

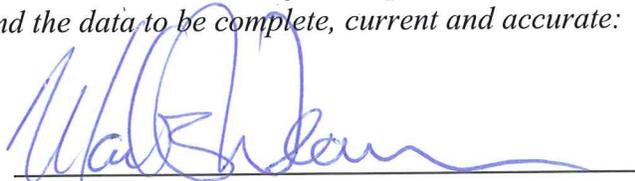
PROJECT SCOPE SUMMARY REPORT  
(ROADWAY REHABILITATION)

To

Request Programming in the 2012 SHOPP  
And  
Provide Project Approval

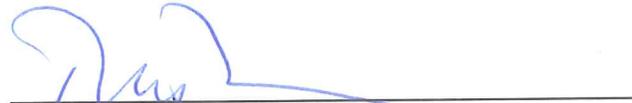
On Route I-680  
Between Scott Creek Road  
And Koopman Road

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



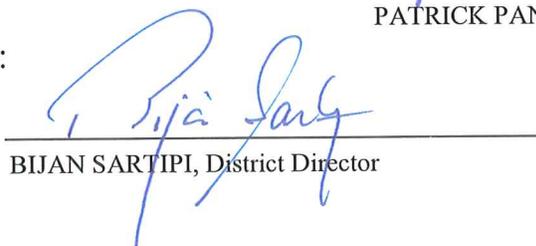
MARK L. WEAVER,  
Deputy District Director - Right of Way and Land Surveys

APPROVAL RECOMMENDED:



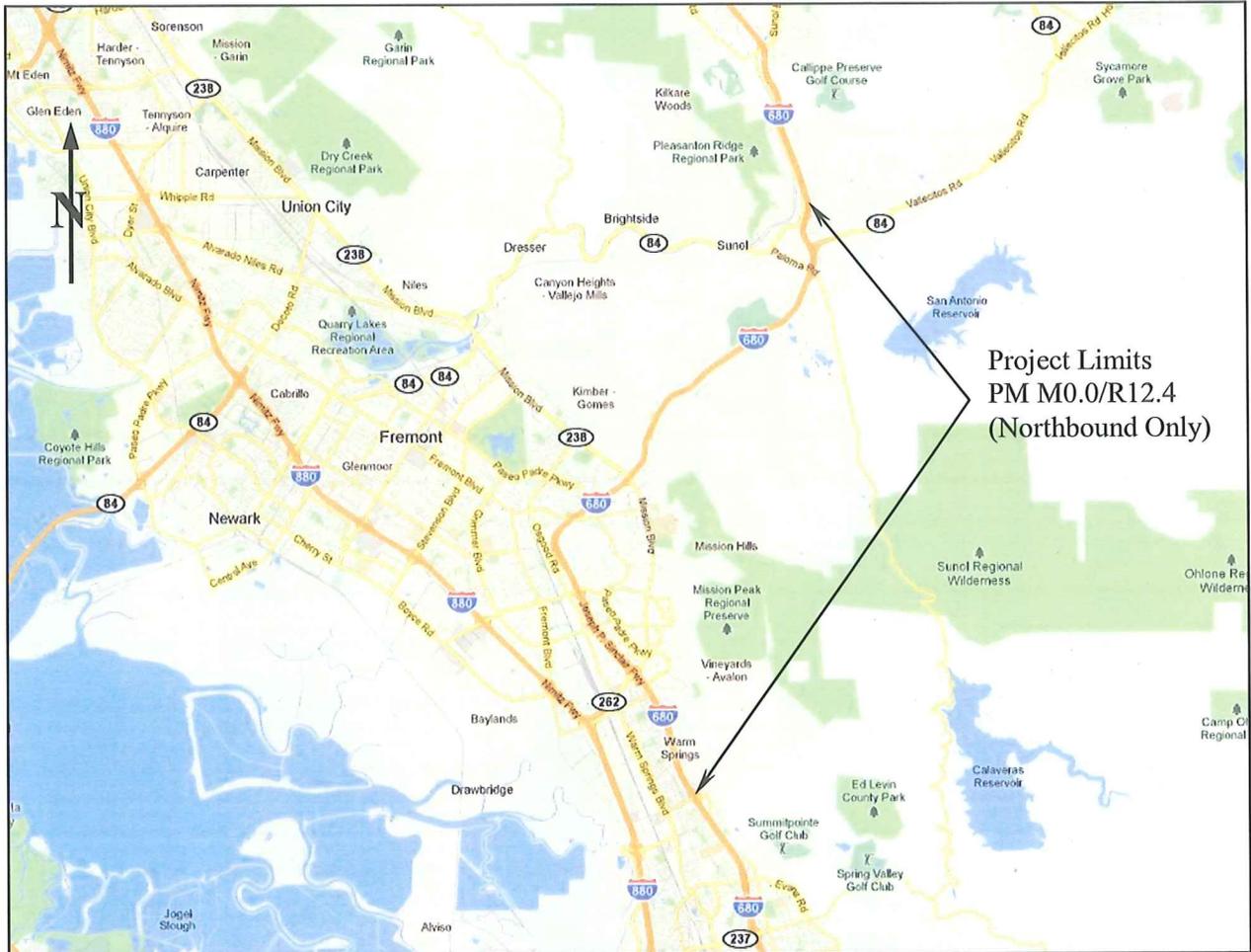
PATRICK PANG, Project Manager

APPROVED:

  
BIJAN SARTIPI, District Director

9/16/11  
Date

04-ALA- 680 PM M0.0-R12.4  
40.50.201.120  
3G600K  
September 2011



On Route I-680

Between Scott Creek Road

And Koopman Road

This Project Scope Summary Report 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.

*David Chi Sing Chan*

\_\_\_\_\_  
DAVID C. CHAN, REGISTERED CIVIL ENGINEER

*9/16/11*

\_\_\_\_\_  
DATE



Reviewed by:

*[Handwritten Signature]*  
\_\_\_\_\_  
PATRICK PANG,  
OFFICE CHIEF, ADVANCE PLANNING

## 1. INTRODUCTION AND BACKGROUND

The proposed project is to rehabilitate the pavement and related improvements along a 12.4 mi. segment of Interstate 680, known as the Sunol Grade. The project begins south of Scott Creek Road (ALA PM M 0.0) in the City of Fremont and ends at the Koopman Road interchange (ALA PM R12.4) in the community of Sunol, in Alameda County.

**Table 1 - Proposed Roadway Improvement Summary**

<b>Project Limits:</b> 04-ALA-680-PM M0.0/R12.4
<b>Capital Costs:</b> \$19.1 Million
<b>Right of Way Cost:</b> \$10,000
<b>Funding Source:</b> Caltrans SHOPP
<b>No. of Alternatives</b>  (1) Crack, Seat and HMA Overlay all lanes (Combine PS&E with Northbound High Occupancy Toll (HOT) lane widening, therefore shoulders do not need overlay) yielding savings (1a) Crack, Seat and HMA Overlay on entire roadway in a standalone project
<b>Recommended Alternative:</b> Crack Seat and HMA Overlay all lanes (Combine PS&E with Northbound HOT widening)
<b>Type of Facility:</b> 3-Northbound Lanes w/ Truck Climbing Lane
<b>No. of Structures:</b> Some SHOPP Maintenance is recommended on the 18 structures within project limits
<b>Anticipated Environmental Determination / Document:</b>  The Recommended Alternative is to combine with Northbound HOT widening. The widening project will determine the type of Environmental Document required.  If the standalone project is selected in the future, the environmental impacts will need to be reevaluated at that time.
<b>Legal Description:</b> Northbound Interstate 680
<b>Project Category:</b> Roadway Rehabilitation in the 2012 SHOPP Program.

## 2. RECOMMENDATION

It is recommended that this Project Scope Summary Report be approved and that the project proceed to the design phase using the Alternative 1, Rehabilitate all lanes (Combine PS&E with Northbound HOT widening).

### 3. PURPOSE AND NEED STATEMENT

**Need:**

The I-680 Corridor between Scott Creek Road (ALA PM M0.0) and Koopman Road (ALA PM R12.4) was built in the late 1960s including widening in 1990, 1996 and 2001. Based on 2008 pavement survey, The PCC pavement in the project limit has up to 36% third stage cracking and the AC pavement has up to 50 % alligator B Cracking. There is a need for this project to rehabilitate pavement. The MBGR in the project limits need to be upgraded to current standards. Structures also recommended some rehabilitation for structures in the project limits.

**Purpose:**

The purpose of this project is to preserve and extend the roadway service life and upgrade safety where reasonable.

### 4. EXISTING FACILITY, DEFICIENCIES AND TRAFFIC DATA

#### 4A. ROADWAY GEOMETRIC INFORMATION

**Table 2 – Existing Roadway Geometric Information**

PM	Facility	Through Traffic Lanes			Shoulder		
		No. of Lanes	Lane Width ft	Pavement Type (AC/PCC)	Outside ft	Inside ft	Pavement Type (AC/PCC)
M0.0/ M2.4	Scott Creek to Mission Blvd./Rte 262	3	12	AC	10	10	AC
M2.4/ R6.4	Mission Blvd./Rte 262 to Mission Blvd./Rte 238	3	12	PCC	10	10	AC
R6.4/ R7.7	Mission Blvd./Rte 238 to Vargas Rd.	4	12	AC over PCC	10	10	AC
R7.7/ R8.4	Vargas Road to Truck Scales	4	12	PCC	10	10	AC
R8.4/ R9.7	Truck Scales to Andrade Road	3	12	PCC	10	10	AC
R9.7/ R10.6	Andrade Road to Alameda Creek	3	12	AC	10	10	AC
R10.6/ R12.4	Alameda Creek to Koopman Road	3	12	PCC	10	10	AC

The I-680 corridor between Scott Creek Road (ALA PM M0.0) and Koopman Road (ALA PM R12.4) is a six-lane facility, with the addition of a southbound HOT lane and truck lanes on both incline directions of the Sunol Grade.

The existing northbound lanes are 12 feet wide throughout the project limits. The shoulder are 10 feet wide. The existing outside shoulders cannot withstand traffic loading.

#### 4B. CONDITION OF THE EXISTING FACILITY

##### PM M0.0 to PM M2.4 Scott Creek Road to Mission Blvd./Rte 262

###### (1) Traveled Way Data

PMS Category (1-29) \_\_\_\_\_ Priority Classification (.1-.4) 33-99

IRI 120-195 Statewide Priority Number (PIN) \_\_\_\_\_

\*Rigid Pavement: \_\_\_\_\_ \*Flexible Pavement: Asphalt Concrete Dense Graded

\* From latest PMS-Pavement Condition Inventory Survey Data.

Alligator B Cracking % 0% (See Attachment C)

Patching % 0%

Rutting No

Bleeding No

Raveling No

Locations(s) of subsurface or ponded surface-water problem: None

Deflection Study Results (if available) :

Remarks: None

###### (2) Shoulder Data

Condition: Good To Misc. Unsealed Cracks

Deficiencies: None

\*T.I. (20-Year) 15 ESAL (20-Year) 82,516,000

\*T.I. (40-Year) 16.5 ESAL (20-Year) 201,221,000

##### PM M2.4 to PM R8.4 Mission Blvd./Rte 262 to Truck Scales

###### (1) Traveled Way Data

PMS Category (1-29) \_\_\_\_\_ Priority Classification (.1-.4) 1-98

IRI 63 to 303 Statewide Priority Number (PIN) \_\_\_\_\_

\*Rigid Pavement: Undoweled Jointed Plain Concrete Pavement

\* From latest PMS-Pavement Condition Inventory Survey Data.

3rd Stage Cracking % up to 28% (See Attachment C)

Faulting Yes

Joint Spalls Yes

Pumping Yes

Corner Breaks % up to 31% (See Attachment C)

Locations(s) of subsurface or ponded surface-water problem: None

Deflection Study Results (if available) :

Remarks: None

###### (2) Shoulder Data

Condition: Shoulder AC Section Breaking up

Deficiencies: Alligator C Cracking/falling Apart

\*T.I. (20-Year) 15 ESAL (20-Year) 82,516,000  
\*T.I. (40-Year) 16.5 ESAL (20-Year) 201,221,000

### PM R8.4 to PM R11.0 Truck Scales to Calaveras Road/Rte 84

#### (1) Traveled Way Data

PMS Category (1-29) \_\_\_\_\_ Priority Classification (.1-.4) 1-98

IRI 74 to 401 Statewide Priority Number (PIN) \_\_\_\_\_

\*Rigid Pavement: AC over Undoweled Jointed Plain Concrete Pavement

\* From latest PMS-Pavement Condition Inventory Survey Data.

3rd Stage Cracking % up to 3 % Alligator B Cracking % 0% (See Attachment C)

Faulting No Patching % 100

Joint Spalls No Rutting No

Pumping No Bleeding No

Corner Breaks % up to 4% Raveling No

Locations(s) of subsurface or ponded surface-water problem: None

Deflection Study Results (if available) :

Remarks: None

#### (2) Shoulder Data

Condition: Shoulder AC Section Breaking up

Deficiencies: Alligator C Cracking/Falling Apart

\*T.I. (20-Year) 15 ESAL (20-Year) 82,516,000

\*T.I. (40-Year) 16.5 ESAL (20-Year) 201,221,000

### PM R11.0 to PM R12.4 Calaveras Road/Rte 84 to Koopman Road

#### (1) Traveled Way Data

PMS Category (1-29) \_\_\_\_\_ Priority Classification (.1-.4) 1-98

IRI 165 to 343 Statewide Priority Number (PIN) \_\_\_\_\_

\*Rigid Pavement: Undoweled Jointed Plain Concrete Pavement

\* From latest PMS-Pavement Condition Inventory Survey Data.

3rd Stage Cracking % up to 36% (See Attachment C)

Faulting Yes

Joint Spalls Yes

Pumping Yes

Corner Breaks % up to 30% (See Attachment C)

Locations(s) of subsurface or ponded surface-water problem: None

Deflection Study Results (if available) :

Remarks: None

#### (2) Shoulder Data

Condition: Shoulder AC Section Breaking up

Deficiencies: Alligator C Cracking/Falling Apart

\*T.I. (20-Year) 15 ESAL (20-Year) 82,516,000

\*T.I. (40-Year) 16.5 ESAL (20-Year) 201,221,000

**4C. STRUCTURES INFORMATION**

**Table 3 – Existing Structures Information**

Structures Bridge Description	Bridge Number	PM	Approx Width Between Curbs Ft.		Minimum Vertical Clearance, FT			Work Identified in STRAIN (2) (Y or N)	Replace Bridge Approach Slab (3) (Y or N)
			Exist [FT]	Prop.	Existing [FT]	Proposed	3R Std. [FT]		
Future 680/237 Separation	33-0423R	M0.04	69.55	NC	n/a	NC	n/a	N	N
Scott Creek Road UC	33-0424R	M0.13	92.51	NC	17.06	NC	16	N	N
South DWR UC	33-0438R	M0.77	69.55	NC	n/a	NC	n/a	N	N
North DWR UC	33-0439R	M1.47	69.55	NC	n/a	NC	n/a	N	N
East Warren Avenue UC	33-0427R	M1.97	79.39	NC	16.30	NC	15	N	N
Mission Blvd Sep 680/262	33-0428R	M2.38	123.35	NC	16.07	NC	15	N	N
Grimmer Boulevard UC	33-0429R	M3.35	50.85	NC	14.30	NC	15	N	N
Auto Mall Parkway	33-0368	M4.02	67.58	NC	15.97	NC	16	N	N
Washington Boulevard	33-0361	M5.37	51.83	NC	18.14	NC	16	N	N
Paseo Padre Parkway OC	33-0405	R5.67	64.30	NC	16.99	NC	16	N	N
Palm Avenue OC	33-0360	R5.91	40.026	NC	17.55	NC	16	N	N
Mission San Jose Separation	33-0294	R6.38	122.37	NC	14.66	NC	15	N	N
Vargas Road UC	33-0306	R7.48	146.98	NC	17.22	NC	15	N	N
Sheridan Road OC	33-0307	R8.31	28.21	NC	15.38	NC	16	N	N
Andrade Road OC	33-0295	R9.71	28.21	NC	16.01	NC	16	N	N
Alameda Creek	33-0047	R10.15	126.32	NC	n/a	NC	n/a	N	N
Calaveras Road Separation 680/84	33-0351	R11.03	154.52	NC	15.81	NC	15	N	N
Scotts Corner Separation 680/84	33-0352	R11.81	114.50	NC	18.24	NC	15	N	N
Koopman Road UC	33-0386R	R12.44	55.44	NC	31.98	NC	15	N	N

**Table 4 – NB680 Replace Approach Slab Recommendations from Bridge HQ Structures**

Prefix	PM	Bridge Number	Bridge Description	Cost	From Bridge Inspection Reports
M	0.4	33-0423	Future/237 Separation	\$50,000	Replace Approach Slab
			Total	\$50,000	

Note: Does not include Traffic Control.

**Table 5 – NB680 Rehab Recommendations from Bridge Inspection Reports for PM M0.0 to R12.4**

Prefix	PM	Bridge Number	Bridge Description	Cost	From Bridge Inspection Reports
M	1.97	33-0427R	East Warren Avenue UC	\$2,000	Repair Dike Abutment 1
M	2.38	33-0428R	Mission Blvd Sep 680/262	\$2,000	Repair Dike Abutment 1
M	2.38	33-0428R	Mission Blvd Sep 680/262	\$2,600	Repair MBGR at Abutment 1
M	4.02	33-0368	Auto Mall Parkway	\$2,600	Repair MBGR at Abutment 1
R	6.38	33-0294	Mission San Jose Separation	\$1,500	Install Vertical Clearance Sign
R	8.31	33-0307	Sheridan Road OC	\$1,500	Install Vertical Clearance Sign
R	8.31	33-0307	Sheridan Road OC	\$2,600	Repair MBGR at Abutment 3
			Total	\$14,800	

Note: Does not include Traffic Control.

#### 4D. TRAFFIC DATA

##### Traffic Volumes and Characteristics

**Table 6 – The 2009 Traffic Volumes**

District	Route	County	PM Prefix	PM	Description	Peak Hour	Peak Month	AADT
4	680	ALA	M	0.13	FREMONT, SCOTT CREEK RD INTERCHANGE	9,300	123,000	122,000
4	680	ALA	M	2.38	FREMONT, JCT. RTE. 262 WEST	10,700	143,000	140,000
4	680	ALA	M	4.02	FREMONT, DURHAM RD INTERCHANGE	10,700	144,000	141,000
4	680	ALA	M	5.37	FREMONT, WASHINGTON BLVD (MISSION SAN JOSE)	10,800	145,000	142,000
4	680	ALA	R	6.4	FREMONT, JCT. RTE. 238 NORTH	10,800	145,000	142,000
4	680	ALA	R	7.48	FREMONT, VARGAS RD INTERCHANGE	10,800	146,000	142,000
4	680	ALA	R	8.31	SHERIDAN RD INTERCHANGE	10,700	144,000	140,000
4	680	ALA	R	9.71	ANDRADE RD INTERCHANGE	10,700	145,000	141,000
4	680	ALA	R	11	JCT. RTE. 84 WEST	10,800	146,000	142,000
4	680	ALA	R	11.8	JCT. RTE. 84 EAST	9,000	121,000	118,000

**Table 7 – The 2009 Truck Traffic Volumes**

Route	District	County	Prefix	Post Mile	Description	AADT Total	Percent Vehicle Total	2 Axle Volume	3 Axle Volume	4 Axle Volume	5+ Axle Volume
680	4	ALA	M	2.382	FREMONT, JCT. RTE. 262 WEST	140000	9	3301	995	441	7862
680	4	ALA	R	6.396	FREMONT, JCT. RTE. 238 NORTH	142000	5.87	2458	493	275	5109
680	4	ALA	R	11.04	JCT. RTE. 84 WEST	142000	8	3272	1102	966	6021
680	4	ALA	R	11.85	JCT. RTE. 84 EAST	118000	9.2	3127	1053	923	5754

**Table 8 The Forecasted Traffic Volumes (Northbound 680) for 2024 and 2034 PM M0.0 to R12.4**

Present Year (2008) ADT:	<b>75,000</b>	Construction Year (2014) ADT:	<b>98,700</b>
10-year ADT (year 2024):	<b>121,100</b>	20-year ADT (year 2034):	<b>143,400</b>
DHV:	<b>10,700</b>	D:	<b>53%</b>
% Truck:	<b>7.4%</b>		
T.I. (10-year)	<b>13.5</b>	ESAL (10-year)	<b>36,735,000</b>
T.I. (20-year)	<b>15</b>	ESAL (20-year)	<b>82,516,000</b>
T.I. (40-year)	<b>16.5</b>	ESAL (40-year)	<b>201,221,000</b>

**Safety Improvements --Accident Data**

The Table B-Selective Accident Rate Calculation shows the following accident numbers and rates on ALA-680-PM M0.0/R12.4 (Northbound) for the most recent three-year period starting from June 1, 2007 to May 31, 2010:

Year	Numbers			Actual Rates			Average Rates		
	Total	Fatal	Injury	Fat.	F+I	Total	Fat.	F+I	Total
06/01/07-05/31/10	423	1	156	0.001	0.17	0.47	0.011	0.31	0.97

The types of collisions per the TSAR- Accident Summary are as follows:

- A. Head-on (0.2%)
- B. Sideswipe (21.0%)
- C. Rear end (56.0%)
- D. Broadside (1.7%)
- E. Hit object (16.1%)
- F. Overturn (3.5%)
- G. Auto pedestrian (0.2%)
- H. Other (0.7%)

The primary collision factors per the TSAR-Accident Summary are as follows:

- |                             |                              |
|-----------------------------|------------------------------|
| 1. Influence alcohol (5.4%) | 2. Follow too close (6.4%)   |
| 3. Failure to yield (0.2%)  | 4. Improper turn (14.2%)     |
| 5. Speeding (47.8%)         | 6. Other violations (22.2%)  |
| B. Improper driving (0.0%)  | C. Other than drivers (3.1%) |
| D. Unknown (0.5%)           | E. Fell sleep (0.0%)         |

There were a total of 423 accidents with 1 fatality and 156 injuries on this northbound segment of I-680 for the most recent three-year period starting from June 1, 2007 to May 31, 2010. The total actual accident rate 0.47 is lower than the average 0.97. 56% were rear ends. 18.4% and 26.5 % of the accidents occurred on Thursday and Friday respectively. 47.3% of the accidents occurred between 3 P.M. and 6 P.M. during afternoon commute hours.

#### **4E. MATERIALS**

##### **Hazardous Waste Disposal Site**

A hazardous material disposal site will be specified in the special provisions for the hazardous waste disposal. Removal of surface marking materials (i.e. yellow thermoplastic, etc) will need a SSP for instructions on safe handling/disposal.

##### **Material and Disposal Site Needs and Availability**

The non-contaminated materials will be recycled and utilized. Any materials that cannot be salvaged will become the property of the contractor and to be disposed of outside the State Right of Way, in accordance with Caltrans Standard Specifications, Section 7.1.13.

#### **5. CORRIDOR AND SYSTEM COORDINATION**

##### **Freeway Performance Initiative (FPI) Project**

In an upcoming Freeway Performance Initiative (FPI) project, ramp metering facilities will be installed at 14 northbound and on ramps between the I-680 Route 237 Separation (SCL PM M7.4) and Stoneridge Drive (ALA PM R19.3). Widening for High Occupancy Vehicle (HOV) bypass for both northbound and southbound onramps will also be included in the FPI project. The FPI project is scheduled to begin construction in 2014.

##### **Northbound High Occupancy Toll (HOT) Lane Project**

The Northbound High Occupancy Toll (HOT) project, proposed to be combined with this roadway rehabilitation project in Alternative 1, will add new High Occupancy Toll lane. Like the southbound HOT Lane, it is expected that two or more passengers could travel the lane for free and solo drivers could pay to access the lane. The Northbound HOT Lane Project is proposed to widen between Calaveras Blvd SR 237 and Calaveras Road SR 84 for the Toll Lane. In addition to the northbound widening, some southbound widening is proposed to be constructed at the following locations:

1) between the Andrade Road (ALA PM R9.7) and Calaveras Road Route 84 (ALA PM R11.0) at the Sheridan Road interchange (ALA PM R8.3), and 3) in the median between Auto Mall Parkway (ALA PM M4.0) and Route 237 (SCL PM M7.4). Sound walls and retaining walls will be constructed as necessary.

The Northbound High Occupancy Toll (HOT) Lane Project is scheduled to begin construction in 2015.

## 6. ALTERNATIVES

### No. of Alternatives

(1) Crack, Seal and HMA Overlay all lanes (Combine PS&E with Northbound High Occupancy Toll (HOT) lane widening, therefore shoulders do not need overlay) yielding savings

(1a) Crack, Seal and HMA Overlay on entire roadway in a standalone project

The Preferred Alternative is Alternative 1 Crack, Seal and HMA Overlay all lanes (Combine PS&E with Northbound HOT widening).

The facilities to be constructed in the both Alternatives are crack, seal and overlay on PCC pavement and overlay on AC pavement in the northbound direction. Per our agreement with Headquarters, life cycle cost analysis will be deferred to the PS&E phase. A crack, seal overlay is assumed in this agreement, this strategy will be reevaluated after the life cycle cost analysis is completed.

An opportunity to capture saving to the standalone Alternative (Alternative 1a) is to do the rehabilitation with the future widening concurrently (Alternative 1). The median shoulders south of Washington Blvd. (ALA PM M5.4) and all the outside shoulders are not full pavement structures for traffic loading. The Northbound HOT lane project will remove the shoulder and replace it with full pavement structures. If this rehabilitation project is combined with the HOT lane project, then the outside shoulder and the median shoulder south of Washington (ALA PM M5.4) could be constructed by the widening project. The outside guardrails placed in the rehabilitation project would also need to be replaced, and set further out because of the widening. The consolidation of both projects will have some savings for the MBGR and the shoulders.

### **Preliminary Recommendations for Overlay of Existing PCC Pavement (PM M2.4 to R12.4):**

Crack and seat the existing old PCC pavement and then place the following overlay:

0.10' OGFC

0.15' RHMA-G

0.10' HMA-A min. & Var\*

Pavement Reinforcing Fabric\*\*

0.10' HMA-A

\*Variable HMA-A thickness is to be used for proposed cross slope correction (from 1.5% to current standards)

\*\*Pavement reinforcing fabric to be extended 2' outside the dimensions of the old PCC pavement.

The 20-year TI used for this PID is 14. This is the same TI that was used for the Southbound HOT Lane and Rehabilitation Project completed this year. Since then, a 20-year TI was received from the Forecast Group of 15. The pavement structural sections will be updated in the PS&E phase, if it is required. A life cycle cost analysis will be performed and 40 year pavement will also be considered.

The concrete barrier installed by the Southbound HOT lane project EA 253794 and EA 4A5204 north of Washington (ALA PM M5.4) accommodates the overall strategy of a crack, seat and overlay and a future slope correction. No slope correction will be done in the standalone alternative, however the correction will be done in the Northbound HOT widening project in the future. Currently, the travelled way slope is 1 1/2 % and after the slope correction, it will be 2%. A cold plane is required to remove a layer of AC over PCC pavement between the Truck Scales and Calaveras Road/Rte 84 (PM R8.4 to PM R11.0). Once the AC layer is removed, a crack, seat and overlay is placed in that segment.

### **Preliminary Recommendations for Overlay of Existing AC Pavement**

#### Mainline (PM M0.0 to M2.4):

Cold plane 2 inches of Asphalt and Overlay with 2 inches of HMA-A

#### Ramps

0.35' HMA-A

An AC pavement section was recommended in the Materials Report:

0.10' OGFC

0.15' RHMA-G

0.15' HMA-A

However after discussion with Headquarters, it was decided that this section, between Scott Creek and Mission Blvd. SR 262 (ALA PM M0.0 to M2.4), will receive a Capital Preventive Maintenance (CAPM) overlay strategy. The CAPM strategy includes a cold plane of 2 inches and replacement with a 2 inch layer of HMA-A. The cost estimate has been updated to reflect this CAPM strategy.

The AC ramps are proposed to have digouts and a 4 inch overlay. The ramps are in fair to poor condition. They have not been rehabilitated for many years. The ramps have large cracks with some cracks 3 inches across, a lot of sealed cracks, settling, drop-offs needing shoulder backing or the safety edge.

## **Design Considerations**

Precast slabs may be used in the this Rehabilitation Project. This may be considered in PS&E phase. The decision on the use of Precast slabs will be made after evaluation of the constructability and performance of a pilot project in Contra Costa I-680.

The Bridge Inspection Reports also recommended some rehabilitation on bridges. Please see section 4C for Recommendations. Twenty-five curb ramps will need to be upgraded to new ADA standards in this rehabilitation project and performance of life cycle cost analysis.

Full lane improvements will be done under the structures with low vertical clearance to obtain as much vertical clearance as possible, such as Automall Parkway OC which has 15.97 ft. less than 16 feet Rehabilitation standard. The Sheridan Road OC will be rebuilt with a higher vertical clearance in the HOT Lane project. The vertical clearance at Sheridan Road OC will exceed or meet the new construction standard of 16.5 feet when constructed by the HOT lane project.

### **6A. Rehabilitation Strategy:**

The standalone project and the project combined with the HOT Lane widening have the same strategy to crack, seat and overlay on PCC pavement and cold plane the top layer of AC and overlay on AC pavement in the northbound direction.

### **6B. Design Exceptions:**

For the preferred alternative, which assumes a combined project, Fact Sheets will be prepared in the next phase to address nonstandard features of the roadway rehabilitation and HOT widening.

If the project proceeds as a standalone project, then Fact Sheets will be prepared in the next phase of the standalone project.

### **6C. Environmental Compliance:**

In Alternative 1, the rehabilitation combined with the widening job will cover environmental compliance.

The proposed standalone rehabilitation project will determine the environmental compliance.

### **6D. Hazardous waste disposal site required? If yes, where are sites?**

Hazardous material will be disposed at designated site as required for both alternatives. This will be outlined in the Special Provisions developed by the Hazardous Materials group. Removal, handling and disposal of yellow thermoplastic during construction will need to be follow the Special Provisions.

### **6E. Other Agencies Involved (Permits/Approvals from Fish & Game, Corps of Engineers, Coastal Commission, etc.):**

No other permits are required for the standalone rehabilitation project.

The widening project will cover all permits required, if both projects are combined.

**6F. Materials and or disposal site needs and availability?**

If possible, non-contaminated materials will be utilized or salvaged for both alternatives. Any material that cannot be utilized or salvaged will become property of the contractor and shall be disposed of outside the State right of way in accordance with Caltrans Standard Specifications, Section 7.1.13.

**6G. Highway planting and irrigation:**

Not applicable to this project.

**6H. Roadside Design and Management:**

A Safety Review was conducted Aug 30, 2011 for the standalone rehabilitation job. MBGR is recommended at various locations.

The MBGR on the outside mentioned in the Safety Review for the standalone Rehabilitation Project will need to be replaced, and set further out because of the widening.

**6I. Stormwater Compliance:**

A Storm Water Data Report (SWDR) for Alternative 1a has been prepared and approved by the District's Storm Water Coordinator. Please see Attachment F.

The widening project will complete the SWDR in the Project Report phase.

**6J. Right of way Issues: include utility issues in guidance:**

No right of way and utility relocation are expected in the standalone rehabilitation project.

The widening project will need to investigate right of way and utility issues.

**6K. Railroad Involvement:**

No railroad involvement for both alternatives.

**6L. Salvaging and recycling of hardware and other non-renewable resources:**

If possible, non-contaminated materials will be utilized or salvaged for both alternatives. See Section 6F Materials and or disposal site needs for both alternatives.

**6M. Prolonged temporary ramp closures:**

No prolonged temporary ramp closures for both alternatives.

**6N. Recycled Materials:**

If possible, non-contaminated materials will be utilized or salvaged for both alternatives. See Section 6F Materials and or disposal site needs.

**6O. Local and Regional Input:**

Both alternatives are consistent with the planning by Alameda County Transportation Commission and the Metropolitan Transportation Commission.

**6P. What are the consequences of not doing this entire project?**

Pavement Condition Survey indicates that this rehabilitation project is needed. If either alternatives is not completed, further deterioration will occur at an exponential rate.

**6Q. List all alternatives studied, cost, reasons not recommended, etc.:**

No. of Alternatives

(1) Crack, Seat and HMA Overlay all lanes (Combine PS&E with NB HOT lane widening, therefore shoulders do not need overlay) yielding savings

Cost **\$19,065,797**

(1a) Crack, Seat and HMA Overlay on entire roadway

Cost **\$26,202,530**

Crack, Seat and HMA Overlay (Combine PS&E with widening) will yield a savings. Completing both projects together will eliminate work in the same area such as paving/overlaying the outside shoulders, constructing outside MBGR and traffic control.

**7. TRANSPORTATION MANAGEMENT**

**7A. TRANSPORTATION MANAGEMENT PLANS**

The purpose of this Transportation Management Plans (TMP) is to provide a comprehensive method of reducing traffic disruption and relieving congestion around the proposed project area during construction. The TMP and associated lane closure charts for this project will be prepared during the PS&E Phase.

**7B. VEHICLE DETECTION SYSTEMS**

Ramp metering equipment will be installed as part of the FPI project following this rehabilitation. Existing Loop detectors in the standalone alternative will be reinstalled at the same location. In the combined project, the loop detectors replacements will be paid for by the HOT widening project.

**8. ENVIRONMENTAL DETERMINATION/DOCUMENT**

The Recommended Alternative is to combine with Northbound HOT widening. The widening project will determine the type of Environmental Document required.

If the standalone project is selected in the future, the environmental impacts will need to be reevaluated at that time. Attached is the PEAR that outlines the Environmental Permits and Agreements expected.

**9. FUNDING/SCHEDULING**

**9A. COST ESTIMATE**

**Table 9 – Summary of Alternative 1 Rehabilitation Project Combined with HOT (Rehabilitation Portion Only) Project Cost vs. Standalone Rehabilitation Project**

<b><u>Alternative 1 Rehabilitation Project Combined with HOT (Rehabilitation Portion Only)</u></b>	<b>\$19,065,797</b>
<b><u>Alternative 1a Standalone Rehabilitation Project</u></b>	<b>\$26,202,530</b>
<b><u>Savings in Combined Project</u></b>	<b>\$7,136,733</b>
<b><u>Percent Saved</u></b>	<b>27.2%</b>

**Table 10 – Detail Estimate of Alternative 1 Rehabilitation Project Combined with HOT (Rehabilitation Portion Only)Project**

<b><u>Pavement Structural Section Work</u></b>	<b><u>QTY</u></b>	<b><u>Cost</u></b>
HMA (A) (TON)	86000	\$6,450,000
RHMA (G) (TON)	27000	\$3,240,000
OGFC (TON)	15000	\$1,275,000
Cold Plane AC (SQ YD)	167000	\$167,000
Crack Seat Rigid Pavement (SQ YD)	279000	\$279,000
Pavement Reinforcing Fabric (SQ YD)	279000	\$837,000
Shoulder Backing (LN-MI)	5.1	\$20,910
Dig-out/Repair Distr. AC Pvmt. (LN-MI)	0.5	\$192,500
Replace Concrete Pavement (Rapid Set) (LN-MI)	1.5	\$1,400,000
Ramps and OC/UC Approaches		
Remove Edge Drain (FT)		
Bridge Approaches (ground, replaced)		
Total Lane-Miles of Rehabilitation (LN-MI)	45	
<b>COST SUBTOTAL</b>		\$13,861,410
<b><u>DOES THE PROJECT INCLUDE?</u></b>	<b><u>Yes/No</u></b>	<b><u>Item Cost</u></b>
Mainline Widening (lanes and/or shoulders)	No	
Bridge Widening and Rail Upgrade	No	
Bridge Rail Upgrade (without widening)	No	
STRAIN/BIRIS Work	Yes	\$14,800
Approach Slab Replacement	Yes	\$50,000
Vertical Clearance Adjustment	No	
Adjust Overhead Sign Structures	No	
Drainage System Adjustment (Shoulder Areas where there is no widening)	Yes	\$150,000
Pedestrian Facilities		
ADA Curbs Ramps	Yes	\$200,000
Audible Signals	Yes	\$150,000
Safety Improvement:		
Rumble Strip (Shoulder Areas where there is no widening)	yes	\$10,000
Superelevation Correction	No	
Vertical Alignment	No	
Horizontal Alignment	No	
Left/Right-Turn Storage/Widening/Lengthening	No	
Signal Upgrade	No	

**Table 10 (Continued)**

Median Barrier (State type: e.g., PCC, Thrie Beam)	No	
Metal Beam Guardrails (New) (Outside Guard Rail Done By HOT Project)	Yes	\$0
Concrete Guardrail (New)	No	
Roadside Cleanup	No	
Gore Cleanup	No	
Electroliers	No	
Roadside Management	No	
Gore Area Pavement (Done By HOT Widening)	Yes	\$0
Pavement beyond Gore Area	No	
Miscellaneous Paving	No	
Maintenance Vehicle Pull outs	No	
Off-Freeway Access (gates, stairways, etc.)	No	
Roadside Facilities	No	
Remove MBGR (Done By HOT Project)	Yes	\$0
Remove Chain Link Fence	No	
Concrete Barriers (Anchor Blocks)	yes	\$0
Chain Link Fence	No	
<b>Traffic Control (Done by HOT Project)</b>	Yes	\$0
<b>TMP (Done by HOT Project)</b>	Yes	\$0
<b>Other</b> (Identify: e.g., Mobilization Cost, Hazardous Waste		
Traffic Operations System	No	
Pavement Delineation (Done by HOT Project)	Yes	\$0
Loop Detector Replacement (Done by HOT Project)	Yes	\$0
Water Pollution Control (Done by HOT Project)	Yes	\$0
10% Mobilization		\$1,443,621
Cost of Subtotals		\$2,018,421
SUM OF SUBTOTALS		\$15,879,831
5% TRO (of Subtotals)		\$793,992
15% Contingency (of Subtotals)		\$2,381,975
<b>Utility Relocation</b>		
<b>Railroad Agreements</b>		
<b>Right of Way</b>		\$10,000
<b>Environmental Compliance</b>		
<b>TOTAL PROJECT COST</b>		<b>\$19,065,797</b>
<b>TOTAL with 4% escalation for 3-years to FY 14/15</b>		<b>\$21,446,429</b>
<b>Savings in Combined Project</b>		<b>\$7,136,733</b>
<b>Percent Saved</b>		<b>27.2%</b>

The estimate of the combined Northbound HOT and Rehabilitation project assumes that the outside shoulders and the inside shoulders south of Washington Blvd. (PM M5.37) will be replaced by the future Northbound HOT Lane project. The pavement that will be replaced in the HOT lane project is deleted from the Combined Rehabilitation Estimate of Alternative 1 (Rehabilitation Portion Only). The inside shoulders, north of Washington Blvd, were replaced with full pavement structures in the Southbound High Occupancy Vehicle Lane project in 2001. The pavement sections in this segment were built with PCC and requires crack, seat and overlay and included in the estimate above.

There are over 5 miles of ramps that need to be rehabilitated by digouts. If summed, the areas is estimated to be a 0.5 lane mile. This area also includes ramp shoulders that may require digouts.

Edge Drains are recommended to be removed. In the combined project, the HOT project will pay for the removal as it is located at the outside the edge of travel way. The edge drain removal costs are included in the standalone project.

Some work is recommended in the Bridge Inspection Reports. Please see Section 4C Structures Information. Only dikes MBGR and Vertical clearance signs were included in the structures estimate. One bridge approach slabs replacement is requested by HQ at Future 237/680 structure.

Full Lane replacement will be constructed below Automall Parkway OC. Currently the vertical clearance is 15.97 feet just short of the 16 feet minimum standard for rehabilitation projects. This vertical clearance will remain the same or improved, if a thinner section is used for the lane replacement. This will be investigated during the PS&E phase. The Sheridan OC has a 15.38 feet vertical clearance. This bridge will be replaced as part of the HOT lane project and more vertical clearance is planned. The 1.5 lanes miles of Replace Concrete Pavement (Rapid Set) includes replacement of failed slabs in other PCC segments.

For Drainage System Adjustment, only the drainage in the inside shoulders north of Washington Blvd. where the HOT lane will not disturb the area, is included in the combined estimate to raise top of grates. More drainage inlets are most likely required because the change in design rainfall intensity and will be paid for by the HOT lane projects. Pedestrian Facilities including 25 ADA Curb ramps and 12 Audible Signals locations are required by the Safety Screening. Please see Attachment H.

The rumble strip as required by the Safety Screening, is included for the shoulder area not planned to be replaced by the HOT Lane project. No Metal Beam Guard Rail, Concrete Anchor Blocks

and Gore Pavement is included in the combined estimate because these items will be done in the HOT lane project. Traffic Control, TMP, Pavement Delineation, Loop Detector Replacement and Water Pollution Control will be done and paid for by the HOT lane project and not included in the Rehabilitation portion of the combined estimate (Alternative 1).

**Table 11 – Detail Estimate of Alternative 1a Standalone Rehabilitation Project**

<b><u>Pavement Structural Section Work</u></b>	<b><u>QTY</u></b>	<b><u>Cost</u></b>
HMA (A) (TON)	103000	\$7,725,000
RHMA (G) (TON)	35000	\$4,200,000
OGFC (TON)	18600	\$1,581,000
Cold Plane AC (SQ YD)	167000	\$167,000
Crack Seat Rigid Pavement (SQ YD)	343800	\$343,800
Pavement Reinforcing Fabric (SQ YD)	343800	\$1,031,400
Shoulder Backing (LN-MI)	17.1	\$70,110
Dig-out/Repair Distr. AC Pvmt. (LN-MI)	0.5	\$192,500
Replace Concrete Pavement (Rapid Set) (LN-MI)	1.5	\$1,400,000
Ramps and OC/UC Approaches		
Remove Edge Drain (FT)	3280	\$7,216.00
Bridge Approaches (ground, replaced)		
Total Lane-Miles of Rehabilitation (LN-MI)	45	
<b>COST SUBTOTAL</b>		\$16,718,026

<b><u>DOES THE PROJECT INCLUDE?</u></b>	<b><u>Yes/No</u></b>	<b><u>Item Cost</u></b>
Mainline Widening (lanes and/or shoulders)	No	
Bridge Widening and Rail Upgrade	No	
Bridge Rail Upgrade (without widening)	No	
STRAIN/BIRIS Work	Yes	\$14,800
Approach Slab Replacement	Yes	\$50,000
Vertical Clearance Adjustment	No	
Adjust Overhead Sign Structures	No	
Drainage System Adjustment	Yes	\$500,000
Pedestrian Facilities		
ADA Curbs Ramps	Yes	\$200,000
Audible Signals	Yes	\$150,000
Safety Improvement:		
Rumble Strip	yes	\$40,000
Superelevation Correction	No	
Vertical Alignment	No	

**Table 11 (Continued)**

Horizontal Alignment	No	
Left/Right-Turn Storage/Widening/Lengthening	No	
Signal Upgrade	No	
Median Barrier (State type: e.g., PCC, Thrie Beam)	No	
Metal Beam Guardrails (New by Safety Screening)	Yes	\$400,000
Concrete Guardrail (New)	No	
Roadside Cleanup	No	
Gore Cleanup	No	
Electroliers	No	
Roadside Management	No	
Gore Area Pavement	Yes	\$100,000
Pavement beyond Gore Area	No	
Miscellaneous Paving	No	
Maintenance Vehicle Pull outs	No	
Off-Freeway Access (gates, stairways, etc.)	No	
Roadside Facilities	No	
Remove MBGR	Yes	\$50,000
Remove Chain Link Fence	No	
Concrete Barriers (Anchor Blocks)	yes	\$10,000
Chain Link Fence	No	
<b>Traffic Control (110 Lane Closures)</b>	Yes	\$200,000
<b>TMP</b>	Yes	\$310,000
<b>Other</b> (Identify: e.g., Mobilization Cost, Hazardous Waste		
Traffic Operations System	No	
Pavement Delineation	Yes	\$400,000
Loop Detector Replacement (19 Loop Locations)	Yes	\$200,000
Water Pollution Control	Yes	\$500,000
10% Mobilization		\$1,984,283
Cost of Subtotals		\$5,109,083
<b>SUM OF SUBTOTALS</b>		\$21,827,109
5% TRO (of Subtotals)		\$1,091,355
15% Contingency (of Subtotals)		\$3,274,066
<b>Utility Relocation</b>		
<b>Railroad Agreements</b>		
<b>Right of Way</b>		\$10,000
<b>Environmental Compliance</b>		
<b>TOTAL PROJECT COST</b>		<b>\$26,202,530</b>
<b>TOTAL with 4% escalation for 3-years to FY 14/15</b>	45 LN-MI	\$29,474,283

In the Standalone Rehabilitation Project estimate of Alternative 1a, all the pavement including shoulders are to be rehabilitated. Similar to the Combined Estimate of Alternative 1, all the assumptions are the same, but for the entire limits of the project. 110 days of lane closures are anticipated in the standalone project, but if combined with the HOT lane project, the widening will pay for traffic control.

**9B. PROJECT SUPPORT**

**Table 12 - Project Support Components for Combined Rehabilitation Project in Dollars--  
 (Rehabilitation Portion Only)**

Ala - 680 Rehab EA 04-3G600K	Support Cost				Const. Capital Cost	
	PAED	PS&E	Phase 2 R/W	Phase 3 Construction		
2011/2012	\$762,600	\$2,859,750	\$190,650	\$2,859,750	\$19,065,000	Current Value
2012/2013						
2013/2014		\$3,093,106	\$206,207			
2014/2015						
2015/2016				\$3,345,503		
2016/2017	\$927,820	\$3,479,323	\$231,955	\$3,479,323	\$23,195,488	Escalated Cost at Completion

**Table 13 - Project Support Components for Combined Rehabilitation  
 Project in PY's (Rehabilitation Portion Only)**

	Support			
	PAED	PS&E	R/W	Construction
PY Estimate (current year)	3.9	14.7	1.0	14.7

Assumptions:

Ave. loaded PY Rate = \$195K per year

This is support costs for the Rehabilitation Project if combined with the HOT Lane Project (Rehabilitation Portion Only). If the Rehabilitation Project is decided to be constructed as a standalone project, then support cost would be higher.

**9C. PROJECT MILESTONES**

**Alternative 1 Rehab Project Combined with HOT Lane Project**

<b>Tentative Schedule:</b>	PSSR Approval	09/2011	(1 mos)
	PA&ED	03/2013	(18 mos)
	PS&E	05/2014	(14 mos)
	R/W Certification	05/2014	(0 mo)
	RTL	11/2014	(6 mos)
	Begin Construction	05/2015	(6 mos)

**Alternative 1a Standalone Rehab Project**

<b>Tentative Schedule:</b>	PSSR Approval	09/2011	(1 mos)
	PA&ED	09/2011	(0 mos)
	PS&E	05/2014	(30 mos)
	R/W Certification	05/2014	(0 mo)
	RTL	11/2014	(6 mos)
	Begin Construction	05/2015	(6 mos)

**9D. RISK ASSESSMENT**

After review of other projects, the probable risk and strategies to mitigate the impacts of these risk are shown in Table 14.

**Table 14 Risk Assessment**

Risk Event		Probability	Impact	Risk Strategy	Responsibility	
1	Estimate	Unforeseen permit requirements and changes in standards or specification requirements could increase project estimate.	Low	Medium	Close coordination with regulatory agency and monitor changes in standards.	Design
2	Design	Coordination with FPI project and HOT Lane project within the same project limits of the rehabilitation project.	High	High	Monitor fund availability and require coordination if all three projects are designed as separate projects.	PM/Design
3	Design	Staff Availability	Medium	High	Project competes with other priorities. Additional resources may be required.	PM

**10. FEDERAL COORDINATION**

No federal-aid funding anticipated or no FHWA action required for this project.

## 11. REVIEWS

District Safety	Date 08/30/11
District Materials	Date 08/23/11
HQ Design Coordinator/Reviewer Reviewer	Date 09/07/11
HQ Maintenance Program	Date 08/17/11

## 12. DISTRICT CONTACT

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## 13. LIST OF ATTACHMENTS

- A. Project Location Map
- B. Typical Sections
- C. PMS Inventory
- D. Material Report
- E. Environmental Determination/Document
- F. Storm Water Data Report
- G. Right of Way Data Sheet
- H. Safety Screening and Safety Improvements Recommendation
- I. Transportation Management Plan Data Sheet