PA&ED phase of the project.

C. Forecasted Conditions

A preliminary assessment of design year (2037) operating conditions was performed under both a No-Build and Build (express lanes) alternative.

The No-Build Alternative would generally maintain the existing number of lanes along the I-80 corridor. Based on estimated 2037 traffic demand volumes, the peak direction of travel along I-80 (westbound in the AM and eastbound in the PM) would experience extended periods of time where the demand volumes substantially exceed the available capacity. The operation of some of the freeway segments within the project limits is expected to be at LOS F for a portion of each peak period.

Based on the estimated future traffic demand, the number of available traffic lanes, and the presence of lane adds/drops and weaving sections, several bottlenecks would likely occur along the corridor. In the eastbound direction of travel, the primary potential bottleneck locations are the merge sections from SR 12 West and I-680 northbound, as well as the HOV lane drop near Air Base Parkway. For westbound travel, the primary potential bottleneck location is near the I-505 interchange, where the demand exceeds the available capacity at this gateway to the study corridor. Additional minor bottlenecks may also occur between closely-spaced ramps or other weaving sections.

Assuming that weekend traffic volumes would likely increase proportionally in the future compared to existing conditions, the eastbound volumes on Saturday and westbound volumes on Sunday would exceed the available capacity during much of these peak periods as well. LOS F conditions would be expected on at least some of the freeway segments during both days, and bottleneck would likely occur at similar locations as described above.

The Build Alternative would add an express lane in each direction between Air Base Parkway and I-505. This additional capacity would be expected to improve the over-capacity conditions along the project corridor, particularly as the utilization of the express lane is maximized by applying variable pricing to ensure that the express lane maintains a travel speed advantage over the mixed-flow lanes. The actual effect of the new express lane would depend on the number of single-occupant vehicles choosing to pay the toll to shift from the mixed-flow lane to the express lane. If the express lanes were fully utilized, the overall LOS along the peak direction of travel would be expected to improve substantially, although the corridor is still expected to remain somewhat congested.

During the weekends, the effect of the additional capacity would depend on how the HOV lane restrictions would be enforced. The current plan for Bay Area High Occupancy Toll Lanes calls for HOV restrictions to be enforced from noon to 7 PM on weekends (and from 6 AM to 7 PM on weekdays); with occupancy requirements being adjusted from HOV 2+ to HOV 3+ once capacity is reached on the express lane. Detailed operational analysis during the PA/ED phase will be required to more accurately determine the hours of HOV restrictions and enforcement. Because of the high level of vehicle occupancy that already occurs along this corridor on the weekends, it is possible that the express lane would need to be restricted to HOV 3+ vehicles early in its implementation, at least during weekend periods. If HOV 3+ restriction is implemented, it would affect the amount of capacity available for toll-paying users, and thus would also affect the overall corridor capacity and operations. It is possible that the Build alternative could operate at a lower level of service than the No Build alternative on the weekends along the western segment, if the express lane does not operate at full capacity.

The potential bottleneck locations described under the No Build scenario above would be positively affected by the proposed project. In the eastbound direction of travel, the bottleneck at the Air Base Parkway HOV lane drop would be addressed. In the westbound direction, the potential bottleneck at I-505 would largely be addressed, although near-capacity conditions would still exist during the weekday morning peaks and on Sundays. Additional minor bottlenecks may occur between closely-spaced ramps or other weaving sections.

D. PA&ED Traffic Scope

During the PA&ED phase of the project a Traffic Operations Analysis Report will be prepared. This work will be conducted in accordance with Section 149 of the California Streets and Highway Code and applicable Caltrans requirements including, but not limited to, the latest versions of the Caltrans Traffic Manual and the California Manual on Uniform Traffic Control Devices, the 2003 High Occupancy Vehicle Guidelines for Planning, Design, and Operations, and the Traffic Operations Policy Directive 11-02 on Updated Managed Lanes Design dated April 7, 2011.

The scope of work and the technical approach for the Traffic Operations Analysis Report (TOAR) to be prepared during PA&ED was developed through a series of discussions including the STA, the consultant team, and Caltrans District 4 staff. The Technical Traffic Memorandum – I-80 Express Lanes Project from Red Top Road to Leisure Town Road, Solano Transportation Authority, May 18, 2011 documents the scope and approach. It not only

addresses the traffic operations-related work for the PA&ED phase, but it also describes the approach to complete the revenue forecasts associated with the HOT lane scenarios. Note that the scope outlined in the Technical Traffic Memorandum is planned to be modified to include the evaluation of different access options (e.g., continuous access, limited access) for the proposed Express lanes.

5. DEFICIENCIES

The PTEA of future conditions on the I-80 corridor within the project limits shows that the demand is expected to far exceed the available capacity during peak periods, adversely affecting travel speeds and creating bottlenecks at constrained locations. The forecasted conditions indicate a level of congestion that is also expected to cause substantial diversion of through traffic onto local streets, degrade air quality, reduce transit service reliability, and worsen the collision rate in the corridor.

The PTEA includes additional information on deficiencies related to current conditions, traffic accident data, and forecasted conditions.

6. CORRIDOR AND SYSTEM COORDINATION

A. Identify Systems

I-80 has been identified by the State as part of the Interregional Road System, and is a major transcontinental Interstate between the San Francisco Bay Area and the East Coast. I-80 serves as the single freeway connection between the San Francisco Bay Area and the Sacramento metropolitan region. It is vital to commuting, freight and recreational traffic and is one of the most congested freeway facilities in the region. Within California, the highway connects the Bay Area to the Sacramento metropolitan region and provides connectivity to I-5 to the north via I-505. The route is designated as a Surface Transportation Assistance Act (STAA) National Network route and is part of the State Highway Extra Legal Road (SHELL) network.

B. State Planning

I-80 is identified as a High Emphasis Route within the Interregional Road System (IRRS) and a "Transportation Gateway of Major Statewide Significance" by the 1998 Interregional Transportation Strategic Plan (ITSP).

With the passage of the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act, known as Proposition 1B, in November 2006, Caltrans implemented the Corridor System Management Plan (CSMP) for all corridors with projects funded by the Corridor Mobility Improvement Act (CMIA) Program. Within Solano County two projects received CMIA funding;

- HOV Lanes, Fairfield (Rte 80/680/12 to Putah Creek)
- WB I-80 to SR 12 (West) Connector and Green Valley Road Interchange Improvements

In coordination with MTC and the Solano STA, Caltrans developed a CSMP for the I-80 East Corridor. The corridor limits extend from the Carquinez Bridge (Solano/Contra Costa County

line) to the junction with SR 113 North. It is approximately 43 miles in length and intersects Interstates 780, 680, 505, and State Routes 29, 37, 12, and 113.

A CSMP is a transportation planning document that provides for the safe, efficient and effective mobility of people and goods within California's most congested transportation corridors. Each CSMP presents an analysis of existing and future traffic conditions and proposes traffic management strategies and capital improvements to maintain and enhance mobility within each corridor. CSMPs also support the Governor's Strategic Growth Plan (SGP), which calls for an infrastructure improvement program that includes a major transportation component (GoCalifornia).

The I-80 East CSMP was completed in October 2010 and presents a performance assessment of the corridor and recommended strategies and improvements. This project's limits, from Red Top Road to I-505, closely align with Segments D and E in the I-80 East CSMP. The CSMP's performance assessment of the corridor identifies two of the top three congested locations, and three of the four bottlenecks as falling within the project limits.

I-80 East CSMP - Congested Locations

- PM eastbound from I-680 to SR-12 East
- AM westbound from West Texas Street to I-680

I-80 East CSMP - Key Bottlenecks

- I-80/Exit to SR-12 West/westbound
- I-80/I-680 connector to eastbound I-80
- I-80/Between Travis Boulevard on ramp and Air Base Parkway off-ramp/eastbound

Consistent with the proposed scope of this project, the I-80 East CSMP recommended corridor management strategies to meet the goals of mobility, reliability and safety by extending the HOV Lanes from Air Base Parkway to I-505 which would encourage additional use of HOV lanes and relieve congestion in the mixed flow lanes.

C. Regional Planning

The MTC 2009 Regional Transportation Plan, Transportation 2035 - Change in Motion, identifies I-80 as a priority corridor and a major gateway Route and includes the project, number 230650 - Widen I-80 from Red Top Road to Air Base Parkway to add HOV lanes in both directions. To speed travel and reduce congestion on Bay Area highways the Transportation 2035 Plan identified a Bay Area Express Lane Network. For I-80 in Solano County, the Transportation 2035 Plan includes three express lane projects; 230658 – I-80 in Solano County from Route 37 to Carquinez Bridge – widen to add an express lane in each direction, 230659 – I-80 in Solano County from Yolo County line to Route 37 – widen to add an express lane in each direction from Yolo County line to Air Base Parkway and from Red Top Road to Route 37, 230660 – I-80 in Solano County from Red Top Road to Air Base Parkway – convert HOV lanes to express lanes. The cost to construct, finance and operate the network would be paid for with toll revenues. The funds generated from the network would be used to pay for additional mobility improvements in the express lane corridors.

On September 28, 2011, the MTC submitted the Bay Area Express Lanes Public Partnership Application for High Occupancy Toll Lanes to the California Transportation Commission (CTC). The application, submitted in cooperation with Caltrans, requests authority, pursuant to Section 149.7 of the Streets and Highways Code, to develop and implement 285 miles of express lanes

with the Bay Area. The application includes 129.7 directional miles (both directions) on I-80 from the San Francisco/Oakland Bay Bridge to the Solano/Yolo County Line. This proposed project is within these corridor limits and provides the linkage between I-505 and I-680. Within the application, and included in the associated Project Study Report to Support the Bay Area Express Lane Backbone Network, the following projects are listed which constitute the limits of this project.

- I-80 in Solano County from Air Base Parkway to I-505 – new express lanes in each direction.
- I-80 in Solano County from Red Top Road to Air Base Parkway – convert HOV lanes to express lanes in each direction.

In October 2011, CTC Resolution G-11-10 approved MTC's Bay Area Express Lane Network application for the planned integrated express lane network to enhance mobility and afford greater user flexibility. This project is integral element of the planned network on I-80.

D. Transit Operator Planning

Several local transit agencies operate in the I-80 corridor and provide express bus services which transport passengers from local stops and Park and Ride lots in Solano County to the El Cerrito Del Norte and Pleasant Hill BART stations or directly to San Francisco. Express Bus routes utilizing the corridor within the project limits include:

- Fairfield-Suisun Transit Express Bus Routes 20, 30, 40, and 90
- Vallejo Transit Express Bus Routes 80 and 85
- Yolo Bus Route 220

Riders utilize the HOV system on I-80 through Fairfield and just east of the Carquinez Bridge (westbound direction only) which continues to the San Francisco-Oakland Bay Bridge. Solano Express Bus Route 30 also takes passengers to Dixon, Davis and Sacramento. In addition, STA provides ride matching through its Solano Napa Commuter Information (SNCI) service. There are also a number of park and ride lots constructed and operated by local jurisdictions along the I-80 corridor.

This project would enhance transit operations along the I-80 corridor by providing eighteen miles of continuous HOV Lane / Express Lane access to Transit Operators from Red Top Road near Fairfield to I-505 in Vacaville.

E. Local Planning

The STA's Comprehensive Transportation Plan (CTP 2030) for Solano County envisions, directs, and prioritizes the transportation needs of Solano County through the year 2030. The CTP incorporates various STA studies and plans into a 25-year planning document. The CTP 2030 was adopted by the STA Board of Directors on June 8th, 2005. The goal of the Solano CTP for arterials, highways, and freeways is to "Develop a balanced transportation system that reduces congestion and improves access and travel choices through the enhancement of roads." One of the objectives in meeting that goal is to "Add HOV Lanes" through Implementation of HOV lane projects on I-80 and I-680 identified in the I-80/I-680/I-780 Major Investment & Corridor Study.

The I-80/I-680/I-780 Major Investment & Corridor Study was adopted by the STA Board in July 2004 and includes the project to construct HOV lanes on I-80 in both directions between Air Base Parkway and I-505 in its long range improvement plan.

More recently, in February 2010 the STA Board adopted the Solano Highways Operations Study (SHOS). Previously called the I-80/I-680/I-780 Corridors Highway Operations Study & Implementation Plan, the study analyzes the performance and safety of Solano County's interstate highway corridors and recommends a variety of operations improvements as well as visual guidelines for landscape and hardscape treatments. This study was developed through the Solano Highways Partnership (SoHIP), which includes staff from the Solano Transportation Authority (STA), the Metropolitan Transportation Commission (MTC), the Sacramento Area Council of Governments (SACOG), Caltrans District 3 and District 4, and the cities of Benicia, Dixon, Fairfield, Vacaville, and Vallejo. Similar to earlier plans, and the East I-80 CSMP, extending the HOV lanes from Air Base Parkway to I-505 (both directions) is identified as a priority project in SHOS.

In February 2009, the STA Board approved an Express Lanes Priority Project List, should the STA be successful in gaining financial resources from MTC/BATA for the funding of the HOV/HOT projects within Solano County. The top two priority projects are to convert the existing HOV lanes from Red Top Road to Air Base Parkway to express lanes, and to construct express lanes from Air Base Parkway to I-505 in each direction.

7. ALTERNATIVES

The approach taken in developing alternatives for this PSR-PDS was to identify two alternatives, Alternatives A and B, that would establish a study area that satisfies the project's purpose and need, and identifies the project factors that must be analyzed and resolved in the PA&ED phase.

Alternative A would provide improvements to the existing facility to implement continuous access express lanes in each direction. While this alternative provides reduced environmental and right-of-way impacts it will require justification and approval of non-standard features. Alternative A provides the lower limit of a study area for PA&ED.

Alternative B would provide improvements to implement express lanes in each direction with ingress/egress access locations and a 4-foot buffer, as well as improvements to the existing facility to meet current design standards within the project limits. While this alternative provides substantial compliance with design standards there would be environmental and right-of-way impacts. Alternative B provides the upper limit of a study area for PA&ED.

The PA&ED studies will define a build alternative that satisfies the project purpose and need, is cost effective and will avoid or minimize environmental and right-of-way impacts while trying to maintain design standards. Analysis of the following key project factors is necessary to establish the build alternative in PA&ED.

- Access Configuration: as described in Section 4.D "PA&ED Traffic Scope" a Traffic Operations and Analysis Report will be conducted to evaluate both continuous and limited access configurations for the express lanes. The results of this analysis will

determine the width necessary for the express lane; limited access with buffer separation, or continuous access.

- **CHP Observation Areas:** observation areas for the alternatives were provided based on current HOV Guidelines regarding cross section width and taper distances, and an approximate 3 mile spacing between enforcement areas. These locations may change in PA&ED based on the determination of the express lane access configuration. A continuous access configuration would provide enforcement areas at regular intervals, while a limited access configuration would likely require a specific location downstream of the proposed ingress/egress locations.
- **Design Standards:** All deviations from design standards will require evaluation and justification in the PA&ED phase. The standards influenced by the determination of access configuration type and the CHP observation locations include median width, inside shoulder width, travel way width and stopping sight distance.
- **Environmental Impacts:** there is a range of potential environmental impacts for the project as identified in the PEAR (Attachment D), including; wetlands, biological sensitive habitat areas, historical and archeological sites, and Section 4(f) property. Establishing the locations of environmental constraints in the PA&ED phase will provide the necessary information to refine a build alternative to avoid or minimize environmental impacts.

A discussion on the no-build and build alternatives follows. Recognizing approval of the PSR-PDS does not constitute conceptual approval of alternatives or non-standard design features, the discussion on the build alternatives focuses on the design concepts and major features. During PA&ED, the analyses of the key project factors will result in a build alternative that meets the project's purpose and need within the study limits.

The project limits are composed of two distinct segments. The West Segment is from Red Top Road (PM 11.2) to Air Base Parkway (PM 19.2) and would convert the existing HOV lanes to express lanes in each direction. The East Segment is from Air Base Parkway to I-505 (PM 29.3) and would construct new express lanes in the median in each direction.

A. No-Build Alternative

Under the No-Build Alternative, no express lanes would be constructed along I-80 from the Red Top Road Interchange to the I-80/I-505 Interchange. The existing HOV lanes along I-80 from Red Top Road to Air Base Parkway would remain as they currently exist. The No-Build Alternative represents the baseline alternative and offers a basis for assessing current conditions and for comparison to the build alternatives. This alternative would include all currently planned and programmed projects on I-80 within the project limits through the year 2037. The No-Build Alternative includes the following related projects:

- Ramp Metering (West Segment) – installation of ramp metering hardware between Red Top Road and Air Base Parkway was completed at the end of 2011 and will be operational by early 2013.
- Ramp Metering (East Segment) – ramp metering improvements from Air Base Parkway to I-505 are currently under development.

- Eastbound I-80 Cordelia Truck Scales Relocation – the EB Cordelia Truck Scales will be relocated to a new, larger facility, approximately 2,500 feet to the east of the current location. The project is anticipated to begin construction in early 2012 and be completed by mid 2013. This project corrects the non standard typical section on EB I-80 between west of Dan Wilson Creek and the WB SR-12/WB I-80 Connector.
- I-80/I-680/SR-12 Interchange Project – the project includes several phased improvements. The first improvement is the Initial Construction Package (ICP) of Alternative C, Phase 1, which consists of the reconstruction of the WB I-80 to WB SR-12 Connector and Green Valley Road Interchange and removal of the existing Green Valley Road Interchange. This project is anticipated to be constructed and open to traffic in 2014.

B. Alternative A

Build Alternative A would implement continuous access express lanes in each direction of I-80 from Red Top Road to I-505. Attachment A provides the typical sections and layouts for this Alternative and the design scope for each segment is provided below.

West Segment – Red Top Road to Air Base Parkway: Build Alternative A would convert the existing HOV lanes to continuous access express lanes through the addition of electronic toll technologies within the existing median. Three CHP observations areas are proposed within the West Segment at the locations shown in Table 6.

Table 6 – West Segment CHP Observation Areas

General Location Description	Direction	PM
Existing area between EB Jameson On-Ramp and Green Valley Road OC	WB	12.1
Existing area between Suisun Creek Bridge and EB SR 12	WB & EB	15.2
Proposed area between Travis Blvd OC and Air Base Parkway OC	WB & EB	18.5

Under this alternative, the conversion of the existing HOV lanes in the West Segment is proposed to be accomplished through restriping and limited outside widening.

East Segment – Air Base Parkway to I-505: Build Alternative A would construct a new continuous access express lane in each direction of I-80 within the East Segment. The express lane, including the addition of electronic toll technologies, would be constructed within the existing median area with minimal widening. Four CHP observations areas are proposed within the East Segment at the locations shown in Table 7.

Table 7 – East Segment CHP Observation Areas

General Location Description	Direction	PM
Proposed area between Air Base Parkway OC and N. Texas Street	WB & EB	20.2
Proposed area between Cherry Glen Road OC and Rivera Road OC	WB & EB	23.5
Between Ulatis Creek Bridge and Allison Drive OC	EB	26.8
Between Nut Tree Road OC and E80-N505 Connector Bridge	WB	28.2

The construction of the express lanes in the East Segment would be accomplished through minimal widening. Table 8 provides a listing of the structures within the East Segment. There are fifteen (15) structures, some of which may require modification.

Table 8 – East Segment Structures

Structure	Bridge No.	PM
N. Texas St OC	#23-102	20.93
Cherry Glen Road OC	#23-160	R23.13
Rivera Road OC	#23-107	23.96
Alamo Creek Bridge	#23-10	R25.03
Alamo Drive OC	#23-13	R25.31
Davis Street UC	#23-23	R26.00
Mason St. UC	#23-51	R26.46
Ulatis Creek Bridge	#23-52	R26.61
Allison Drive OC	#23-213	R27.20
Nut Tree Road OC	#23-145	R28.01
S505-E80 Conn SEP	#23-146	R28.15
Pine Tree Creek Bridge	#23-36L	R28.32
E80-N505 Conn SEP	#23-104G	R28.36
Horse Creek Bridge	#23-11L	R28.57
Horse Creek Bridge	#23-73R	29.25

The project footprint and study area for Build Alternative A would constitute the lower limit of studies during PA&ED as the implementation of express lanes would be accomplished through converting the existing HOV lanes in the West Segment and constructing new express lanes in the median in the East Segment. Outside widening in areas may be necessary to accommodate this alternative.

Depending on the location and requirements for outside widening, additional lands outside the existing State right-of-way, as well as utility easements and temporary construction easements

may be necessary. Non standard design features associated with this alternative would require review and approval during the PA&ED phase. Approval of the PSR-PDS does not constitute conceptual approval of these features.

C. Alternative B

Build Alternative B would provide improvements to implement express lanes in each direction with ingress/egress access locations and a 4-foot wide buffer, as well as improvements to the existing facility to satisfy current design standards within the project limits. Attachment B provides the typical sections and layouts for this Alternative and the design scope for both segments is provided below.

This alternative would provide a 36-foot paved median, concrete median barrier, 12-foot express lane with 4-foot buffer. Additional outside widening would be constructed to accommodate standard sight distance at existing deficient locations. CHP observation areas would be provided in locations similar to those identified in Build Alternative A. The CHP observation areas would be located within the proposed 36-foot paved median and no additional outside widening would be necessary. Similar to the CHP observation areas, the median would be utilized to provide for express lane ingress/egress locations without the need for additional outside widening. Auxiliary lanes would be provided under this alternative at various locations shown in Table 9.

Table 9 – Alternative B Proposed Auxiliary Lanes

Direction	Location
EB	Travis Blvd On-Ramp to Air Base Parkway Off-Ramp
EB	Lagoon Valley Road On-Ramp to Rivera Road Off-Ramp
EB	Rivera Road On-Ramp to Alamo Drive Off-Ramp
EB	Cliffside Drive On-Ramp to Allison Drive Off-Ramp
WB	Alamo Drive On-Ramp to Rivera Road Off-Ramp
WB	North Texas Road On-Ramp to Air Base Pkwy Off-Ramp
WB	Air Base Pkwy On-Ramp to Travis Blvd Off-Ramp
WB	SR 12 On-Ramp to I-680 Off-Ramp

Under this Alternative twenty five (25) interchanges would be impacted due to the outside widening and mandatory design standards. Table 10 provides a listing of the structures within the project limits and those impacted by this alternative that would be evaluated in PA&ED.

Table 10 – Structures Requiring Modification or Relocation Due to Alternative B Impacts

Structure	Bridge No.	PM	Modification/ Relocation
Red Top Road UC	#23-165	R11.39	X
Cordelia UP	#23-25	R11.92	X
E12-E80/80 Conn SEP	#23-16G	R11.98	
Green Valley Road OC	#23-138	12.74	
RTE 680/80 SEP	#23-139E	12.84	
Green Valley Creek	#23-4	12.91	X

Suisun Valley Road OC	#23-140	13.49	X
Dan Wilson Creek Bridge	#23-6	13.92	X
Suisun Creek Bridge	#23-7	14.55	X
W12-W80/80 Conn SEP	#23-199F	15.81	
Abernathy Road OC	#23-141	16.17	
Ledgewood Creek Bridge	#23-8	17.02	X
W. Texas Street UC	#23-106	17.2	X
W. Fairfield PUC	#23-93	17.27	X
Travis Blvd OC	#23-61	17.92	X
Air Base Pkwy OC	#23-96	19.18	
N. Texas St OC	#23-102	20.93	X
Cherry Glen Road OC	#23-160	R23.13	X
Rivera Road OC	#23-107	23.96	X
Alamo Creek Bridge	#23-10	R25.03	X
Alamo Drive OC	#23-13	R25.31	X
Davis Street UC	#23-23	R26.00	X
Mason St. UC	#23-51	R26.46	X
Ulatis Creek Bridge	#23-52	R26.61	X
Allison Drive OC	#23-213	R27.20	X
Nut Tree Road OC	#23-145	R28.01	X
S505-E80 Conn SEP	#23-146	R28.15	X
Pine Tree Creek Bridge	#23-36L	R28.32	X
E80-N505 Conn SEP	#23-104G	R28.36	X
Horse Creek Bridge	#23-11L	R28.57	X
Horse Creek Bridge	#23-73R	29.25	X

The project footprint and study area for Alternative B would constitute the upper limit of studies during PA&ED as this alternative would require reconstruction or widening of the existing roadway and structures, reconstruction of existing interchanges, sound walls, and retaining walls, and the construction of new sound walls and retaining walls. These improvements would result in right of way, utility, and environmental impacts.

Under this build alternative there are some proposed deviations from design standards such as stopping sight distance along vertical curves at two locations within the East Segment and interchange spacing along the West Segment. In addition, providing for some design standards in this alternative may not be viable due to potential environmental and right of way impacts.

8. RIGHT OF WAY

A. Right of Way

Right of Way Estimates have been prepared for each build alternative and are included in the estimates shown in Attachment C. Alternative A would not include fee parcel takes if design exceptions are warranted, and assumes only impacts for proposed temporary construction easements (TCEs) and the utility impacts which are discussed below. The parcel requirements for Alternative B would include various agricultural, residential and commercial/industrial properties as well as the utility impacts discussed below. A Conceptual Cost Estimate Request - Right of Way Component scoping tool sheet has been prepared and is shown in Attachment H.

B. Railroad

There is an existing Union Pacific Railroad (UPRR) crossing within the I-80 project limits. The crossing is located in the West Segment at PM 11.92 with the structure designation of "Cordelia UP" bridge number 23-25. Build alternatives A and B do not propose to impact the existing UPRR structure and therefore it is assumed that a railroad agreement will not be required.

C. Utilities

A preliminary investigation of the existing utilities within the project study area is summarized in Attachment F of this report. The table primarily shows existing transverse utilities within the State right of way that may be impacted by the build alternatives.

It is anticipated that Build Alternative A will have no impacts requiring relocation of non-Caltrans utilities along the corridor. During the PA&ED phase of the project the design team will confirm any impacts with the utility agency owners through the Caltrans utility relocation process.

Build Alternative B assumes that all existing utilities within the project area will be relocated, realigned, and/or extended as necessary to accommodate the project construction and operation. Utilities that will be affected include water, sanitary sewer, electrical, gas, cable/fiber, and telephone lines. These facilities include both overhead and underground lines and conduits.

Impacts associated with the various utility relocations will be addressed in the PA&ED phase pursuant to California Public Utilities Commission (PUC) General Order (GO)-131 D filing requirements. The precise field location of high-risk utilities will be identified during the final design PS&E phase in accordance with the Caltrans Procedures on High Risk Utilities. Any modification or new longitudinal encroachment exceptions will be pursued in the PA&ED phase of the project development.

9. STAKEHOLDER INVOLVEMENT

The STA and its member agencies are supportive of the project. There is no known opposition to the project at this time.

10. ENVIRONMENTAL DETERMINATION AND DOCUMENTATION

The appropriate level of environmental document is expected to be an EIR/EIS if Alternative B as currently configured is carried forward as an action alternative. This is because it is likely that Build Alternative B would result in significant and unavoidable adverse effects to Peña Adobe. The recommended historic architecture evaluation will be necessary to determine the precise extent of any such impacts to Peña Adobe and whether such impacts can be successfully mitigated. Alternative B could take enough land in the surrounding park such that the integrity of the historic resource is compromised to such a degree to adversely affect its eligibility for inclusion on the National Register. It should also be noted that Peña Adobe will also require close analysis for impacts under Section 4(f), as it is likely to qualify as a Section 4(f) property.

The appropriate level of environmental document for Build Alternative A is expected to be an IS/EA. This document level would be supportable based on the environmental constraints present in the project study area and the low potential for the project (including all design options) to cause significant environmental impacts.

Caltrans would act as the lead agency in the preparation of this joint NEPA/CEQA environmental document. Caltrans will serve as the NEPA lead agency under its assumption of responsibility pursuant to 23 U.S. Code 327. It is expected that the environmental technical reports and environmental document (IS/EA or EIR/EIS) would take approximately 18 to 42 months to prepare and process for final certification/approval, including time for substantive review by the environmental division staff within Caltrans. It is anticipated a number of environmental technical studies and reports will be required for this project as identified in the Preliminary Environmental Assessment Report (PEAR) included as Attachment D.

11. FUNDING

Preliminary cost estimates are provided in Attachment C. A summary of cost ranges for the project is provided below.

	<u>Range of Total Cost (x 1,000)</u>	
Roadway Items	\$ 140,000	\$ 845,000
Structure Items	<u>\$ 6,000</u>	<u>\$ 145,000</u>
Subtotal Construction	\$ 146,000	\$ 990,000
Right of Way	\$ 4,500	\$ 75,000
Capital Outlay Support	<u>\$ 44,500</u>	<u>\$ 333,000</u>
Total Project Cost	\$ 195,000	\$ 1,398,000

All costs escalated to 2015 except for support costs which are estimated as a percentage of the capital costs.

A. Capital Cost

Capital Outlay Estimate (in 2015 dollars)

	Range for Total Cost	STIP Funds	Fund Source "A"
Build Alternatives	\$195 to 1,400 million	\$0	MTC Enterprise Funds

The capital costs should not be used to program or commit capital funds. The Project Report will serve as the appropriate document from which the remaining support and capital components of the project will be programmed.

B. Capital Support Estimate

The capital support needed to complete the PA&ED phase is estimated at \$12 million and will be funded with Regional Measure 2 funds.

12. SCHEDULE

Project Milestones	Delivery Date (Month, Year)
Begin Environmental	January 2012
Circulate DED	September 2013
PA&ED	March to June 2014
Construction	2015

13. FHWA COORDINATION

No federal-aid funding is anticipated for the project. FHWA coordination will be required in the PA&ED phase as the proposed project is on the Interstate.

14. DISTRICT CONTACTS

Caltrans Project Manager	Nicolas Endrawos (510) 286-5123
Caltrans Project Development Team Leader	Roni Boukhalil (510) 286-5694
Caltrans Environmental Unit Supervisor	Melanie Brent (510) 286-5231
Caltrans Right of Way Branch Reviewer	Beth Perrill (510) 286-5383
Caltrans Traffic Operations	David Seriani (510) 286-4653

15. PROJECT REVIEWS

No project reviews with Caltrans District 4 staff have been conducted to date. Project reviews with the appropriate PDT members and Caltrans District 4 staff is anticipated to occur in PA&ED.

16. ATTACHMENTS

- A. Alternative A – Layouts and Typical Cross Sections**
- B. Alternative B – Layouts and Typical Cross Sections**
- C. Preliminary Cost Estimate**
- D. Preliminary Environmental Analysis Report (PEAR)**
- E. PID Cooperative Agreement & Draft Cooperative Agreement for PA&ED**
- F. Existing Utilities Summary Table**
- G. Risk Register**
- H. Right of Way Conceptual Cost Estimate**
- I. Transportation Planning Scoping Checklist**

17. REFERENCES

- MTC's *Transportation 2035 Plan for the San Francisco Bay Area* - April 2009
 - http://www.mtc.ca.gov/planning/2035_plan/
- MTC's *Project Study Report (PSR) to Support the Bay Area Express Lane Backbone Network* - August 2011
 - <http://www.mtc.ca.gov/planning/hov/>
- Caltrans *Traffic Operations Policy Directive (TOPD) for Updated Managed Lane Design* - April 2011
 - <http://www.dot.ca.gov/hq/traffops/signtech/signdel/policy.htm>
- *California Manual on Uniform Traffic Control Devices* - 2010
 - http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd2010.htm
- Caltrans *High Occupancy Vehicle Guidelines for Planning, Design, and Operations-2003*
 - http://www.dot.ca.gov/hq/traffops/systemops/hov/hov_sys/guidelines/
- Caltrans *Interregional Transportation Strategic Plan (ITSP)* – June 1998
 - <http://www.dot.ca.gov/hq/tpp/offices/oasp/itsp.html>
- Caltrans *Corridor System Management Plan (CSMP) for the I-80 East Corridor* – October 2010
 - http://www.dot.ca.gov/hq/tpp/corridor-mobility/CSMPs/d4_CSMPs/i80_east/I-80_East_FINAL_CSMP_FULL_DOC.pdf
- MTC's *Bay Area Express Lanes Public Partnership Application For High Occupancy Toll Lanes* – September 2008
 - <http://www.mtc.ca.gov/planning/hov/>
- STA's *Comprehensive Transportation Plan (CTP 2030)* - 2005
 - <http://www.sta.ca.gov/Content/10054/ComprehensivePlans.html>
- STA's *I-80/I-680/I-780 Major Investment & Corridor Study* - July 2004
 - <http://www.sta.ca.gov/Content/10055/CountywidePlansampStudies.html>
- STA's *Solano Highways Operations Study* - February 2010
 - <http://www.sta.ca.gov/Content/10055/CountywidePlansampStudies.html>
- STA's *Continuous Access White Paper* - presented to Caltrans Traffic Operations and MTC in March 2011