04-SM-101, PM 6.3/20.8 EA 04-1J560K, HB5 Project ID 0413000206 April 2015

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

То

Request Approval to Program Capital Support for the Project Approval and Environmental Document (PA&ED) Phase

On Route US 101 Between South of Whipple Avenue (Post Mile 6.3)

And _____ North of Interstate 380 (Post Mile 20.8)

APPROVAL RECOMMENDED:

SANDY WONG, C/CAG OF SAN MATED COUNTY PROJECT SPONSOR, Accepts Risks Identified in This PSR-PDS and Attached Risk Register

RON MORIGUCHI, CALTRANS PROJECT MANAGER

APPROVED:

DATE

BIJAN SARTIPI DISTRICT DIRECTOR

US 101 HOV PSR-PDS



Vicinity Map

On Route	US 101
Between	South of Whipple Avenue (Post Mile 6.3)
And	North of Interstate 380 (Post Mile 20.8)

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.

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RICHARD K. TANAKA - REGISTERED CIVIL ENGINEER



ADRIL 71

DATE

Reviewed by

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Office Chief Office of Advance Planning

US 101 HOV PSR-PDS

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1. INTRODUCTION

The San Mateo County Transportation Authority (SMCTA) and the City/County Association of Governments of San Mateo County (C/CAG), in cooperation with the California Department of Transportation (Caltrans) propose to extend approximately fourteen (14) miles of High Occupancy Vehicle (HOV) lanes in each direction along the US 101 corridor in San Mateo County from Whipple Avenue to the south to I-380 to the north.

US 101 on the San Francisco Peninsula is the main access route to San Francisco International Airport (SFO) from the North and South Bay. It also serves as a major gateway route between San Francisco and Silicon Valley, as well as providing access to San Jose International Airport (SJC) at the southern end of the corridor. US 101 also links to the East Bay via the Dumbarton Bridge (SR 84), the San Mateo Bridge (SR 92), and the San Francisco Bay Bridge (I-80), and provides access to the Port of Redwood City.

See Attachment C for the escalated capital outlay cost estimate for this project.

Project Limits (Dist., Co., Rte., PM)	District 04; San Mateo; US 101; PM 6.3/20.8
Number of Alternatives:	2 Build Alternatives, 1 No-Build Alternative
Capital Construction Cost Range	\$85 million to \$142 million
Right of Way & Utilities Cost Range	\$0.3 million to \$16 million
PA&ED Support Cost Range	\$6.8 million to \$7.4 million
PS&E & R/W Support Cost Range	\$15.3 million to \$28.2 million
Construction Support Range	\$12.7 million to \$21.3 million
Funding Source:	Federal, State and Local Funds
Type of Facility	Freeway: HOV lanes widening
(conventional, expressway, freeway):	
Number of Structures:	Widen five bridges, seven new retaining walls and
	five new soundwalls. No new overcrossings.
Anticipated Environmental	IS with MND for CEQA
Determination or Document:	Complex EA with FONSI for NEPA
Legal Description	In San Mateo County from 0.2 miles south of
	Whipple Avenue Overcrossing to 0.9 miles north of I-
	380
Approximate Schedule	Complete PA&ED Phase – April 2018
	Start Construction – November 2020
	,

Support cost for PA&ED phase is in the range of \$6.8 to \$7.4 million. 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 costs, right of way and capital costs of the project.

2. BACKGROUND

A. Existing Facility

US 101 is a north-south freeway on the Federal Aid Primary System, but is not part of the Rural and Single Interstate Routing System. The entire length of US 101 extends from the City of Los Angeles, California in the south to the City of Olympia, Washington in the north. Within the project limits from Whipple Avenue to I-380, US 101 is currently an 8-lane facility (4 through-lanes in each direction) with auxiliary lanes between most interchanges. To the south of Whipple and extending into Santa Clara County, US 101 currently consists of 1 HOV lane and 3 general purpose lanes in each direction. The posted speed limit on this segment of US 101 is 65 mph.

The existing travel lanes are generally 12 feet wide except at various locations where 11-footwide lanes exist. The outside shoulder varies from 7 feet to 10-feet, and the inside shoulder varies from 1 foot to 14 feet. The northbound and southbound lanes are separated by a concrete median barrier. The median width ranges from 5 to 30 feet.

There are 12 interchanges within the project limit as listed below in Table 1.

DM	Interchange	No. of Ramps				
PIVI	Interchange	NB-On	NB-Off	SB-On	SB-Off	
6.62	Whipple Avenue	2	1	2	1	
	Brittan Avenue	0	0	1	1	
8.40	Holly Street	1	1	1	1	
	Harbor Avenue			1		
9.55	Ralston Street	2	1	0	1	
11.15	Hillsdale Boulevard	2	1	2	1	
11.91	Route 92	2	1	2	1	
	Kehoe Avenue	1	1			
13.46	3rd Avenue	1	1	1	1	
	Dore Avenue		1			
	Poplar Avenue	0	0	1	1	
14.69	Peninsula Avenue	1	1	0	0	
	Anza Boulevard	1	1			
16.58	Broadway	1	1	1	1	
17.95	Millbrae Avenue	1	1	2	1	
19.09	SFO Airport Terminal	1	1	2	0	
20.39	San Bruno Avenue	1	1	1	1	
20.71	I-380	1	2	2	1	

Table 1 – Interchange Locations

There are 33 structures within the project limit as listed below in Table 2.

PM	Structure	Bridge No.	Vertical
			Clearance
6.62	Whipple Avenue OC	#35-0122	14'-11"
7.13	Cordilleras Creek Bridge	#35-0019	N/A
7.66	Pulgas Creek Bridge	#35-0056	N/A
8.40	Holly Street OC	#35-0037	15'-5"
9.11	Belmont Creek Bridge	#35-0018	N/A
9.55	Ralston Avenue OC	#35-0337	17'-2"
9.72	Ralston Avenue POC	#350332	19'-9"
10.25	Laurel Creek Bridge	#35-0141	N/A
11.15	E. Hillsdale Boulevard OC	#35-0138	16'-3"
11.67	Borel Creek Bridge	#35-0140	N/A
11.78	Route 92/101 Separation	#35-0252L	19'-1"
11.88	Route 92/101 Separation	#35-0252R	21'-3"
11.90	Fashion Island Blvd OC	#35-0027	17'-5"
13.44	San Mateo Creek Bridge	#35-0010	N/A
13.44	San Mateo Creek Bridge (NB On-ramp)	#35-0010S	N/A
13.44	San Mateo Creek Bridge (Off-ramp)	#35-0010T	N/A
13.45	San Mateo Creek Bridge (SB Off-ramp)	#35-0010K	N/A
13.46	3rd Avenue OC	#35-0026	15'-5"
13.95	Monte Diablo Ave POC	#35-0346	18'-3"
14.69	Peninsula Avenue OC	#35-0349	19'-2"
16.40	Transmission Canal	#35-0017	N/A
16.53	Broadway Ave POC	#35-0342	18'-4"
16.58	Broadway OC	#35-0096	16'-7"
17.95	Millbrae Avenue OC	#35-0089	15'-5"
18.09	Millbrae Slough Bridge	#35-0126	N/A
19.09	SFO Airport-S101 On-ramp Separation	#35-0274K	16'-3"
19.09	Airport Terminal Off-ramp Separation	#35-0275K	30'-5"
19.29	Airport Terminal Off-ramp Separation	#35-0323K	47'-0"
19.29	SFO Airport-S101 On-ramp Separation	#35-0324K	17'-1"
19.30	Airport BART Underpass	#35-0329	42'-7"
20.39	San Bruno Canal	#35-0128Y	N/A
20.39	San Bruno Avenue OC	#35-0264	22'-4"

Table 2 – Structures

There are auxiliary lanes (10 in the northbound direction and 9 in the southbound direction) within the project limit as listed below in Table 3. C-D on-ramp indicates the loop and diagonal on-ramps combine into a Collector-Distributor road before starting the auxiliary lane.

Direction	Auxiliary Lane
NB	Whipple Avenue Loop On-Ramp to Holly Street Off-Ramp
SB	Holly Avenue C-D On-Ramp to Whipple Avenue Off-Ramp
NB	Holly Street C-D On-Ramp to Ralston Avenue Off-Ramp
SB	Ralston Avenue/Harbor Avenue C-D On-Ramp to Holly Street Off-Ramp
NB	Ralston Avenue/Marine Parkway Diagonal On-Ramp to Hillsdale Avenue Off-
	Ramp

Table 3 – Auxiliary Lane Locations

Direction	Auxiliary Lane
SB	Hillsdale Avenue Diagonal On-Ramp to Ralston Avenue/Marine Parkway Off-
	Ramp
NB	Hillsdale Avenue Diagonal On-Ramp to SR 92 Connector
SB	EB SR 92 connector to Hillsdale Avenue Off-Ramp
NB	WB SR 92 connector to 3rd Avenue Off-Ramp
SB	3rd Avenue C-D On-Ramp to SR 92 Connector
NB	3rd Avenue C-D On-Ramp to Peninsula Avenue Off-ramp
SB	Poplar Avenue On-ramp to 3 rd Avenue off-ramp
NB	Peninsula Avenue On-ramp to Broadway Off-ramp
SB	Broadway C-D On-ramp to Poplar Avenue Off-ramp
NB	Broadway C-D On-ramp to Millbrae Avenue Off-ramp
SB	Millbrae Avenue Diagonal On-ramp to Broadway Off-ramp
NB	Millbrae Avenue C-D On-ramp to I-380 Connector
NB	SFO On-ramp to San Bruno Avenue Off-ramp
SB	I-380 Connector to Millbrae Avenue Off-ramp

B. Project Development History

The addition of HOV Lanes on US 101 in San Mateo County was studied from 2009 through 2011 as part of the Metropolitan Transportation Commission's (MTC's) Freeway Performance Initiative and Caltrans 2010 Corridor System Management Plan (CSMP). As part of this corridor study, two options were considered: (1) convert an existing general purpose lane to HOV; or (2) add a new HOV lane to the freeway. This work was documented in a final report entitled "SM/SCI 101, FPI/CSMP Corridor Study, HOV Lane Feasibility Analysis," dated March 2011, by Dowling Associates (now Kittelson Associates), completed for MTC. The feasibility analysis evaluated the US 101 corridor from the US 101/85 interchange in Mountain View to the San Mateo/San Francisco County line using the C/CAG traffic model and Year 2030 forecasts.

Out of those studies, a further study was prepared to evaluate a "hybrid" HOV lane approach. The hybrid approach combined the "add" HOV lane option and "convert" HOV lane option approaches into a more cost effective alternative that converts existing auxiliary lanes to through lanes by extending them through the interchanges along US 101 to create a new fifth through lane, and then adds auxiliary lanes back only at locations needed to maintain freeway traffic operations. The inside lane would then be converted to an HOV lane at a much lower cost than widening the entire freeway to add another lane. The work was documented in a final report entitled "San Mateo 101, HOV Lane Analysis, Final Mainline Report," dated March 2012, by Kittelson Associates, completed for MTC. The final mainline report only evaluated the US 101 corridor from the end of the currently existing HOV lanes at Whipple Avenue in Redwood City north to the San Mateo/San Francisco county line (approximately 19 miles) and used Year 2040 forecasts extrapolated from the C/CAG Year 2030 numbers.

As an outcome of this study, an even smaller specific project was identified to develop a "staged hybrid" HOV lane approach to get most of the benefit of adding HOV lanes but with further reduced cost by only constructing HOV lanes from Whipple Avenue to I-380, approximately 14 miles. This study was not formally analyzed as a stand-alone project but was extrapolated from the results of the previous study and discussed in a memo entitled "**Staged HOV Lane Analysis** (from Whipple Avenue to I-380)," dated July 15, 2012, by Kittelson Associates. The primary reasons for separating the 101 HOV corridor improvements in San Mateo County into two

phases (South Segment from Whipple to I-380, and North Segment from I-380 to SM/SF County Line) were as follows:

- Geometric improvements to accommodate additional HOV lanes for the South Segment can be accomplished with essentially pavement widening, whereas, the North Segment would require significant reconstruction of structures and realignment/reconstruction of interchanges.
- Majority of the South Segment already has auxiliary lanes. The intent of this Hybrid HOV
 project was to utilize or convert this auxiliary lane to HOV thru lanes. Where necessary,
 auxiliary lanes will be restored.
- Segmenting into two phases for this corridor allows a South Segment with a much lower capital cost to be prioritized for implementation.
- 14 miles of HOV extension northerly would maximize each dollar expended to accomplish the greatest public benefits to motorists, including transit operators.

As an outcome of these initial planning studies, C/CAG as the sponsoring agency and SMCTA as the implementing agency, have decided to move forward to complete the Caltrans project initiation document (PID) phase for a staged hybrid HOV lane project which proposes to add HOV lanes on US 101 between Whipple Road and I-380.

In December 2013 SMCTA and Caltrans entered into the cooperative agreement 04-2407 to complete a PSR-PDS for this project.

3. PURPOSE AND NEED

Purpose:

The purpose of this project is to:

- Improve travel time for high occupancy vehicles along the US 101 corridor;
- Encourage carpooling and usage of transit;
- Increase person throughput (i.e., number of people moved) on US 101 in San Mateo County;
- Provide lane continuity on U.S. 101 in San Mateo County, as called for in the Regional Transportation Plan (RTP ID 240060).

Need:

US 101 between Santa Clara County line and I-380 is currently an 8-lane facility (4 through-lanes in each direction) with auxiliary lanes between most interchanges. The southern segment from Santa Clara County line to Whipple Avenue in Redwood City consists of 1 HOV lane and 3 general purpose lanes in each direction. The northbound HOV lane ends at the Whipple Avenue interchange while the southbound HOV lane begins at the Whipple Avenue interchange. From Whipple Avenue to the San Francisco County line, US 101 consists of 4 general purpose lanes in each direction.

During peak hours, generally all lanes are congested resulting in an overall degradation of operations throughout the corridor. Commuters with multiple passengers and commuter buses

traveling on US 101 within the project limits also experience the same delays in both the northbound and southbound directions in the AM and PM peak hours as the non HOV traffic.

4. TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT

Studies of the US 101 corridor in San Mateo County were undertaken between 2009 and 2012 by the MTC's Freeway Performance Initiative (FPI). The work was incorporated into the Caltrans Corridor System Management Plan (CSMP) that was approved in December 2010. Subsequently, MTC completed two additional reports, specifically the SM/SCL 101 FPI/Corridor Study HOV Lane Feasibility Analysis report (Kittelson/Dowling Associates, March 2011) and the San Mateo 101 Hybrid HOV Lane Analysis (Kittelson & Associates/Dowling, March 2012).

This Traffic Engineering Performance Assessment (TEPA) presents the analysis of existing and future traffic conditions associated with the no-build and two viable build alternatives for the project.

The key findings of the TEPA include:

A. Forecasted Traffic Volumes & Conditions

Existing traffic data and future baseline forecast were obtained from the US 101 Corridor System Management Plan (CSMP) which involved extensive and intensive field data collection effort launched in January 2009 to collect counts, aerial photography survey, travel times, speeds, as well as incident logs. The C/CAG countywide travel demand model was used to develop the forecasts for 2015 and 2030.

The 2012 San Mateo 101 Hybrid HOV Lane Analysis Report extrapolated the C/CAG 2030 travel demand model to develop two sets of traffic forecasts for 2040: one for the hybrid HOV lane option (proposed project), and the other for baseline (No Build) conditions. Table 4 provides the 2040 forecast results at key mainline locations for the baseline and project conditions within the study limits of this project.

	AM 4-Hour (6 AM to 10 AM)					
Location	2040 Baseline			2040 Project		
Location	General	HOV	Total	General	HOV	Total
	purpose			Purpose		
			Northbound			
South of SR 92			33,551	31,738	6,427	38,165
South of I-380			35,366	31,754	6,272	38,026
Southbound						
South of SR 92			33,446	32,584	4,203	36,787
South of I-380			27,007	25,708	4,245	29,953

Table 4: Forecast Volumes for 2040 Conditions

	PM 5-Hour (2:30 PM to 7:30 PM)						
Location	2040 Baseline			2040 Project			
Location	General	HOV	Total	General	HOV	Total	
	purpose			purpose			
	Northbound						
South of SR 92			43,519	38,367	8,349	46,716	
South of I-380			48,835	43,972	8,193	52,165	
Southbound							
South of SR 92			37,506	32,157	6,727	38,884	
South of I-380			34,788	28,607	7,585	36,192	

Source: Kittelson & Associates Inc./Dowling, March 2012

B. Traffic Analysis and Forecasting Methodology

In previous US101 corridor studies, the FREQ modeling software was used to simulate peak period freeway operations in San Mateo County. HOV demand forecasts were developed using the C/CAG travel demand model based on ABAG 2005 Projection, as well as existing total traffic volume counts and occupancy survey results.

Previous traffic operations analysis for the Hybrid HOV and Staged Hybrid HOV Lane Options were conducted using the same tool and methodologies as to be consistent with the baseline evaluations.

C. Existing Conditions

The US 101 corridor within the project limits has four mixed-use lanes in each direction. Currently HOV lanes (in both directions) exist outside the project limits to the south, from Whipple Avenue in Redwood to beyond the Santa Clara County line. These HOV lanes are restricted to eligible HOV's from 5:00 – 9:00 AM and 3:00 – 7:00 PM Monday through Friday; they are open to all vehicles outside of those hours. HOV occupancy requirements during operating hours are two or more persons per vehicle. Motorcycles and suitably tagged low-emission vehicles (hybrids, electric, etc.) are also allowed to use the HOV lanes during the operating hours, regardless of their actual occupancy. The occupancy survey results for existing conditions indicated that currently 15% to 17% of the peak period vehicle stream is two-person HOV, while 1% to 2% is three-person or more HOV.

D. Design Year Conditions Summary

Baseline Conditions (Future No-Build Alternative)

Baseline conditions analysis include future-year improvements described in the San Mateo US 101 Corridor System Management Plan (CSMP) Technical Report, 2010. In general, the improvements include auxiliary lane(s) in both directions between all interchanges (on-ramp to off-ramp) from Whipple Avenue to I-380 within the current study corridor. As indicated in the CSMP report (2010), ramp metering within the corridor is assumed to be in the base condition, i.e. from Route 92 to SF County Line (Caltrans SHOPP project) and all on-ramps in Santa Clara County.

The previous analysis did not include the Santa Clara 101 Express Lanes for the baseline improvements. As such, the previous operations analysis did not look at the operational impacts of necking down from two express lanes in Santa Clara County to a single HOV lane in San Mateo County. Currently Santa Clara County is considering implementation of the Express Lane in a phased approach which could be further evaluated in the PA&ED Phase

Minimum Build Alternative (Staged Hybrid HOV Lane Option)

The general approach of the minimum build alternaitve was to effectively extend HOV lanes north on US 101 from Whipple Avenue to I-380 by converting auxiliary lanes to through lanes (and adding auxiliary lanes back in some segments) and extend these lanes through the interchanges to create a 10-lane freeway. The inside lanes would then be restriped as HOV lanes and 8 continuous general purpose lanes would be maintained along the entire corridor. Auxiliary lanes would be eliminated in many segments except where traffic analysis showed the need to keep them for maintaining freeway operations.

In the northbound direction, the project would extend from the existing HOV lane terminus at Whipple Avenue to approximately half a mile south of the I-380 off-ramp, where it would then continue as a general purpose lane to the north. North of the I-380 off-ramp, this option would remain identical in geometric configuration to the future baseline (No Build) scenario.

In the southbound direction, geometric configuration for the project would be identical to future baseline conditions north of the San Bruno Avenue overcrossing. The HOV lane would begin south of the San Bruno Avenue overcrossing and continue to Whipple Avenue where it would conform to the existing HOV lane.

Freeway Performance Measures

The corridor-wide mobility performance results for Year 2040 are presented in the Staged Hybrid Memo (Kittelson/Dowling Associates, June 2012). The summary of results comparing the baseline conditions and the proposed project (staged hybrid HOV lane option) on the US 101 freeway corridor are presented in the table below.

Performance Measures	2040 No-Build	2040 Project (Staged HOV)	Project vs No- Build
VMT – vehicle miles of travel	4,925,100	5,145,620	4%
VHT – vehicle hours of travel	196,000	187,043	-5%
VHD – vehicle hours of delay	120,400	107,841	-10%
PMT – person miles of travel	5,197,700	5,839,950	12%
PHD – person hours of delay	120,600	109,240	-9%
Average vehicle speed (MPH)	25.1	27.5	9%
Average person speed (MPH)	25.9	29.3	13%

Table 5:	Freeway	S	vstem	Performance	Com	parison
			,			

As indicated in Table 5 above, the freeway performance for the Staged Hybrid HOV lane option operates with a higher performance than the future no-build condition. For the Staged Hybrid HOV lane option:

• Vehicle miles of travel would be increased by 4%, which would improve the productivity of the freeway;

- Both vehicle hours of travel and vehicle hours of delay would be reduced by 5%, and 10%, respectively, which could translate to lower gasoline consumption and greenhouse gas emissions;
- Person hours of delay would be reduced by 9%, which translates to direct cost savings for freeway users;
- Average peak period speeds would be increased for both vehicle-trips and persontrips.

Carpool vehicles and express transit buses would experience much improved travel time savings and reliability with the extension of the HOV lanes. All of these travel time savings or increases are for travel between 9 miles north of San Francisco county line in the southbound direction and 13 miles south of SR 85 in the northbound direction, which extends beyond the project limits as summarized in Table 6 below.

	No-Build Staged HOV				No-Build vs. Staged HOV			
Direction/ Peak	General purpose	HOV	HOV travel time saving	General purpose	HOV	HOV travel time saving	General purpose Diff	HOV Diff
	min	min	min	min	min	min	min	min
Average Peak Period Travel Time								
Northbound AM	108.6	54.5	54.1	110.2	47.3	62.9	1.6	-7.2
Northbound PM	169	61.4	107.6	135.6	50.8	84.8	-33.4	-10.6
Southbound AM	70.5	69.6	0.9	63.7	43.2	20.5	-6.8	-26.4
Southbound PM	95.6	61.6	34	100.2	61.9	38.3	4.6	0.3
Maximum Peak Hour Travel Time								
Northbound AM	161.8	63.3	98.5	169.3	52.1	117.2	7.5	-11.2
Northbound PM	249.7	75.5	174.2	189.9	65	124.9	-59.8	-10.5
Southbound AM	105.9	105.9	0	82.5	47.3	35.2	-23.4	-58.6
Southbound PM	139.8	88.4	51.4	149.9	79.9	70	10.1	-8.5

Table 6 – Travel Time Comparison

Source: Kittelson & Associates Inc./Dowling, June 2012; Peak period average travel times from FREQ analysis, including congestion south of SR 85 interchange (13 miles) and north of San Francisco County line (9 miles). Total distance is approximately 43 miles for northbound and 39 miles for southbound.

For the minimum build alternative, the analysis found that average peak period travel times for HOV's would generally be improved on the order of 7 to 26 minutes, except Southbound PM (worsens by 0.3 minutes). For general purpose lane users, average travel times would be significantly improved, on the order of 33 minutes of travel time savings compared to baseline conditions for PM peak period travel in the northbound direction, and 7 minutes for AM peak period in the southbound direction. However, Single Occupancy Vehicles (SOV's) using US 101 during the AM peak period in the northbound direction and PM peak period in the southbound direction would experience minor increases between 2 and 5 minutes when compared to baseline conditions.

For the minimum build alternative, maximum peak hour travel times (as opposed to the averages for the full peak period described above) would be affected to a much greater extent. HOV lane users would experience savings of 9 to 59 minutes. General purpose lane

users would experience significant maximum peak hour travel time savings for northbound travel in the PM peak period of 60 minutes, and 23 minutes for southbound travel in the AM peak hour. SOV's using US 101 during the AM peak hour in the northbound direction and PM peak hour in the southbound direction, however, would experience minor increases of between 8 and 10 minutes when compared to baseline conditions.

The travel time and delay savings discussed above are for the entire corridor evaluated in the previous study, i.e. 43 miles in the northbound direction and 39 miles in the southbound direction. It can be anticipated that about twenty-five perecent of these benefits can be realized withn the project limits (approximately 13 miles).

Freeway Bottlenecks and Queues Summary

Peak period general purpose lane bottleneck locations, as well as the locations and extent of congestion approaching controlling bottlenecks during the height of the peak, are described below for Year 2040 conditions with the minimum build alternative option. Only the bottleneck locations within the project limits are identified in this report. These bottlenecks result from increased demand on the 101 corridor (demand exceeding capacity) as the primary reason for the bottleneck.

Northbound AM Peak – During the AM peak period, three (3) bottlenecks would develop in the following freeway segments:

- Kehoe Avenue on-ramp to 3rd Avenue off-ramp
- 3rd Avenue on-ramp to Dore Avenue off-ramp
- Broadway on-ramp to Millbrae off-ramp

Based on previous study at the height of the peak (when delay or travel time through the corridor is the longest) it would take approximately 169 minutes for general purpose lane vehicles to travel a total of 43 miles from 13 miles south of SR 85 to San Francisco/San Mateo countyline of which 128 minutes are associated with the delay due to queues and bottlenecks. The Kehoe bottleneck will be embedded in a 2-mile queue extending to the Hillsdale Boulevard interchange from the 3rd Avenue bottleneck. Similarly, the Broadway bottleneck will be embedded in a 6-mile queue extending to south of the Broadway on-ramp from the Bayshore Boulevard bottleneck outside the project limit.

The HOV lane would generally operate at or near free flow speeds throughout the peak period, except between the SR 92 interchange and 3rd Avenue interchange, where it would operate with reduced speeds between about 30 and 50 MPH.

Northbound PM Peak – During the PM peak period, five (5) bottlenecks would develop in the following freeway segments:

- Kehoe Avenue on-ramp to 3rd Avenue off-ramp
- 3rd Avenue on-ramp to Dore Avenue off-ramp
- Anza Boulevard on-ramp to Broadway off-ramp
- Broadway on-ramp to Millbrae Avenue off-ramp
- Millbrae Avenue on-ramp to SFO Airport on-ramp

Based on previous study at the height of the peak it would take approximately 190 minutes for general purpose lane vehicles to travel a total of 43 miles from 13 miles south of SR 85 to

San Francisco/San Mateo countyline, of which about 150 minutes are associated with delay due to bottleneck and queuing effects. Within the study limits, the Kehoe bottleneck would result in queues extending to south of the Whipple Avenue interchange, or approximately 6.6 miles in length. Queues associated with the 3rd Avenue, Millbrae Avenue and Broadway on-ramp bottlenecks would be relatively short and would be contained within the interchanges. The Anza bottleneck would result in queues extending to south of the Peninsula interchange, approximately 2 miles in length.

The HOV lane would generally operate at or near free flow speeds throughout the peak period, except between the Holly interchange and SR 92 interchange, where it would operate with reduced speeds between about 20 and 40 MPH, and between the Peninsula interchange and the Broadway interchange, where speeds would be reduced to about 40 and 50 MPH.

Southbound AM Peak – During the AM peak period, three (3) bottlenecks would develop in the following freeway segments:

- SFO Airport on-ramp from international terminal to on-ramp from domestic terminal
- Poplar Avenue on-ramp to 3rd Avenue off-ramp
- Hillsdale Boulevard loop on-ramp to diagonal on-ramp

Based on previous study at the height of the peak it would take approximately 83 minutes for general purpose lane vehicles to travel a total of 39 miles from 9 miles north of San Francisco/San Mateo countyline to SR 85, of which about 45 minutes are associated with delay due to bottleneck and queuing effects. Within the study limits, both the SFO and Poplar bottlenecks will become hidden by the 10-mile queue from the downstream bottleneck at Hillsdale Boulevard. The HOV lane would operate at or near free flow speeds throughout the peak period.

Southbound PM Peak – During the PM peak period, no bottleneck locations would develop withinin the project limits (Whipple Avenue to I-380). However, two (2) bottlenecks would develop outside the project limits. Based on previous study at the height of the peak it would take approximately 150 minutes for general purpose lane vehicles to travel a total of 39 miles from 9 miles north of San Francisco/San Mateo countyline to SR 85, of which about 112 minutes are associated with delay due to bottleneck and queuing effects, outside the study limits. The HOV lane would operate at or near free flow speeds throughout the peak period.

Overall, freeway operations and performances would generally be improved with the Staged Hybrid HOV lane compared to the baseline conditions, as described above with travel time and productivity comparisons.

MAXIMUM BUILD ALTERNATIVE

The maximum build alternative lane configuration would be similar to that of the minimum build alternative, except auxiliary lanes would be added back at all locations where they currently exist. The maximum build alternative may result in less benefits than the alternative evaluated in the 2011 MTC study, since the maximum build alternative would add an HOV in each direction from Whipple Avenue to I-380 (approximately 14 miles), while the MTC study alternative would add and HOV lane in each direction from Whipple Avenue to Beatty Road near the San Mateo/San Francisco county line, a total distance of 19.5 miles. The MTC study alternative would result in the following:

- Delay for the HOV lanes will be significantly reduced. In 2015, the HOV demands would briefly exceed the physical capacity of the HOV lanes (1900 vph/lane) during the northbound AM peak period at Peninsula Avenue. In 2030 the HOV demands would not exceed HOV lane capacity.
- The added lanes would reduce bottlenecks and reduce congestion in the mixed flow lanes. In 2015, mixed flow lane travel times (for the full length of the freeway) would decrease by up to 14% (up to 6 minutes) depending on the peak period and direction. In 2030 the decrease would be up to 15% (approximately 8 minutes) compared to the baseline 2030 condition.
- Vehicle trip productivity of the freeway would be improved. After accounting for mode and route shifts estimated by the C/CAG model, this alternative would increase the productivity of the freeway by increasing vehicle-miles traveled (VMT) by 7% and reducing vehicle-hours of delay (VHD) by 20% compared to baseline conditions in 2015. In 2030, this alternative would increase VMT by 6% and reduce VHD by 4% compared to baseline conditions.
- Person-trip productivity of the freeway would also be improved. Person-miles traveled (PMT) would be increased by 8% and person-hours of delay (PHD) would be decreased by 24% in 2015 compared to baseline conditions. In 2030, PMT would be increased by 8% and PHD would be decreased by 8% compared to baseline conditions.
- In terms of the effects on the county as a whole, this alternative would generally increase both vehicle and passenger miles traveled, and would reduce delays and travel times throughout the county, for both 2015 and 2030.
- This alternative would provide significant time savings for carpoolers compared to mixed-flow traffic. In 2015 the HOV lane would operate up to 30% faster (8 to 12 minutes faster for traveling the full length of the freeway, depending on direction and peak period) than the mixed flow lanes. By 2030, as congestion continues to increase, travel time benefits for HOV would be as much as 52%, or 13 to 31 minutes savings, compared to the mixed flow lanes.
- This alternative would generally increase the vehicle capacity of US 101 freeway, thereby enabling some north-south traffic in the corridor to shift from parallel surface streets and freeways to the US 101 freeway.
- Improved travel time savings in the HOV lane would translate into better reliability for carpool vehicles, which would promote mode shift towards HOV's, rather than drive-alone. By 2015, HOV mode share would be increased by approximately 1.4% for the add lane scenario. By 2030, mode shift to HOV would be slightly higher at 1.8% for add lane.

E. Recommended Scope of the Traffic Studies for PA&ED

Traffic Forecasting - The recommended scope for the next phase traffic study is to obtain current freeway mainline and ramp volumes (including ramp intersection volumes), assess the existing conditions, and identify queuing issues and bottleneck locations. This analysis will help determine the study limits. The next phase of study will need to update the traffic forecast volumes using the new C/CAG model (combined Santa Clara/San Mateo County

model) and the freeway mainline analysis accordingly. At the time of commencement of the PA&ED phase, all approved/funded projects will be identified and considered under baseline conditions analysis. During the PA&ED Phase, coordination to determine implementation timing for the Santa Clara County Express Lane Project will be critical in developing scope for the corridor operational analysis.

Operations Analysis - More detailed ramp capacity analysis, and ramp intersection analysis would be performed within the traffic study limits defined above to further evaluate ramp queuing effects on arterial streets and freeways along the corridor. As opposed to FREQ, a macroscopic model, use of microscopic analysis models, such as CORSIM or VISSIM, should be explored for future analysis. Additionally, the impacts of weaving, merging, and bottlenecks on the mainline would require a weaving/merging analysis for the mainline in both directions within the study area as well as queuing analysis for the ramps. The affects of existing ramp metering locations and proposed locations (currently planned to be activated by Spring 2015) would be considered in the analysis.

Traffic Safety Analysis – Caltrans Traffic Operations Policy Directive 11-02 for a Managed Lane requires the preparation of a traffic safety analysis. Caltrans will initiate this process during the PA&ED phase by analyzing and evaluating the actual traffic safety performance of US 101 and identifying high risk areas that will be impacted by the proposed improvements. The study will include traffic safety field review for daytime and nighttime conditions and historical accident data from Caltrans Transportation System Network and the California Statewide Integrated Traffic Records System and evaluate operational and safety impacts of this project, including elimination of the auxiliary lanes where deemed necessary from both local and regional perspectives.

Traffic Safety Analysis Report is considered a living document all the way through to the approval of PS&E and will be updated as needed through the planning and design phases, until the final plans are approved for construction.

5. DEFICIENCIES

Based on previous traffic analysis, the traffic demands on US 101 corridor within the project limits would far exceed the available capacity during peak periods, adversely affecting travel speeds, increase vehicular delays, and create additional bottlenecks if no improvements are made to the corridor. 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 existing HOV lane system extends 6.6 miles from the Santa Clara County line into San Mateo County and ends at Whipple Avenue in Redwood City. North of Whipple Avenue, the northbound HOV users experience the same traffic congestion as other SOV drivers beginning at the Whipple Avenue interchange. Similarly, the southbound HOV users do not get the HOV benefit until after Whipple Avenue. The HOV lane discontinuity diminishes the incentive for drivers to carpool and to use public transit.

Accident Data

Collision data for the corridor was provided by Caltrans via their Traffic Accident Surveillance and Analysis System (TASAS). Table 7 summarizes the TASAS data for the entire study corridor.

Location	Post Mile	Number of Accidents			Actua (acc/m	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
NB/SB US 101 Between Projects Limits	6.30 to 20.8	2,325	13	731	0.64	0.004	0.20	0.98	0.004	0.30
Notes: Limits are from south of Whipple Avenue to North of I-380 Source: Caltrans TASAS data, 2009-2012										

As indicated in Table 7, there were a total of 2,325 accidents along the US 101 corridor between Whipple Avenue and I-380 in the three-year period between 2009 and 2012. Actual accident rates averaged for the entire segment are less than the average statewide rate for comparable facilities.

Type and Number		Percent	Primary Collision factors	Percent
of Collisions (%)		(%)	(Other Associated factors)	(%)
Rear End	1,329	57.2	Speeding and following too close	58.6
Hit Object	399	17.2	Improper turn	14.2
Sideswipe	452	19.4	Other violation	17.0
Others	145	6.2	Unknown	10.2
Total	2,325	100		100

More than 50% of accidents are rear end accidents, with the primary collision factors of speeding and following too closely. The primary reason for these rear-end accidents can be attributed to congestion. Thus, if the proposed improvements are implemented, then the number of accidents would be expected to decrease.

6. CORRIDOR AND SYSTEM COORDINATION

A. Identify Systems

Although US 101 is not part of the Interstate System, it is a principal arterial and part of the National Highway System (NHS), is a Strategic Highway Network (STRAHNET) route, and is part of the State Highway Extra Legal Load (SHELL) route system, which permits transport of loads exceeding limits of length, height, or weight as stated in the California Vehicle Code, Section 15. Caltrans' Interregional Transportation Plan (ITP) classifies US 101 as a "High Emphasis" and "Focus Route," making this route the highest priority for completion with at least minimum facility standards for the 20-year period. Focus routes serve as a system of high-volume primary arteries to which other state highway routes can connect for purposes of longer interregional trips and access to statewide gateways.

US 101 is a National Truck Network route, a Surface Transportation Assistance Act (STAA) route, and functions as a principal truck route between the Central Valley, Central Coast, and San Francisco Bay Areas. There are no truck advisories on US 101 within the project limits.

B. State Planning

US 101 was adopted into the California State Highway System in 1909. The present alignment within project limits was designated as Route 101 in 1937, and widened into a separated freeway in 1960. Within California, Route 101 is part of the California Freeway and Expressway System in accordance with the Streets and Highways Code. The 1985 Route Concept Report (RCR, 20-year route development planning document) identified the route concept for Route 101 as an 8-lane freeway within the project limits. The 2002 Transportation Corridor Concept Report (TCCR, 4-panel map used to expand on the MTC 2001 RTP to provide year 2025 facility and operational concepts) also identified Route 101 as an 8-lane freeway within project limits. Both the RCR and TCCR have now been replaced by the 2011 "US 101 South Corridor Concept". The Corridor Concept (also known as a Corridor Plan) provides Caltrans' vision for this route with respect to corridor capacity and operations for a 25-year planning horizon. The Corridor Concept specifies the 25-year concept for this section of US 101 as an 8-lane freeway but notes that the concept could be updated to convert HOV to HOT lanes depending on future studies currently being evaluated by Caltrans, MTC, C/CAG and SMCTA.

After passage of Proposition 1B in 2006, Caltrans has implemented the Corridor System Management Plan (CSMP) process statewide for all corridors with projects funded by the Corridor Mobility Improvement Account (CMIA) program. The California Transportation Commission (CTC) requires all corridors with a CMIA-funded project to have a CSMP that is developed with regional and local partners. The CSMP recommends how the congestion-reduction gains from the CMIA projects will be maintained with supporting system management strategies. CTC has also provided guidance in the 2008 RTP Guidelines that state that CSMPs are an important input to the development of the Regional Transportation Plans (RTP 2035).

In December 2010, Caltrans completed the CSMP for US 101 South corridor which revisited the planned future improvements along the corridor. The CSMP studied the mobility and performance of US 101 between the San Mateo/San Francisco County border to the US 101/SR 85 South Interchange in Santa Clara County. The plan recommended corridor management strategies such as Intelligent Transportation Systems (ITS), ramp metering, auxiliary lanes, and construction of HOV lanes to be consistent with a regional plan that can be converted to express lanes. The CSMP emphasized the importance of implementing the SMART Corridor Plan to redirect traffic during emergencies on US 101.

C. Regional Planning

The project is listed in the Metropolitan Transportation Commission's (MTC's) Plan Bay Area - Regional Transportation Plan (RTP) 2040 as adding HOV lane on U.S. 101 from Whipple to San Francisco County line. US 101 in San Mateo County is part of the MTC HOV Master Plan and the Bay Area Express Lanes network as published in the Bay Area High-Occupancy/Toll (HOT) Network Study Final Report.

D. Transit Operator Planning

The CSMP for US 101 South Corridor identifies multiple transit opportunities that can assist in managing congestion in the corridor — mass transit for the longer distance and local transit specifically in areas where congestion is experienced.

Local bus service is provided by San Mateo County Transit District (SamTrans). SamTrans provides express, intercity, and local bus service throughout San Mateo County. Several express and intercity lines extend into downtown San Francisco and Palo Alto. An important express line is the KX that connects Redwood City, SFO and San Francisco. Many of the express bus services operate along US 101, and in addition to these services SamTrans operates several intercity routes on El Camino Real and other arterials parallel to US 101.

Caltrain service is the commuter rail service backbone of the Peninsula, offering baby bullet express trains on an hourly schedule Monday through Friday. Caltrain runs train service from San Francisco to Gilroy, with a total of 49 northbound and 49 southbound trains. In some segments the Caltrain tracks run parallel to US 101. The tracks do not cross US 101 within the project limits.

Bay Area Rapid Transit (BART) serves the Peninsula as far south as Millbrae and SFO, providing a regional rail line in the norhern US 101 corridor. The three southernmost BART stations are parallel to US 101 and they provide easy access to downtown San Francisco. SamTrans has reconfigured its routes throughout northern San Mateo County to serve BART.

Adding HOV lanes to US 101 could have the following impacts on travelers' mode choice:

- HOV Travel times by HOV could be reduced, making this mode more attractive. This
 would draw trips primarily from SOVs because express bus service on the freeway
 would also experience significant improvements in travel time. The HOV mode, with its
 reduced travel times, may draw some riders from the existing BART and Caltrain
 services.
- Transit Express buses operating along US 101 could experience reduced travel times, making express bus service on US 101 more attractive than it is now. Caltrain and SamTrans daily system ridership could each be reduced about 1% due to the added HOV lanes. BART could experience a similar decrease.

E. Local Planning

The City/County Association of Governments (C/CAG) of San Mateo County is the county's Congestion Management Agency (CMA), and is responsible for the coordination, planning, and programming of transportation, land-use, and air quality related programs and projects. C/CAG released the 2011 San Mateo County Congestion Management Plan (CMP) which identifies the county's congestion relief plan, and includes elements that are intended to be a comprehensive package of policies and actions that together will make a measurable impact on current congestion and slow the pace of future congestion. As with Caltrans' CSMP, the CMP focuses on an operational improvement strategy that emphasizes ITS elements such as the SMART Corridor and a ramp metering program. The 2011 San Mateo County CMP is

consistent with the MTC Transportation 2040 RTP, which includes the addition of HOV lanes within this segment of US 101.

The San Mateo County Transportation Authority (SMCTA) was formed in 1988 with the passage of the voter-approved half-cent sales tax for countywide transportation projects and programs, known as Measure A. The original Measure A expired Dec. 31, 2008. In 2004, the county voters overwhelmingly approved a reauthorization of Measure A through 2033. The TA's role is to administer the proceeds from Measure A to fund a broad spectrum of transportation-related projects and programs. In October 2012, SMCTA approved funding for the following projects within the project limits:

Post mile	Sponsor	Project Description	Project Phase
8.5	City of San Carlos	US 101 Holly-St Interchange - a Type L-9 partial cloverleaf has been proposed to replace the existing Type L-10 four-quadrant cloverleaf (EA-04-1G6201).	PA& ED
11.0	City of San Mateo	US 101-Hillsdale Blvd pedestrian and bicycle overcrossing (EA 04-4H330)	PSR-PDS
12.1	C/CAG	US 101/92 Interchange	Preliminary Study
14.9	City of San Mateo	A new southbound US 101/Peninsula Ave Interchange (EA 04-4H460) has been proposed. The southbound US 101ramps at Poplar Ave (14.3 PM) would be eliminated.	PSR-PDS
16.5	City of Burlingame	US 101/Broadway interchange (EA-04-235844) project - reconstruct the interchange.	Construction

Table 8: SMCTA Approved Projects

7. ALTERNATIVES

The approach taken in developing alternatives for this PSR-PDS was to identify two build alternatives, minimum geometric design (minimum build) and maximum geometric design standard (maximum build) alternatives, which would establish a study area that satisfies the project's purpose and need and identify project factors that must be analyzed and resolved in the PA&ED phase.

A. No-Build Alternative

Under the No-Build Alternative, no HOV lanes would be constructed along US 101 from the Whipple Road Interchange to the I-380 Interchange. The existing lane configuration along US 101 would remain as they currently exist. The No-Build Alternative represents the baseline alternative and offers a basis for assessing current conditions and for comparing the build alternatives. This alternative would include all currently planned and programmed projects on US 101 within the project limits through the year 2040 as identified in the US101 CSMP including following. All of these projects have currently been constructed except for the 101/Broadway interchange project:

Project Name	Description
101 Aux Lanes – Marsh to Embarcadero	Widen NB and SB auxiliary lane segments from 4 lanes to 5
101 Aux Lanes and Ramp Metering – 3rd to Millbrae	Widen NB and SB auxiliary lane segments from 4 lanes to 5 and install ramp metering equipment. Ramp meters will be turned on as widening construction is completed.
101 SMART Corridor	Emergency re-route of traffic on US-101 via ITS and static signs on freeway, intersections, and parallel arterial streets. Includes emergency traffic signal timing plans and emergency response coordination via Caltrans freeway management center in Oakland.
101 Ramp Metering	Caltrans' SHOPP project for Ramp Metering from Route 92 to SF County line
101/Broadway Interchange	Reconstruct the interchange to improve traffic operations in the interchange area. (To be completed in 2017)

Table 9: CSMP Baseline Improvement projects

B. Minimum Geometric Design (Minimum Build) Alternative

The minimum geometric design (minimum build) alternative would extend existing auxiliary lanes through the interchanges without replacing existing overcrossing structures to create a continuous fifth through lane. The leftmost inside lane would be converted to an HOV lane.

Based on results from the 2012 Kittelson & Associates US 101 Hybrid HOV Lane Analysis Report Final Mainline Report, auxiliary lanes were proposed to be added back at only some of the locations where there are existing auxiliary lanes. The list of these added auxiliary lane locations is presented below, with the addition of 3 more auxiliary lanes; Auxiliary lanes in both the northbound and southbound directions at the Broadway off-ramps and in the northbound direction at the Holly Street off-ramp have been added to the Minimum alternative to be consistent with the latest two lane off-ramps proposed to be constructed at these interchanges. A traffic operational analysis during the PA&ED would confirm if these proposed auxiliary lane locations would be viable, feasible and cost effective to address particular congestion bottlenecks.

Northbound Direction (6 out of the 10 auxiliary lanes are proposed to be restored)

- 2,000' before Holly Street off ramp
- Marine Parkway/Ralston Avenue diagonal on-ramp to Hillsdale off-ramp
- Hillsdale Boulevard diagonal on-ramp to SR 92 off-ramp
- SR 92 WB diagonal on-ramp to lane drop just south of Kehoe Ave
- Anza Boulevard on-ramp to Broadway off-ramp
- Millbrae on-ramp I-380 Westbound off-ramp

Southbound Direction (7 out of the 9 auxiliary lanes are proposed to be restored)

- Last SFO on-ramp to Millbrae Avenue off-ramp
- Millbrae Avenue on-ramp to Broadway off-ramp
- 3rd Avenue on-ramp to SR 92 off-ramp
- SR 92 EB on-ramp to Hillsdale Boulevard off-ramp

- Hillsdale Boulevard on-ramp to Marine Parkway/Ralston Avenue off-ramp
- Ralston Avenue/Harbor Boulevard on-ramp to Holly Street off-ramp
- Holly Street/Brittan Avenue on ramp to Whipple Avenue off-ramp

At two (2) northbound locations, partial auxiliary lanes (deceleration lanes) in advance of the exit are proposed in order to maintain existing 2-lane off-ramps:

- Northbound off-ramp at Marine Parkway
- Northbound off-ramp at SFO

Similarly for the southbound direction approaching the SR 92 connector, a deceleration lane would be maintained approaching the connector in order to keep the off-ramp at 3-lanes.

The general scope of work for the minimum build includes reconstruction of approximately 40% of the freeway's median barrier, 15 acres of new pavement area, five retaining walls, one soundwall, widening of five culverts/bridges, three new drainage culverts, narrowing of two adjacent frontage roads and realignment of four collector-distributor roads. The project footprint for the minimum build alternative would constitute the lower limit of studies during PA&ED phase. 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 need to be acquired as necessary.

The capital construction cost for this alternative is about \$85 million, with \$80.4 million for roadway and environmental items, \$4.1 million for structures and \$0.3M for right of way and utilities.

C. Maximum Geometric Design (Maximum Build) Alternative

The maximum build alternative has all the features of the minimum build alternative. In addition, all existing auxiliary lanes would be restored. In areas of restrictive conditions, i.e. the north/west side bounded by wetland and in the area south of Poplar Avenue to Third Avenue, the proposed configuration would consist of a 2-foot-wide inside shoulder, 11-foot-wide travel lanes and an 8-foot-wide wide outside shoulder for the freeway typical section. Where there are existing frontage roads, frontage roads would be reduced to two 11-foot wide lanes with an 8 foot shoulder for parking.

The general scope of work for the maximum build includes reconstruction of approximately 50% of the freeway's median barrier, 27 acres of new pavement area, seven retaining walls, five soundwalls, widening of five culverts/bridges, three new drainage culverts, narrowing of four adjacent frontage roads and realignment of four collector-distributor roads. This layout would require the relocation of two gas transmission lines, an underground electric line, multiple overhead electric lines, a sanitary sewer line, a water line and partial acquisitions of right of way from 15 residential properties. The project footprint and study area for the maximum design alternative would constitute the upper limit of studies during PA&ED phase.

Nonstandard design features associated with the alternatives would require review and approval during the PA&ED phase. Approval of the PSR-PDS does not constitute approval of these non-standard design features. The capital construction cost for this alternative is about \$158 million,

with \$137.7 million for roadway and environmental items, \$4.1 million for structures and \$15.7 million for right of way and utilities.

Analysis of Alternatives

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.

- <u>Local and Through Traffic Degradation</u>: Minimize degradation of local and through traffic using the facilities as compared to the no build alternative.
- <u>Maximum Use of Existing Facilities</u>: Maximize use of the existing facilities to create the new HOV lanes and minimize impacts to structures, right of way, and the environment.
- <u>Environmental Impacts</u>: There is a range of potential environmental impacts for the project as identified in the PEAR (Attachment D), including potential 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.
- Sea Level Rise Consideration: Caltrans developed the *Guidance on Incorporating Sea-Level Rise (May 2011)* to address sea level rise impacts on existing infrastructure and future projects. The Guidance provides screening criteria for construction projects within vulnerable areas to determine whether a range of sea level rise scenarios need to be considered. If sea level rise analysis is warranted, scenarios should be considered for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise.

Since the project area along the US 101 corridor is vulnerable to sea level rise and the design life of the project is beyond 2030, the project is obligated to do an analysis of sea level rise and adaptation. To address impacts of sea level rise, a large portion of US 101 would either require relocation, raising or other large scale improvements to reduce or avoid the effects of sea level rise in this area. Such alternatives would likely involve substantial residential and business relocations and impacts to environmentally sensitive areas.

• <u>Design Standards:</u> All nonstandard design features will require evaluation and justification in the PA&ED phase. These standards include lane widths, median width, inside and outside shoulder widths, vertical clearance, deceleration lane lengths, stopping sight distance, decision sight distance, ramp entrance and exit, distance between successive on-ramps, auxiliary lane length, interchange spacing, partial interchanges, weaving length, radius of curvature and superelevation.

Table 10, Table 11 and Table 12 summarize non-standard design features and the probability of design exception approval. Probabilities of approvals were determined during two geometric focus meetings with Larry Moore (Project Delivery Coordinator) on August 27 and October 28, 2014.

Table 10: Design Standards Risk Assessment for Minimum Build Alternative

#	Proposed or Existing Feature	Design Standard from HDM Tables 82.1A & 82.1B	Description	Probability of Approval (None, Low, Medium, High)	Justification for Probability Rating
1	Existing	Index 201.1 Stopping sight Distance (Mandatory)	4 horizontal curves along mainline #1 lane	Medium	Some soundwall and right-of-way impacts
2	Proposed	Index 202.2 Standards for Superelevation (Mandatory)	6 ramps	Medium	Right of way impacts.
3	Existing	Index 203.2 Curvature- Minimum Radius (Mandatory)	4 ramps	Medium	Frontage road & right-of-way impacts
4	Existing & Proposed	Index 301.1 Lane Width (Mandatory)	Mainline generally #2,#3 & #4 lanes 11' wide	Medium	Some impact to soundwalls & frontage roads
5	Existing & Proposed	Index 302.1 Inside Shoulder Width (Mandatory)	Mainline generally 2' to 4'	Medium	Some impact to soundwalls & frontage roads
6	Proposed	Index 302.1 Outside Shoulder Width (Mandatory)	Mainline at overcrossings & some ramps	Medium to High depending on location	High impact to overcrossing structures (replace)
7	Existing & Proposed	Index 305.1 Median Width (Mandatory)	Mainline generally 6' to 10'	Medium	Some impact to soundwalls & frontage roads
8	Existing & Proposed	Index 309.1 Horizontal Clearance (Mandatory)	Mainline generally 2' to 4'	Medium	Some impact to soundwalls & frontage roads
9	Existing	Index 309.2 Vertical Clearance (Mandatory)	At 6 Overcrossings	Medium to High depending on location	High impact to overcrossing structures (replace)

#	Proposed or Existing Feature	Design Standard from HDM Tables 82.1A & 82.1B	Description	Probability of Approval (None, Low, Medium, High)	Justification for Probability Rating
10	Existing	Index 501.3 Interchange Spacing (Mandatory)	10 interchanges	High	High impact to right-of-way if rebuilding & to traffic if removing interchange
11	Existing	Index 502.2 Partial Interchange/ Isolated ramps (Mandatory)	7 interchanges	High	High impact to right-of-way if rebuilding & to traffic if removing interchange
12	Proposed	Index 504.2 Ramp Deceleration Length (Mandatory)	8 ramps	Low to Medium depending on location	Some impacts to frontage roads & Right- of-way
13	Existing	Index 504.7 Minimum Weave Length (Mandatory)	5 interchanges	 Medium to High depending on location 	High impact to right-of-way if moving interchange ramps
14	Existing	Index 201.7 Decision Sight Distance (Advisory)	5 ramps	Medium	Some soundwall and right-of-way impacts
15	Existing	Index 504.2 Ramp Entrance & Exit Standards (Advisory)	9 ramps	Medium	Some soundwall and right-of-way impacts
16	Existing	Index 504.3 Successive On- ramp Distance (Advisory)	2 ramps	Medium	Right-of-way impacts
17	Proposed	Index 504.5 Auxiliary Lanes Length (Advisory)	1 ramp	Medium	Frontage road & right-of-way impacts

Table 11: Design Standards Risk Assessment for Maximum Build Alternative

#	Proposed or Existing Feature	Design Standard from HDM Tables 82.1A & 82.1B	Description	Probability of Approval (None, Low, Medium, High)	Justification for Probability Rating
1	Existing	Index 201.1 Stopping Sight Distance (Mandatory)	4 horizontal curves along mainline #1 lane	High	Some soundwall & right-of-way impacts
2	Proposed	Index 202.2 Standards for Superelevation (Mandatory)	5 ramps	High	Impact to frontage road and right-of- way
3	Existing	Index 203.2 Curvature- Minimum Radius (Mandatory)	4 ramps	Medium	Frontage road and right-of- way impacts
4	Existing & Proposed	Index 301.1 Lane Width (Mandatory)	Mainline generally #2,#3 & #4 lanes 11' wide	High	High impact to frontage roads & right-of-way
5	Existing & Proposed	Index 302.1 Inside Shoulder Width (Mandatory)	Mainline generally 2' to 8'	High	High impact to frontage roads & right-of-way
6	Proposed	Index 302.1 Outside Shoulder Width (Mandatory)	Mainline at overcrossings and some ramps	Medium to High depending on location	High impact to overcrossing structures (replace)
7	Existing & Proposed	Index 305.1 Median Width (Mandatory)	Mainline generally 6' to 10'	High	High impact to frontage roads & Right-of-way
8	Existing & Proposed	Index 309.1 Horizontal Clearance (Mandatory)	Mainline generally 2' to 8'	High	High impact to frontage roads & right-of-way
9	Existing	Index 309.2 Vertical Clearance (Mandatory)	At 6 Overcrossings	Medium to High depending on location	High impact to overcrossing structures (replace)
10	Existing	Index 501.3 Interchange Spacing (Mandatory)	10 interchanges	High	High impact to Right-of-way if rebuilding & to traffic if removing interchange

#	Proposed or Existing Feature	Design Standard from HDM Tables 82.1A & 82.1B	Description	Probability of Approval (None, Low, Medium, High)	Justification for Probability Rating
11	Existing	Index 502.2 Partial Interchange/ Isolated ramps (Mandatory)	7 interchanges	High	High impact to Right-of-way if rebuilding & to traffic if removing interchange
12	Proposed	Index 504.2 Deceleration Length (Mandatory)	8 ramps	High	Impact to frontage roads and Right-of- way
13	Existing	Index 504.7 Minimum Weave Length (Mandatory)	5 interchanges	Medium to High depending on locations	High impact to right-of-way if moving interchange ramps
14	Existing	Index 201.7 Decision Sight Distance (Advisory)	5 ramps	Medium	Some soundwall & right-of-way impacts
15	Existing	Index 504.2 Ramp Entrance & Exit Standards (Advisory)	9 ramps	Medium	Some soundwall & Right-of-way impacts
16	Existing	Index 504.3 Successive On- ramp Distance (Advisory)	2 ramps	Medium	Right-of-way impacts

Table 12: Design Standards Risk Assessment for Maximum Build Alternative at Constraint Segment (Broadway to 3rd Ave)

#	Proposed or Existing Feature	Design Standard from HDM Tables 82.1A & 82.1B	Description	Probability of Approval (None, Low, Medium, High)	Justification for Probability Rating
17	Proposed	Index 301.1 Lane Width (Mandatory)	All 11-foot- wide lanes	High	High impact to frontage road soundwall & right-of-way
18	Proposed	Index 302.1 Inside Shoulder Width (Mandatory)	2'	High	High impact to frontage road soundwall & right-of-way

D. Alternative Considered But Eliminated from Further Discussion

Full Design Standard Alternative – The PSR-PDS evaluated an alternative that added an HOV lane in each direction with perpetuation of all existing auxiliary lanes and improvements to existing features to full design standards within the project limits. While this alternative provides compliance with design standards, there would be significant environmental, cost and right-of-way impacts. Under this full design standard alternative, nine (9) interchanges and twelve (12) structures would need to be reconstructed due to the outside widening and compliance with mandatory design standards. It would require closure of two partial interchanges and construction of two (2) braided ramp systems. The right-of-way impacts would consist of more than 300 residential takes and 4.5 million square feet of commercial or industrial takes.

The order of magnitude project cost for the full design standard alternative was estimated at \$1.5 billion.

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. The minimum build alternative would not require any partial fee acquisitions if design exceptions are approved as listed above, but may require temporary construction easements. The right of way requirements for the maximum build alternative include partial acquisitions of right of way from 15 residential properties and utility impacts as discussed below. A Conceptual Cost Estimate - Right of Way Component sheet has been prepared and is shown in Attachment F.

B. Railroad

Two Bay Area Rapid Transit (BART) rail line structures cross over 101 at the San Francisco International Airport. Neither build alternative is anticipated to modify the BART structures or bents. A clause will be added to the project plans reminding the contractor that rail facilities are within the project limits.

C. Utilities

It is anticipated that the minimum build alternative will have minor 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.

Minimum Geometric Design Alternative

The impact to existing utilities would be very limited and can be estimated at a cost of about \$0.3M.

In areas where the relocation of a soundwall is proposed, existing utility poles and overhead lines may be impacted. These locations include the NB Diagonal Off-ramp to 3rd Ave at Beacon Ave/S Bayshore Blvd and the SB Diagonal On-ramp from 3rd Ave at East 5th Ave/S Amphlett Blvd.

Maximum Geometric Design Alternative

The impact to existing utilities is estimated to be in the range of \$16 million.

In areas where the relocation of a soundwall is proposed, existing utility poles and overhead lines, water mains, sewer mains and gas mains will be impacted and will need to be relocated.

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

C/CAG and SMCTA authorized the initiation of the PID phase in December 2012. Community involvement and public outreach will be conducted as part of the PA&ED Phase.

10. ENVIRONMENTAL DETERMINATION AND DOCUMENTATION

The appropriate level of environmental document for either alternative is an Initial Study/Complex Environmental Assessment (IS/Complex EA) with a Mitigated Negative Declaration (MND) for CEQA and Findings of No Significant Impact (FONSI) for NEPA. During the course of PA&ED phase, if a potentially significant impact is discovered which cannot be mitigated, an Environmental Impact Report/Environmental Impact Statement (EIR/EIS) would be needed.

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/Complex EA) would take approximately 18 months for the Minimum Alternative and 28 months for the Maximum Alternative 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 below and in the Preliminary Environmental Assessment Report (PEAR) included as Attachment D.

Minimum Geometric Design Alternative

The minimum alternative would require only minor work outside of the existing US 101 right of way. There would be only minimal concerns related to community impacts, hazardous waste, cultural resources and visual impacts. More detailed analysis would still be required for potential air quality, noise, climate change and biological impacts. If culvert work is needed, a CDFW Streambed Alteration Agreement, a Nationwide Section 404 permit, and a Water Quality Certification may be required.

<u>Maximum Geometric Design Alternative</u> The maximum alternative would require substantial widening and modifications at several key interchanges. These modifications would require numerous right of way acquisitions of businesses as well as residences. In addition, this alternative would use land from several Section 4(f) recreational facilities including the Bay Trail, Coyote Point Park, and Bayside Park and likely require preparation of an Individual Section 4(f) Evaluation. Impacts to biological resources would potentially include several federally and state listed species as well as impacts to jurisdictional waters of the U.S., including wetlands. This alternative would also have greater visual impacts due to the structures and trees removed as part of the widening and modification work. Like the minimum alternative, air quality, climate change, and noise impacts would be concerns as well. With respect to noise, because the widening would be to the outside and would move vehicles closer to sensitive receptors, its noise impacts are anticipated to be greater. This alternative would also have more likelihood to trigger more in-depth evaluations for hazardous materials/waste and cultural resources since it would involve greater areas and depths of ground disturbing activities.

The maximum alternative would necessitate the full suite of biological permits including potentially a CDFW Streambed Alteration Agreement, a USACE Section 404 permit, a Water Quality Certification, a BCDC permit, SHPO Consultation and Section 7 consultation with both USFWS and NMFS.

11. FUNDING

Preliminary cost estimates are provided in Attachment C. It is anticipated that this project will be funded from federal, state and local sources. A summary of costs for the project alternatives is provided below.

<u>ITEM</u>	Costs	(Millions)			
	Minimum Alternative	Maximum Alternative			
<u>Capital Outlay Costs</u>					
Roadway Items	\$75.8	\$132.9			
Structure Items	\$4.1	\$4.1			
Environmental Mitigation Iten	ns \$4.6	\$4.8			
Right of Way Costs	\$0.3	<u>\$15.7</u>			
Subtotal	\$84.8	\$157.5			
Capital Outlay Support Costs					
a) PA/ED Phase	\$6.8	\$7.4			
b) PS&E	\$15.3	\$28.2			
c) Construction Phase	\$12.7	<u>\$21.3</u>			
Subtotal	\$34.8	\$56.9			
TOTAL PROJECT COSTS (Rounded) \$120 \$215					

A. Capital Outlay Project Estimate

Capital Outlay Estimate (Escalated to 2017 dollars)				
	Range of Cost	STIP Funds	Fund Source "Local"	
Build Alternatives	\$85M TO \$158M	TBD	Local Sales Tax	

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

B. Capital Outlay Support Estimate

The capital outlay support cost needed to complete the PA&ED phase is estimated to range from \$6.8 million for the Minimum Alternative to \$7.4 million for the Maximum Alternative. A cooperative agreement will be executed between Caltrans and the implementing agency prior to the start of the PA&ED phase. Separate future Cooperative Agreements for the PS&E, Right of Way and Construction phases of the project will be prepared before those phases begin.

12. SCHEDULE

Project Milestones	Delivery Date (Month, Year)	
Begin Environmental	December 2015	
Circulate DED	May 2017	
Complete PA&ED	April 2018	
Begin PS&E	May 2018	
Begin Construction	November 2020	
End Construction	February 2023	

The following assumptions were made to develop project schedule as outlined above. These assumptions are:

- Funding will be in place for each phase of the project (PA&ED, PS&E and Construction).
- Schedule is based on the maximum alternative, which includes partial right of way acquisitions, but no buildings impact.
- Communities along the corridor will support the locally preferred alternative without litigation or delaying the project.
- The majority of design exceptions listed as medium to high probability of approval will be approved by Caltrans, including existing longitudinal utility encroachments.

As the project moves forward, there may be opportunities to expedite the delivery schedule. If these opportunities arise, i.e. such as expediting review and approval processes, early consensus of on locally preferred alternative, etc., the Project Development Team will explore and implement accelerating the delivery schedule.

13. RISKS

A Listing of potential risks is included in the risk register as Attachment G. In summary, the main risks are as follows:

- 1) Right of Way risks include potential delay in R/W acquisitions and longitudinal encroachment approval of existing utilities.
- 2) Design risks include delay in approval of design exceptions and reaching an agreement on preferred alternative.
- 3) Project management risks include timely reviews by Caltrans, SMCTA and C/CAG, and coordination with other stakeholders and agencies.
- 4) Construction risks include discovery of man-made buried objects, unidentified utilities, findings of cultural significance, and insufficient funding.
- 5) Environmental risks include challenges to obtaining environmental approval, and consultation with impacted resource agencies (wetlands, water of US, biological impacts)

14. FHWA COORDINATION

The project is considered an assigned project under the current 2010 Joint Stewardship and Oversight Agreement between FHWA and Caltrans. US 101 is not part of the Interstate System and therefore does not need FHWA approval for access modifications or exceptions to Mandatory Design Standards. However, the north end of the project does propose some modifications near the connectors to I-380. During the PA&ED if it is determined the viable alternatives do propose access modifications or Mandatory Design Standards to the I-380 connectors, FHWA will be consulted for approval.

15. DISTRICT CONTACTS

Caltrans Project Manager	Ron Moriguchi	(510) 286-5073
Caltrans Project Development Team Leader	Mimy Hew	(510) 286-5578
Caltrans Environmental Analysis	Kathy Boltz	(510) 622-8706
Caltrans Right of Way	Kristen Schober	(510) 286-5327
Caltrans Traffic Operations	Lance Hall	(510) 286-6311
Caltrans Project Delivery Coordinator	Larry Moore	(916) 653-2647

16. PROJECT REVIEWS

The project was reviewed by Larry Moore, Project Delivery Coordinator on August 27, September 18, and October 28, 2014.

17. ATTACHMENTS

- A. Minimum Build Alternative Layouts and Typical Cross Sections
- B. Maximum Build Alternative Layouts and Typical Cross Sections
- C. Capital Outlay Project Estimate
- D. Preliminary Environmental Analysis Report (PEAR)
- E. Transportation Planning Scoping Information Sheet
- F. Right of Way Conceptual Cost Estimate
- G. Risk Register

18. REFERENCES

- MTC's Transportation Plan Bay Area December 2013

 <u>http://www.mtc.ca.gov/planning/plan_bay_area/</u>
- California Manual on Uniform Traffic Control Devices 2014

 <u>http://www.dot.ca.gov/hq/traffops/engineering/mutcd/ca_mutcd2014.htm</u>
- Caltrans Interregional Transportation Strategic Plan (ITSP) June 1998
 <u>http://www.dot.ca.gov/hq/tpp/offices/oasp/itsp.html</u>
- Caltrans Traffic Operations Policy Directive (TOPD 11-02) for Updated Managed Lane Design - March 2011
 http://www.det.eo.gov/bg/troffopg/policy.htm
 - o http://www.dot.ca.gov/hq/traffops/policy.htm
- Caltrans High Occupancy Vehicle (HOV) Guidelines August 2003

 <u>http://www.dot.ca.gov/hq/traffops/trafmgmt/hov/hov_sys/guidelines/</u>

ATTACHMENT A

Minimum Build Alternative Layouts and Typical Cross Sections




























SCALE: 1" =	200'
12/10/14	

US 101 HOV LANES PROJECT – WHIPPLE AVENUE TO I–380 MINIMUM FOOTPRINT ALTERNATIVE SHEET 13

ATTACHMENT B

Maximum Build Alternative Layouts and Typical Cross Sections





























SCALE:	1"	=	200'		
12/10	/14				

US 101 HOV LANES PROJECT – WHIPPLE AVENUE TO I–380 MAXIMUM FOOTPRINT ALTERNATIVE SHEET 13

ATTACHMENT C

Capital Outlay Project Estimate

Project Study Report – Project Development Support Capital Outlay Project Estimate

Dist - Co - Rte____04-SM-101____

PM <u>6.3/20.8</u>

Program Code_____

Project Number 04-1J560K

Month/Year March 2015

PROJECT DESCRIPTION: US 101 HOV Lanes

Limits: Along US 101 from south of Whipple Ave to south of I-380

Proposed Improvement (Scope): Continuous HOV Lane in both directions of US 101

Alternate: Minimum and Maximum builds

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	\$ <u>75.8M -132.9M</u>
TOTAL STRUCTURE ITEMS	\$4.1M
TOTAL ENVIRONMENTAL MITIGATION ITEMS	\$ <u>4.6M - 4.8M</u>
SUBTOTAL CONSTRUCTION COSTS	\$ <u>84.5M -141.8M</u>
TOTAL RIGHT-OF-WAY ITEMS	\$ <u>0.3M - 15.7M</u>

TOTAL PROJECT CAPITAL OUTLAY COSTS\$84.8M -157.5M

I. ROADWAY ITEMS

Average Cost per Lane Mile		Mile	Number of Lane Mile		Total Cost
Total Cost \$	<u>5.41M - 9.49M</u>	X	14	= \$ <u>7</u>	5.8M -132.9M

Explanation: This includes road items such as new pavement, barriers, soundwalls, retaining walls, temporary and permanent water pollution control, lighting, signage, and traffic operations.

Contact Steve Ojeda at (408) 453-5373 if further information is needed.

TOTAL ROADWAY ITEMS: \$ 75.8M-132.9M

II. STRUCTURES ITEMS

	Minimum Build	Maximum Build
Bridge Name	Bridge/Culvert	Bridge/Culvert
Total Cost for Structure	\$4.1M	\$4.1M

Explanation:

Culvert/bridge widening along the corridor, but no reconstruction of overcrossings. New culverts will be necessary at some ramp realignment locations.

TOTAL STRUCTURE ITEMS: \$4.1M

III. ENVIRONMENTAL MITIGATION

	<u>Quantity</u>	<u>Unit</u>	Unit Price	Item Cost
Environmental Mitigation		X	=	

Explanation: Environmental Mitigations are shown in Attachment D of the PEAR, and include allowances for noise abatement/mitigation, landscape restoration, mitigation for potential archeological and biological resources, and impacts to possible wetlands within project limits.

TOTAL ENVIRONMENTAL MITIGATION ITEMS: \$4.6M - 4.8M

IV. RIGHT-OF-WAY ITEMS

Escalated Value

A.	Acquisition, including excess lands, damages to remainder(s) and Goodwill	\$ <u>0 - 0.7M</u>
B.	Utility Relocation (project share)	\$ <u>0.3M -15.0M</u>

Anticipated Date of Right-of-Way Certification <u>April 2020</u>

Explanation:

Maximum build requires right of way acquisition and greater impacts to existing utilities.

TOTAL RIGHT-OF-WAY ITEMS: \$0.3M - 15.7M

ATTACHMENT D

Preliminary Environmental Analysis Report (PEAR)



1. Project Information

District	County	Route	PM	EA
04	San Mateo	101	6.3/20.8	04-1J560K
Project Title:				
Add HOV Lanes on	U.S. 101 from Whipp	ble Avenue to I-380		
Project Manager			Phone #	
Ron Moriguchi			(510) 286-5073	
Project Engineer			Phone #	
Karsten Adam		(408) 453-5373		
Environmental Offic	e Chief/Manager		Phone #	
Stefan Galvez			(510) 286-5506	
PEAR Preparer			Phone #	
Kelly Dunlap			(916) 414 1600	

2. Project Description

Purpose and Need

Project Purpose

The purpose of this project is to:

- Improve travel time for high occupancy vehicles along the US 101 corridor;
- Encourage carpooling and usage of transit;
- Increase person throughput (i.e., number of people moved) on US 101 in San Mateo County;
- Provide lane continuity on US 101 in San Mateo County, as called for in the Regional Transportation Plan (RTP ID 240060).

Need for the Project

US 101 between Santa Clara County line and I-380 is currently an 8-lane facility (4 through-lanes in each direction) with auxiliary lanes between most interchanges. The southern segment from Santa Clara County line to Whipple Avenue in Redwood City consists of 1 HOV lane + 3 mixed-flow lanes in each direction. The northbound HOV lane ends at the Whipple Avenue interchange while the southbound HOV lane begins at the Whipple Avenue interchange. From Whipple Avenue to San Francisco County line, US 101 consists of 4 mixed-flow lanes in each direction.

During peak hours, generally all lanes are congested resulting in overall degradation of operations in the corridor. Commuters with multiple passengers and commuter buses traveling on US 101

within the project limits also experience the same delays in both northbound and southbound directions in the AM and PM peak hours as the non HOV traffic.

Description of work

The project would extend the HOV lanes on the US 101 freeway in San Mateo County for approximately 14 miles from Whipple Avenue to the south to just I-380 to the north in each direction. To get a more detailed understanding of the potential environmental impacts of the project, the following description was developed in greater detail than provided in the PSR/PDS.

Alternatives

The PSR-PDS evaluated the no build and two build alternatives – the minimum geometric design alternative and the maximum design alternative.

Minimum Geometric Design Alternative

The minimum geometric design alternative would extend existing auxiliary lanes through the interchanges without replacing existing overcrossing structures to create a continuous fifth through lane. The leftmost inside lane would be converted to an HOV lane. Existing auxiliary lanes in the following locations would be added back to address particular congestion bottlenecks.

Northbound Direction

- 2,000' before Holly Street off ramp
- Marine Parkway/Ralston Avenue diagonal on-ramp to Hillsdale off-ramp
- Hillsdale Boulevard diagonal on-ramp to SR 92 off-ramp
- SR 92 WB diagonal on-ramp to lane drop just south of Kehoe Ave
- Anza Boulevard on-ramp to Broadway off-ramp
- Millbrae on-ramp I-380 Westbound off-ramp

Southbound Direction

- Last SFO on-ramp to Millbrae Avenue off-ramp
- Millbrae Avenue on-ramp to Broadway off-ramp
- 3rd Avenue on-ramp to SR 92 off-ramp
- SR 92 EB on-ramp to Hillsdale Boulevard off-ramp
- Hillsdale Boulevard on-ramp to Marine Parkway/Ralston Avenue off-ramp
- Ralston Avenue/Harbor Boulevard on-ramp to Holly Street off-ramp
- Holly Street/Brittan Avenue on ramp to Whipple Avenue off-ramp

At two (2) northbound locations, partial auxiliary lanes (deceleration lanes) in advance of the exit are proposed in order to maintain 2-lane off-ramps:

- Northbound off-ramp at Marine Parkway
- Northbound off-ramp at SFO

Similarly for the southbound direction approaching the SR 92 connector, a deceleration lane would be maintained approaching the connector in order to keep the off-ramp at 3-lanes.

Design exceptions approval will be required for non-standard lane widths, shoulder widths, and vertical clearances at various overcrossing locations. Non-standard lane and inside shoulder widths would exist throughout most of the corridor along with some non-standard ramp entrance/exit configurations and deceleration lanes.

In general, standard outside shoulder widths would be perpetuated except at various overcrossing locations and tight areas. The general scopes of works for each segment (interchange to interchange) are listed below.

1. Whipple Avenue to Holly Street

- Realign northbound (NB) loop on ramp and diagonal on ramp at Whipple Avenue
- Outside widening on southbound (SB) side with retaining walls, barriers and collectordistributor road realignment
- SB side widening requires widening of Cordilleras Creek and Pulgas Creek bridge structures
- SB side widening impacts adjacent roadside ditch wetlands
- Freeway median barrier realigned north of Whipple to avoid impact to northbound (NB) side wetlands
- NB side widening to accommodate and auxiliary lane.
- 2. Holly Street to Ralston Avenue
 - Outside widening on SB side with barriers and collector-distributor road realignment
 - SB side widening requires widening of Belmont Creek bridge structure
 - SB off-ramp to Holly Street requires new drainage structure
- 3. Ralston Avenue to Hillsdale Boulevard
 - Outside widening on SB side with retaining wall with new median barrier for CHP observation area
 - SB off-ramp to Ralston Avenue requires a new drainage structure
 - Widening on SB side required widening of Laurel Creek bridge structure
- 4. Hillsdale Boulevard to Route 92
 - Realign Hillsdale Blvd on and off ramps
 - Outside widening on both NB & SB sides
- 5. Route 92 to 3rd Avenue
 - Outside widening on NB side
 - Freeway median barrier realigned to the east to reduce impacts on SB side
- 6. 3rd Avenue to Peninsula Avenue
 - Realign 3rd Ave ramps
 - Realign NB and SB collector-distributor roads
 - Realign SB Poplar Ave ramps

- Poplar Ave on ramp requires shifting of a segment of soundwall and removal of on-street parking from the frontage road for approximately 300 feet at the DMV facility
- 7. Peninsula Avenue to Broadway
 - Realign NB Peninsula Ave/Airport Boulevard on-ramp with retaining wall, barrier, two drainage structures, frontage road reconfiguration and wetland right of way take
- 8. Broadway to Millbrae Avenue
 - Realign NB Broadway ramp with barrier and drainage canal bridge widening
 - NB 101 on ramp from Airport Boulevard requires two drainage structures.
 - NB side ramps at Broadway interchange require design exceptions for superelevation transitions
 - Outside widening south of Millbrae Ave
 - Inside freeway pavement and median barrier replacement south of Millbrae Ave
- 9. Millbrae Avenue to SFO Connector Ramps
 - Replace inside shoulders with traffic-rated pavement structural section
 - Replace and realign median barrier
- 10. SFO Connector Ramps to San Bruno Avenue
 - Replace inside shoulders with traffic-rated pavement structural section
 - Replace and realign median barrier for CHP observation area
- 11. San Bruno Avenue to I-380
 - Outside widening on NB side
 - Replace inside shoulders with traffic-rated pavement structural section
 - SB 101 HOV lane will start south of the I-380 on ramp

Maximum Design Alternative

The maximum design alternative would add an additional lane in each direction and also would provide standard ramp entrance/exits at some locations. All existing auxiliary lanes would be restored under the alternative. Each segment would encompass the following general scopes of works.

1. Whipple Avenue to Holly Street

- Reconstruct Whipple Avenue Overcrossing and its on- and off-ramps except the southbound diagonal on-ramp and diagonal on-ramp at Whipple Avenue
- Outside widening on northbound side (NB) to accommodate auxiliary lane
- Outside widening on southbound (SB) side with retaining walls, barriers and C-D road realignment
- NB and SB widening requires widening of Cordilleras Creek and Pulgas Creek bridge structures
- SB side widening requires collector-distributor road realignment
- SB side widening impacts adjacent roadside ditch wetlands
- Reconstruct median barrier just north of Whipple Ave overcrossing
- 2. Holly Street to Ralston Avenue
- Outside widening on NB side with barriers and Shoreway Road realignment
- Outside widening on SB side with barriers and collector-distributor road realignment
- NB and SB widening requires widening of Belmont Creek bridge structure
- Reconstruct SB off ramp to Holly Street with new drainage structure

3. Ralston Avenue to Hillsdale Boulevard

- Reconstruct Ralston Avenue Overcrossing and realign Ralston Avenue on- and off-ramps
- Outside widening on both NB & SB sides with new median barrier for CHP observation area
- Outside widening on SB side with retaining wall and barrier
- Outside widening on NB side
- Widening on SB side requires widening of Laurel Creek bridge structure
- 4. Hillsdale Boulevard to Route 92
 - Realign Hillsdale Boulevard on- and off-ramps
 - Outside widening on both NB & SB sides
 - •
- 5. Route 92 to 3rd Avenue
 - Outside widening on NB side
 - Freeway median barrier realigned to the east to avoid impacts on SB side
 - Widening on NB side requires sound wall reconstruction, S. Bayshore Boulevard realignment, realignment of Kehoe Avenue on- and off-ramps, and reduction of the frontage road width to approximately 30 feet
- 6. 3rd Avenue to Peninsula Avenue
 - Realign 3rd Avenue on and off ramps
 - Realign NB and SB collector-distributor roads
 - Outside widening on both NB and SB sides
 - Realign N. Bayshore Boulevard with soundwall reconstruction
 - Realign N. Amphlett Boulevard with soundwall reconstruction
 - Realign NB Dore Avenue off ramp
 - Realign SB Poplar Ave ramps

- Poplar Ave on ramp requires shifting of a segment of soundwall and removal of on-street parking from the frontage road for approximately 300 feet at the DMV facility
- 7. Peninsula Avenue to Broadway
 - Realign NB Peninsula Ave/Airport Blvd on ramp with retaining wall, barrier, drainage structure, frontage road reconfiguration and wetland right of way take
 - Outside widening on SB side
 - NB outside widening after Anza Blvd on ramp
 - Realign N. Amphlett Boulevard and Rollins Road with sound wall reconstruction Realign Anza Boulevard on- and off-ramps
- 8. Broadway to Millbrae Avenue
 - Realign Broadway on and off-ramps
 - Outside widening on both NB and SB sides
 - Realign NB Broadway on-ramp with barrier and drainage canal bridge widening
 - NB side ramps at Broadway interchange require design exceptions for superelevation transitions
- 9. Millbrae Avenue to SFO Connector Ramps
 - Realign Millbrae Avenue on and off ramps
 - Replace inside shoulders with traffic-rated pavement structural section
 - Replace and realign median barrier
 - SB side widening with retaining walls
- 10. SFO Connector Ramps to San Bruno Avenue
 - Replace inside shoulders with traffic-rated pavement structural section
 - Replace and realign median barrier for CHP observation area
 - NB side widening

11. San Bruno Avenue to I-380

- Outside widening on NB side
- Replace inside shoulders with traffic-rated pavement structural section
- SB 101 HOV lane will start south of the I-380 on ramp

3. Anticipated Environmental Approval

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

CEQA		NEPA	4	
Environmental Determination		·		
Statutory Exemption				
Categorical Exemption		Categorical Exclusion		
Environmental Document (Minimum	Alterr	native Only)		
Initial Study or Focused Initial Study with proposed Negative Declaration (ND) or Mitigated ND		Routine Environmenta with proposed Finding Impact Complex Environment with proposed Finding Impact	l Assessment of No Significant tal Assessment of No Significant	
Environmental Impact Report		Environmental Impact	Statement	
CEQA Lead Agency (if determined):			Caltrans	-
Estimated length of time (months) to obta	ain env	vironmental approval:	18 to 28 months	
Estimated person hours to complete iden	tified t	asks:	2,568	

For both alternatives an initial study (IS) with a Negative Declaration (ND) is recommended for CEQA; if a potentially significant impact is found then a Mitigated Negative Declaration (MND) or Environmental Impact Report (EIR) would be needed. For both alternatives the NEPA document would be a complex Environmental Assessment (EA) with proposed Finding of No Significant Impact.

4. Special Environmental Considerations

In addition to the right of way/relocation impacts and potential Section 7 concerns that are discussed in Section 8 of this PEAR, the maximum alternative would involve the use of several Section 4(f) properties. A preliminary analysis shows that use would occur at Coyote Point County Park, the Bay Trail and Bayside Park. While the uses of the Bay Trail and Bayside Park may qualify as de minimis with further refinement of the design, the use of Coyote Point County Park as shown in the PSR-PDS interferes more substantially with the key activities, features and attributes of that resource and a full Individual Section 4(f) Evaluation, including analysis of prudent and feasible avoidance alternatives may be needed. The additional effort involved in doing an Individual Section 4(f) would be extensive. There are also several potential Section 4(f)

properties within $\frac{1}{4}$ mile of the proposed project that would also need to be evaluated relative to the requirements of Section 4(f) for either alternative.

Assembly Bill No. 52 (AB 52), which takes effect July 1, 2015, resulted in modifications and amendments to the PRC, and creates a new category of environmental resources, which must be considered under CEQA : "tribal cultural resources." The legislation imposes requirements for consultation regarding projects that may affect a tribal cultural resource which includes a broad definition of what may be considered to be a tribal cultural resource, and includes a list of recommended mitigation measures.

AB 52 adds tribal cultural resources to the categories of cultural resources in CEQA, which had formerly been limited to historic, archaeological, and paleontological resources. "Tribal cultural resources" are defined as either

- (1) "sites, features, places cultural landscapes, sacred places and objects with cultural value to a California Native American tribe" that are included in the state register of historical resources or a local register of historical resources, or that are determined to be eligible for inclusion in the state register; or
- (2) resources determined by the lead agency, in its discretion, to be significant based on the criteria for listing in the state register.

5. Anticipated Environmental Commitments

As this is a PSR-PDS, no cost estimates for potential mitigation measures have been prepared. However, commitments related to biological resources, noise, community impacts, hazardous waste, air quality, and cultural resources are anticipated.

Compensatory mitigation would be required for any unavoidable impacts to wetlands and waters of the U.S. or State and to special-status species or their habitats. Project-specific mitigation measures would need to be determined prior to project implementation. However, the following general avoidance and mitigation measures are recommended:

- Designate environmentally sensitive areas (ESA) and protect these areas with fencing and signs;
- Establish and conduct an ongoing worker environmental awareness program throughout project construction;
- Avoid or reduce vegetation removal in sensitive areas and establish practices to avoid the introduction of invasive species into cleared areas. Cleared areas should be re-vegetated postconstruction.

Measures related to cultural resources could include:

- Cultural resources awareness training to be conducted for personnel involved in ground disturbing activities.
- If undocumented resources are encountered during construction, all destructive work in the vicinity of the find shall cease until a qualified archaeologist can assess the significance of the find and, if appropriate, provide recommendations for treatment.
- Designation of an ESA and monitoring conducted by a qualified archaeologist and representative of the Native American community, as needed
- If a qualified archaeologist determines the cultural resource to be potentially significant, mitigation measures may include data recovery of archaeological materials and thorough documentation of historic structures.
- If human remains are found, the California Health and Safety Code (HSC) requires that excavation be halted in the immediate area, and that the county coroner be notified to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (HSC Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (HSC Section 7050.5[c]).

6. Permits and Approvals

The following is a list of permits and approvals that would potentially be needed for the maximum alternative:

- BCDC-jurisdictional limit is at the existing NB US 101 right of way line near Coyote Point County Park and Bayside Park; any widening to the outside in that area will trigger the need for BCDC permitting and approval
- CDFW Streambed Alteration Agreement (Fish and Game Code Section 1602 permit)
- RQWCB Water Quality Certification (under section 401 of the Federal Clean Water Act)
- USACE Clean Water Act Section 404 permit (could still be nationwide depending on impacts; impacts needs to be less than .5 acres)
- Section 7 Federal Endangered Species Act Consultation with USFWS (for terrestrial species) and possibly NMFS (if potential impacts to anadromous fish are identified)
- CDFW 2081 incidental take permit
- SHPO Consultation for Section 106 of the National Historic Preservation Act

The minimum alternative may not need any permits or approvals; however, if culvert work is needed the minimum alternative may require a CDFW streambed alteration agreement, a nationwide Section 404 permit, water quality certification pursuant to Section 401 and a BCDC permit, if widening on the outside lane near Coyote Point County Park and Bayside Park is required.

7. Level of Effort: Risks and Assumptions

Assumptions:

- A portion of the project funding would be from Federal sources and would trigger a federal nexus qualifying the project for consultation with USFWS under Section 7 of the Endangered Species Act. The need for a Section 404 permit from the USACE would also qualify the project for Section 7 consultation.
- Known breeding populations of California red-legged frog are present within the vicinity of the project. If suitable upland or refugia habitat is determined to be present within the project disturbance limits, CRLF presence will be presumed therefore negating the need for protocol-level breeding and non-breeding seasonal surveys.
- Potentially significant impacts to jurisdictional wetlands or waters and special-status species or their habitats can be reduced with mitigation.

Risks:

- Section 10 consultation with USFWS for species with federal status which is a lengthier and more intensive effort could be needed if Federal funding is not secured and impacts to federally jurisdictional wetlands and waters are avoided. Consultation under Section 10 could require up to 2 years. Probability of occurrence is 1, impact to schedule is very high.
- Potential requirement to conduct trapping surveys for San Francisco Garter Snake. These surveys generally require 90 consecutive trapping days. Probability of occurrence is 1, impact to schedule is moderate.
- Potential requirement to conduct additional botanical surveys in subsequent years if adverse conditions such as extreme drought reduce the ability to observe target species in areas of potential habitat during initial surveys. Probability of occurrence is 1, impact to schedule is very high.
- Potential requirement to conduct additional surveys for special-status and migratory bird nests or other special-status species that could delay the schedule coincidental to the various nesting or breeding seasons. Probability of occurrence is 1, impact on schedule is moderate.

8. PEAR Technical Summaries

8.1 Land Use:

None of the proposed alternatives would require changes to applicable land use zoning maps or ordinances within the project area. The majority of land use types directly adjacent to US 101 through this area is commercial, mixed use, and residential development (see Figure 1 in Attachment E).

Minimum Alternative

The minimum alternative would be mostly within existing Caltrans right of way with only sliver acquisition in some of the ramp areas.

Maximum alternative

The Maximum alternative would require some right of way acquisitions in interchange areas where the outside widening would require modification of local road structures and ramps entering and exiting US 101.

See Community Impact section below for additional details on potential right of way impacts.

8.2 Growth:

Following the Caltrans *Guidance for Preparers on Growth-Related, Indirect Impact Analyses*, a preliminary first cut screening was conducted. Both alternatives were analyzed to determine whether they had the potential to change travel behavior and accessibility within the project area; both the minimum and the Maximum alternative would have the same potential for growth impacts.

Minimum and Maximum Alternative

According to the guidance, adding high occupancy vehicle (HOV) lanes or mixed-flow lanes are examples of projects that could cause growth-related impacts because they add capacity to an existing facility. These projects warrant closer consideration to determine whether an analysis of growth-related impacts will be necessary. In general, the likelihood of a highway project causing growth-related impacts in an urban area is typically low because of its built-out land use pattern. The proposed project is in an urban corridor that is almost completely built out. The areas within the project area that are not built out are largely lands set aside for recreational or conservation purposes. The proposed project does not include any new interchanges or other access locations. However, it has the potential to change travel times and speeds in the corridor, particularly for HOV users. Therefore, a more in-depth first cut screening would be needed to determine whether the proposed project would have potential growth-related effects. Based on the preliminary analysis, however, a full growth analysis is not anticipated to be needed.

8.3 Farmlands/Timberlands:

There are no farmlands or timberlands within the proposed project area.

8.4 Community Impacts:

Impacts to community cohesion and character would not be substantial because US 101 currently already extends through existing communities.

Minimum Alternative

With the minimum alternative, no residential or business relocations would occur but right of way acquisitions would be required at some interchange locations.

Maximum alternative

The Maximum alternative would, however, require a few right of way acquisitions and would have some relocation and right of way effects. These include but are not limited to: a portion of the City of Millbrae Public Works Operation Center and "a loft" along the southeast portion of the US 101/Millbrae Avenue Interchange and portions of an industrial/commercial facility along Adrian Road west of the US 101/Millbrae Avenue interchange; at the US 101/Broadway interchange the Crowne Plaza Hotel, Bayside Park, the Holiday Inn Express; at the US 101/Peninsular Avenue interchange, portions of the Poplar Creek Golf Course; at Dore Avenue, a portion of an office building; at E. Poplar/Idaho Street a multifamily residential dwelling; along Amphlett Boulevard several commercial establishments. A comprehensive Community Impact Assessment and a Draft Relocation Impact Document would be needed for the proposed project.

8.5 Visual/Aesthetics:

US 101 through the project area is urbanized and the freeway corridor is already in existence. This section of US 101 is not listed as a scenic highway and it is not listed as eligible for listing as a scenic highway. No scenic resources were identified in the proposed project area. However, portions of US 101 in the project limits are designated as Classified Landscaped Freeway. This designation controls the use of billboards along State highways where there exists continuous, ornamental planting. Planting must be a minimum of 1,000 feet long, with no gaps greater than or equal to 200 feet on at least one side of the freeway. Depending on the extent and locations of vegetation removal, Classified Landscaped Freeway status can be jeopardized when highways are widened leaving little to no room for replacement planting. This will be evaluated as part of the assessment of Visual Impacts for the project. Consistent with Caltrans policy, any highway planting removed due to roadway construction will be replaced.

Minimum Alternative

With the minimum alternative, the proposed project is not anticipated to have substantial effects to visual resources within the proposed project area.

Maximum alternative

With the Maximum alternative, the new structures, ramps and roadway work would cause more visual disruption in the project area including removal of structures, buildings, and trees.

A Visual Impact Assessment would be needed for the proposed project.

8.6 Cultural Resources:

Pockets of residential buildings are located in close proximity to the interchange locations along the freeway, particularly at the southern end of the alignment. Historically, the proposed project area consisted primarily of landfill. Beginning in the early 20th century the area gradually populated with residential, light industrial, and commercial properties.

Cultural resources staff conducted a records search of pertinent cultural resources information curated at the California Historical Resources Information System at the Northwest Information Center (NWIC). According to the NWIC, the majority of the project area has been previously inventoried. A total of 22 archaeological investigations have been conducted within the project area and 30 have been conducted within ¼-mile of the study area. Seven prehistoric cultural resources have been identified within ¼-mile of the project area: P-41-39, P-41-105, P-41-498, CA-SMA-341, CA-SMA-314, CA-SMA-315, and CA-SMA-317, and another site CA-SMA-321 is located within the right-of-way of the project limits. These sites have not been formally evaluated for National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR) significance. In addition, the Native American Heritage Commission (NAHC) was contacted on July 31, 2014 to request a sacred land files search. This consultation is currently ongoing.

A preliminary assessment of the project area for built-environment was also conducted by reviewing historic and modern aerial maps to determine the location and approximate age and type of resources located in the project area. Areas with the potential to contain historic-era (more than 45 years in age) resources were identified.

A summary of the types of resources and level of sensitivity for the two alternatives is discussed below. Figures 2a-2d in Attachment E depict: 1) parcels along each alignment that would likely require full evaluation of buildings and 2) areas of archaeological sensitivity.

<u>Minimum Alternative</u>

The minimum alternative follows the same general alignment as the maximum alternative, with less overall ground disturbance and will encroach on one property adjacent to Airport Boulevard and northwest of Peninsula Avenue. The subject property includes a mid-twentieth century facility. The sensitivity for encountering significant cultural resources under this alternative is lower than the maximum alternative.

<u>Maximum alternative</u>

The maximum alternative extends primarily within the US101 right-of-way and therefore there is likely low sensitivity for encountering cultural resources in these areas. However, there will also be ground disturbance and some property acquisitions along the alignment. Existing development southeast of Peninsula Avenue consists mostly of mid-to-late 20th century multi-and single-family residential properties. Culverts are also located throughout the alignment. The sensitivity for this alternative for significant cultural resources is low to moderate.

Seven prehistoric sites have been identified primarily in the central portion of the project in the San Mateo area. These subsurface deposits have not been formally tested; therefore the exact boundaries of the sites have not been established.

No known significant built-environment resources are located within the two alternatives. Builtenvironment features of the proposed project corridors (including buildings and structures) consist primarily of recently constructed developments and some supporting infrastructure (bridges, water channels, etc.). Older buildings are located near the south end of the alignment. The maximum alternative has a higher proportion of resources that would require inventory and evaluation because of their age than the minimum alternative. Parcels in the proposed project area that contain buildings/structures, and or linear features more than 45 years old, and where property acquisitions will occur, would require formal inventory and evaluation for historical significance under current Caltrans guidelines. The culverts would be exempt per the Caltrans SER and would not require evaluation.

Although unlikely, it is possible that presently unidentified cultural deposits are present in subsurface contexts. Subsurface prehistoric resources may take the form of stone-tool and tool fragments, rock concentrations, burned and/or unburned shell or bone, and/or darkened sediments containing some of the above-mentioned constituents. Historic-period deposits could include fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains, such as building foundations and dumps.

To complete the environmental documentation and be able to identify and analyze potential impacts, the following tasks would need to be completed.

- Determine appropriate level of effort required by the applicable regulatory processes. Under Section 106 of the National Historic Preservation Act, and using the 2014 Programmatic Agreement, Caltrans acting as the lead agency, in consultation with the Office of Historic Preservation, will make this determination.
- As project designs solidify, delineate an area of potential effects (APE) in order to formally identify and evaluate historic resources for the purposes of NEPA and CEQA.
- Conduct a comprehensive survey of the project area.
- Perform subsurface investigations to find the horizontal and vertical extent of potentially buried resources, and determine the boundaries of sites that are within 200 feet of project areas. An extended Phase I proposal detailing the level of effort would be prepared for approval by Caltrans.
- Complete inventory and evaluation of all cultural resources for properties in the APE. Documentation for Section 106 compliance for both alternatives would need to include preparation of a Historic Properties Survey Report, Archaeological Survey Report, and a Historic Resources Evaluation Report.
- Ensure compliance with AB 52 as described in Section 4 above.

After the above tasks have been completed, it will be possible to analyze potential impacts to all cultural resources and develop mitigation measures, as appropriate.

8.7 Hydrology and Floodplain:

The proposed project would cross several locations that are Zone A and Zone AE on the FEMA flood mapping. Zone A identifies areas subject to inundation by the 1-percent-annual-chance

flood event generally determined using approximate methodologies. Zone AE identifies areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. One large area of Zone AE extends from East 3rd Avenue to Peninsula Avenue.

Minimum Alternative

The minimum alternative is not anticipated to have a significant encroachment into the base floodplain but it may involve some culvert extensions and drainage modifications within the flood plain.

Maximum alternative

The Maximum alternative is also not anticipated to have a significant encroachment into the base floodplain but it is likely to have greater modifications to existing culverts and drainage facilities, especially in the area of ramp and interchange improvements.

A Location Hydraulic Study would be needed. At a minimum, a Summary Floodplain Evaluation Report would also be needed.

8.8 Water Quality and Storm Water Runoff:

As detailed in the Biological Environment section below, the proposed project area includes several water features that are associated with the San Francisco Bay shoreline. Both the minimum alternative and the maximum alternative would have potential water quality and stormwater impacts. South San Francisco Bay is listed as a 303(d) impaired water body.

Minimum Alternative

The minimum alternative would have less ground disturbing activities during construction than the maximum alternative; however, it would still have potential water quality impacts both during construction and operations.

Maximum alternative

The maximum alternative would involve ground disturbing not only along the main lanes but it would also require widening and reconstruction of some ramps and interchanges; it would have greater potential for water quality impacts both during construction and operations.

A full Water Quality Assessment Report would be needed for the proposed project. The WQAR would provide data on surface water and groundwater resources within the project area and the water quality of these waters, describe water quality impairments and beneficial uses, and identify potential water quality impacts/benefits associated with the proposed project, and recommend avoidance and/or minimization measures for potentially adverse impacts. It would also integrate and discuss requirements related to the National Pollution Discharge Elimination System (NPDES) and construction general permit.

8.9 Geology, Soils, Seismic and Topography:

A search of the California Geological Survey maps did not show any known and surveyed active faults or liquefaction zones within the proposed project area. However, ABAG's hazard mapping indicates that portions of the project are located within high risk areas for liquefaction and ground shaking due to proximity to the San Andreas Fault. A Geotechnical Report is needed to determine project area soil type and to further evaluate if there are any geologic, soil, or seismic hazards.

8.10 Paleontology:

The vast majority of the proposed project is within areas identified as artificial fill (af) on USGS geologic mapping. However, there are areas directly adjacent to the proposed project that are classified as Qhb and Qhaf. Qh designations are Pleistocene formations that may have high potential for paleontological sensitivity.

Minimum Alternative

The minimum alternative would have less overall potential for high paleontological effects because it would have less ground disturbance; however, some widening and ground disturbance would still be potentially within the Qh formations.

Maximum alternative

The Maximum alternative has a greater likelihood for high paleontological effects since it has more area of disturbance, especially at the intersections and ramps.

Once more details are known about potential excavation depths and locations, preparation of a Paleontological Evaluation Report is recommended.

8.11 Hazardous Waste/Materials:

A preliminary desktop evaluation of the potential hazardous waste impacts of the project was completed and a map of the results is included in Attachment E. The preliminary desktop evaluation included a review of the project layout drawings, a review of the layout on Google Earth, and a review of the California Regional Water Quality Control Board (RWQCB) Geotracker online database and the California Department of Toxics Substances Control (DTSC) Envirostor online database for regulated contaminated sites. The sites listed on those regulatory databases include petroleum hydrocarbon releases associated with underground and above ground fuel storage tanks and releases of solvents or other volatile organic compounds associated with commercial and manufacturing business in the area, past or present. Results of the preliminary evaluation identified numerous hazardous waste sites that are either classified as open investigation/remediation sites or regulatory closed sites with residual contamination allowed to remain (low threat threshold impacted sites). The listed sites are located near the project footprint (on or nearby the frontage roads paralleling US 101 and or in the up-gradient groundwater direction from Hwy 101). The groundwater in the vicinity of US 101, especially where US 101 is

nearest the bay, is shallow (approximately 2-5 ft below the ground surface) and the local groundwater gradient direction is towards the bay, therefore up-gradient contaminated sites that have impacted the groundwater have the potential to impact the project site through groundwater migration towards US101 and the bay.

US 101 is a heavily used roadway with thousands of automobiles and trucks using the roadway on a daily basis, this has been going on for several decades. It is therefore likely that surface soils adjacent to the roadway may be impacted by aerially deposited lead from vehicle fuels.

Minimum Alternative

The minimum alternative would have only minor ground disturbing activities beyond the current US 101 right of way. There is potential for the minimum alternative to impact soils with aerially deposited lead.

Maximum alternative

In addition to potential impacts to soils contaminated with aerially deposited lead, the maximum alternative may impact storage tanks and other facilities at the City of Millbrae Operations Center that may contain hazardous materials. As shown on Figures 3 and 4 in Attachment E, there are also multiple sites located directly adjacent to US 101 that have the potential to be impacted by the Maximum alternative.

It is recommended that an Initial Site Assessment (ISA) be conducted to review all the federal, state, and local databases for a more in depth review of the listed hazardous waste sites that have the potential to impact the project footprint. The ISA would also include an additional in-depth review of the regulatory files of selected sites that have the greatest potential to impact the project area. In addition, at a minimum surface soil sampling and testing is recommended along the length of the project area where surface soils are exposed to evaluate whether aerial deposited lead or pesticides and herbicides have been used in those areas.

8.12 Air Quality:

The proposed project is located within the San Francisco Bay Area Air Basin (SFBAAB), which consists of all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. The SFBAAB is designated as a nonattainment area for the federal and state ozone standards and the state standards for particulate matter equal to or less than 10 microns in diameter (PM_{10}) and equal to or less than 2.5 microns in diameter ($PM_{2.5}$). The SFBAAB is currently a federal attainment/maintenance area for carbon monoxide (CO). Federal and state standards have been met for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead.

Construction activities would generate emissions by sources such as heavy-duty off-road equipment, trucks hauling materials to the site, and construction worker commutes. The build

alternatives could also cause shifts in traffic patterns, which could result in regional and localized air quality impacts. The Traffic Engineering Performance Assessment (TEPA) Report indicated that traffic volumes and vehicle miles traveled (VMT) could increase as a result of the project. However, an increase in average vehicles speeds would also result in a decrease in overall vehicle hours of delay.

Minimum Alternative

The construction air quality effects with the minimum alternative would be less than the maximum alternative because the minimum alternative would not involve as much demolition and construction work at the ramps and interchanges. Operationally, the minimum alternative would have similar effects to the maximum alternative since it would be adding the same number of HOV lanes to US 101.

Maximum alternative

The maximum alternative would have higher construction emissions due to greater construction activities and a greater project footprint. Operationally, the maximum alternative would have similar air quality effects to the minimum alternative since the number of traffic lanes would be the same as the minimum alternative.

Based on the potential for the build alternatives to result in construction activities and modifications in traffic operations, an air quality technical report should be prepared for all build alternatives to evaluate potential air quality impacts both in the near term and over the project planning horizon. The air quality report would include an analysis of regional and project-level impacts. The proposed project must be included in a conforming Regional Transportation Plan (RTP) and Transportation Improvement Program at the time that the report is developed. The air quality report will also include an analysis of Mobile Source Air Toxics (MSATs). Projects that result in changes to traffic patterns can also result in localized air quality impacts. Therefore, the air quality report will conduct project-level "hotspot" analyses for PM and CO emissions. The findings of the air quality report would be incorporated into the environmental document. All analyses will be conducted in accordance with the recommended methodologies identified by FHWA, Caltrans, and the Bay Area Air Quality Management District.

8.13 Noise and Vibration:

Noise sensitive receivers within the influence area (500 feet from the centerline) of the project corridor along both sides (northbound and southbound) of the freeway include residential uses, schools, parks, sport fields, hotels, hospitals, places of worship, commercial uses and vacant lands.

Minimum Alternative

The construction noise effects with the minimum alternative would be less than the maximum alternative because the minimum alternative would not involve as much demolition and construction work at the ramps and interchanges. Operationally, the minimum alternative would have similar effects to the maximum alternative since it would be adding the same number of HOV lanes to US 101.

Maximum alternative

With the exception of construction noise impacts, the maximum alternative and the minimum alternative would have similar potential noise impacts.

Preliminary predictions of traffic noise levels along US 101 for the year 2040 baseline and baseline plus project conditions, are summarized in Table 1. The predicted noise levels were estimated using FHWA (RD 77-108) Model and the maximum alternative design. The model is based on the Calveno reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the project site. Traffic volumes were obtained from the Traffic Engineering Performance Assessment (TEPA) for the project.

Modeled traffic noise levels were assumed to be conservative since the noise level reduction effects of topographical shielding, excess ground absorption, intervening structures, and atmospheric absorption were not considered. The Federal Highway Administration's (FHWA) Traffic Noise Model (TNM2.5) would need to be used to calculate the traffic noise in the project vicinity to account for shielding (e.g., the presence of walls, buildings and other intervening structures) from existing or proposed structures or topography.

Based on these preliminary results and the fact that the project would be a Type 1 project (it adds capacity), a noise study report (NSR) would be required under the Caltrans Traffic Noise Analysis Protocol (Protocol) for New Highway Construction and Reconstruction Projects. The protocol discusses federal and state regulations, standards, and policies relating to traffic noise (Caltrans 2009). It also discusses procedures for implementing title 23, part 772 of the Code of Federal Regulations "Procedures for Abatement of Highway Traffic Noise" (23 CFR 772).

Noise abatement may be required to reduce the traffic noise impacts associated with the proposed project under both alternatives. Noise abatement measures should be identified and either incorporated into the project description, or listed as mitigation. This issue will be addressed in the Noise Study Report (NSR). Noise abatement measures and cost analysis of the recommended walls would be addressed in a Noise Abatement Decision Report (NADR). If noise abatement is not reasonable and feasible at a location with a severe traffic noise impact, the location may be eligible for "extraordinary" noise abatement as defined by Caltrans. This may include construction of barrier that does not meet the Caltrans' normal standards for cost reasonableness

or implementation of non-standard noise abatement, such as implementation of upgraded acoustical insulation for a residence. Extraordinary noise abatement is considered on a case by case basis.

Also, noise levels within and adjacent to construction sites would increase during the construction period. Construction activities are temporary, however, due to the potential for high short-term and instantaneous noise levels during peak construction activity at nearby residential properties, this would also need to be addressed in the NSR.

			2040 Bas	eline N	o Proje	ct	20)40 Basel	ine Plu	ıs Proje	ect
Roadwa			Noise		Conto	urs		Noise		Conto	urs
y I	Segment	Volume s	Level @ 100 feet	70 dB	65 dB	60 dB	Volume s	Level @ 100 Feet	70 dB	65 dB	60 dB
US 101	From South End to SR 92	81,025	85.1	1010	2176	4688	85,600	85.3	1048	2257	4862
US 101	From SR 92 to I-380	83,623	85.2	1031	2222	4787	88,357	85.4	1070	2305	4966

 Table 1. Predicted Noise Levels for the Year 2040

8.14 Energy and Climate Change:

Because the proposed project would add additional HOV capacity, the proposed project would require quantitative modeling of potential CO₂ emissions.

Minimum Alternative

The construction greenhouse gas (GHG) emissions would be less than the maximum alternative because the minimum alternative would not involve as much demolition and construction work at the ramps and interchanges. Operationally, the minimum alternative would have similar effects to the maximum alternative since it would be adding the same number of HOV lanes to US 101.

Maximum alternative

With the exception of construction greenhouse gas emissions, the maximum alternative and the minimum alternative would have similar potential climate change impacts.

Given the proposed project proximity to the San Francisco Bay, analysis should also be conducted for potential sea level rise and other climate change effects that may require adaptation strategies.

The air quality report will also include an evaluation of the project's greenhouse gas (GHG) emissions in the context of consistency with the State's goals set in Assembly Bill (AB) 32 and recommendations from Caltrans. The air quality report will assess the potential for generation of GHG emissions from the project during construction and due to changes in operation. Avoidance

and/or mitigation measures will be incorporated into the recommendations of the report, as necessary.

8.15 Biological Environment:

While a majority of the project corridor is heavily developed, the project site is located along the San Francisco Bay shoreline. Pockets of open space are present on the west side and in some sections the project site abuts bay wetlands to the east. Several drainages are present that cross the project site arising in the hills to the west and draining to the bay. Many sensitive wildlife and plant species are documented within the project vicinity as shown in Figures 5 and 6 in Attachment E. Five sensitive wildlife species are documented at CNDDB accuracy class 3¹ or above within or adjacent to the project limits and all those occurrences are presumed extant (CNDDB 2014):

- San Francisco forktail damselfly (Ischnura gemina), CDFW special animals list
- Alameda song sparrow (*Melospiza melodia pusillula*), CDFW species of special concern and USFWS bird of conservation concern;
- California black rail (*Laterallus jamaicensis coturniculus*), state-listed as threatened and a California fully protected species, USFWS bird of conservation concern, and BLM sensitive species;
- California clapper rail (*Rallus longirostris obsoletus*), federally and state-listed as endangered and a California fully protected species;
- California red-legged frog (*Rana draytonii*), federally listed as threatened and CDFW species of special concern.

One rare plant species is documented at accuracy class 3 within the project limits but the occurrence is presumed extirpated (CNDDB 2014):

• San Francisco owl's clover (*Triphysaria floribunda*), California Rare Plant Rank 1B.2 (plants rare, threatened, or endangered in California and elsewhere).

There are eleven additional special-status wildlife species, including San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), federally and state-listed as endangered and a California fully protected species, and salt marsh harvest mouse, federally and state listed as endangered, and nine additional special-status plant species documented within a 1-mile buffer of the project limits as well as additional occurrences of the species listed above (CNDDB 2014). One sensitive vegetation community, northern coastal salt marsh, is present adjacent to the project limits. Depending on construction methods used, project effects could extend further into the bay than

¹ CNDDB Accuracy Classes are defined as follows:

Accuracy Class 1 - specific bounded area with an 80 meter radius

Accuracy Class 2 - specific, non-circular bounded area

Accuracy Class 3 - non-specific bounded area

Accuracy Classes 4 to 10 - non-specific, circular feature with a radius of 150 meters to 8000 meters

the 1-mile limit analyzed here and additional special-status fish and marine mammals may need to be considered in the analysis of project effects.

Minimum Alternative

Even though the minimum alternative would stay mostly within the US 101 right of way, there are resources directly adjacent to US 101 that would require biological evaluation (see Figures 5 and 6 in attachment E). A wetland delineation and preliminary jurisdictional determination for wetlands and waters of the U.S. and State should be prepared to ensure avoidance and/or to quantify impacts to wetlands and waters of the U.S. and State for regulatory permitting purposes. A Natural Environment Study (NES) including a field assessment and habitat mapping should be prepared documenting the existing biological resources and analyzing project effects on those resources. In addition to the biological resources survey for the NES, other surveys that are likely to be required are pre-construction surveys for nesting birds and roosting bats and seasonal botanical surveys. Other surveys that may be required include a California red-legged frog habitat assessment and protocol level surveys for special-status wildlife.

Maximum alternative

The maximum alternative would require all of the studies and surveys listed above for the minimum alternative and it also has a greater likelihood to trigger formal Section 7 Consultation for listed species; with the maximum alternative, a Biological Assessment may be needed.

8.16 Cumulative Impacts:

A cumulative impact analysis will be required as part of the environmental documentation process. Based on preliminary analyses, cumulative impacts related to biological resources and community impacts would be of most concern. The cumulative impact analysis would be similar for both alternatives; although there is a somewhat greater potential for the maximum alternative to have cumulatively considerable effects.

8.17 Context Sensitive Solutions:

Minimum Alternative

The minimum alternative would be almost completely within the existing US 101 right of way. Context sensitive solutions would be analyzed as part of the minimum alternative but the minimum alternative would not create a high level of disturbance to the existing freeway context.

Maximum alternative

The maximum alternative would have more severe impacts to community environments and would warrant the most consideration of context sensitive solutions related to roadway work at the modified and expanded interchanges. Particular focus should be given to pedestrian and bicycle traffic within those areas.

9. Summary Statement for PSR or PSR-PDS

Minimum Alternative

The minimum alternative would require only minor work outside of the existing US 101 right of way. There would be only minimal concerns related to community impacts, hazardous waste, cultural resources and visual. More detailed analysis would still be required for potential air quality, noise, climate change and biological impacts. If culvert work is needed, a CDFW Streambed Alteration Agreement, a Nationwide Section 404 permit, and a Water Quality Certification may be required.

Maximum alternative

The maximum alternative would require substantial widening and modifications at several key interchanges. These modifications would require numerous right of way acquisitions of businesses as well as residences. In addition, this alternative would use land from several Section 4(f) recreational facilities including the Bay Trail, Coyote Point Park, and Bayside Park and likely require preparation of an Individual Section 4(f) Evaluation. Impacts to biological resources would potentially include several federally and state listed species as well as impacts to jurisdictional waters of the U.S., including wetlands. This alternative would also have greater visual impacts due to the structures and trees removed as part of the widening and modification work. Like the minimum alternative, air quality, climate change, and noise impacts would be concerns as well. With respect to noise, because the widening would be to the outside and would move vehicles closer to sensitive receptors, its noise impacts are anticipated to be greater. This alternative would also have more likelihood to trigger more in-depth evaluations for hazardous materials/waste and cultural resources since it would involve greater areas and depths of ground disturbing activities.

The maximum alternative would necessitate the full suite of biological permits including potentially a CDFW Streambed Alteration Agreement, a USACE Section 404 permit, a Water Quality Certification, a BCDC permit, SHPO Consultation and Section 7 consultation with both USFWS and NMFS.

10. Disclaimer

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

11. List of Preparers

Cultural Resources specialist Anna Starkey	Date: 11/19/14
Biologist Kristin Asmus	Date: 11/19/14
Community Impacts specialist Kelly Dunlap	Date: 11/7/14
Noise and Vibration specialist Issa Mahmodi	Date: 11/15/14
Air Quality specialist Jason Paukovits	Date: 11/15/14
Paleontology specialist/liaison Kelly Dunlap	Date: 11/9/14
Water Quality specialist Kelly Dunlap	Date: 11/9/14
Hydrology and_Floodplain specialist Kelly Dunlap	Date: 11/9/14
Hazardous Waste/Materials specialist Luis Fraticelli	Date: 11/9/14
Visual/Aesthetics specialist Kelly Dunlap	Date: 11/9/14
Energy and Climate Change specialist Jason Paukovits	Date: 11/19/14
Other: reviews/updates; Petra Unger	Date: 11/20/14
PEAR Preparer (Name and Title) Kelly Dunlap, Senior Transportation Planner	Date: 11/9/14

12. Review and Approval

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

Kathy Boltz Senior Environmental Planner

M. Sili

Ron Moriguchi Caltrans Project Manager

Date

4/9/2015

Date

REQUIRED ATTACHMENTS:

PEAR Attachment A: Environmental Studies Checklist PEAR Attachment B: Estimated Resources by WBS Code PEAR Attachment C: Schedule (Gantt Chart) PEAR Attachment D: Environmental Commitments Cost Estimate (Standard PSR) PEAR Attachment E: Figures

PEAR ATTACHMENT A

Environmental Studies Checklist

PEAR Attachment A: Environmental Studies Checklist

Rev. 11/08

Environmental St	udies fo	r PA8	ED C	necklis	st
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use				L	
Growth		\square		L	
Farmlands/Timberlands	\square			L	
Community Impacts			\square	L	
Community Character and Cohesion				L	To be discussed in Community Impacts
Relocations			\square	L	
Environmental Justice				L	To be discussed in Community Impacts
Utilities/Emergency Services		\square		L	
Visual/Aesthetics			\square	L	
Cultural Resources:				L	
Archaeological Survey Report			\square	L	
Historic Resources Evaluation Report			\square	L	
Historic Property Survey Report			\square	L	
Historic Resource Compliance Report	\square			L	
Section 106 / PRC 5024 & 5024.5			\square	L	
Native American Coordination			\square	L	
Finding of Effect				L	Further study required
Data Recovery Plan				L	Further study required
Memorandum of Agreement				L	Further study required
Other:				L	
Hydrology and Floodplain			\square	L	
Water Quality and Stormwater Runoff			\square	L	
Geology, Soils, Seismic and Topography			\square	L	
Paleontology				L	
PER			\square	L	
PMP	\boxtimes			L	
Hazardous Waste/Materials:				L	
ISA (Additional)			\square	L	
PSI				L	
Other:				L	
Air Quality			\square	L	
Noise and Vibration			\square	L	
Energy and Climate Change			\square	L	
Biological Environment				L	
Natural Environment Study			\square	L	
Section 7:				L	

Environmental Stu	udies fo	r PA8	ED C	necklis	st
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Formal			\square	L	
Informal				L	
No effect				L	
Section 10				L	
USFWS Consultation			\square	L	
NMFS Consultation			\square	L	
Species of Concern (CNPS, USFS, BLM, S, F)		\boxtimes		L	
Wetlands & Other Waters/Delineation			\square	L	
404(b)(1) Alternatives Analysis	\square			L	
Invasive Species		\boxtimes		L	
Wild & Scenic River Consistency	\square			L	
Coastal Management Plan	\square			L	
НММР	\square			L	
DFG Consistency Determination	\square			L	
2081			\square	L	
Other: BCDP permit			\square	L	
Cumulative Impacts			\square	L	
Context Sensitive Solutions	\square			L	
Section 4(f) Evaluation			\square	L	
Permits:					
401 Certification Coordination			\square	L	
404 Permit Coordination, IP, NWP, or LOP			\square	L	
1602 Agreement Coordination			\square	L	
Local Coastal Development Permit Coordination				L	
State Coastal Development Permit Coordination	\square			L	
NPDES Coordination			\square	L	
US Coast Guard (Section 10)				L	
TRPA	\square			L	
BCDC			\square	L	

PEAR ATTACHMENT B

Estimated Resources by WBS Code

ATTACHMENT B - Resources by WBS Code

Project ID: 0413000210 EA: 04-1J560K Description: US 101 HOV Lanes from Whipple to I-380

WBS Task Activity Code	Division Chief	Office Chief	Senior	Generalist	Biology	Cultural	Haz Waste	Socio- Economic	Water Quality	ECL	EPPM	Noise/Air	Sup Svcs	Design	Hydraulics	Landscape	Planning	Right of Way	Surveys	Total
Assigned Unit																				
Project Management		-							-		-		-	-						
100.10 – Project Management - F	PA&ED																			-
100.15 – Project Management - F	'S&E																			-
100.20 – Project Management - C	Construction)																		-
100.25 – Project Management - F	ight of Way	/																		-
Total Project Management	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perform Preliminary Engineerir	ng Studies	and Draft I	Project Rep	oort																
160.05 – Updated Project Informa	ation		8	16	16	16	8		60			16				16				156
160.10 – Engineering Studies																				-
160.15 – Draft Project Report																				-
160.30 – Environmental Study Re	equest																			-
160.40 – NEPA Assignment																				-
Total Perform Prelim Eng Studies	-	-	8	16	16	16	8	-	60	-	-	16	-	-	-	16	-	-	-	156
Perform Environmental Studies	and Prepa	are Draft E	nvironmen	tal Documen	t - Task Ma	nagement	Activities													
165.05 – Env Scoping of Alternati	ves																			-
165.10 – General Env Studies			16	66			16		75		100	100				80				453
165.15 – Biological Studies			2	4	250															256
165.20 – Cultural Resource Studi	es	8				375														383
165.25 – Draft Env Document	8		40	250																298
165.30 – NEPA Assignment				8																8
Total Perform Env Studies & Prep	8	8	58	328	250	375	16	-	75	-	100	100	-	-	-	80	-	-	-	1,398
Obtain Permits, Licenses, Agre	ements an	d Certifica	tions (PLA	Cs) and Rout	e Adoptior	ns during P	A&ED Cor	nponent - Ta	isk Manage	ement Activ	vities									
170.05 – Reqired PLACs									60		20									80
170.10 – PLACs					100	50														150
170.15 – Railroad Agreements																				-
170.20 – Freeway Agreements																				-
170.25 – Agreement for Material	Sites																			-
170.30 - Executed Maintenance	Agreements	6																		-
170.40 – Route Adoptions																				-
170.45 – MOU from TERO																				-
170.55 – NEPA Assignment																				-
Obtain PLACS & Rte Adoptions d	-	-	-	-	100	50	-	-	60	-	20	-	-	-	-	-	-	-	-	230
Circulate Draft Environmental [Document a	and Select	Preferred	Project Alterr	native - Tas	sk Manager	nent Activ	ties												
175.05 – DED Circulation		8	8	24		50														90
175.10 – Public Hearing			16	16							L	8			1	40				80
175.15 – Public Comment Respo	8		16	40	8	8						8				8				96
175.20 – Project Preferred Alterna	ative			.0		Ĵ										<u>_</u>				8
175.25 – NEPA Assignment	-		2	8																10
Total Circ DED & Select Preferred	8	8	42	96	8	58	-	-	-	-	-	16	-	-	-	48	-	-	-	284
Prenare and Approve Project P	onort and	Final Envir	onmental						I				1	1						
190 05 Einel Dreiget Dengrt	eport and l	i illai EliVii			1				E0			40	1			10				00
100.00 - Final Project Report			40	250	0	E0.	<u>^</u>		50			10				10				ŏZ
100.10 - Final Env Document	0		40	250	8	50	0		ð			24				16				402
160.15 - Completed Env Docume	8		l	I	l	I			I			1	l	1	I		1			8

61 C2 - Intry Assignment 6 6 6 6																			
	180.20 – NEPA Assignment			8															8
<form>Prover Prover Prover Prover Prover Prover Prove Prove</form>	Total Prep and Approve PR & FE 8	-	40	258	8 50	6	-	58	-	40	40	-	-	-	32	-	-	-	500
18.5. 0. Updates Program Image: 1 mining of the program <	Prepare Base Maps and Plan Sheets for	PS&E Deve	lopment																
Bits P. Schellung Desgn I	185.05 – Updated Project Information																		-
Open Project Version and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management and Excess Land Right of Way Project Vy Management Packagement and Excess Land Right of Way Project Vy Management Packagement Packagem	185 15 – Preliminary Design					1													-
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198. 40 - Pooper Management Image Management <td>Right of Way Property Management and</td> <td>Excess Lan</td> <td>nd</td> <td></td>	Right of Way Property Management and	Excess Lan	nd																
108.46. F. Explosing and E. A. Image: A market of the second of the	195.40 – Property Management		T																-
Total RV Process Mgmt and Eq Image Mgmt and Eq	195.45 – Excess Land					1													-
Unity Protocols in Proprious in the intervence of the	Total RW Property Mgmt and Exc -	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Data Data <th< td=""><td>Litility Relocation</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Litility Relocation																		
One 2011	200 15 – Approved Litility Relocation Plan																		_
Construint Building	200.10 - Approved Offinty Relocation Package																		
Construction of the Action of the A	Total Utility Coordination -	-	-	-		-	-	-	-	-	-	-	-	_	-	-	-	-	-
Obtain Pervis, Licenses, Agreements, and Certifications (PLACS) during PSAE Component - Task Management Activities Inclusions PLACS descriptions Inclusions Inclusions<!--</td--><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td>						1													
02006 0 - PLAC2 Dutarimitation 0 <	Obtain Permits, Licenses, Agreements, a	nd Certifica	ations (PLA	Cs) during PS&E	Component - T	ask Manage	ment Activit	ies											
000000000000000000000000000000000000	205.05 – PLACs Determination				-														-
2011 5 - Rairoud Agrouments <td>205.10 – PLACs</td> <td></td> <td>-</td>	205.10 – PLACs																		-
202.02 - Agreement to Material State	205.15 – Railroad Agreements																		-
Decession of TERO Decession of TERO <thdecession of="" tero<="" th=""> Decession of TERO</thdecession>	205.25 – Agreement for Material Sites																		-
2062.45 - MQU from TERO	205.30 - Executed Maintenance Agreemen	ts																	-
202.55 - NEPA Delegation	205.45 – MOU from TERO																		-
Total Permits & Agreements durf	205.55 – NEPA Delegation																		-
Obtain Night of Way Clearance Image: Clearance Imag	Total Permits & Agreements durir -	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-
227.75 - Right of Way Clearance	Obtain Right of Way Interests for Project	Right of W	ay Certifica	ation															
Total Obdin RW Interests for Prod -	225.75 – Right of Way Clearance																		-
Propare Draft PS&E 230.05 - Draft Roadway Plans A A A A A A A A A A A A A A A A A A A	Total Obtain RW Interests for Pro -	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-
20.06 - Draft Roadway Plans <td>Prepare Draft PS&E</td> <td></td>	Prepare Draft PS&E																		
230.10 - Draft Highway Planting Plans	230.05 – Draft Roadway Plans		1																-
230.30 - Drait Drainage Plans	230 10 – Draft Highway Planting Plans					1													_
230.35 - Draft Specifications </td <td>230.30 – Draft Drainage Plans</td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td>_</td>	230.30 – Draft Drainage Plans					1													_
230.60 - Updated Project Info for PS&E Pkg	230.35 – Draft Specifications																		-
230.90 - NEPA Assignment	230.60 – Updated Project Info for PS&E Pk	a l																	-
230.99 - Other Draft PS&E	230.90 – NEPA Assignment																		-
Total Prepare Draft PS&E · <td>230.99 – Other Draft PS&E Products</td> <td></td> <td>-</td>	230.99 – Other Draft PS&E Products																		-
Migate Environmental Mitigation 235.05 - Environmental Mitigation 235.10 - Detailed Site Investigation for HW 235.20 - HW Pase 235.20 - HW Clean-up 2	Total Prepare Draft PS&E -	-	-	-			-		-	-	-	-	-	-	-	-	-	-	-
Minipate Priving and Clear-up Razardous wase - rask management Activities 235.05 - Environmental Mitigation for HW 235.05 - Environmental Mitigation for HW 235.10 - Detailed Site Investigation for HW 235.10 - Detailed Site Investigation for HW 235.20 - HW PS&E 235.20 - HW PS&E 235.20 - HW S&E 235.20 - HW Clean-up 235.30 - Haz Substances Disclosure Doc 235.40 - Updated Env Commitment Record 235.40 - Update Env Commitment Record 235.40 - Update Env Commitment Record 235.40 - Update Env Commitment Record 235.40 - Env Env Env Env Env	Misigata Environmental Impacts and Clas		dava Maat	a Taak Managar	nont Actitivition														
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205.10 - Defaned one investigation for my	235.00 - Environmental Willigation			<u>├</u> ───		┥───┤										 '			-
2010 - I'W Management in and I <td< td=""><td>235.10 - Detailed Site Investigation for HW</td><td></td><td></td><td><u> </u></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><u> </u>'</td><td></td><td></td><td>-</td></td<>	235.10 - Detailed Site Investigation for HW			<u> </u>												<u> </u> '			-
235.20 - HW Foac Image: Construction of the state																 '			-
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235.35 - Long Term Mitigation Monitoring 235.35 - Long Term Mitigation Monitoring 235.35 - Long Term Mitigation Monitoring 235.40 - Updated Env Commitments Record 245.40 - Updated Env Commitments Record 245	235.25 – Hvv Clean-up	1														ł'			-
235.40 - Updated Env Commitments Record Image: Constrained in the image of t	235.30 - Haz Substances Disclosure DOC			<u>├</u>				ļ			ļ					<u> </u> '			-
235.45 - NEPA Assignment 1 </td <td>235.40 – Undated Env Commitments Page</td> <td>d</td> <td></td> <td><u>├</u></td> <td></td> <td></td> <td></td> <td>ļ</td> <td></td> <td></td> <td>ļ</td> <td></td> <td></td> <td></td> <td></td> <td><u> </u>'</td> <td></td> <td></td> <td>-</td>	235.40 – Undated Env Commitments Page	d		<u>├</u>				ļ			ļ					<u> </u> '			-
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Post Right of Way Certification Work 245.75 - Right of Way Clearance Total Post RW Clearance Work	Total Mit Env Impacts & Clean-un	_	-				-	-	-	-	-		-	-	_	-	_	_	-
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245.75 - Right of Way Clearance Image: Clearance work in the second	Post Right of Way Certification Work		1																
Total Post RW Clearance Work - <th< td=""><td>245.75 – Right of Way Clearance</td><td></td><td></td><td></td><td></td><td> </td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td></th<>	245.75 – Right of Way Clearance																		-
	Total Post RW Clearance Work -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Circulate, Review and Prepare Final District PS&E Package

255.05 – Circ. & Rev. Draft Dist PS&E Packa	age												
255.10 – Updated PS&E Package													
255.15 – Environmental Reevaluation													
255.20 – Final District PS&E Package													
255.40 – Resident Engineer's Pending File													
255.45 – NEPA Assignment													
Total Circ, Rev and Prepare Fina -	-	-	-	-	-	-	-	-	-	-	-	-	

Contract Bid Documents "Ready to List"

260.75 - Env Cert at RTL		-													
Total Contract Rid Documents "D	260.75 - Env Cert at RTL												ſ	i	
	Total Contract Bid Documents "R	-	-	-	-	-	-	-	-	-	-	-	-	-	

Construction Engineering and General Contract Administration

270.15 – Construction Stakes															
270.33 – Construction Inspection															
270.66 – Technical Support															
Total Const Engineering & Gen C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Administration of Permits, Licenses, Agreements and Certifications (PLACs) and Environmental Stewardship

280.10 – PLAC Compliance															
280.40 – PLAC Violations															
280.50 – Other Environmental Co	mpliance														
280.60 - Other Environmental Vic	olations														
280.70 – Updated ECR															
280.75 – Environmental Reevalua	ation														
280.80 – Updated PLACs															
Total Admin of PLACs and Env S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Change Order Administration

285.05 – Change Order Process															
285.10 – Functional Support															
Total Change Order Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Disputes and Claims

290.40 – Potential Claim Record															
Total Disputes and Claims	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Accept Contract/Prepare Final Construction Estimate and Final Report

295.35 – Certificate of Environmental Compliance															
295.40 – Long Term Env Mit/Mor	nt after CCA	L.													
Total Accept Contract	-	-	-	-	-	-	-	-	-	-		-	-	-	
Total Project Hours	24		148	698	382	549		-	253	-	180	172	-	-	

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PEAR ATTACHMENT C

Schedule (Gantt Chart)

ID	Task Name	Duration	Start	Finish
1	Notice to Proceed	0 days	Tue 12/1/15	Tue 12/1/15
2	Perform Environmental Studies	460 days	Tue 12/1/15	Mon 9/4/17
3	Community Impacts Study	3 mons	Tue 12/1/15	Mon 2/22/16
4	Visual/Aesthetics Study	3 mons	Tue 12/1/15	Mon 2/22/16
5	Cultural Resources Investigation and NHPA Section 106 Compliance	6 mons	Tue 12/1/15	Mon 5/16/16
		-		
6	Hydrology and Floodplain Study	3 mons	Tue 12/1/15	Mon 2/22/16
7	Water Quality and Stormwater Runoff Study	3 mons	Tue 12/1/15	Mon 2/22/16
8	Paleontological Evaluation Report (PER)	3 mons	Tue 12/1/15	Mon 2/22/16
9	Hazardous Waste/Materials Initial Site Assessment (ISA)	3 mons	Tue 12/1/15	Mon 2/22/16
10	Air Quality Study	3 mons	Tue 12/1/15	Mon 2/22/16
11	Noise and Vibration Study	3 mons	Tue 12/1/15	Mon 2/22/16
12	Energy and Climate Change Study	3 mons	Tue 12/1/15	Mon 2/22/16
13	Natural Environment Study (NES)	7 mons	Tue 12/1/15	Mon 6/13/16
14	USFWS Consultation Report	10 mons	Tue 11/29/16	Mon 9/4/17
15	NMES Consultation Report	10 mons	Tup 11/20/16	Mon 9/4/17
16	Dronaro Environmental Decument		Tue 2/22/10	Mon 2/10/19
10	Prepare Environmental Document	520 days	Tue 2/23/16	Mon 2/19/18
17	DED	10 mons	Tue 2/23/16	Mon 11/28/16
18	FED	6 mons	Tue 9/5/17	Mon 2/19/18
19	Coordinate Permitting	120 days	Mon 10/23/17	7Fri 4/6/18
20	RWQCB Section 401 Water Quality Certifcation	3 mons	Mon 1/15/18	Fri 4/6/18
21	USACE Section 404 Permit	6 mons	Mon 10/23/17	' Fri 4/6/18
22	CDFW Section 1602 Streambed Alteration Agreement	3 mons	Mon 1/15/18	Fri 4/6/18
23	NPDES Permit	3 mons	Mon 1/15/18	Fri 4/6/18
24	CDFW 2081 Take Permit	6 mons	Mon 10/23/17	' Fri 4/6/18
25	BDCP Permit	3 mons	Mon 1/15/18	Fri 4/6/18



PEAR ATTACHMENT D

Environmental Commitments Cost Estimate (Standard PSR)

PEAR Attachment D: Environmental Commitments Cost Estimate

Standard PSR Only

(Prepare a separate form for each viable alternative described in the Project Study Report)

PART 1 PROJECT INFORMATION	Rev. 11/08						
District-County-Route-Post Mile	EA:						
04	04-1J560K						
Project Description:							
The project would extend the HOV lanes on the US 101 freeway in San Mateo County for							
approximately 14 miles from Whipple Avenue t	to the south to just I-380 to the north in each direction.						
Form completed by (Name/District Office):							
Petra Unger, AECOM							
Project Manager:	Phone Number:						
Ron Moriguchi	(510) 286-5073						
Date: 2/25/2015							

PART 2 PERMITS AND AGREEMENTS

	Permits and Agreements		
	(\$\$)		
Fish and Game 1602 Agreement	5,000 for each "crossing"		
Coastal Development Permit	N/A		
State Lands Agreement	N/A		
Section 401 Water Quality Certification	40,000 to 90,000 depending on		
	acreage of discharge		
Section 404 Permit – Nationwide (U.S. Army Corps)	0		
Section 404 Permit – Individual (U.S. Army Corps)	N/A		
Section 10 Navigable Waters Permit (U.S. Army	N/A		
Corps)			
Section 9 Permit (U.S. Coast Guard)	N/A		
Other: California Department of Fish and Wildlife	0		
Section 2081 incidental take permit			
US Fish and Wildlife Services BO and take permit	0		
NPDES permit for General Construction	512 plus 57/acre; max 5,700		
BCDC Major Permit (2% of project cost)	20,000		
Total (enter zeros if no cost)	120,000		

PART 3. ENVIRONMENTAL COMMITMENTS FOR PERMANENT IMPACTS

To complete the following information:

- Report costs in \$1,000s.
- o Include all costs to complete the commitment:
 - O.K. to break down by phase: Design, ROW, Construction, and/or provide Sub-Total.
 - Capital outlay and staff support. Refer to Estimated Resources by WBS Code. For example, if you estimated 80 hours for biological monitoring (WBS 235.35 Long Term Mitigation Monitoring), convert those hours to a dollar amount for this entry. For current conversion rates from PY to dollars, see the Project Manager.
 - Cost of right of way or easements.
 - If compensatory mitigation is anticipated (for wetlands, for example), insert a range for purchasing credits in a mitigation bank.
 - Long-term monitoring and reporting
 - Any follow-up maintenance
 - Use current costs; the Project Manager will add an appropriate escalation factor.
 - This is an estimating tool, so a range is not only acceptable, but advisable.

Environmental Commitments Maximum Alternative									
	Estimate	ed Cost in	\$1,000's		Notes				
	Phases								
	Design	ROW	Construction	<u>Sub-</u>					
				<u>Total</u>					
Noise abatement or mitigation	40	0	350	390	For night time construction				
Special landscaping	20	0	450	470	Classified				
					Landscape				
					Freeway				
					restoration				
Archaeological resources	100	0	250	350	Pending results				
					from arch				
					survey				
Biological resources	280	0	500	780	Sensitive				
					wildlife &				
					plants in area				
Historical resources	40	0	60	100					
Scenic resources	40	0	140	180					
Wetland/riparian resources	180	0	1500	1680	Impacts to exist				
					wetlands				
Res./bus. relocations	0	0	50	50					
Other:	100	0	700	800	Contingency				
Total (enter zeros if no	800	0	4,000	4,800					
cost)									

PEAR ATTACHMENT E

Figures



Figure 1. General Plan Land Use



Figure 2a. Cultural Resources Sensitivity Maps


Figure 2b. Cultural Resources Sensitivity Maps



Figure 2c. Cultural Resources Sensitivity Maps



Figure 2d. Cultural Resources Sensitivity Maps





Figure 4.



Figure 5. Half-Mile Map (Animal)



Figure 6. Half-Mile Map (Plant)

ATTACHMENT E

Transportation Planning Scoping Information Sheet

Transportation Planning Scoping Information Sheet

PROJECT INFORMATION

				Project ID No/
District	County	Route	Post Miles	Expenditure Authorization No.
04	SM	101	6.3/20.8	ID 0413000206 / EA 04-1J560K
Project Name and Description : US 101 HOV Lanes – Whipple Ave to I-380				

Prepared by:

District Information Sheet	Name: Karsten Adam (Mark	Functional	
Point of Contact*: TBD	Thomas & Co)	Unit:	

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

Project Development Team (PDT) Information			
Title	Name	Phone Number	
Project Manager	Ron Moriguchi	(510) 286-5073	
District Office Chief –	Celia McCuaig	(510) 286-5566	
Advance Planning			
Project Engineer	Karsten Adam (Mark Thomas & Co)	(408) 453-5373	
HQ Project Delivery	Larry Moore	(916) 653-2647	
Coordinator			
Environmental Unit	Kathy Boltz	(510) 622-8706	
Supervisor			
Traffic Operations	Lance Hall	(510) 286-6311	
Transportation Planning PDT	Mimy Hew	(510) 286-5578	
Representative**			

Transportation Planning Stakeholder Information			
Title	Name	Phone Number	
System and Regional Planning	TBD		
Local Development-	Erik Alm, Transit and Community Planning	(510) 286-6053	
Intergovernmental Review			
(LD-IGR) Planner			
Community Planning	Becky Frank	(510) 286-5536	
Goods Movement Planner	Joe Aguilar, System and Regional Planning	(510) 286-5591	
Transit Planner	Wingate Lew, Transit and Community Planning	(510) 622-5432	
Bicycle and Pedestrian	Beth Thomas	(510) 286-7227	
Coordinator			
Park and Ride Coordinator	Wingate Lew, Transit and Community Planning	(510) 622-5432	
Native American Liaison	Blesilda Gebreyesus, System and Regional	(510) 286-5575	
	Planning		
Other Coordinators:	TBD		

Project Purpose and Need** – Need:

US 101 between Santa Clara County line and I-380 is currently an 8-lane facility (4 through-lanes in each direction) with auxiliary lanes between most interchanges. The southern segment from Santa Clara County line to Whipple Avenue in Redwood City consists of 1 HOV lane + 3 mixed-flow lanes in each direction. The northbound HOV lane ends at the Whipple Avenue interchange while the southbound HOV lane begins at the Whipple Avenue interchange. From Whipple Avenue to San Francisco County line, US 101 consists of 4 mixed-flow lanes in each direction.

During peak hours, generally all lanes are congested resulting in overall degradation of operations in the corridor. Commuters with multiple passengers and commuter buses traveling on US 101 within the project limits also experience the same delays in both northbound and southbound directions in the AM and PM peak hours as the non HOV traffic.

Purpose:

- Improve travel time for high occupancy vehicles along the US 101 corridor;
- Encourage carpooling and usage of transits;
- Increase person throughput (i.e., number of people moved) on US 101 in San Mateo County;
- Provide lane continuity on US 101 in San Mateo County, as called for in the Regional Transportation Plan (RTP ID 240060).

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

1. **Project Funding:**

<u> </u>	1 ojeet 1 anamgt
0	List all known and potential funding sources and percent splits: (ie. State Transportation Improvement Program (STIP)/State Highway Operations and Protection Program (SHOPP)/Transportation Enhancement (TE)/Environmental Enhancement and Mitigation (EEM)/Safe Routes to School
a	(SR2S)/etc.)
	Funding for future phases anticipated from Federal, State and Local sources
b	Is this a measure project?
	Yes, San Mateo County Transportation Authority (SMCTA) "Measure A"

2. Regional Planning:

	Name of and contact information for Metropolitan Planning Organization (MPO) or Regional
a	Transportation Planning Agency (RTPA).
	Winnie Chung, Transportation Engineer, Metropolitan Transportation Commission (MTC)
h	Name of and contact information for local jurisdiction (City or County)
D	Joe Hurley, Director, SMCTA
	Provide the page number and project description as identified in the Regional Transportation Plan (RTP)
	and the date of adoption, or provide an explanation if not in RTP.
c	RTP ID 240060 on page number 22 of 33 of Final Plan Bay Area Project List dated July 2013. Project
	description is to modify existing lanes on U.S. 101 from Whipple to County line to accommodate HOV/T
	lane.
d	Provide nexus between the RTP objectives and the project to establish the basis for the project purpose
	and need.

	The project would add HOV lanes in each direction of US 101 in San Mateo County for
	approximately 14 miles from Whipple Avenue to I-380, thereby providing lane continuity of the
	existing US 101 HOV lanes from Whipple Avenue to the south, improve HOV travel time,
	encourage carpooling and increase person throughput.
	Is the project located in an area susceptible to sea-level rise?
е	Yes
f	Name of Air Quality Management District (AQMD)
1	Bay Area Air Quality Management District (BAAQMD).
	If the project is located in a federal non-attainment or attainment-maintenance area is the project:
	• Regionally Significant? (per 40 (Code of Federal Regulations (CFR) 93.101) Yes
g	• Exempt from conformity? (per 40 CFR 93.126 and 93.128) No
	• Exempt from regional analysis? (per 40 CFR 93.127) No
	• Not exempt from conformity (must meet all requirements)? Yes

3. Native American Consultation and Coordination:

	If project is within or near an Indian Reservation or Rancheria? If so, provide the name of Tribe.
a	No.
h	Has/have the Tribal Government(s) been consulted? If no, why not?
U	N/A
	If the project requires Caltrans to use right-of-way on trust or allotted lands, this information needs to be
с	included as soon as possible as a key topic in the consultation with the Tribe(s). Has the Tribe been
ľ	consulted on this topic? If no, why not?
	N/A
d	Has the Bureau of Indian Affairs (BIA) been notified?
u	N/A
e	Have all applicable Tribal laws, ordinances and regulations [Tribal Employment Rights Ordinances
	(TERO), etc.] been reviewed for required contract language and coordination?
	N/A
	If the Tribe has a TERO, is there a related Memorandum of Understanding between the District and the
f	Tribe?
	N/A
	Has the area surrounding the project been checked for prehistoric, archeological, cultural, spiritual, or
	ceremonial sites, or areas of potentially high sensitivity? If such areas exist, has the Tribe, Native
	American Heritage Commission or other applicable persons or entities been consulted?
g	A records search was initiated for the PEAR, and a majority of the project area has already been
Ð	previously inventoried. To complete the environmental documentation and be able to identify and
	analyze potential impacts, the next phase of PA&ED would need to delineate an area of potential effects
	(APE) and complete an inventory and evaluation of all cultural resources for properties in the APE with
	an Archaeological Survey Report.
h	If a Native American monitor is required for this project, will this cost be reflected in cost estimates?
	Yes
	In the event of project redesign, will the changes impact a Native American community as described
i	above in d, e, or h?
	TBD

4. System Planning:

a	Is the project consistent with the DSMP? If yes document approval date. If no, explain.
	District 4 DSMP began development in 2012, but it is not yet complete.
h	Is the project identified in the TSDP? If yes, document approval date. If no, explain.
U	Identified in Caltrans District 4 final TSDP dated 12/2011 on page 20-2.
c	Is the project identified in the TCR/RCR or CSMP? If yes, document approval date. If no, explain. Is
	the project consistent with the future route concept? If no, explain.

	Yes, on page 103 of the December 2010 US 101 South CSMP.
Y	Provide the Concept Level of Service (LOS) through project area.
	LOS D based on Attachment F of the 1985 RCR.
e	Provide the Concept Facility – include the number of lanes. Does the Concept Facility include High
	Occupancy Vehicle lanes?
	8 Lane Freeway based on page 9 of the 2011 US 101 South CSMP Supplement. HOV lanes are not
	included in the 25 year concept.
	Provide the Ultimate Transportation Corridor (UTC) – include the number of lanes. Does the UTC
f	include High Occupancy Vehicle Lanes?
	No known UTC concept for US 101.
	Describe the physical characteristics of the corridor through the project area (i.e. flat, rolling or
g	mountainous terrain).
	Flat terrain
h	Is the highway in an urban or rural area? Provide Functional Classification.
	Urban Area. Freeway facility functional classification.
i	Is facility a freeway, expressway or conventional highway?
-	Freeway
	Provide Route Designations: (i.e. Interregional Transportation Strategic Plan (ITSP) High Emphasis or
j	Focus Route, Surface Transportation Assistance Act (STAA) Route, Scenic Route).
	STAA and Interregional route.
ŀ	Describe the land uses adjacent to project limits (i.e. agricultural, industrial).
ĸ	The majority of land use is residential, followed by commercial and industrial
	Describe any park and ride facility needs identified in the TCR/CSMP, local plans, and RTP.
1	There are a total of 3 existing park and ride facilities along US 101 in project limits; 1 in Redwood City
1	and 2 in San Mateo. No park and ride facility needs along US 101 in project limits are identified in the
	CSMP or RTP.
	Describe the Forecasted 10 and 20-year Vehicle Miles Traveled (VMT), Annual Average Daily Traffic
	(AADT), and Peak Hour truck data in the TCR. Include the source and year of Forecast, and names and
	types of traffic and travel demand analysis tools used.
m	From Caltrans 2013 Traffic Volumes on California State Highways, existing AADT traffic volumes
	range from a low of 218,000 at Whipple Ave to a high of 260,000 at SR 92. Truck AADT ranges from
	7,200 to 11,000 within project limits. The corridor-wide mobility performance results for Year 2040 are
	presented in the Staged Hybrid Memo (Kittelson/Dowling Associates, June 2012) with VMT 4,925,100
	(no project) and 5,145,620 (with project)
	Has analysis on Daily Vehicle Hours of Delay (DVHD) from the Highway Congestion Monitoring
	Program (HICOMP) been completed and included?
n	The corridor-wide mobility performance results for Year 2040 are presented in the Staged Hybrid Memo
	(Kittelson/Dowling Associates, June 2012) with Vehicles Hour of Delay of 120,400 (no project) and
	107,841 (with project)

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

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

LD-IGR Project Information		Project
a	County-Route-Postmile & Distance to Development.	1. SM-101-8.5 US 101 Holly-St Interchange - a Type L-9 partial cloverleaf has been proposed to replace the existing Type L-10 four-quadrant cloverleaf (EA-04-1G6201). PA&D complete in 2015. \$19M

		 2. SM-101-11.0 US 101-Hillsdale Blvd pedestrian and bicycle overcrossing (EA 04-4H330) PSR-PDS complete in 2014. \$20M 3. SM-101-14.9 A new southbound US 101/Peninsula Ave Interchange (EA 04-4H460) has been proposed. The southbound US 101ramps at Poplar Ave would be eliminated. PSR-PDS complete in 2015. \$10M 4. SM-101-16.5 US 101/Broadway interchange (EA 04-235844) project - reconstruct the interchange. Construction Started 2014. \$75M
b	Development name, type, and size.	See above
с	Local agency and/or private sponsor, and contact information.	 City of San Carlos & SMCTA City of San Mateo & SMCTA City of San Mateo & SMCTA City of Burlingame & SMCTA
d	California Environmental Quality Act (CEQA) status and Implementation Date.	TBD
e	If project includes federal funding, National Environmental Policy Act (NEPA) status.	TBD
f	All vehicular and non-vehicular unmitigated impacts and planned mitigation measures including Transportation Demand Management (TDM) and Transportation System Management (TSM) that would affect Caltrans facilities.	TBD
g	Approved mitigation measures and implementing party.	TBD
h	Value of constructed mitigation and/or amount of funds provided.	See above
i	Encroachment Permit, Transportation Permit, Traffic Management Plan, or California Transportation Commission (CTC) Access approvals needed.	TBD
j	Describe relationship to Regional Blueprint, General Plans, or County Congestion Management Plans.	TBD
k	Inclusion in a Regional Transportation Plan Sustainable Community Strategy or Alternative Planning Strategy?	The projects listed above are in the RTP except for the Hillsdale POC.
1	Regional or local mitigation fee program in place?	TBD

6. Community Planning:

	INITIAL PID INFORMATION
a	Has lead agency staff worked with any neighborhood/community groups in the area of the proposed improvements? If yes, summarize the process and its results including any commitments made to the community. If no, why not?

	No community or neighborhood groups in the area have been involved with the project yet because it is currently at such a preliminary stage of PSR-PDS. Outreach will begin in the next phase of PA&ED					
	during the environmental documentation period.					
	Are any active/completed/proposed Environmental Justice (EJ) or Community-Based Transportation					
	(CBTP) Planning Grants in the project area? If yes, summarize the project, its location, and whether/how					
	it may interact with the proposed project.					
b	The North Central San Mateo Community-Based Transportation Plan was prepared in 2011 for an area in					
	the City of San Mateo bounded by Poplar Ave, 5 th Ave, Caltrain RR tracks and US 101. Widening US					
	101 to accommodate the maximum alternative could impact some properties in this community along the					
	Amphlett Blvd frontage road immediately west of US 101.					
C Describe any community participation plans for this PID including how recommendations will incorporated and/or addressed. Has a context sensitive solutions (CSS) approach been applied?						
					No community participation has been implemented yet for this project.	
	FINAL PID INFORMATION					
	How will the proposed transportation improvements impact the local community? Is the project likely to					
	create or exacerbate existing environmental or other issues, including public health and safety, air quality,					
	water quality, noise, environmental justice or social equity? Describe issues, concerns, and					
	recommendations (from sources including neighborhood/community groups) and what measures will be					
	taken to reduce existing or potential negative effects.					
	An air quality report would need to be prepared to study the project impacts on air quality. The project					
d	would increase traffic volumes, but also decrease overall vehicle delay, both of which counteract each					
	other in terms of air quality. Water quality would likely be maintained for either alternative since					
	permanent treatment BMP's are required for increases in impervious area. Local traffic and residences					
	on frontage roads in San Mateo could be affected by the freeway widening proposed for the maximum					
	alternative, which could require sliver right of way takes and narrowing of frontage roads. Nonstandard					
	lane and shoulder widths are proposed to minimize impacts to right of way and environmentally sensitive					
	areas.					
	Does this highway serve as a main street? If yes, what main street functions and features need to be					
e	protected or preserved?					
	No, it is a freeway.					

7. Freight Planning:

	INITIAL PID INFORMATION			
а	Identify all modal and intermodal facilities that may affect or be affected by the project.			
	San Francisco International Airport is located immediately east of US 101 between Millbrae Ave and San			
	Bruno Ave, but the Airport would not be physically affected by the project. BART runs across US 101			
	and to SF airport, but would also not be affected by the project.			
	FINAL PID INFORMATION			
b	Describe how the design of this project could facilitate or impede Goods Movement and relieve choke			
	points both locally and statewide through grade separations, lane separations, or other measures (e.g.,			
	special features to accommodate truck traffic and at-grade railroad crossings).			
	The project would generally increase vehicles mile traveled, and therefore facilitate goods movement			
	along the US 101 corridor within project limits.			
	Describe how the project integrates and interconnects with other modes (rail, maritime, air, etc.). Do			
	possibilities exist for an intermodal facility or other features to improve long-distance hauling, farm-to-			
	market transportation and/or accessibility between warehouses, storage facilities, and terminals?			
	The Port of Redwood City is just to the south end of the project limits, while the San Francisco			
с	International airport is at the northern end of the project limits. The Caltrain railroad corridor is generally			
	parallel and to the west of the US 101 corridor within project limits, and is mainly for passenger service			
	during the day, with limited heavy freight movement during overnight hours from the South San			
	Francisco rail yard to the north of I-380. There may be possibilities to improve long-distance hauling,			
	but this project is focused on improving conditions for HOV commuters.			

	Is the project located in a high priority goods movement area, included in the Goods Movement Action Plan (GMAP) or on a Global Gateways Development Program (GGDP) route? If yes, describe.
d	North of the San Francisco International Airport, US 101 is identified as a major international trade highway route on the Priority Global Gateways map included in the 2007 GMAP and is also mentioned as a priority gateway in the 2002 GGDP.
e	Is the project on a current and/or projected high truck volume route [e.g., Average Annual Daily Truck Traffic (AADTT) of 5 axle trucks is greater than 3000]? If yes, describe how the project addresses this demand.
	5 axle truck AADT for this segment of US 101 is below 3,000.
f	If the project is located near an airport, seaport, or railroad depot, describe how circulation (including truck parking) needs are addressed.
	This project is focused on improving conditions for HOV commuters, but accommodates STAA semi- trucks on this this segment of US 101 with appropriate lane widths and turning radii for truck off- tracking.
g	Describe any other freight issues.
	None.

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

	INITIAL PID INFORMATION					
а	List all local transit providers that operate within the corridor.					
	SamTrans provides express and local bus service along more than half the corridor (primarily in San					
	Mateo County). SamTrans provides express, intercity, and local bus service throughout San Mateo					
	County. Several express and intercity lines also extend into downtown San Francisco and Palo Alto					
	Many of the express bus services operate along US-101, including:					
	• Route FX – serves Foster City, Mariners Island, Third Avenue and downtown San					
	Francisco;					
	• Route KX – serves Palo Alto, Menlo Park, Atherton, Redwood City, San Carlos,					
	Belmont, San Francisco International Airport, and San Francisco;					
	• Route MX – serves San Mateo, Burlingame, Millbrae, San Bruno, San Francisco Civic					
	Center, and the San Francisco Transbay Terminal;					
	• Route NX – serves Redwood Shores, San Mateo US-101/SR-92 Park and Ride, and					
	downtown San Francisco;					
	• Route PX – serves Redwood City, San Carlos, Belmont, San Mateo, and San					
	Francisco;					
	• Route REX – serves East Palo Alto, Menlo Park, Redwood Shores, San Mateo,					
	Burlingame, and the Millbrae BART/Caltrain station; and					
	• Route RX – serves Palo Alto, Menlo Park, Atherton, Redwood City, San Carlos,					
	Belmont, San Mateo, and San Francisco.					
	Have transit agencies been contacted for possible project coordination? If no, why not?					
b	SMCTA is the project proponent, and works in coordination with the SamTrans transit agency and JPB					
	(Caltrain) under the combined umbrella of the San Mateo County Transit District.					
с	Describe existing transit services and transit features (bus stops, train crossings, and transit lines) within					
	the corridor.					
	Within project limits, there are no train crossings of US 101, however immediately to the south of project					
	limits at Woodside Rd in Redwood City there is a freight rail line that passes under the freeway for night					
	time movement of heavy freight, while immediately to the north of project limits at E Grand Ave in					
	South San Francisco the Caltrain railroad crosses underneath the freeway. BART crosses over US 101 at					
	the San Francisco Airport in San Bruno/Millbrae, but would not be affected by the project. SamTrans					
	runs express buses along US 101, but the only current active bus stops along US 101 are at the 3 rd Ave					
	interchange in the City of San Mateo. The bus stops between the 3 rd Ave loop on-ramps and frontage					
	roads in both directions are proposed to be maintained for both proposed alternatives.					
	Caltrain provides regional commuter rail service along the length of the Caltrain corridor to the west of					

	US 101. A total of 49 northbound and 49 southbound trains operate between 4:30 AM and 1:30 AM on					
	weekdays, including 11 Baby Bullet Express Service trains that operate during the peak periods in each					
	direction.					
	Describe transit facility needs identified in short- and long-range transit plans and RTP. Describe how					
d	these future plans affect the corridor.					
	TBD					
	FINAL PID INFORMATION					
	Describe how the proposed project integrates transit and addresses impacts to transit services and transit					
	facilities.					
0	There are multiple Caltrain improvements included in the RTP, including upgrades of rolling stock,					
C	station upgrades, grade separations, and electrification for future high speed rail service. All of these					
	upgrades are beyond the project limits of the US 101 HOV improvements though. No SamTrans					
	improvements along US 101 are identified in the RTP.					
	Have transit alternatives and improvement features been considered in this project? If yes, describe. If					
	no, why not?					
f	No direct transit improvements are considered for this project since the focus is providing HOV lanes,					
	however SamTrans bus service could benefit from the project by having HOV lanes with faster travel					
	times provided.					

9. Bicycle:

	INITIAL PID INFORMATION
0	Does the facility provide for bicyclist safety and mobility needs? If no, please explain.
a	No, as the focus of the project are HOV lanes on the US 101 freeway facility.
	Are any improvements for bicyclist safety and mobility proposed for this facility by any local agencies or
b	included in bicycle master plans? If yes, describe (including location, time frame, funding, etc.).
	No bicycle facilities are allowed on a freeway.
	Are there any external bicycle advocacy groups and bicycle advisory committees that should be included
	in the project stakeholder list? If so, provide contact information.
	TBD. Silicon Valley Bicycle Coalition, Bike San Mateo, and various city BPAC groups may become
	involved as related to the project impacts to adjacent frontage roads, which would generally be narrowed
	by widening the freeway for the maximum alternative in the City of San Mateo, Belmont and San Carlos.
с	Amphlett Blvd frontage road (to the west of US 101) is not currently designated as a bikeway in the City
	of San Mateo bicycle master plan, but between Broadway and Howard Ave Amphlett is indicated as an
	"additional cyclist suggested route" on the San Mateo County bicycle map. Bayshore Blvd to the east of
	US 101 in San Mateo will need to be examined for impacts to bicyclists as well, which has a
	sidewalk/path that is currently designated as Class 1 bikeway between Poplar Ave and Peninsula Ave. In
	Belmont/San Carlos, widening the freeway and impacting Shoreway Rd to the east of US 101 should be
	reviewed for impacts to bicycle access south of Ralston Ave.
	FINAL PID INFORMATION
d	Will bicycle travel deficiencies be corrected? How or why not?
	TBD
6	How will this project affect local agency plans for bicycle safety and mobility improvements?
	TBD as indicated in item C above.
f	If the project is the construction of a new freeway or modification to an existing freeway, will it sever or
	destroy existing provisions for bicycle travel? If yes, describe how bicycle travel provisions will be
	included in this project.
	TBD

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

	INITIAL PID INFORMATION
a	Does this facility provide for pedestrian safety and mobility needs? If so, describe pedestrian facilities.
	Do continuous and well-maintained sidewalks exist? Are pedestrians forced to walk in the roadway at

	any locations due to lack of adequate pedestrian facilities? Please explain.						
	Widening US 101 for the maximum alternative could have potential impacts to existing frontage road						
	sidewalks in the City of San Mateo, but the project would replace any relocated sidewalks with new						
	sidewalk to maintain existing pedestrian travel patterns and comply with the latest ADA accessibility						
	standards.						
h	Are pedestrian crossings located at reasonable intervals?						
U	N/A for widening freeway facility.						
	Are all pedestrian facilities within the corridor ADA accessible and in compliance with Federal and State						
C	ADA laws and regulations?						
C	Any relocated sidewalks along adjacent frontage roads would be brought into compliance with the						
	latest ADA accessibility standards.						
	FINAL PID INFORMATION						
d	Will pedestrian travel deficiencies be corrected? How or why not?						
u	Existing pedestrian travel routes would be maintained.						
	How will this project affect local agency plans for pedestrian safety and mobility improvements?						
C	TBD, but any relocated sidewalks would be replaced as mentioned above.						
	If the project is the construction of a new freeway or modification to an existing freeway, will it sever or						
f	destroy existing provisions for pedestrian travel? If yes, describe how pedestrian travel provisions will be						
1	included in this project.						
	No. Existing pedestrian travel routes will be maintained.						
	Are there any external pedestrian advocacy groups and advisory committees that should be included in						
g	the project stakeholder list? If so, provide contact information.						
	TBD, but could include local City BPAC groups.						
	Have ADA barriers as noted in the District's ADA Transition Plan been identified within the project						
	limits? If not included in the project, provide justification and indicate whether District Design						
h	coordinator approval was obtained.						
	TBD, but any affected sidewalks would be brought into compliance with the latest ADA accessibility						
	standards.						

11. Equestrian:

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

12. Intelligent Transportation Systems (ITS):

	INITIAL PID INFORMATION
	Have ITS features such as closed-circuit television cameras, signal timing, multi-jurisdictional or
a	multimodal system coordination been considered in the project? Yes. If yes, describe. If no, explain.
	Existing and proposed ITS features such as ramp metering, LOS loop detectors, CCTV cameras,
	changeable and extinguishable message signs and the SMART corridor emergency rerouting system will
	all be considered during the project development. Existing ITS systems would be maintained or replaced
	with either alternative. Costs to replace these existing systems have been included in the project cost
	estimates.
	FINAL PID INFORMATION
	Have ITS features been identified? If so, are they included a part of this project? Describe. If no, why
b	not?
	Yes, see above.

ATTACHMENT F

Right of Way Conceptual Cost Estimate

CONCEPTUAL COST ESTIMATE – RIGHT OF WAY COMPONENT

To: Kristin L. Schober, R/W Local Public	Date: 2/21/ 04-SM-101 PM 6 3/20	Date: 2/21/2015 04-SM-101 PM 6 3/20 8			
From: Richard Tanaka Mark Thomas & (408) 453-5373	Project ID: EA: 04-1J5 101 HOV I	PM 0.3/20.8 Project ID: 0413000206 EA: 04-1J560K 101 HOV Lanes (Whipple to 380			
A Field Review was con	educted Yes X N	0			
Scope of the Right of V	Nay:				
Provide a general descr Right of Way Required	$\frac{1}{2} \frac{1}{1} \frac{1}{10} = \frac{1}{1} \frac{1}{10} $	uding the location	attributes.	>100	
X Urban	1-10 <u>11-25</u> Rural	20-30		/100	
Land Area: F	$\underline{}$	Easement			
Displaced Perso	ns/Businesses Yes	X No			
Demolition/Clea	arance Yes X N	0			
Railroad Involvement	X Yes No				
Utility Involvements	X Yes No <u>6</u>	_Number of Utiliti	les in area		
Cost Estimates:					
Support Costs	\$0-\$25,000	\$500,001-\$1,	,000,000		
	\$25,001-\$100,000	\$1,000,001-\$	5,000,000		
	<u>\$100,001-\$250,000</u>	\$5,000,001-\$	10,000,000		
	<u>X</u> \$250,001-\$500,000	>\$10,000,000	J		
Capital Costs	\$0-\$100,000	X \$5,000,001-\$	15,000,000		
	\$100,001-\$500,000	\$15,000,001-	\$50,000,000		
	\$500,001-\$1,000,000	\$50,000,001-	\$100,000,000		
	\$1,000,001-\$5,000,000	>\$100,000,00	00		

Schedule:

Right of Way will require up to 24 months to deliver Right of Way Certification #1 from PA&ED approval estimated <u>April 2018</u>. This estimate is based on a Right of Way Certification date of <u>April 2020</u>.

Areas of Concern:

Provide a description of areas in close proximity to the project footprint that are likely to result in complex right of way issues if impacted (i.e. junkyards, cemeteries, utility towers, etc.).

Project is not anticipated to result in complex right of way issues. Impacts are primarily to front yards of private property and standard underground electric, gas and water line relocations.

Assumptions and Limiting Conditions:

Provide a description of assumptions and limiting conditions.

Refer to the PSR-PDS for project displays. The right of way acquisition cost for *Maximum Alternative* was estimated using approximate estimates of the market value. The partial takes are as follow from a total of 15 separate private right of way parcels.

3,000 sf impact x \$200/sf = \$600,000

The total right of way acquisition value was escalated to 2020 for a total value of <u>\$700,000</u>. Project scope and limits could change as the project development process moves along. Further certainty would be obtained during the next PA&ED phase when the preferred alternative is identified and a right of way data sheet is prepared.

ATTACHMENT G

Risk Register

LEVEL 3 - RISK REGISTER			Project Name: HOV Lanes on U.S. 101 from Whipple Avenue to I-380			DIST- EA 04-1J560			Project Manager Richard Tanaka (MTCo)												
									Risk Assessment												
			1	Risk Identification	1	Probability			Cost Impact (\$)				Time Impact (days))	Bationale		Risk Response			
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions	Risk Owner	Updated	
Active	1	R/W	Delay of R/W Acquisition	Acquisition of ROW may take longer than anticipated.	R/W acquisition will not be complicated since no building impacts are proposed.	20	50	\$ 500,000	\$ 750,000 \$	2,000,000	\$ 379,000	180	200	365	87	Condemnation process would take longer to clear	Mitigate	Research fair market value of property to offer attractive price for acquisition	Consultant	12/5/2014	
Active	2	R/W	Longitudinal encroachment approval for existing utilities	Potential existing utilities exceptions can cause delay or increased cost to relocate.	Existing conditions will be approved by Caltrans.	20	50	\$ 100,000	\$ 500,000 \$	2,000,000	\$ 303,000	30	60	180	32	Additional utility relocation would take longer to coordinate	Mitigate	Prepare utility EPVR in next phase of PA&ED and implement early and continuous coordination with Caltrans.	Consultant	1/30/2015	
Active	3	Design	Positive Location of Utilities	The project proposes to defer the positive locating of the underground utility crossings to the PS&E phase. If potholing efforts reveal that utilities require relocation, it could increase the project cost and potentially delay the schedule.	Major utility location and impacts have already been identified.	20	30	\$ 500,000	\$ 800,000 \$	3,000,000	\$ 358,000	30	50	200	23	Unexpected utility relocations will delay project.	Avoid	Perform potholing in suspected locations early in PS&E phase.	Consultant	12/5/2014	
Active	4	Design	Design exceptions may not be approved	Delay of conceptual approval to PA&ED phase could require design change to accommodate standards.	Design exceptions have been identified with probability of approval. Most are medium to high probability of approval.	30	50	\$ 500,000	\$ 1,000,000 \$	1,000,000	\$ 333,000) 30	60	240	44	Change in design for design exceptions could have large impact on project.	Mitigate	Early and continuous design exceptions coordination with Caltrans.	Consultant	12/5/2014	
Active	5	Design	Traffic Operation Analysis Report (TOAR) Approval	Depending on results of TOAR, design concept could change which would delay the PA/ED phase.	TOAR will be completed in the next PA&ED phase	10	60	\$ 500,000	\$ 1,000,000 \$	2,000,000	\$ 408,000	30	45	90	19	There will likely be back and forth with Caltrans on results of TOAR.	Mitigate	Early and continuous coordination with Caltrans.	Consultant	12/5/2014	
Active	6	Design	No agreement on preferred alternative for PA&ED	PDT and stakeholders (Local Cities) may not have consensus of alternative to move forward with	Cities will agree to preferred alternative if impacts to private R/W are limited.	10	20	\$ 50,000	\$ 500,000 \$	2,000,000	\$ 128,000	30	90	120	12	Stakeholder input can affect design and schedule of project.	Mitigate	Early and continuous coordination with all stakeholders.	SMCTA	12/5/2014	
Active	7	PM	Coordination with other projects	Other planned and proposed projects in the area could impact the scope, schedule and cost of the project.	Known projects have been incorporated into proposed designs.	20	40	\$ 100,000	\$ 200,000 \$	1,000,000	\$ 130,000	30	60	20	11	Other projects could have moderate effects on project design.	Mitigate	Periodically review potential conflicting projects and confirm their direction through PDT.	SMCTA	12/5/2014	
Active	8	РМ	Timely review by Caltrans, SMCTA and C/CAG	If staff are overloaded could cause potential project review delays.	There has been recent Caltrans staff turnover.	50	80	\$ 60,000	\$ 100,000 \$	300,000	\$ 100,000	20	80	150	54	Sometimes different functional units do not coordinate.	Mitigate	Hold frequent PDT meetings and design charrettes to keep team on the same page.	SMCTA, consultant and Caltrans	12/5/2014	
Active	9	РМ	Delay technical studies until PA&ED	Unforeseen tasks may appear in PA&ED phase that may take longer to accomplish.	PEAR has identified most tech studies needed.	30	50	\$ 30,000	\$ 50,000 \$	150,000	\$ 31,000	20	60	120	27	Extra technical studies can take longer to get approved.	Mitigate	Thorough review of PEAR will reduce probability that needed technical studies are identified.	Consultant	12/5/2014	
Active	10	Construction	Man-made Buried objects	Construction crews may encounter buried man- made objects that are not shown on the plans during construction. The contractor will need to be compensated for handling such items, resulting in increased costs.	Aware that man-made buried objects may been used for fill material during construction and may be under the existing roadway.	10	20	\$ 50,000	\$ 150,000 \$	500,000	\$ 35,000	0 10	30	90	7	SF bay is historically a fill area and during the various upgrades of US 101 in the past, man-made objects could have been used for fill material under the existing roadway.	Mitigate	Every effort should be made to discover these objects during the planning and design phases. Added cost for those that are not found should be covered by the 5% contingencies.	Consultant	12/5/2014	
Active	11	Construction	Cultural resources.	Native American, archeological or paleontological resources encountered during construction.	The majority of the project area has been previously inventoried.	0	10	\$ 100,000	\$ 500,000 \$	1,000,000	\$ 27,000	0 10	30	120	3	There is low risk of Encountering cultural resources during construction due to previous construction in the area.	Mitigate	Perform detailed environmental field studies and early involvement from resource agencies.	Consultant	12/5/2014	
Active	12	Construction	Insufficient funding for construction.	Insufficient funding can delay project or require it to be built in phases.	Project currently not fully funded.	50	100					120	300	1,500	480	Lack of funding will delay project.	Avoid	Early coordination to program and secure construction funds.	SMCTA	12/5/2014	
Active	13	Environmental	Community and Advocacy Groups opposition	Potential opposition to adding capacity to freeway.	Improving congestion will be favored by the public.	10	30					30	120	200	23	May require additional public hearings	Mitigate	Perform early and continuous outreach to community and advocacy groups	SMCTA	12/5/2014	
Active	14	Environmental	Challenge to the Environmental Document	Potential lawsuits may challenge the environmental report, delaying the start of construction or increase costs.	Proper level of environmental documentation will be prepared.	10	30	\$ 100,000	\$ 200,000 \$	1,200,000	\$ 100,000	60	80	240	25	Lawsuit can significantly delay schedule of project.	Mitigate	Address concerns of stakeholders and public during environmental process	Consultant	1/29/2015	
Active	15	Environmental	for federal status species preparation of trapping surveys.	Lengthier and more intensive effort with USFWS involvement.	Probability of occurrence is low.	10	20	\$ 50,000	\$ 120,000 \$	150,000	\$ 16,000	50	300	500	43	Impact to schedule is high.	Avoid	Early coordination of effort of federal species.	Consultant	12/5/2014	
Active	16	Environmental	Wetland or Waters of US.	Wetland or Waters of US present within footprint of project.	Currently limited data on locations of Wetlands.	30	60	\$ 100,000	\$ 500,000 \$	1,000,000	\$ 240,000	60	90	120	41	Mitigation efforts may be required if impacting Wetlands.	Mitigate	Perform early survey of Wetlands in PA&ED phase.	Consultant	12/5/2014	
Active	17	Environmental	Additional botanical surveys in subsequent years	Potential requirement to conduct additional botanical surveys in subsequent years if adverse conditions such as extreme drought reduce the ability to observe target species in areas of potential habitat during initial survey	Probability of occurrence is low.	10	30	\$ 10,000	\$ 100,000 \$	300,000	\$ 27,000	50	300	500	57	Impact to schedule is high.	Accept	Response depends on future weather conditions.	Consultant	2/3/2015	
Active	18	Environmental	Additional surveys for special-status and migratory bird nests or other special-status species	Special-status and migratory bird nests or other special-status species that could delay the schedule coincidental to the various nesting or breeding seasons	Probability of occurrence is low.	10	20	\$ 10,000	\$ 50,000 \$	80,000	\$ 7,000) 30	60	100	10	Impact to schedule is moderate.	Mitigate	Perform early survey migratory birds and other special status species.	Consultant	2/3/2015	
-						тс		\$ 2,760,000	\$ 6.520.000 \$	17,680,000	\$ 2.622.000										