

# Interstate 580 East

## Volume II: Appendix 2 (technical documents)

The following technical memorandums present 1) supporting information and schematics for the recommended improvements with attachments detailing short-term improvement cost estimates and long-term improvement cost estimates, 2) the travel demand forecasting and traffic operations analysis methodology and 3) the traffic microsimulation approach used for the I-580 East CSMP Corridor technical analysis.

### **Attached Documents:**

#### **Memorandum**

*I-580 CSMP Recommended Improvement Projects Schematics and Cost Estimates (Task Order 5: deliverables 4B and 4C) Revised*, Dowling Associates, Inc. dated May 19, 2009

#### **Memorandum**

*Travel Demand Forecasting and Traffic Operations Analysis Methodology (FINAL)*, Dowling Associates, Inc. dated September 12, 2008 (revised September 27, 2008)

#### **Memorandum**

*Traffic Microsimulation Approach (FINAL)*, Dowling Associates, Inc. dated September 12, 2008 (revised September 27, 2008)

# Dowling Associates, Inc.

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## Memorandum

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**To:** Albert Yee, Joy Lee, Mike Kerns, Joanna Fox MTC

**From:** Richard Dowling, Pratyush Bhatia

**Project:** MTC/Caltrans I-580 Corridor System Management Plan Technical Support (P06106.8)

**Date:** May 19, 2009

**Subject:** I-580 CSMP Recommended Improvement Projects Schematics and Cost Estimates (Task Order 5: deliverables 4B and 4C) Revised

**File:** c:\work\proj\06106\_08 mtc ala580 csmp\task order 5 analysis\task 4 evaluation\4c cost estimates\ala580 costs deliv 4b4c2.doc

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This memo presents the schematic layouts and construction cost estimates for the draft recommended short-term and long-term improvements for the corridor. These estimates do not take into account impacts of the improvements on agency maintenance and operation costs over the lifetime of the improvement.

Schematic layouts and cost estimates were not prepared for those improvements for which cost estimates were already available in a published plan, such as MTC's Transportation 2035 Plan for the San Francisco Bay Area.

Supporting information and schematics for the recommended improvements for which there were no pre-existing cost estimates were prepared by Dave Melis and Jihyoung Kim of Mark Thomas and Company. This supporting information and schematics are contained in two separate attachments:

**Attachment 1: I-580 CSMP-Exhibit 1-Short Term Improvements.pdf** (Source: Mark, Thomas & Company) contains detailed cost estimates for short-term improvements 2, 3,4,5,8,9,12 & 13(b. through f.) and 14 as shown in Exhibit 3. This attachment also contains schematics for the short term improvements 2a, 3a, 8, 9 and 12.

**Attachment 2: I-580 CSMP-Exhibit 2-Long Term Improvements.pdf** (Source: Mark, Thomas & Company) contains detailed cost estimates for long-term improvements 18, 19 and 33 as shown in Exhibit 10. This attachment also includes schematics for the long-term improvements 18(a. through d.), 19a, 19b, 23, 25, 26 and 27.

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## **Key to Detailed Cost Estimates and Schematics (The Attachments)**

The two attachments were prepared by Mark Thomas and Company prior to finalizing the recommended improvements. In addition, several recommended improvements already had cost estimates available from other sources. Consequently, the following key is provided to assist readers in locating the finalized recommended improvements in the Mark Thomas attachments.

**Attachment 1: I-580 CSMP-Exhibit 1-Short Term Improvements.pdf** (Source: Mark, Thomas & Company) contains detailed cost estimates for short-term improvements 2, 3,4,5,8,9,12 & 13 (b. through f.) and 14(b, c, e and f) as shown in Exhibit 3. This attachment also contains schematics for the short term improvements 2a, 3a, 8, 9 and 12.

**Attachment 2: I-580 CSMP-Exhibit 2-Long Term Improvements.pdf** (Source: Mark, Thomas & Company) contains detailed cost estimates for long-term improvements 18, 19 and 33 as shown in Exhibit 10. This attachment also includes schematics for the long-term improvements 18(a. through d.), 19a, 19b, 23, 25, 26 and 27.

These two attachments with the detailed cost estimates have different labels for the corresponding short-term and long-term improvement numbers used in the report and in this memo. Exhibit 1 and Exhibit 2 provides a key for reference between project numbers in this memo and the attachment. Alternatively, the projects can be identified by the Project Description in the attachments. No detailed cost estimates are attached for the improvements highlighted in grey. Schematics are attached for the improvements highlighted in red.

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**Exhibit 1: Reference Key for Attachment #1 Short Term Improvements**

Recommended Short-Term Improvements	Project No. (Attachment 1)
<b>Freeway Management Improvements</b>	
1. Increase capacity at the following metered on ramps	N/A
2. Increase storage capacity for following metered on-ramps	2a
3. Install ramp meters with HOV lanes (where Right of Way allows)	3a.
4. ITS improvements in corridor	N/A
5. Increase capacity of HOT lane EB between Santa Rita/Tassajara On and First Street Off.*	4
6. Increase capacity of HOT lane WB between First Street On and Santa Rita/Tassajara Off *	5
7. Add 4th truck to Freeway Service Patrol Beat #22	N/A
<b>Surface Street Management Improvements</b>	
8. Continue Improvement of Signal System Coordination	N/A
<b>Freeway Capacity Improvements</b>	
9. Construct separate off-ramp WB 580 to access SB 680 SB loop ramp.	8
10. Accelerate Construction of WB auxiliary lane between N. Livermore and Isabel.	9
11. Accelerate Construction of WB auxiliary lane between Isabel and Airway	N/A
12. Accelerate Construction of WB auxiliary lane between Fallon and Tassajara	N/A
13. Add 4th lane WB from Mission/East 14th off to I-880 SB off.	12
14. Accelerate Construction of EB auxiliary lane between Isabel N. Livermor	13
<b>Surface Street Capacity Improvements</b>	
15. Spot Intersection capacity improvements:	by Name
<b>Transit Improvements</b>	
	<b>N/A</b>

N/A = Not applicable.

\* There are other less expensive options for increasing HOT lane capacity, such as increasing the occupancy requirement for HOV use of the HOT lanes. This cost estimate deals with only the most expensive option, adding a second lane.

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**Exhibit 2: Reference Key for Attachment #2 Long Term Improvements**

Recommended Long-Term Improvements	Project No. (Attachment 2)
<b>Freeway Management Improvements</b>	
18. Extend Single HOT lanes: <ul style="list-style-type: none"> <li>Westbound between I-680 and Redwood Road.</li> <li>Eastbound between Redwood Road and Hacienda.</li> <li>Westbound between I-205/Mountain House Parkway and Greenville Road</li> <li>Eastbound between Greenville Road and I-205/Mountain House Parkway</li> </ul>	1a 1b 1c 1d
19. Extend Higher Capacity HOT lanes*: <ul style="list-style-type: none"> <li>Westbound between Santa Rita and I-680</li> <li>Eastbound between First Street and Vasco Road.</li> </ul>	2a 2b
20. Construct Direct Ramp I-580 WB to I-680 SB	N/A
<b>Surface Street Management Improvements</b>	
21. Signal coordination, incident detection, incident management.	N/A
22. Add HOT lanes both directions to SR 84 between I-580 and I-680.	N/A
<b>Freeway Capacity Improvements</b>	
23. Reconstruct San Ramon/Foothill Road Interchange	Schematic Only
24. Reconstruct Hacienda Drive Interchange	N/A
25. Reconstruct First Street Interchange	Schematic Only
26. Reconstruct Vasco Road Interchange	Schematic Only
27. Reconstruct Greenville Road Interchange	Schematic Only
28. Not Used	
<b>Surface Street Capacity Improvements</b>	
29. Widen SR 84 to 4 lanes divided expressway I-680 to Isabel Avenue to Stanley	N/A
30. Widen SR 84 (Isabel Parkway) to 6-lane expressway Stanley to Jack London	N/A
31. Widen Byron Highway (SR 239) to 4 lane divided expressway from SR 4 Bypass to I-205	N/A
32. El Charro Road extension to Stanley Blvd. (off loads Santa Rita interchange)	N/A
<b>Transit Improvements</b>	
33. Double Track Union Pacific (ACE) rail line Tracy to Livermore	16
34. Increase ACE train service to 7 trains.	N/A
35. Altamont Rail Corridor Speed and Safety Improvements (90 mph)	N/A
36. Extend BART to ACE/Livermore Station and I-580/Greenville Road Station	N/A
37. Cross-Platform transfer BART/ACE at Livermore Station	N/A
38. Cross-Platform transfer ACE/High Speed Rail at San Jose Station	N/A
39. Integrate BART/ACE Monthly Passes	N/A
40. Bus Rapid Transit between major Livermore employers (Lawrence Livermore Lab) and BART/ACE train Livermore Station	N/A
<b>Gateway Constraint and Other Measures</b>	
41. Restrict I-580 over Altamont Pass to 8 mixed-flow lanes (4 each direction).	N/A
42. Safety Improvements (including signing, striping, signalization, realignments, passing lanes, median barriers, increased speed enforcement) to Altamont Pass Road and Patterson Pass Road to accommodate expected diverted SOV demand.	N/A

N/A = Not Applicable

\* There are other less expensive options for increasing HOT lane capacity, such as increasing the occupancy requirement for HOV use of the HOT lanes. This cost estimate deals with only the most expensive option, adding a second lane.

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## **General Overview of Cost Estimation Procedures**

[This section prepared by Dave Melis of Mark Thomas and Company]

The methodology for the preparation of the cost estimates for the recommended short and long term improvements within the I-580 corridor began with the development of conceptual layouts for each individual project, where the proposed improvements were overlaid on an aerial photograph to determine the various items of work that would need to be performed. Because there were distinct types of projects (freeway widening, local roadway widening and intersections, and interchange reconstruction), a number different templates (spreadsheets) were generated to estimate the costs of each type of project. These templates were created based on previous similar project experience and modified according to be pertinent for the current projects.

The consultant team's engineers looked at each project and compiled a list of standard construction items that could be quantified and estimated. Items such as roadway excavation, new pavement, ramp metering, and traffic signals could be calculated and estimated based off of historical pricing data from Caltrans and other sources. While ramp metering and traffic signals could be tabulated by counting the number of installations; the depth required for roadway excavation and pavement structural section were assumed as parameters and calculated based off the area that needed to be paved or removed. Separate unit costs were developed for HMA (asphalt) and PCC (concrete) pavements.

The work required for each project was separated into roadway items, structure items (bridges), and right of way items. Structures and right of way costs were based upon square foot of each surface area, and applying "typical" unit costs for the construction and acquisition, respectively.

Certain assumptions were based on the breakdown of the various types of work from past freeway improvement projects. The consultant team developed charts which provided guidance for what percentage the various items of work contribute to the total project cost. Pavement sections are generally the largest cost of a project and were easily quantified and estimated. Therefore, the pavement costs were used as a baseline, while other items were calculated as a percentage of the roadway costs. An example of this is for freeway widening, where historically 74% of the total cost can be attributed to the pavement section. Pavement delineation and roadside signs are historically 3% the total cost of a project. Using these percentages and the cost of the new pavement, the cost for pavement delineation and roadside signs could be estimated.

The cost estimates for the HOT lanes presented a unique challenge, since they are a relatively new to District 4. The costs for the HOT lanes were calculated based on the cost of the pavement, barriers and other roadway costs, as well as the toll lane management subsystem and electronic toll collection system. Toll collection stations were assumed at each ingress/egress point along the corridor. The last cost was based upon the length of the HOT lane added to calculate the amount of conduit and fiber optic required for the corridor. All of these costs were added together and rounded up to finalize the cost estimate per project. Where a second HOT lane was added, it was assumed that some modifications to the toll collection system would be required, but the "backbone" of the system would already be in place.

Because these are preliminary cost estimates, an appropriate contingency and allowances for miscellaneous items of work were estimated using percentages appropriate for the level of accuracy of the overall estimate. In addition to these "hard" (i.e. construction and right of way) costs, factors were included to account for "soft" costs such as preliminary engineering/environmental clearance, final design, right of way engineering and acquisition, and construction administration/staking. Together, the "hard" and "soft" costs were totaled and rounded up to provide preliminary estimates for cost of each project.

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## Cost Estimates for Recommended Short Term Improvements

The short-term improvements are estimated to cost \$62.3 million for construction. Exhibit 3 below shows the summary of cost estimates for the recommended short-term improvements.

A detailed description of the bases of the cost estimates for recommended short-term improvements is provided below. Additional information on the cost estimates for improvements 2,3,4,5,8,9,12 & 13 and 14 are provided in the attached file:I-580 CSMP- Exhibit1-Short Term Improvements.pdf (Source: Mark, Thomas & Company, see Attachment 1)

### ***Freeway Management Improvements***

1. Increase capacity of ramp meters above 900 vph at the following on-ramps
  - San Ramon/Foothill Road On
  - I-580 Westbound on-ramp at I-205

**Estimated Cost:** This improvement can be accomplished various ways.

Capacity can be increased if signs are posted allowing two vehicles per green. Caltrans experience has been that this might increase the maximum meter capacity by 20% rather than 100% (Many drivers in the second position at a meter do not take advantage of the green.) The estimated cost is negligible in comparison to that of the other improvements, approximately \$150 (or higher) per location to install new metering signs (depending on how much of the labor cost of using maintenance personnel is allocated to the improvement).

Capacity can be more effectively increased by purchasing right of way (if necessary) and constructing a second lane at the meter for SOV's. This may run \$500,000 per location (per Alan S. Chow, April 9, 2009) varying depending on the need for additional right of way.

2. Increase storage capacity for following metered on-ramps:
  - Hacienda Loop On to EB 580 (increase storage to 2 lanes)
  - Tassajara Loop On to EB 580 (increase storage to 2 lanes)

**Estimated Cost:** The estimated cost of the improvements is \$2.6 million. The estimated cost at each ramp is approximately \$1.3 million. Significant cost items include a new traffic signal (\$175,000), ramp metering (\$75,000) and roadway additions (\$66,000).Detailed calculations for the Hacienda Loop On to EB 580 are attached (Source: Mark, Thomas & Company, see Attachment 1).

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**Exhibit 3: Cost Estimates for Recommended Short-Term Improvements**

Recommended Short-Term Improvements	Construction Cost (\$million)
<b>Freeway Management Improvements</b>	
1. Increase metered capacity above 900 vph at the following metered on ramps <ul style="list-style-type: none"> <li>• San Ramon/Foothill Road On</li> <li>• I-580 Westbound on-ramp at I-205</li> </ul>	Negligible to \$1.0
2. Increase storage capacity for following metered on-ramps <ul style="list-style-type: none"> <li>• Hacienda Loop On to EB 580 (increase storage to 2 lanes)</li> <li>• Tassajara Loop On to EB 580 (increase storage to 2 lanes)</li> </ul>	2.6
3. Install ramp meters with HOV lanes (where Right of Way allows) at the following on-ramps <ul style="list-style-type: none"> <li>• Hesperian Blvd. to I-238 SB</li> <li>• East 14th Street to I-238 WB</li> <li>• East Lewelling Blvd. to I-238 SB</li> <li>• Foothill Blvd. to I-238 NB</li> <li>• Foothill Blvd. to I-580 EB</li> <li>• Strobridge Avenue to I-580 EB</li> <li>• Redwood Road to I-580 EB</li> <li>• Redwood Road to I-580 WB</li> <li>• Grove Way Loop On to I-580 EB</li> <li>• Grove Way Direct On to I-580 EB</li> <li>• East Castro Valley Blvd. to I-580 WB</li> <li>• Eden Canyon Road to I-580 EB (no HOV bypass lane needed)</li> <li>• Eden Canyon Road to I-580 WB (no HOV bypass lane needed)</li> </ul>	35.0
4. ITS Improvements as needed throughout the corridor	0.5
5. Increase capacity of eastbound HOT lane EB between Santa Rita/Tassajara On and First Street Off.	Negligible to 3.8
6. Increase capacity of westbound HOT lane between First Street On and Santa Rita/Tassajara Off	Negligible to 3.8
7. Add 4th truck to Freeway Service Patrol Beat #22	Negligible
<b>Surface Street Management Improvements</b>	
8. Continue Improvement of Signal System Coordination and Optimization with integration as appropriate with freeway operations.	5.0
<b>Freeway Capacity Improvements</b>	
9. Construct separate off-ramp WB 580 to access SB 680 SB loop ramp.	0.3
10. Accelerate Construction of WB auxiliary lane between N. Livermore and Isabel.	No Additional Cost
11. Accelerate Construction of WB auxiliary lane between Isabel direct on and Airway Off	No Additional Cost
12. Accelerate Construction of WB auxiliary lane between Fallon/El Charro Off and Tassajara/Santa Rita Loop On	No Additional Cost
13. Add 4th lane WB from Mission/East 14th off to I-880 SB off.	5.6
14. Accelerate Construction of EB auxiliary lane between Isabel direct on and N. Livermore off.	No Additional Cost

Schematics and Cost Estimates for Recommended ALA-580 CSMP Improvement Program

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Recommended Short-Term Improvements	Construction Cost (\$million)
<b>Surface Street Capacity Improvements</b>	
15. Spot Intersection capacity improvements: <ul style="list-style-type: none"> <li>• East Lewelling Blvd. and Hesperian Blvd.</li> <li>• Castro Valley Blvd. and Foothill Blvd.</li> <li>• Foothill Blvd. and Grove Way</li> <li>• Redwood Road and Norbridge</li> <li>• Hopyard Road and Owens Drive</li> <li>• N. Vasco Road and Northfront Road</li> </ul>	4.7
<b>Transit Improvements</b>	
16. Preserve frequency and number of routes of San Joaquin RTD (SMART), and Modesto (MAX BART) inter-regional express bus service to Dublin/Pleasanton BART Station	No Added Capital Cost
17. Preserve frequency and number of routes of County Connection and Tri-Delta express bus service to Dublin/Pleasanton BART Station	No Added Capital Cost
<b>Other Measures</b>	
18. None - Management and capacity improvements are able to reduce congestion below current levels in the corridor.	None
<b>Total</b>	<b>\$62.3</b>

Note: Cost estimates are for construction and do not include operating or maintenance costs over lifetime of improvements.

3. Install ramp meters with HOV lanes (where Right of Way allows) at the following on-ramps:
  - Hesperian Blvd. to I-238 SB
  - East 14th Street to I-238 WB
  - East Lewelling Blvd. to I-238 SB
  - Foothill Blvd. to I-238 NB
  - Foothill Blvd. to I-580 EB
  - Strobridge Avenue to I-580 EB
  - Redwood Road to I-580 EB
  - Redwood Road to I-580 WB
  - Grove Way Loop On to I-580 EB
  - Grove Way Direct On to I-580 EB
  - East Castro Valley Blvd. to I-580 WB
  - Eden Canyon Road to I-580 EB (no HOV bypass lane needed)
  - Eden Canyon Road to I-580 WB (no HOV bypass lane needed)

**Estimated Cost:** The estimated cost to install ramp meters at the Hesperian to I-238 SB on-ramp is \$2.67 million. Significant costs include new pavement (\$214,000), ramp metering (\$75,000) and new traffic signal (\$175,000). Detailed calculations are attached (Source: Mark, Thomas & Company, see Attachment 1). The total cost at all 13 on-ramp locations was estimated to be \$35 million (=13X\$2.67 million).

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4. ITS Improvements as Needed Throughout the Corridor

Listed below is a high level cost estimate for constructing, operating and maintaining the ITS enhancements recommended by TransCore (see Exhibit 4). This estimate does not include the ITS field elements listed in the inventory information obtained from Caltrans District 4.

A total of \$515,400 of ITS enhancements are recommended for the corridor with \$369,000 in capital improvements and \$146,400 in ongoing operations and maintenance.

**Exhibit 4: Planning Level Cost Estimates for I-580/I-238 ITS Improvements**

Item	Description	Unit of Measure	Qty	Capital Equipment Unit Cost	Capital Equipment Extended Cost	Estimated Useful Life (Years)	Estimated Annual O&M Costs	Total O&M Cost	Total Cost
<b>Ramp Meter</b>	Furnish, install, and maintain ramp meter assembly, signal displays, controller, cabinet, detection and optimization	EA	0	\$48,000	\$0	5	\$2,700	\$0	\$0
<b>TMS</b>	Furnish, install, and maintain RTMS unit for monitoring a 8 lane freeway facility (4 lanes in each direction)	EA	3	\$13,000	\$39,000	10	\$580	\$17,400	\$56,400
	580/EI Charro 580/North Flynn 580/Grant Line								
<b>CCTV</b>	Furnish, install, and maintain CCTV camera with PTZ control, CODEC, camera tower and mounting and utilities	EA	3	\$31,000	\$93,000	10	\$2,300	\$69,000	\$162,000
	238/Hesperian 580/North Flynn 580/Grant Line								
<b>Fixed CMS</b>	Furnish, install, and maintain fixed CMS unit and utilities for overhead structure spanning one direction of travel (four lane facility assumed)	EA	1	\$237,000	\$237,000	10	\$6,000	\$60,000	\$297,000
	580 WB/Eden Canyon								
<b>Total</b>					<b>\$369,000</b>			<b>\$146,400</b>	<b>\$515,400</b>

Note: Unit cost and useful life figure obtained from FHWA's IDAS system. Unit cost figures are nationwide averages based on 2005 dollars

5. Increase Capacity of Eastbound HOT lane between Santa Rita/Tassajara On and First Street Off.

**Estimated Cost:** HOT lane capacity available for toll paying SOV's can be increased either by increasing the person occupancy requirement for free HOV use of the HOT lane from 2 to 3+ persons per vehicle, or by constructing a second HOT lane.

The estimated cost of constructing a second HOT lane is \$3.77 million. Significant cost items include electronic toll collection (\$483,000), signing and striping (\$810,000) and new traffic signal (\$175,000). Detailed calculations are attached (Source: Mark Thomas & Company, see Attachment 1).

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6. Increase Capacity of Westbound HOT lane between First Street On and Santa Rita/Tassajara Off

**Estimated Cost:** HOT lane capacity for SOV's can be increased either by increasing the HOV occupancy requirement or by constructing a second HOT lane. The estimated cost of constructing a second HOT lane is \$3.77 million. Significant cost items include electronic toll collection (\$483,000), signing and striping (\$810,000) and new traffic signal (\$175,000). Detailed calculations are attached (Source: Mark Thomas & Company, see Attachment 1).

7. Add 4<sup>th</sup> truck to Freeway Service Patrol Beat #22 (I-580: Hacienda to Grant Line). Increase operating hours to 5:30 AM to 9:30 AM and 3:30 PM – 7 PM.

**Estimated Cost:** For fiscal year 2007-2008, an expansion of the Freeway Service Patrol (FSP) program was proposed. The proposal included new service to implement six trucks on four additional beats at an estimated total cost of \$750,000. Since the proposed improvement on I-580 is only to add one additional truck and increase operating hours on an existing beat, the cost for implementing this improvement has been conservatively estimated to be one-sixth of the cost of the new service in 2007-2008, or \$125,000.

#### ***Surface Street Management Improvements***

8. Continue Improvement of Signal System Coordination and Optimization with integration as appropriate with freeway operations.

**Estimated Cost:** The estimated cost is \$5 million. The cost of signal system coordination was estimated for 200 signals at \$10,000 per intersection.

#### ***Freeway Capacity Improvements***

9. Construct separate off-ramp WB 580 to access SB 680 SB loop ramp.

**Estimated Cost:** The estimated cost is \$260,000. Significant cost items include new traffic signal (\$175,000), ramp metering (\$75,000) and roadway additions (\$13,000). Detailed calculations are attached (Source: Mark Thomas & Company, see Attachment 1).

10. Accelerate Construction of WB auxiliary lane between N. Livermore and Isabel.

**Estimated Cost:** Auxiliary lane is part of the Isabel Interchange project. No additional cost.

The estimated cost of the auxiliary lane from First Street to Isabel Avenue is \$16.8 million. This is how much funding would need to be accelerated for this project. Detailed calculations are attached. (Source: Mark, Thomas & Company, see Attachment 1).

11. Accelerate Construction of WB auxiliary lane between Isabel direct on and Airway Off

**Estimated Cost:** Auxiliary lane is part of the Isabel Interchange project. No additional cost.

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12. Accelerate Construction of WB auxiliary lane between Fallon/EI Charro Off and Tassajara/Santa Rita Loop On

**Estimated Cost:** Auxiliary lane is part of the Fallon/EI Charro Interchange Project. No additional cost. Total programmed funding for the WB auxiliary lanes between Airway Blvd and Tassajara Road (TIPID: ALA050011) based on MTC's 2009 TIP is \$4.5 million.<sup>1</sup> The MTC's 2035 Transportation Plan provides the total cost to construct auxiliary lanes on I-580 between Santa Rita Road/Tassajara Road and Airway Blvd.(reference no: 21456) as \$5.5 million (in year of expenditure dollars).<sup>2</sup>

13. Add 4th lane WB from Mission/East 14th off to I-880 SB off.

**Estimated Cost:** The estimated cost is \$5.6 million. Significant cost items include clearing and grubbing (\$75,000), new traffic signal (\$175,000) and street lighting (\$150,000). Detailed calculations are attached (Source: Mark Thomas & Company, see Attachment 1).

14. Accelerate Construction of EB auxiliary lane between Isabel direct on and N. Livermore off.

**Estimated Cost:** Auxiliary lane is part of the Isabel Interchange project. No additional cost. The estimated cost is \$5.4 million. This is how much would have to be accelerated. Detailed calculations are attached (Source: Mark, Thomas and Company, see Attachment 1)

### ***Surface Street Capacity Improvements***

15. Spot Intersection Capacity Improvements

The total estimated cost of these improvements is approximately \$4.6 million. The cost estimate details of each intersection are provided below.

- a. East Lewelling Blvd. and Hesperian Blvd.

**Improvements:** Convert east-west approaches to protected left-turn phasing by providing dual left-turn lanes on each approach. Convert the northbound through lane adjacent to the dual left-turn lanes to a third left-turn lane. The channelized right-turn lane from the southbound approach that feeds the westbound "auxiliary lane" would be modified so that it is controlled by the signal, which could operate on an overlap phase with the eastbound left-turn. Add southbound left-turn lane and northbound right-turn pocket.<sup>3</sup> With these improvements the intersection will operate at LOS D during the AM Peak and LOS E

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<sup>1</sup> 2009 Transportation Improvement Plan, Project Listings, [http://www.mtc.ca.gov/funding/tip/2009/final/Project\\_Listings\\_Final.pdf](http://www.mtc.ca.gov/funding/tip/2009/final/Project_Listings_Final.pdf)

<sup>2</sup> Draft Transportation 2035 Plan, 2035 Change in Motion, [http://www.mtc.ca.gov/planning/2035\\_plan/DRAFT/Draft\\_T2035\\_Plan.pdf](http://www.mtc.ca.gov/planning/2035_plan/DRAFT/Draft_T2035_Plan.pdf)

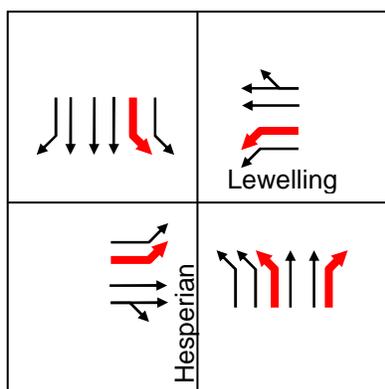
<sup>3</sup> Recommended Alternative 4 and estimated cost is from the Draft Final Report, Hesperian/Lewelling Intersection Traffic Assessment, prepared for City of San Leandro and Alameda County by Dowling Associates, Inc, October 19, 2007.

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during the PM peak, under 2015 conditions. Exhibit 5 shows the intersection geometry with the recommended improvements. The bold red arrows show the lane geometry improvements and/or modifications.

**Estimated Cost:** The initial order of magnitude cost of the improvements at this intersection is \$3.1 million. The construction related cost is estimated to be \$2,270,000 and the right-of-way related costs are \$830,000. Some of the significant costs items include 10,476 square feet of property acquisition (\$523,800), signal modifications (\$175,000), the median relocation on the north leg (\$150,000) and hardscape new median (246,000). The costs were developed by conducting a less detailed quantity takeoff than would be done during the PS&E stage of project development, then utilizing multipliers to develop some of the unknown costs. A 25% contingency factor was used in developing the costs, along with a 10 % inflation factor.<sup>4</sup>

**Exhibit 5: Hesperian/Lewelling Intersection Improvements**

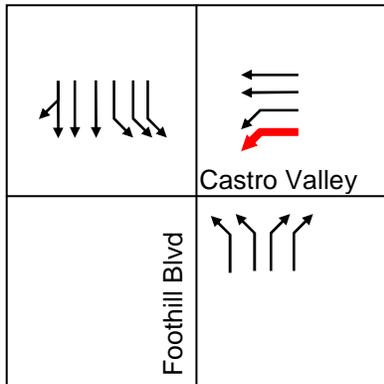


b. Castro Valley Blvd. and Foothill Blvd.

Improvements: Add a westbound left-turn lane and optimize signal timing. With these changes, the intersection will operate at LOS D during the AM peak and LOS D during the PM peak, under 2015 conditions. Exhibit 6 shows the improvements at the intersection of Castro Valley and Foothill Blvd.

<sup>4</sup> Summary Construction Costs, Alternative 4, Hesperian/Lewelling Intersection Traffic Assessment, prepared for City of San Leandro and Alameda by Dowling Associates, Inc, October 19, 2007.

**Exhibit 6: Castro Valley and Foothill Blvd. Improvements**

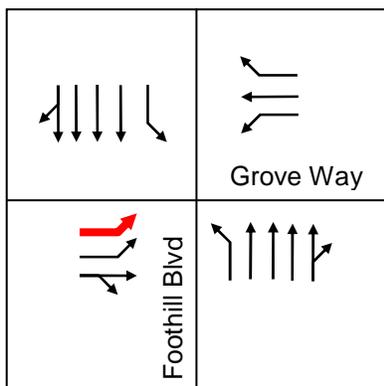


**Estimated Cost:** The estimated cost of these improvements is \$360,000. Significant cost items include traffic handling/stage construction (\$50,000), signal modifications (\$50,000) and relocating utilities (\$25,000). Detailed calculations are attached (Source: Mark, Thomas & Company, see Attachment 1).

c. Foothill Blvd. and Grove Way

Improvements: Add eastbound left-turn lane if feasible and optimize signal timing. With these improvements, the intersection will operate at LOS D during the AM peak and PM peak hours. Exhibit 7 shows the lane geometry with the improvements at Foothill Blvd. and Grove Way.

**Exhibit 7: Foothill Blvd and Grove Way Improvements**



**Estimated Cost:** The estimated cost of these improvements is \$350,000. Significant cost items include the traffic handling/stage construction (\$50,000), signal modifications (\$30,000) and relocating utilities (\$20,000). Detailed calculations are attached (Source: Mark, Thomas & Company, see Attachment 1).

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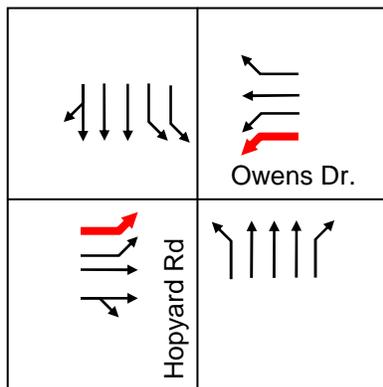
d. Redwood Road and Norbridge Avenue

**Improvement:** Optimize signal timing. With this improvement, the intersection will operate at LOS C during the AM peak and LOS E during the PM peak, under 2015 conditions. The estimated cost of this improvement is \$10,000.

e. Hopyard Road and Owens Drive

**Improvement:** Add eastbound and westbound left turn lanes, change east-west phasing to protected left-turn phasing. With this improvement, the intersection will operate at LOS E during the AM peak and LOS D during the PM peak, under 2015 conditions. Exhibit 8 shows the lane geometry with the improvements at the intersection of Hopyard Road and Owens Road.

**Exhibit 8: Hopyard Road and Owens Drive Improvements**



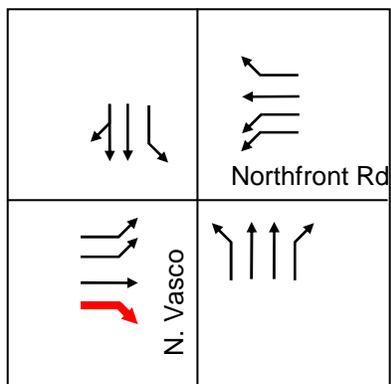
**Estimated Cost:** The estimated cost of these improvements is \$420,000. Significant cost items include the new pavement (\$113,000), signal modifications (\$50,000) and relocating utilities (\$25,000). Detailed calculations are attached (Source: Mark, Thomas & Company, see Attachment 1).

f. N. Vasco Road and Northfront Road

**Improvements:** Add eastbound right turn lane and optimize signal timing. With these improvements, the intersection will operate at LOS C during the AM peak and LOS E during the PM peak. shows the lane geometry with the improvements at N. Vasco Road and Northfront Road.

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**Exhibit 9: N. Vasco Road and Northfront Road Improvements**



**Estimated Cost:** The estimated cost of the improvements is \$390,000. Significant cost items include new pavement (\$27,000), traffic handling/stage construction (\$50,000) and signal modifications (\$50,000). Detailed calculations are attached (Source: Mark, Thomas & Company, see Attachment 1).

***Transit Improvements***

- 16. Preserve frequency and number of routes of San Joaquin RTD (SMART), and Modesto (MAX BART) inter-regional express bus service to Dublin/Pleasanton BART Station

The recommended transit improvement does not involve new capital or construction costs but does involve new operating costs.

**Estimated Operating Cost:**

San Joaquin RTD: The Total Operating Expenses of the San Joaquin RTD in 2007 and 2008 were \$41,878,620 and \$44,048,346 respectively. The 2008 expenses represent an increase of approximately 5 % over the 2007 expenses.<sup>5</sup> Based on information from the National Transit Database website, the operating expense for the San Joaquin Regional Transit District (RTD) was \$113.4 per Vehicle Revenue Hour for 2007.<sup>6</sup>

Modesto (MAX BART): Based on information from the National Transit Database website, the operating expense per Vehicle Revenue Hour for Modesto Area Express (MAX) was \$69.42 for 2007.<sup>7</sup>

<sup>5</sup> San Joaquin RTD 2008 Financial Report  
<http://sanjoaquinrtd.com/cafr/pdf/SJRtd%20CAFR%206%2030%2008-%20Signed.pdf>

<sup>6</sup> 2007 National Transit Database  
[http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2007/agency\\_profiles/9012.pdf](http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2007/agency_profiles/9012.pdf)

<sup>7</sup> 2007 National Transit Database  
[http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2007/agency\\_profiles/9007.pdf](http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2007/agency_profiles/9007.pdf)

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17. Preserve frequency and number of routes of County Connection and Tri-Delta express bus service to Dublin/Pleasanton BART Station

The recommended transit improvement does not involve new capital or construction costs but does involve new operating costs.

#### **Estimated Operating Cost:**

County Connection: The 2007 total operating cost for the Contra Costa County Transit Authority was \$25,456,225.8 In 2007, the County Connection provided service on 30 bus routes. Two of the routes (routes 121 and 970) serve the Dublin-Pleasanton BART station. In 2007, the average weekday boardings for Route 121 were 1,222. Based on the FY 2007 Performance Standards (Source: CCCTA), the operating cost/passenger is \$5.17/passenger. The estimated cost of this route for 2007 can then be calculated as \$2.3 million. ( $=1222*365*\$5.17$ ). In 2007, the average weekday boardings for Route 970 were 217. The estimated cost of this route for 2007 can be calculated as \$410,000 ( $=217*365*\$5.17$ /passenger). The combined estimated cost of the two routes to serve the Dublin-Pleasanton BART station in 2007 dollars is \$2.71 million. The operating cost/RVH (Revenue Vehicle Hour) is based on FY 2007 standards for Fixed Routes is \$90.47.

Tri-Delta Express Bus: The total operating expense for Route DX-2(Delta Express Dublin BART) for FY 2006-07 was \$154,491<sup>9</sup>. This was based on Total Revenue Hours =1,558 and Expense/RVH of \$88.59.

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<sup>8</sup> 2007 CCCTA Operating Data, Short Range Transit Plan, April 2008, [http://www.cccta.org/public\\_information/CCCTA\\_SRTP\\_final.pdf](http://www.cccta.org/public_information/CCCTA_SRTP_final.pdf)

<sup>9</sup> Table 3.6, Route Performance & Productivity, FY 2006-07, Short Range Transit Plan, FY 2007-08-2017/18, Tri-Delta Transit. [http://www.trideltatransit.com/pdf/tdt\\_srtp\\_july\\_08.pdf](http://www.trideltatransit.com/pdf/tdt_srtp_july_08.pdf)

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## **Cost Estimates for Recommended Long Term Improvements**

The long-term improvements are estimated to cost an additional \$2,394 million for construction plus significant additional annual operating costs for the improved transit services. Exhibit 10 below shows the summary of cost estimates for the recommended long-term improvements.

A detailed description of the bases of the cost estimates for recommended long-term improvements is provided below. The detailed cost estimates for long-term improvements 18, 19 and 33 are provided in the attached file: I-580 CSMP-Exhibit 2-Long Term Improvements.pdf (Source: Mark, Thomas & Company, see Attachment 2).

### ***Freeway Management Improvements***

#### 19. Extend Single HOT lanes:

- Westbound between I-680 and Redwood Road.
- Eastbound between Redwood Road and Hacienda.
- Westbound between I-205/Mountain House Parkway and Greenville Road
- Eastbound between Greenville Road and I-205/Mountain House Parkway

#### **Estimated Cost:**

The total estimated cost for all four segments is \$365.3 million. Significant cost items for all four segments (a. through d.) include: roadway excavation, remove pavement, new pavement and electronic toll collection. Detailed calculations are attached. (Source: Mark, Thomas & Company, see Attachment 2).

- The estimated cost for Westbound HOT lane between I-680 and Redwood Road is \$74.2 million.
- The estimated cost for Eastbound HOT lane between Redwood Road and Hacienda is \$122 million.
- The estimated cost for Westbound HOT lane between I-205/Mountain House Parkway and Greenville Road is \$82.7 million.
- The estimated cost for Eastbound HOT lane between Greenville Road and I-205/Mountain House Parkway is \$86.4 million.

#### 20. Extend Capacity Expansion of HOT lanes:

The forecasted HOV demand for the HOT lanes will exceed the capacity of a single HOT lane in each direction. Additional capacity for toll paying vehicles can be obtained by increasing the HOV person occupancy requirements to 3+ for free use of the HOT lanes. Alternatively, a second HOT lane in each direction can be constructed. The cost estimates below are for this latter option, constructing a second HOT lane in each direction.

#### **Estimated Cost:**

The estimated cost for 2<sup>nd</sup> Westbound HOT lane between Santa Rita and I-680 is \$3.8 million. The estimated cost is for 2<sup>nd</sup> Eastbound HOT lane between First Street and Vasco Road \$3.6 million. The total estimated cost of the two segments together is \$7.4 million. Significant cost items include electronic toll collection, traffic signal (new), street lighting and signing and striping. Detailed calculations are attached (Source: Mark, Thomas & Company, see Attachment 2).

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**Exhibit 10: Cost Estimates for Recommended Long-Term Improvements**

Recommended Long-Term Improvements	Construction Cost (\$million)
<b>Freeway Management Improvements</b>	
19. Extend Single HOT lanes: <ul style="list-style-type: none"> <li>Westbound between I-680 and Redwood Road.</li> <li>Eastbound between Redwood Road and Hacienda.</li> <li>Westbound between I-205/Mountain House Parkway and Greenville Road</li> <li>Eastbound between Greenville Road and I-205/Mountain House Parkway</li> </ul>	365.3
20. Improve operations of HOT lanes to address forecasted capacity shortfalls for following sections: <ul style="list-style-type: none"> <li>Westbound between Santa Rita and I-680</li> <li>Eastbound between First Street and Vasco Road.</li> </ul>	7.4
21. Construct Direct Ramp I-580 WB to I-680 SB – 2 mixed flow lanes plus 1 HOT lane.	750.0
<b>Surface Street Management Improvements</b>	
22. Signal coordination, incident detection, incident management.	5.0
23. Add HOT lanes both directions to SR 84 between I-580 and I-680.	110.0
<b>Freeway Capacity Improvements</b>	
24. Reconstruct San Ramon/Foothill Road Interchange	2.1
25. Reconstruct Hacienda Drive Interchange	20.0
26. Reconstruct First Street Interchange	37.0
27. Reconstruct Vasco Road Interchange	45.0
28. Reconstruct Greenville Road Interchange	43.0
29. Not Used	
<b>Surface Street Capacity Improvements</b>	
30. Widen SR 84 to 4 lanes divided expressway I-680 to Isabel Avenue to Stanley	129.6
31. Widen SR 84 (Isabel Parkway) to 6-lane expressway Stanley to Jack London	See above
32. Widen Byron Highway (SR 239) to 4 lane divided expressway from SR 4 Bypass to I-205	15.5
33. El Charro Road extension to Stanley Blvd. (off loads Santa Rita interchange)	18.5
<b>Transit Improvements</b>	
34. Double Track Union Pacific (ACE) rail line Tracy to Livermore	34.5
35. Increase ACE train service to 7 trains.	12.4
36. Altamont Rail Corridor Speed and Safety Improvements (90 mph)	30.0
37. Extend BART to ACE/Livermore Station and I-580/Greenville Road Station	700.0
38. Cross-Platform transfer BART/ACE at Livermore Station	20.0
39. Cross-Platform transfer ACE/High Speed Rail at San Jose Station	20.0
40. Integrate BART/ACE Monthly Passes	Negligible
41. Bus Rapid Transit Lawrence Livermore Lab and ACE train Livermore Station	23.0
<b>Gateway Constraint and Other Measures</b>	
42. Restrict I-580 over Altamont Pass to 8 mixed-flow lanes (4 each direction).	No Cost
43. Safety Improvements to Altamont Pass Road and Patterson Pass Road	6.0
Total	2,394.3

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Note: Cost estimates are for construction and do not include operating or maintenance costs over lifetime of improvements.

21. Construct Direct Ramp I-580 WB to I-680 SB – 2 mixed flow lanes plus 1 HOT lane.

**Estimated Cost:** The estimated cost of this project is \$ 750 million. This is based on project reference # 22765 from the MTC 2035 RTP. No schematics were developed for this project.

### ***Surface Street Management Improvements***

22. Signal coordination, incident detection, incident management, CMS signs on SR 84 between I-580 and I-680.

**Estimated Cost:** The estimated cost is \$5 million. The cost of signal system coordination was estimated for 200 signals at \$10,000 per intersection.

TMIP Advance Elements Project: The Alameda County Congestion Management Agency (ACCMA), in cooperation with the California Department of Transportation (Caltrans) is proposing to implement a Traffic Management Plan by installing traffic monitoring devices along I-580, I-680, Route 84, and local arterials within the Tri-Valley Area. The estimated cost of this project is \$9.5 million.<sup>10</sup>

23. Add HOT lanes both directions to SR 84 between I-580 and I-680.

**Estimated Cost:** The estimated cost is \$110 million based on \$6.0 million per mile. : The estimated average cost of adding a HOT lane ranges from \$5.39 million per mile to \$6.19 million per mile (2008 dollars).<sup>11</sup> The average cost is based on the estimated cost to add HOT lanes along various freeway corridors in the Bay Area like I-80, SR-4, US 101, I-680, I-580, I-880, SR 237, I-280, SR-85, I-580, SR 87, SR 92, SR 84.

### ***Freeway Capacity Improvements***

24. Reconstruct San Ramon/Foothill Road Interchange

**Estimated Cost:** The total project cost is \$2.1 million (project reference #21489, MTC 2035 RTP). No schematics were developed for this project.

25. Reconstruct Hacienda Drive Interchange

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<sup>10</sup> Source: <http://www.i580.info/documents/Fact%20Sheets-rev%2011-27-06%201.pdf>

<sup>11</sup> Regional HOT Lanes Network Feasibility Study, Phase 3 , Final Summary Report, prepared for MTC by Parsons Brinkerhoff, February 2009. Table 1 -Summary of Costs by Corridor for the Basic Approach (2008 \$) and Table 2-Summary of Costs by Corridor for the Revised Full Featured Approach (2008 \$).

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**Estimated Cost:** The estimated cost of this improvement is \$ 20 million, approximately half of the total project cost of 37.6 million to reconstruct both the Fallon Road Interchange and the Hacienda Drive Interchange in Dublin (project reference #230086, MTC 2035 RTP). No schematics were prepared for this project.

26. Reconstruct First Street Interchange

**Estimated Cost:** The estimated cost of this improvement is \$37.0 million (project reference #21475 , MTC 2035 RTP). No schematics were prepared for this project.

27. Reconstruct Vasco Road Interchange

**Estimated Cost:** The estimated cost of this improvement is \$45 million. This is based on the total project cost of \$55 million to construct auxiliary lanes on I 580 between Vasco Road and First Street and modify I-580/Vasco Road interchange (project reference #21100, MTC 2035 RTP). No schematics were prepared for this project.

28. Reconstruct Greenville Road Interchange

**Estimated Cost:** The total project cost is \$43.0 million (project reference # 21477, MTC 2035 RTP). No schematics were prepared for this project.

29. This number was Not Used

***Surface Street Capacity Improvements***

30. Widen SR 84 to 4 lanes divided expressway I-680 to Isabel Avenue to Stanley

31. Widen SR 84 (Isabel Parkway) to 6-lane expressway Stanley to Jack London

**Estimated Cost:** The estimated cost of the improvements 30) and 31) together is \$129.6 million (project reference # 22776, MTC 2035 RTP). No schematics were prepared for these projects.

32. Widen Byron Highway (SR 239) to 4 lane divided expressway from SR 4 Bypass to I-205 (off loads I-580 over Altamont Pass and Vasco Road).

**Estimated Cost:** Based on the MTC 2009 TIP Project Listing (TIP ID: CC-070019) estimated cost of this project is \$15.537 million (in year of expenditure dollars).<sup>12</sup> No schematics were prepared for this project.

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<sup>12</sup> 2009 Transportation Improvement Program,  
[http://www.mtc.ca.gov/funding/tip/2009/final/Project\\_Listings\\_Final.pdf](http://www.mtc.ca.gov/funding/tip/2009/final/Project_Listings_Final.pdf)

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33. El Charro Road extension to Stanley Blvd.(off loads Santa Rita Interchange)

**Estimated Cost:** Based on the Tri-Valley Transportation Council Nexus Study Fee Update, estimated cost of this project is \$18.5 million (in year of expenditure dollars).<sup>13</sup> No schematics were prepared for this project.

***Transit Improvements***

34. Double Track Union Pacific (ACE) rail line Tracy to Livermore

**Estimated Cost:** The estimated cost of this project is \$34.5 million. Significant cost items include the mainline track, signals, at grade crossings, grading and railroad crossing signals. Detailed calculations are attached (Source: Mark, Thomas & Company, see Attachment 2).

35. Increase ACE train service to 7 trains.

**Estimated Cost:** The estimated cost of \$12.4 million is the capital cost of additional train sets. There will be an additional operating cost of \$14.0 million per year.<sup>14</sup>

36. Altamont Rail Corridor Speed and Safety Improvements (90 mph).

**Estimated Cost:** Based on the SJCOG 2007 Regional Transportation Plan (Table 6-6, Project #SJ07-6034), estimated cost of this project is \$30.0 million (in year of expenditure dollars). SJCOG project cost estimates are based on a template developed for countywide application that is designed to cover all project phases, including: environmental (both studies and mitigation), design, right-of-way, construction management, inspection, and construction. The Project Cost Estimation Template Materials is included in Appendix 9-2 of the 2007 Regional Transportation Plan.<sup>15</sup>

37. Extend BART to ACE/Livermore Station and I-580/Greenville Road Station.

**Estimated Cost:** The estimated cost of the project is approximately \$750 million. Based on the BART to Livermore Extension Program EIR Notice of Preparation, the following three alignment alternatives are being considered: 1) along I-580 to a terminus station in the vicinity of Greenville Road, 2) along I-580, turn south at Isabel Avenue and terminate at a station at Isabel Avenue & Stanley Boulevard, and 3) along I-580, turn south at El Charro Road, proceed southeast along Quarry Road, east at Stanley Boulevard, and terminate at a station at Isabel Avenue & Stanley Boulevard. The lengths of the extensions for the above alternatives are 10, 6, and 5 miles, respectively.<sup>16</sup>

For reference, the total project cost of the BART extension from Fremont to Warm Springs is \$890 million (project reference # 21132, MTC 2035 RTP). The Warm Springs Extension will add 5.4-miles of new

<sup>13</sup> Tri-Valley Transportation Council Nexus Study Fee Update Final Report, January 2008.

<sup>14</sup> Draft San Joaquin Regional Rail Commission, Short Range Transit Plan, Fiscal Year 2006/07-2016.

<sup>15</sup> Regional Transportation Plan, SJCOG, 2007

<sup>16</sup> [http://barttolivermore.org/files/files/BTL\\_Final\\_NOP.pdf](http://barttolivermore.org/files/files/BTL_Final_NOP.pdf)

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tracks from the existing Fremont Station south to a new station in the Warm Springs District of the City of Fremont, with an optional station to be located approximately midway, in the Irvington District.<sup>17</sup>

38. Cross-Platform transfer BART/ACE at Livermore Station.

**Estimated Cost:** Based on the SJCOG 2007 Regional Transportation Plan, estimated cost of this project is \$20.0 million (in year of expenditure dollars). See 35. above for SJCOG project cost estimate procedures.

39. Cross-Platform transfer ACE/High Speed Rail at San Jose Station.

**Estimated Cost:** Estimated to be similar to the project above for the Cross-Platform transfer BART/ACE at Livermore Station. The SJCOG 2007 Regional Transportation Plan estimates this project would cost \$20.0 million (in year of expenditure dollars).

40. Integrate BART/ACE Monthly Passes.

**Estimated Cost :** Negligible capital costs.

41. Bus Rapid Transit between major Livermore employers (Lawrence Livermore Lab) and BART/ACE train Livermore Station.

**Estimated Cost:** The estimated total capital cost of this project is \$21.66 million and the estimated annual operating cost is \$1.24 million (2007 dollars).<sup>18</sup> The total estimated cost is \$23.0 million.

#### ***Gateway Constraint and Other Measures***

42. Restrict I-580 over Altamont Pass to 8 mixed-flow lanes (4 each direction).

Estimated Cost : No capital cost.

43. Safety Improvements (including signing, striping, signalization, realignments, passing lanes, median barriers, increased speed enforcement) to Altamont Pass Road and Patterson Pass Road to accommodate expected diverted SOV demand.

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<sup>17</sup> <http://www.bart.gov/about/projects/wsx/index.aspx>

<sup>18</sup> Source: [www.fta.dot.gov/documents/CA\\_Livermore\\_Amador\\_BRT\\_\(sean.libberton\\_v1\).doc](http://www.fta.dot.gov/documents/CA_Livermore_Amador_BRT_(sean.libberton_v1).doc)

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**Estimated Cost:** A project to rehabilitate Redwood Road and Altamont Pass Road in Alameda County has been identified as part of the Alameda County American Recovery and Reinvestment Act (ARRA) Local Streets & Roads Rehabilitation Projects. This project includes keycutting, milling, base repair, new asphalt concrete sections, and signing and striping along Redwood Road and Altamont Pass Road. The estimated cost of this project is \$3.44 million.<sup>19</sup> For the purposes of this document, it is estimated the portion of the project related to Altamont Pass Road is half of the total cost, or \$1.72 million.

Based on the ACCMA 2007 Congestion Management Program (Chapter 7 – Capital Improvement Program), the estimated cost of this project is \$6.0 million.<sup>20</sup>

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<sup>19</sup> Source: <http://www.accma.ca.gov/pages/HomeARRA.aspx>

<sup>20</sup> Source: [http://www.accma.ca.gov/.../2007\\_congestion\\_management\\_program/chapter\\_7.pdf](http://www.accma.ca.gov/.../2007_congestion_management_program/chapter_7.pdf)

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 1: Recommended Short Term Improvements**

Project Number: 2a

Project Description: Hacienda Loop On to EB 580 (increase storage to 2 lanes)

			March 2009 Estimate		
<b>Roadway Items:</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extended</b>	<b>Total</b>
Roadway excavation	1,750	CY	\$ 15	\$ 27,000	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	-	LF	\$ 15	\$ -	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	12,700	SF	\$ 15	\$ 191,000	
New Pavement - PCC	4,000	SF	\$ 25	\$ 100,000	
Coldplane HMA Pavement	1,100	SY	\$ 8	\$ 9,000	
Hot Mix Asphalt (2" Overlay)	3,100	SF	\$ 2	\$ 7,000	
Storm drain	1	LS	\$ 30,700	\$ 31,000	
Sound wall	-	SF	\$ 16	\$ -	
Landscape/Irrigation	2,200	SF	\$ 6	\$ 14,000	
Erosion control	1	LS	\$ 7,700	\$ 8,000	
Minor concrete	22	CY	\$ 250	\$ 6,000	
Ramp Metering	1	EA	\$ 75,000	\$ 75,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 50,000	\$ 50,000	
Signing & Striping	1	LS	\$ 38,300	\$ 39,000	
Minor & Misc. items (10%)	1	LS	\$ 66,000	\$ 66,000	
Roadway Additions (10%)	1	LS	\$ 66,000	\$ 66,000	
Mobilization (10%)	1	LS	\$ 66,000	\$ 66,000	
Contingency (25%)	1	LS	\$ 165,000	\$ 165,000	
<b>Roadway Subtotal</b>					\$ 1,020,000
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
NAME OF BRIDGE	-	SF	\$ 120	\$ -	
<b>Structure Subtotal</b>					\$ -
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ -	\$ -	
<b>Right of way subtotal</b>					\$ -
<b>Subtotal "Hard Costs"</b>					\$ 1,020,000
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 62,000	\$ 62,000	
Design/Acquisition (13%)	1	LS	\$ 133,000	\$ 133,000	
Construction Administration (8%)	1	LS	\$ 82,000	\$ 82,000	
Construction Staking (2%)	1	LS	\$ 21,000	\$ 21,000	
Legal (Est) (1%)	1	LS	\$ 11,000	\$ 11,000	
<b>Subtotal "Soft Costs"</b>					\$ 310,000
<b>Grand Total</b>					\$ 1,330,000

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 1: Recommended Short Term Improvements**

Project Number: 3a

Project Description: Install ramp meters with HOV lanes at Hesperian Blvd. to I-238 SB

			March 2009 Estimate		
<b>Roadway Items:</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extended</b>	<b>Total</b>
Roadway excavation	2,220	CY	\$ 15	\$ 34,000	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	200	LF	\$ 15	\$ 3,000	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	8,620	SF	\$ 15	\$ 130,000	
New Pavement - PCC	8,540	SF	\$ 25	\$ 214,000	
Coldplane HMA Pavement	1,430	SY	\$ 8	\$ 12,000	
Hot Mix Asphalt (2" Overlay)	4,920	SF	\$ 2	\$ 10,000	
Storm drain	1	LS	\$ 36,300	\$ 37,000	
Sound wall	-	SF	\$ 16	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 9,100	\$ 10,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	1	EA	\$ 75,000	\$ 75,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 150,000	\$ 150,000	
Signing & Striping	1	LS	\$ 45,300	\$ 46,000	
Minor & Misc. items (10%)	1	LS	\$ 83,000	\$ 83,000	
Roadway Additions (10%)	1	LS	\$ 83,000	\$ 83,000	
Mobilization (10%)	1	LS	\$ 83,000	\$ 83,000	
Contingency (25%)	1	LS	\$ 206,000	\$ 206,000	
<b>Roadway Subtotal</b>					\$ 1,280,000
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
NAME OF BRIDGE	2,200	SF	\$ 120	\$ 264,000	
<b>Structure Subtotal</b>					\$ 270,000
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					\$ 500,000
<b>Subtotal "Hard Costs"</b>					\$ 2,050,000
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 123,000	\$ 123,000	
Design/Acquisition (13%)	1	LS	\$ 267,000	\$ 267,000	
Construction Administration (8%)	1	LS	\$ 164,000	\$ 164,000	
Construction Staking (2%)	1	LS	\$ 41,000	\$ 41,000	
Legal (Est) (1%)	1	LS	\$ 21,000	\$ 21,000	
<b>Subtotal "Soft Costs"</b>					\$ 620,000
<b>Grand Total</b>					\$ 2,670,000

# MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN

## ENGINEERING DIVISION DRAFT DELIVERABLE 4-D

### Project Name: Exhibit 1: Recommended Short Term Improvements

Project Number: 4

Project Description: Add 2nd HOT lane EB between Santa Rita/Tassajara On and First St Off

			March 2009 Estimate		
Roadway Items:	Quantity	Unit	Unit Cost	Extended	Total
Roadway excavation	-	CY	\$ 15	\$ -	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	-	LF	\$ 15	\$ -	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	-	SF	\$ 15	\$ -	
New Pavement - PCC	-	SF	\$ 25	\$ -	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	-	SF	\$ 2	\$ -	
Storm drain	1	LS	\$ -	\$ -	
Sound wall	-	SF	\$ 16	\$ -	
Retaining wall	-	LF	\$ 900	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ -	\$ -	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 483,000	\$ 483,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 150,000	\$ 150,000	
Signing & Striping	1	LS	\$ 810,000	\$ 810,000	
Minor & Misc. items (10%)	1	LS	\$ 155,000	\$ 155,000	
Roadway Additions (10%)	1	LS	\$ 155,000	\$ 155,000	
Mobilization (10%)	1	LS	\$ 155,000	\$ 155,000	
Contingency (25%)	1	LS	\$ 386,000	\$ 386,000	
<b>Roadway Subtotal</b>					\$ 2,400,000
<b>Structure items:</b>	quantity	unit	unit cost	extended	total
	-	SF	\$ 120	\$ -	
<b>Structure Subtotal</b>					\$ -
<b>Right of way Items:</b>	quantity	unit	unit cost	extended	total
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					\$ 500,000
<b>Subtotal "Hard Costs"</b>					\$ 2,900,000
<b>Soft Costs</b>	quantity	unit	unit cost	extended	total
Preliminary Eng/Envir (6%)	1	LS	\$ 174,000	\$ 174,000	
Design/Acquisition (13%)	1	LS	\$ 377,000	\$ 377,000	
Construction Administration (8%)	1	LS	\$ 232,000	\$ 232,000	
Construction Staking (2%)	1	LS	\$ 58,000	\$ 58,000	
Legal (Est) (1%)	1	LS	\$ 29,000	\$ 29,000	
<b>Subtotal "Soft Costs"</b>					\$ 870,000
<b>Grand Total</b>					\$ 3,770,000

# MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN

## ENGINEERING DIVISION DRAFT DELIVERABLE 4-D

### Project Name: Exhibit 1: Recommended Short Term Improvements

Project Number: 5

Project Description: Add 2nd HOT lane WB between First St On and Santa Rita/Tassajara Off

		March 2009 Estimate			
Roadway Items:	Quantity	Unit	Unit Cost	Extended	Total
Roadway excavation	-	CY	\$ 15	\$ -	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	-	LF	\$ 15	\$ -	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	-	SF	\$ 15	\$ -	
New Pavement - PCC	-	SF	\$ 25	\$ -	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	-	SF	\$ 2	\$ -	
Storm drain	1	LS	\$ -	\$ -	
Sound wall	-	SF	\$ 16	\$ -	
Retaining wall	-	LF	\$ 900	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ -	\$ -	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 483,000	\$ 483,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 150,000	\$ 150,000	
Signing & Striping	1	LS	\$ 810,000	\$ 810,000	
Minor & Misc. items (10%)	1	LS	\$ 155,000	\$ 155,000	
Roadway Additions (10%)	1	LS	\$ 155,000	\$ 155,000	
Mobilization (10%)	1	LS	\$ 155,000	\$ 155,000	
Contingency (25%)	1	LS	\$ 386,000	\$ 386,000	
<b>Roadway Subtotal</b>					\$ 2,400,000
<b>Structure items:</b>	quantity	unit	unit cost	extended	total
	-	SF	\$ 120	\$ -	
<b>Structure Subtotal</b>					\$ -
<b>Right of way Items:</b>	quantity	unit	unit cost	extended	total
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					\$ 500,000
<b>Subtotal "Hard Costs"</b>					\$ 2,900,000
<b>Soft Costs</b>	quantity	unit	unit cost	extended	total
Preliminary Eng/Envir (6%)	1	LS	\$ 174,000	\$ 174,000	
Design/Acquisition (13%)	1	LS	\$ 377,000	\$ 377,000	
Construction Administration (8%)	1	LS	\$ 232,000	\$ 232,000	
Construction Staking (2%)	1	LS	\$ 58,000	\$ 58,000	
Legal (Est) (1%)	1	LS	\$ 29,000	\$ 29,000	
<b>Subtotal "Soft Costs"</b>					\$ 870,000
<b>Grand Total</b>					\$ 3,770,000

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 1: Recommended Short Term Improvements**

Project Number: 8

Project Description: Construct Separate off-ramp WB 580 to access SB 680 loop ramp

			March 2009 Estimate		
<b>Roadway Items:</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extended</b>	<b>Total</b>
Roadway excavation	300	CY	\$ 15	\$ 5,000	
Remove Pavement	610	SY	\$ 50	\$ 31,000	
Remove Barrier	800	LF	\$ 15	\$ 12,000	
Clearing and Grubbing	1	LS	\$ 5,000	\$ 5,000	
Develop water supply	1	LS	\$ 10,000	\$ 10,000	
New Pavement - HMA	2,800	SF	\$ 15	\$ 42,000	
New Pavement - PCC	-	SF	\$ 25	\$ -	
Coldplane HMA Pavement	160	SY	\$ 8	\$ 2,000	
Hot Mix Asphalt (2" Overlay)	2,800	SF	\$ 2	\$ 6,000	
Storm drain	1	LS	\$ 4,500	\$ 5,000	
Sound wall	-	SF	\$ 16	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 1,200	\$ 2,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ -	\$ -	
Signing & Striping	1	LS	\$ 5,600	\$ 6,000	
Minor & Misc. items (10%)	1	LS	\$ 13,000	\$ 13,000	
Roadway Additions (10%)	1	LS	\$ 13,000	\$ 13,000	
Mobilization (10%)	1	LS	\$ 13,000	\$ 13,000	
Contingency (25%)	1	LS	\$ 32,000	\$ 32,000	
<b>Roadway Subtotal</b>					\$ 200,000
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Bridge	-	SF	\$ 120	\$ -	
<b>Structure Subtotal</b>					\$ -
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ -	\$ -	
<b>Right of way subtotal</b>					\$ -
<b>Subtotal "Hard Costs"</b>					\$ 200,000
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 12,000	\$ 12,000	
Design/Acquisition (13%)	1	LS	\$ 26,000	\$ 26,000	
Construction Administration (8%)	1	LS	\$ 16,000	\$ 16,000	
Construction Staking (2%)	1	LS	\$ 4,000	\$ 4,000	
Legal (Est) (1%)	1	LS	\$ 2,000	\$ 2,000	
<b>Subtotal "Soft Costs"</b>					\$ 60,000
<b>Grand Total</b>					\$ 260,000

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 1: Recommended Short Term Improvements**

Project Number: 9

Project Description: WB I-580 Aux Lane from First St to Isabel Ave

			March 2009 Estimate		
<b>Roadway Items:</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extended</b>	<b>Total</b>
Roadway excavation	41,453	CY	\$ 15	\$ 622,000	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	560	LF	\$ 15	\$ 9,000	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	142,900	SF	\$ 15	\$ 2,144,000	
New Pavement - PCC	171,500	SF	\$ 25	\$ 4,288,000	
Coldplane HMA Pavement	611	SY	\$ 8	\$ 5,000	
Hot Mix Asphalt (2" Overlay)	7,200	SF	\$ 2	\$ 15,000	
Storm drain	1	LS	\$ 94,600	\$ 95,000	
Sound wall	-	SF	\$ 16	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 94,600	\$ 95,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 150,000	\$ 150,000	
Signing & Striping	1	LS	\$ 94,600	\$ 95,000	
Minor & Misc. items (10%)	1	LS	\$ 762,000	\$ 762,000	
Roadway Additions (10%)	1	LS	\$ 762,000	\$ 762,000	
Mobilization (10%)	1	LS	\$ 762,000	\$ 762,000	
Contingency (25%)	1	LS	\$ 1,905,000	\$ 1,905,000	
<b>Roadway Subtotal</b>					<b>\$ 11,810,000</b>
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
(3 Bridges) N. Livermore; 2 rivers	5,360	SF	\$ 120	\$ 644,000	
<b>Structure Subtotal</b>					<b>\$ 650,000</b>
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	600	SF	\$ 8	\$ 5,000	
Title/escrow fees	1	LS	\$ 1,000	\$ 1,000	
Contingencies (20%)	1	LS	\$ 2,000	\$ 2,000	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					<b>\$ 510,000</b>
<b>Subtotal "Hard Costs"</b>					<b>\$ 12,970,000</b>
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 779,000	\$ 779,000	
Design/Acquisition (13%)	1	LS	\$ 1,687,000	\$ 1,687,000	
Construction Administration (8%)	1	LS	\$ 1,038,000	\$ 1,038,000	
Construction Staking (2%)	1	LS	\$ 260,000	\$ 260,000	
Legal (Est) (1%)	1	LS	\$ 130,000	\$ 130,000	
<b>Subtotal "Soft Costs"</b>					<b>\$ 3,900,000</b>
<b>Grand Total</b>					<b>\$ 16,870,000</b>

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 1: Recommended Short Term Improvements**

Project Number: 12

Project Description: I-238 NB 4th Lane from East 14th to I-880 SB Off

			March 2009 Estimate		
<b>Roadway Items:</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extended</b>	<b>Total</b>
Roadway excavation	-	CY	\$ 15	\$ -	
Remove Pavement	3,086	SY	\$ 50	\$ 155,000	
Remove Barrier		LF	\$ 15	\$ -	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	21,791	SF	\$ 15	\$ 327,000	
New Pavement - PCC	48,105	SF	\$ 25	\$ 1,203,000	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	-	SF	\$ 2	\$ -	
Storm drain	1	LS	\$ 22,500	\$ 23,000	
Sound wall	24,275	SF	\$ 16	\$ 389,000	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 22,500	\$ 23,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 150,000	\$ 150,000	
Signing & Striping	1	LS	\$ 22,500	\$ 23,000	
Minor & Misc. items (10%)	1	LS	\$ 240,000	\$ 240,000	
Roadway Additions (10%)	1	LS	\$ 240,000	\$ 240,000	
Mobilization (10%)	1	LS	\$ 240,000	\$ 240,000	
Contingency (25%)	1	LS	\$ 599,000	\$ 599,000	
<b>Roadway Subtotal</b>					\$ 3,720,000
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Ashland U/C	636	SF	\$ 120	\$ 77,000	
<b>Structure Subtotal</b>					\$ 80,000
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					\$ 500,000
<b>Subtotal "Hard Costs"</b>					\$ 4,300,000
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 258,000	\$ 258,000	
Design/Acquisition (13%)	1	LS	\$ 559,000	\$ 559,000	
Construction Administration (8%)	1	LS	\$ 344,000	\$ 344,000	
Construction Staking (2%)	1	LS	\$ 86,000	\$ 86,000	
Legal (Est) (1%)	1	LS	\$ 43,000	\$ 43,000	
<b>Subtotal "Soft Costs"</b>					\$ 1,290,000
<b>Grand Total</b>					\$ 5,590,000

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 1: Recommended Short Term Improvements**

Project Number: 13

Project Description: EB I-580 Aux Lane from Isabel to N. Livermore

Roadway Items:	Quantity	Unit	March 2009 Estimate		Total
			Unit Cost	Extended	
Roadway excavation	10,240	CY	\$ 15	\$ 154,000	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	1,970	LF	\$ 15	\$ 30,000	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	36,100	SF	\$ 15	\$ 542,000	
New Pavement - PCC	41,900	SF	\$ 25	\$ 1,048,000	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	12,400	SF	\$ 2	\$ 25,000	
Storm drain	1	LS	\$ 23,400	\$ 24,000	
Sound wall	1,970	SF	\$ 16	\$ 32,000	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 23,400	\$ 24,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 150,000	\$ 150,000	
Signing & Striping	1	LS	\$ 23,400	\$ 24,000	
Minor & Misc. items (10%)	1	LS	\$ 216,000	\$ 216,000	
Roadway Additions (10%)	1	LS	\$ 216,000	\$ 216,000	
Mobilization (10%)	1	LS	\$ 216,000	\$ 216,000	
Contingency (25%)	1	LS	\$ 539,000	\$ 539,000	
<b>Roadway Subtotal</b>					\$ 3,340,000
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
NAME OF BRIDGE	2,710	SF	\$ 120	\$ 326,000	
<b>Structure Subtotal</b>					\$ 330,000
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					\$ 500,000
<b>Subtotal "Hard Costs"</b>					\$ 4,170,000
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 251,000	\$ 251,000	
Design/Acquisition (13%)	1	LS	\$ 543,000	\$ 543,000	
Construction Administration (8%)	1	LS	\$ 334,000	\$ 334,000	
Construction Staking (2%)	1	LS	\$ 84,000	\$ 84,000	
Legal (Est) (1%)	1	LS	\$ 42,000	\$ 42,000	
<b>Subtotal "Soft Costs"</b>					\$ 1,260,000
<b>Grand Total</b>					\$ 5,430,000

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**

**ENGINEERING DIVISION  
DRAFT DELIVERABLE 4-D**

**Project Name: Castro Valley Blvd and Foothill Blvd**

Project Description: Add a westbound left turn lane. Optimize signal timing.

**ESTIMATED PROJECT COST: \$360,000.00**

**Project Name: Foothill Blvd and Grove Way**

Project Description: Add eastbound left turn lane if feasible. Optimize signal timing

**ESTIMATED PROJECT COST: \$350,000.00**

**Project Name: Hopyard Road and Owens Drive**

Project Description: Add eastbound and westbound left turn lanes, change east-west phasing  
to protected left-turn phasing.

**ESTIMATED PROJECT COST: \$420,000.00**

**Project Name: N Vasco Road and Northfront Road**

Project Description: Add eastbound right turn lane. Optimize signal timing.

**ESTIMATED PROJECT COST: \$390,000.00**

**TOTAL ESTIMATED PROJECT COST: \$1,520,000.00**

\*Projects have Construction, Administration, and Contingencies added to costs.

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**

**ENGINEERING DIVISION**

**DRAFT DELIVERABLE 4-D**

**Project Name:** Castro Valley Blvd and Foothill Blvd

Project Description: Add a westbound left turn lane. Optimize signal timing.

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
1	Remove Signing and Pavement Markings	500	LF	\$5.00	\$3,000
2	Roadway Excavation - 11" Full Depth Section	500	SF	\$0.75	\$1,000
3	New Pavement - 11" Full Depth AC	4,500	SF	\$6.00	\$27,000
4	Concrete Curb & Gutter	500	LF	\$35.00	\$18,000
5	Concrete Sidewalk	-	LF	\$30.00	\$0
6	Median Curb and Decorative Concrete	400	LF	\$25.00	\$10,000
7	Median Landscaping	-	LF	\$50.00	\$0
8	Signing and Pavement Marking	1,200	LF	\$15.00	\$18,000
9	Traffic Handling/Stage Construction	1	LS	\$50,000.00	\$50,000
10	Remove Median	-	CY	\$200.00	\$0
11	Signalize Intersection (Modification)	1	EA	\$50,000.00	\$50,000
12	Relocate Utilities	500	LF	\$50.00	\$25,000
<b>Estimated Construction Cost Subtotal</b>					<b>\$210,000</b>
Miscellaneous Items (15% of Estimated Construction Cost Subtotal)					\$32,000
<b>ESTIMATED CONSTRUCTION COST TOTAL</b>					<b>\$250,000</b>
Design Engineering (15% of Estimated Construction Cost Total)					\$38,000
Construction Management (10% of Estimated Construction Cost Total)					\$25,000
Overhead and Administration (5% of Estimated Construction Cost Total)					\$13,000
Contingencies (10% of Estimated Construction Cost Total)					\$25,000
<b>ENGINEERING AND ADMINISTRATION TOTAL</b>					<b>\$360,000</b>
		<b>Quantity</b>	<b>Units</b>	<b>Amount</b>	<b>Total</b>
	<b>Right of Way Acquisition</b>	-	SF	\$4.00	\$0.00
	Building Acquisition	0	EA	\$500,000.00	\$0.00
<b>Estimated Right-Of-Way Cost Subtotal</b>					<b>\$0.00</b>
<b>Contingencies, Appraisals and Negotiations (20% of Estimated R.O.W. Cost Subtotal)</b>					<b>\$0.00</b>
<b>ESTIMATED RIGHT-OF-WAY COST TOTAL</b>					<b>\$0.00</b>
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$360,000.00</b>

**Notes:**

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Foothill Blvd and Grove Way**

Project Description: Add eastbound left turn lane if feasible. Optimize signal timing

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
1	Remove Signing and Pavement Markings	400	LF	\$5.00	\$2,000
2	Roadway Excavation - 11" Full Depth Section	1,500	SF	\$0.75	\$2,000
3	New Pavement - 11" Full Depth AC	1,500	SF	\$6.00	\$9,000
4	Concrete Curb & Gutter	400	LF	\$35.00	\$14,000
5	Concrete Sidewalk	400	LF	\$30.00	\$12,000
6	Median Curb and Decorative Concrete	-	LF	\$25.00	\$0
7	Median Landscaping	-	LF	\$50.00	\$0
8	Signing and Pavement Marking	600	LF	\$15.00	\$9,000
9	Traffic Handling/Stage Construction	1	LS	\$50,000.00	\$50,000
10	Remove Median	-	CY	\$200.00	\$0
11	Signalize Intersection (Modification)	1	EA	\$30,000.00	\$30,000
12	Relocate Utilities	400	LF	\$50.00	\$20,000
<b>Estimated Construction Cost Subtotal</b>					<b>\$150,000</b>
Miscellaneous Items (15% of Estimated Construction Cost Subtotal)					\$23,000
<b>ESTIMATED CONSTRUCTION COST TOTAL</b>					<b>\$180,000</b>
Design Engineering (15% of Estimated Construction Cost Total)					\$27,000
Construction Management (10% of Estimated Construction Cost Total)					\$18,000
Overhead and Administration (5% of Estimated Construction Cost Total)					\$9,000
Contingencies (10% of Estimated Construction Cost Total)					\$18,000
<b>ENGINEERING AND ADMINISTRATION TOTAL</b>					<b>\$260,000</b>
		<b>Quantity</b>	<b>Units</b>	<b>Amount</b>	<b>Total</b>
	<b>Right of Way Acquisition</b>	1	LS	\$75,000.00	\$75,000.00
	Building Acquisition	-	EA	\$500,000.00	\$0.00
<b>Estimated Right-Of-Way Cost Subtotal</b>					<b>\$75,000.00</b>
<b>Contingencies, Appraisals and Negotiations (20% of Estimated R.O.W. Cost Subtotal)</b>					<b>\$15,000.00</b>
<b>ESTIMATED RIGHT-OF-WAY COST TOTAL</b>					<b>\$90,000.00</b>
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$350,000.00</b>
<b>Notes:</b>					

# MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN

## ENGINEERING DIVISION

### DRAFT DELIVERABLE 4-D

**Project Name:** Hopyard Road and Owens Drive

Project Description: Add eastbound and westbound left turn lanes, change east-west phasing to protected left-turn phasing.

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
1	Remove Signing and Pavement Markings	500	LF	\$5.00	\$3,000
2	Roadway Excavation - 11" Full Depth Section	5,000	SF	\$0.75	\$4,000
3	New Pavement - 11" Full Depth AC	5,000	SF	\$22.50	\$113,000
4	Concrete Curb & Gutter	-	LF	\$35.00	\$0
5	Concrete Sidewalk	-	LF	\$30.00	\$0
6	Median Curb and Decorative Concrete	150	LF	\$25.00	\$4,000
7	Median Landscaping	-	LF	\$50.00	\$0
8	Signing and Pavement Marking	100	LF	\$15.00	\$2,000
9	Traffic Handling/Stage Construction	1	LS	\$50,000.00	\$50,000
10	Remove Median	-	CY	\$200.00	\$0
11	Signalize Intersection (Modification)	1	EA	\$50,000.00	\$50,000
12	Relocate Utilities	500	LF	\$50.00	\$25,000
<b>Estimated Construction Cost Subtotal</b>					<b>\$260,000</b>
Miscellaneous Items (15% of Estimated Construction Cost Subtotal)					\$39,000
<b>ESTIMATED CONSTRUCTION COST TOTAL</b>					<b>\$300,000</b>
Design Engineering (15% of Estimated Construction Cost Total)					\$45,000
Construction Management (10% of Estimated Construction Cost Total)					\$30,000
Overhead and Administration (5% of Estimated Construction Cost Total)					\$15,000
Contingencies (10% of Estimated Construction Cost Total)					\$30,000
<b>ENGINEERING AND ADMINISTRATION TOTAL</b>					<b>\$420,000</b>
		<b>Quantity</b>	<b>Units</b>	<b>Amount</b>	<b>Total</b>
	<b>Right of Way Acquisition</b>	-	SF	\$4.00	\$0.00
	Building Acquisition	0	EA	\$500,000.00	\$0.00
<b>Estimated Right-Of-Way Cost Subtotal</b>					<b>\$0.00</b>
<b>Contingencies, Appraisals and Negotiations (20% of Estimated R.O.W. Cost Subtotal)</b>					<b>\$0.00</b>
<b>ESTIMATED RIGHT-OF-WAY COST TOTAL</b>					<b>\$0.00</b>
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$420,000.00</b>

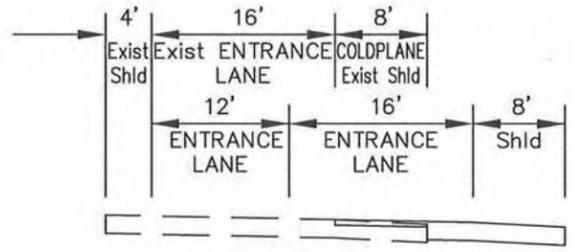
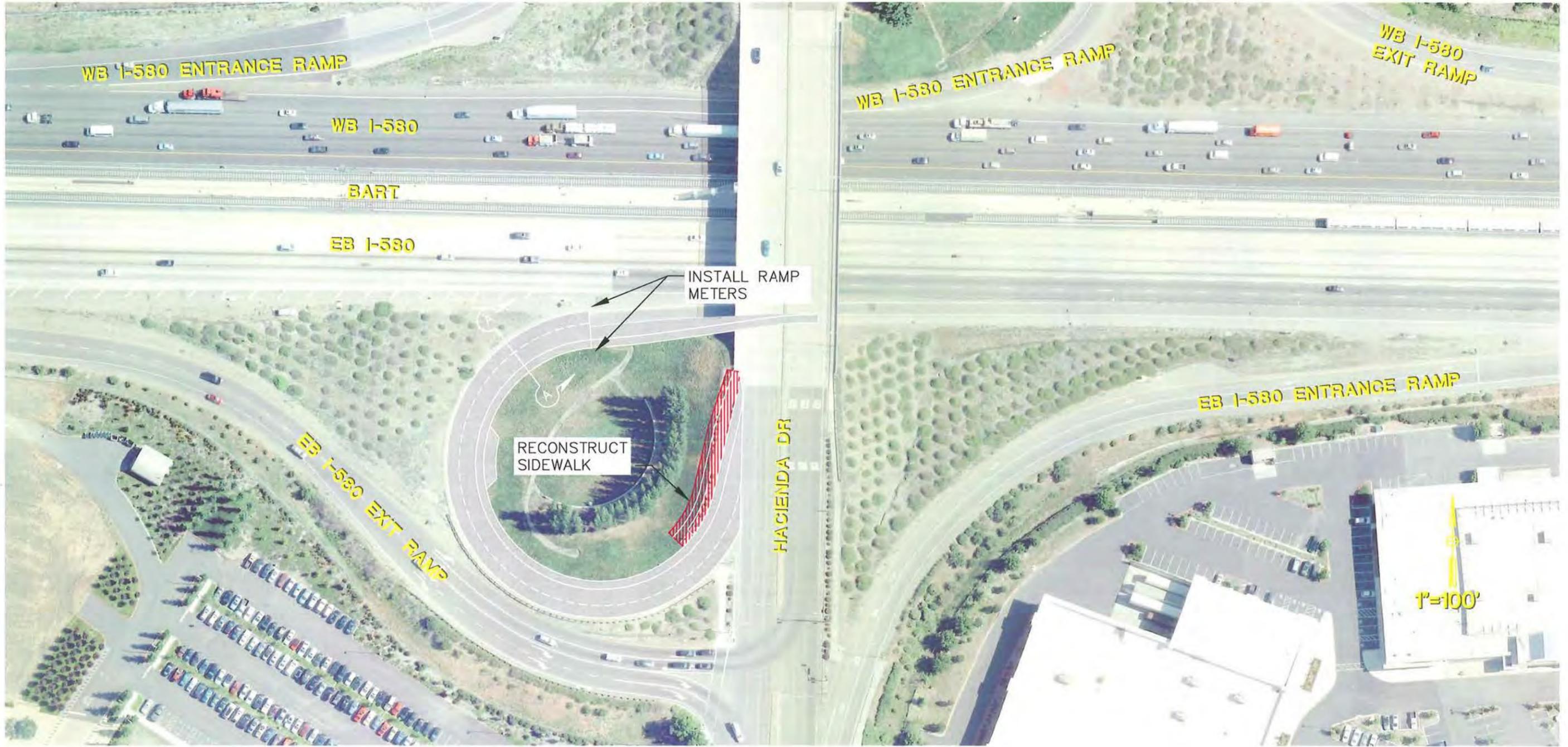
**Notes:**

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name:** N Vasco Road and Northfront Road

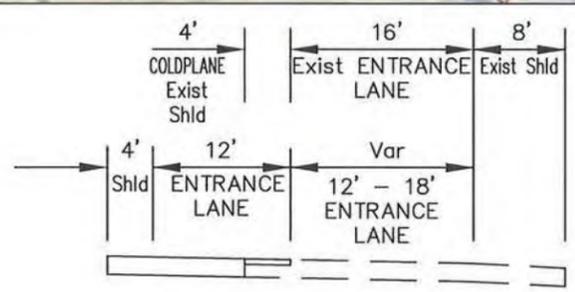
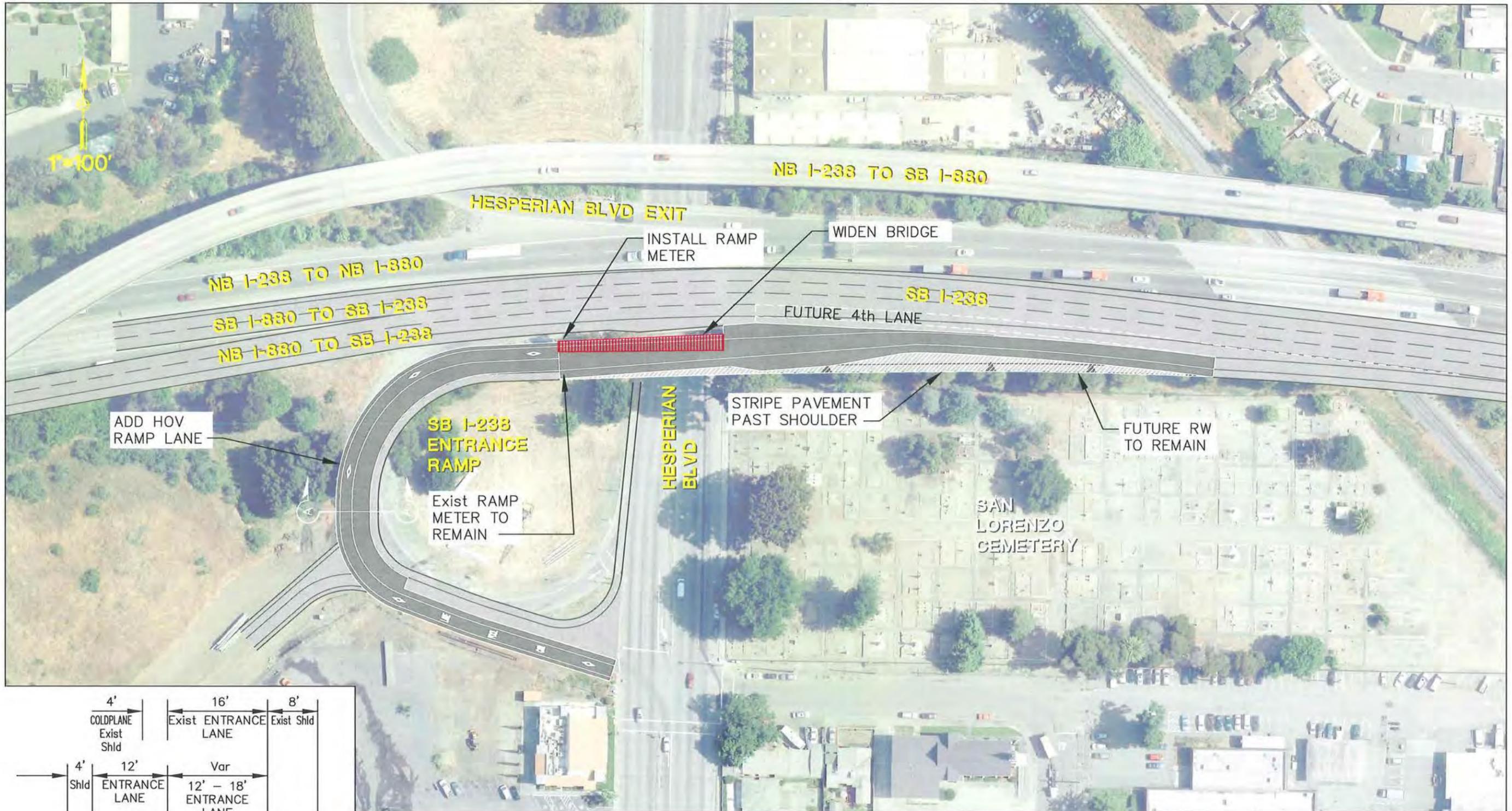
Project Description: Add eastbound right turn lane. Optimize signal timing.

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
1	Remove Signing and Pavement Markings	150	LF	\$5.00	\$1,000
2	Roadway Excavation - 11" Full Depth Section	4,500	SF	\$0.75	\$4,000
3	New Pavement - 11" Full Depth AC	4,500	SF	\$6.00	\$27,000
4	Concrete Curb & Gutter	200	LF	\$35.00	\$7,000
5	Concrete Sidewalk	200	LF	\$30.00	\$6,000
6	Median Curb and Decorative Concrete	-	LF	\$25.00	\$0
7	Median Landscaping	-	LF	\$50.00	\$0
8	Signing and Pavement Marking	200	LF	\$15.00	\$3,000
9	Traffic Handling/Stage Construction	1	LS	\$50,000.00	\$50,000
10	Remove Median	-	CY	\$200.00	\$0
11	Signalize Intersection (Modification)	1	EA	\$50,000.00	\$50,000
12	Relocate Utilities	200	LF	\$50.00	\$10,000
<b>Estimated Construction Cost Subtotal</b>					<b>\$160,000</b>
Miscellaneous Items (15% of Estimated Construction Cost Subtotal)					\$24,000
<b>ESTIMATED CONSTRUCTION COST TOTAL</b>					<b>\$190,000</b>
Design Engineering (15% of Estimated Construction Cost Total)					\$29,000
Construction Management (10% of Estimated Construction Cost Total)					\$19,000
Overhead and Administration (5% of Estimated Construction Cost Total)					\$10,000
Contingencies (10% of Estimated Construction Cost Total)					\$19,000
<b>ENGINEERING AND ADMINISTRATION TOTAL</b>					<b>\$270,000</b>
		<b>Quantity</b>	<b>Units</b>	<b>Amount</b>	<b>Total</b>
	<b>Right of Way Acquisition</b>	1	LS	\$100,000.00	\$100,000.00
	Building Acquisition	-	EA	\$500,000.00	\$0.00
<b>Estimated Right-Of-Way Cost Subtotal</b>					<b>\$100,000.00</b>
<b>Contingencies, Appraisals and Negotiations (20% of Estimated R.O.W. Cost Subtotal)</b>					<b>\$20,000.00</b>
<b>ESTIMATED RIGHT-OF-WAY COST TOTAL</b>					<b>\$120,000.00</b>
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$390,000.00</b>
<b>Notes:</b>					



SECTION A-A

RECOMMENDED SHORT TERM IMPROVEMENTS



SECTION A-A

RECOMMENDED SHORT TERM IMPROVEMENTS



**RECOMMENDED SHORT TERM IMPROVEMENTS**



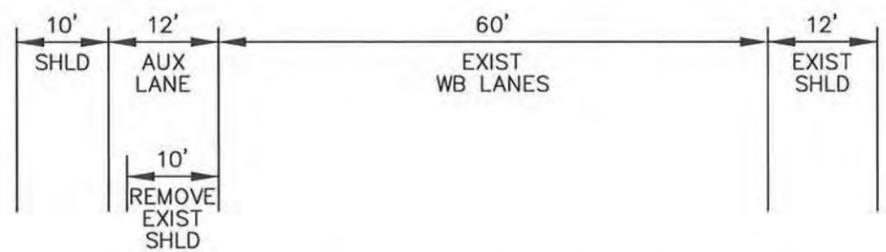
MATCH LINE - SEE BELOW

RAMP TO BE REMOVED  
ISABEL RD INTERCHANGE PROJECT



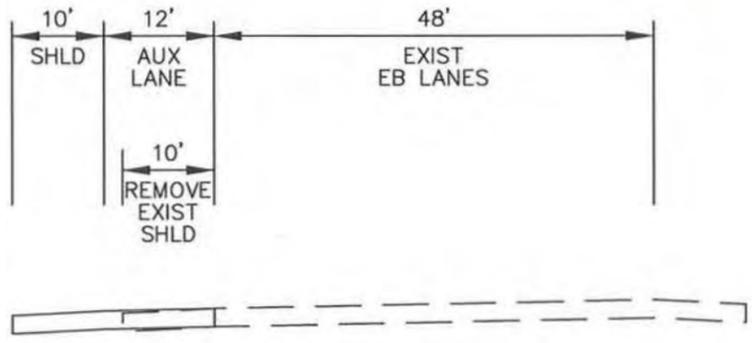
MATCH LINE - SEE ABOVE

MATCH LINE - SEE SHT 2



SECTION A-A

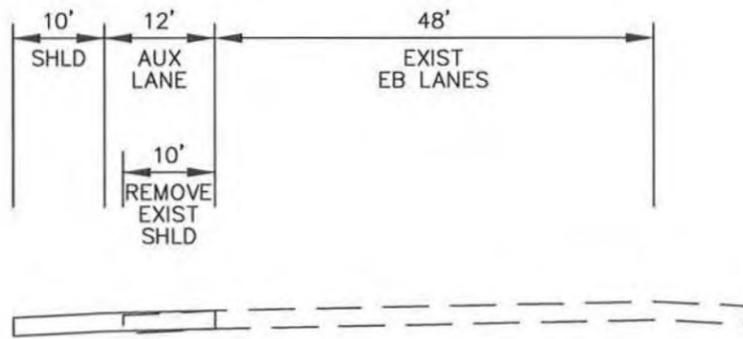
RECOMMENDED SHORT TERM IMPROVEMENTS



SECTION B-B

RECOMMENDED SHORT TERM IMPROVEMENTS

MATCH LINE - SEE SHT 2



SECTION B-B

RECOMMENDED SHORT TERM IMPROVEMENTS

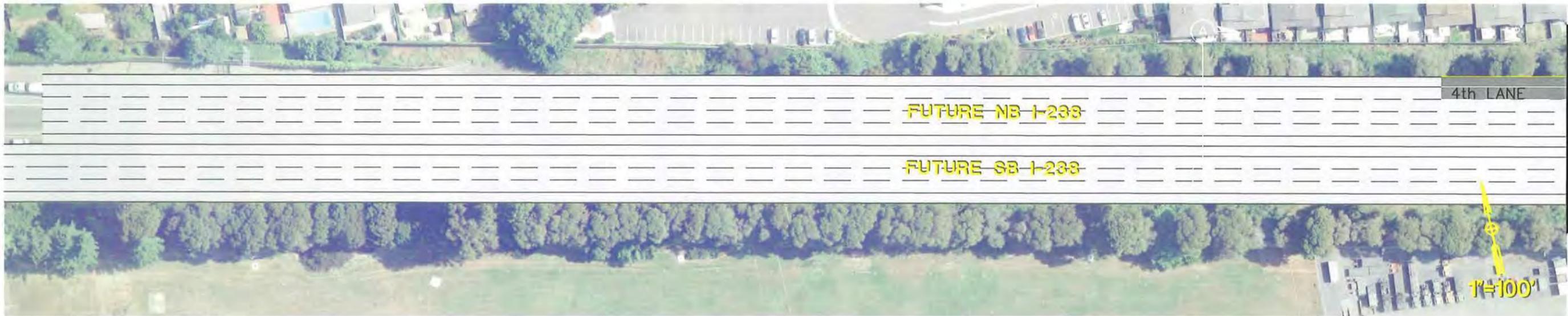


**MARK THOMAS & COMPANY, INC.**  
 Providing Engineering, Surveying, and Planning Services  
 5000 Hopyard Road, Suite 315  
 Pleasanton, CA 94588 925/417-8000

CALTRANS / MTC  
 I-580 CORRIDOR SYSTEM MANAGEMENT PLAN / FREEWAY PERFORMANCE INITIATIVE  
 SCHEMATIC PLANS FOR ALTERNATIVES ANALYSIS

I-580 WB AUXILIARY LANE FROM FIRST ST TO ISABEL AVE

PROJECT #9  
 SHEET 3 OF 3

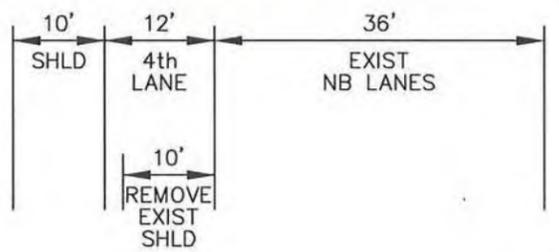


MATCH LINE - SEE BELOW



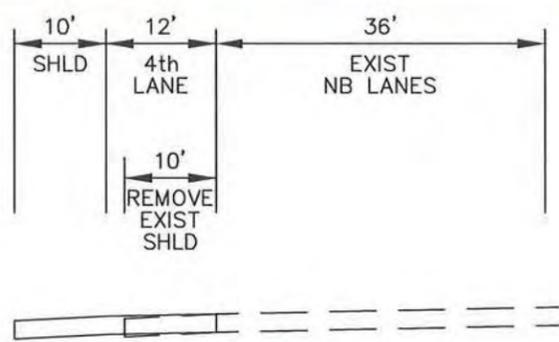
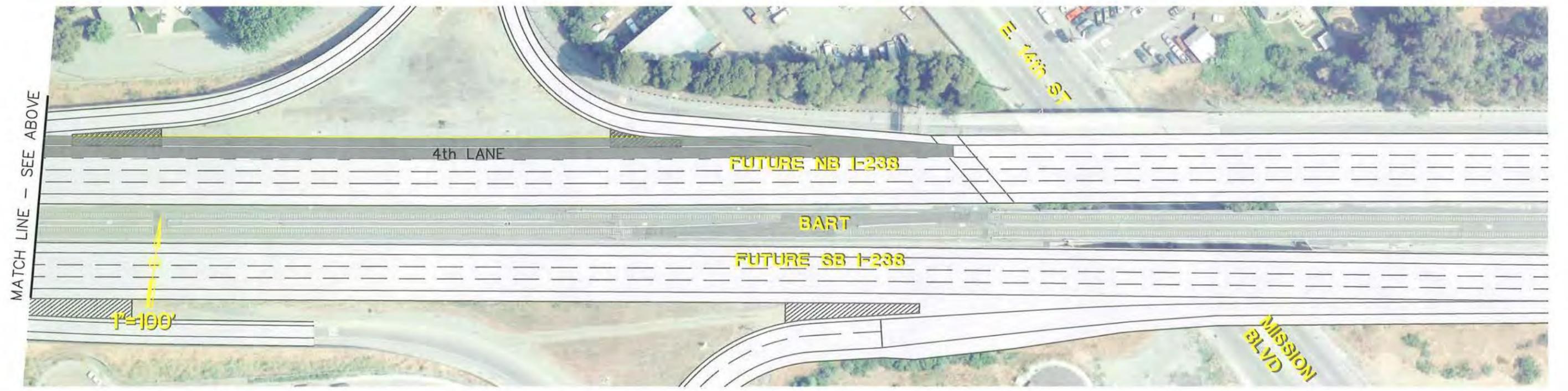
MATCH LINE - SEE ABOVE

MATCH LINE - SEE SHT 2

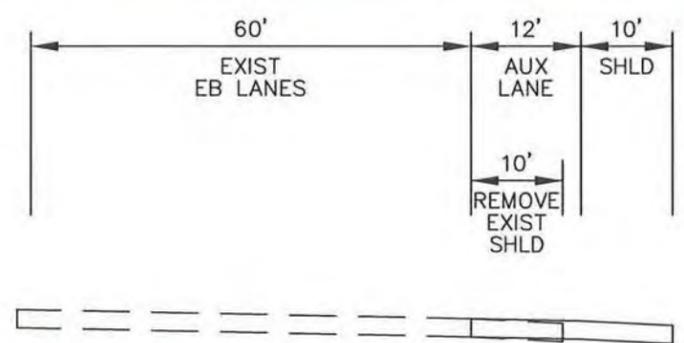
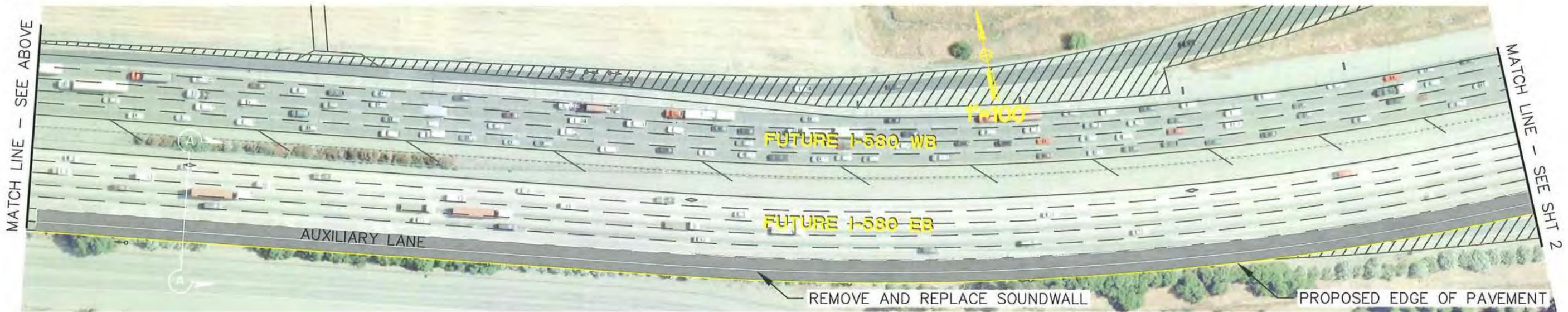


SECTION A-A

RECOMMENDED SHORT TERM IMPROVEMENTS

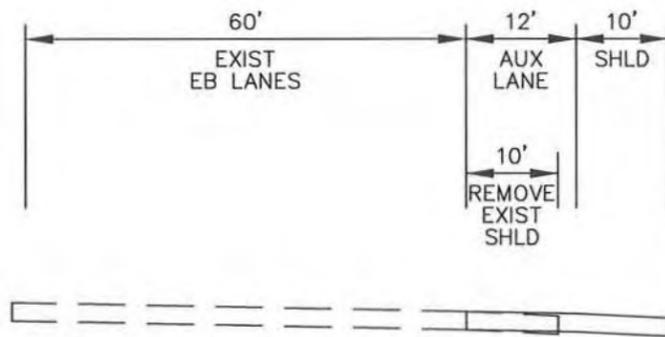
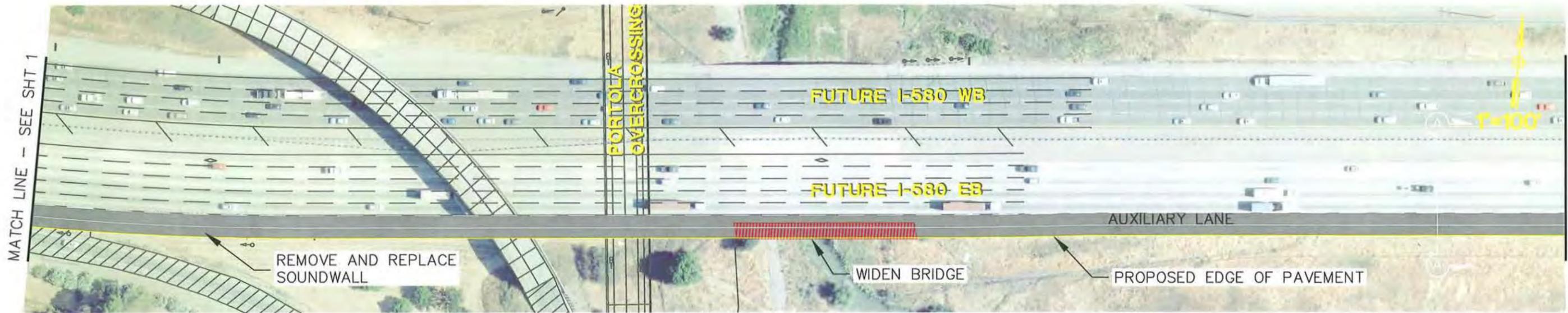


RECOMMENDED SHORT TERM IMPROVEMENTS



SECTION A-A

RECOMMENDED SHORT TERM IMPROVEMENTS



SECTION A-A

RECOMMENDED SHORT TERM IMPROVEMENTS

# MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN

## ENGINEERING DIVISION

### DRAFT DELIVERABLE 4-D

**Project Name: Exhibit 2: Recommended Long Term Improvements**

Project Number: 1a

Project Description: Extend Single HOT lanes: WB between I-680 and Redwood Road

Roadway Items:	Quantity	Unit	March 2009 Estimate		Total
			Unit Cost	Extended	
Roadway excavation	145,000	CY	\$ 15	\$ 2,175,000	
Remove Pavement	61,800	SY	\$ 50	\$ 3,090,000	
Remove Barrier	550	LF	\$ 15	\$ 9,000	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	429,000	SF	\$ 15	\$ 6,435,000	
New Pavement - PCC	647,500	SF	\$ 25	\$ 16,188,000	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	-	SF	\$ 2	\$ -	
Storm drain	1	LS	\$ 332,700	\$ 333,000	
Sound wall	5,500	SF	\$ 16	\$ 88,000	
Retaining wall	550	LF	\$ 900	\$ 495,000	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 332,700	\$ 333,000	
Concrete Barrier	550	LF	\$ 80	\$ 44,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 2,519,000	\$ 2,519,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	-	LS	\$ 150,000	\$ -	
Signing & Striping	1	LS	\$ 332,700	\$ 333,000	
Minor & Misc. items (10%)	1	LS	\$ 3,215,000	\$ 3,215,000	
Roadway Additions (10%)	1	LS	\$ 3,215,000	\$ 3,215,000	
Mobilization (10%)	1	LS	\$ 3,215,000	\$ 3,215,000	
Contingency (25%)	1	LS	\$ 8,036,000	\$ 8,036,000	
<b>Roadway Subtotal</b>					<b>\$ 49,830,000</b>
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
WB I-580 Redwood Rd UC	829	SF	\$ 120	\$ 100,000	
WB I-580 Crow Creek Bridge	6,582	SF	\$ 120	\$ 790,000	
WB I-580 Crow Canyon Rd UC	2,654	SF	\$ 120	\$ 319,000	
WB I-580 San Lorenzo Creek UC	22,973	SF	\$ 120	\$ 2,757,000	
WB I-580 E Castro Valley Blvd UC	16,870	SF	\$ 120	\$ 2,025,000	
WB I-580 Eden Canyon Rd UC	2,630	SF	\$ 120	\$ 316,000	
WB I-580 Schaefer Ranch Rd UC	3,685	SF	\$ 120	\$ 443,000	
<b>Structure Subtotal</b>					<b>\$ 6,750,000</b>
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					<b>\$ 500,000</b>
<b>Subtotal "Hard Costs"</b>					<b>\$ 57,080,000</b>
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 3,425,000	\$ 3,425,000	
Design/Acquisition (13%)	1	LS	\$ 7,421,000	\$ 7,421,000	
Construction Administration (8%)	1	LS	\$ 4,567,000	\$ 4,567,000	
Construction Staking (2%)	1	LS	\$ 1,142,000	\$ 1,142,000	
Legal (Est) (1%)	1	LS	\$ 571,000	\$ 571,000	
<b>Subtotal "Soft Costs"</b>					<b>\$ 17,130,000</b>
<b>Grand Total</b>					<b>\$ 74,210,000</b>

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**

**ENGINEERING DIVISION**

**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 2: Recommended Long Term Improvements**

Project Number: 1b

Project Description: Extend Single HOT lanes: EB between Redwood Road and Hacienda

			March 2009 Estimate		
Roadway Items:	Quantity	Unit	Unit Cost	Extended	Total
Roadway excavation	267,000	CY	\$ 15	\$ 4,005,000	
Remove Pavement	92,350	SY	\$ 50	\$ 4,618,000	
Remove Barrier	560	LF	\$ 15	\$ 9,000	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	532,200	SF	\$ 15	\$ 7,983,000	
New Pavement - PCC	1,368,200	SF	\$ 25	\$ 34,205,000	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	-	SF	\$ 2	\$ -	
Storm drain	1	LS	\$ 620,500	\$ 621,000	
Sound wall	5,600	SF	\$ 16	\$ 90,000	
Retaining wall	560	LF	\$ 900	\$ 504,000	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 620,500	\$ 621,000	
Concrete Barrier	560	LF	\$ 80	\$ 45,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 2,921,000	\$ 2,921,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	-	LS	\$ 150,000	\$ -	
Signing & Striping	1	LS	\$ 620,500	\$ 621,000	
Minor & Misc. items (10%)	1	LS	\$ 5,635,000	\$ 5,635,000	
Roadway Additions (10%)	1	LS	\$ 5,635,000	\$ 5,635,000	
Mobilization (10%)	1	LS	\$ 5,635,000	\$ 5,635,000	
Contingency (25%)	1	LS	\$ 14,086,000	\$ 14,086,000	
<b>Roadway Subtotal</b>					<b>\$ 87,340,000</b>
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
EB I-580 Redwood Rd	1,763	SF	\$ 120	\$ 212,000	
EB I-580 Crow Creek Bridge	5,719	SF	\$ 120	\$ 687,000	
EB I-580 Crow Canyon Rd UC	3,226	SF	\$ 120	\$ 388,000	
EB I-580 San Lorenzo Creek UC	8,100	SF	\$ 120	\$ 972,000	
EB I-580 San Lorenzo Creek UC	11,760	SF	\$ 120	\$ 1,412,000	
EB I-580 E Castro Valley Blvd UC	12,618	SF	\$ 120	\$ 1,515,000	
EB I-580 Eden Canyon Rd UC	3,860	SF	\$ 120	\$ 464,000	
EB I-580 Schaefer Ranch Rd UC	3,061	SF	\$ 120	\$ 368,000	
<b>Structure Subtotal</b>					<b>\$ 6,020,000</b>
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					<b>\$ 500,000</b>
<b>Subtotal "Hard Costs"</b>					<b>\$ 93,860,000</b>
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 5,632,000	\$ 5,632,000	
Design/Acquisition (13%)	1	LS	\$ 12,202,000	\$ 12,202,000	
Construction Administration (8%)	1	LS	\$ 7,509,000	\$ 7,509,000	
Construction Staking (2%)	1	LS	\$ 1,878,000	\$ 1,878,000	
Legal (Est) (1%)	1	LS	\$ 939,000	\$ 939,000	
<b>Subtotal "Soft Costs"</b>					<b>\$ 28,160,000</b>
<b>Grand Total</b>					<b>\$ 122,020,000</b>

# MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN

## ENGINEERING DIVISION

### DRAFT DELIVERABLE 4-D

<b>Project Name: Exhibit 2: Recommended Long Term Improvements</b>
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Project Number: 1c

Project Description: Extend Single HOT lanes: WB between I-205/Mountain House Parkway and Greenville Road

			March 2009 Estimate		
Roadway Items:	Quantity	Unit	Unit Cost	Extended	Total
Roadway excavation	171,800	CY	\$ 15	\$ 2,577,000	
Remove Pavement	93,600	SY	\$ 50	\$ 4,680,000	
Remove Barrier	-	LF	\$ 15	\$ -	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	1,490,000	SF	\$ 15	\$ 22,350,000	
New Pavement - PCC	102,400	SF	\$ 25	\$ 2,560,000	
Coldplane HMA Pavement	5,200	SY	\$ 8	\$ 42,000	
Hot Mix Asphalt (2" Overlay)	46,800	SF	\$ 2	\$ 94,000	
Storm drain	1	LS	\$ 366,400	\$ 367,000	
Sound wall	-	SF	\$ 16	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 366,400	\$ 367,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 2,646,000	\$ 2,646,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	-	LS	\$ 150,000	\$ -	
Signing & Striping	1	LS	\$ 366,400	\$ 367,000	
Minor & Misc. items (10%)	1	LS	\$ 3,615,000	\$ 3,615,000	
Roadway Additions (10%)	1	LS	\$ 3,615,000	\$ 3,615,000	
Mobilization (10%)	1	LS	\$ 3,615,000	\$ 3,615,000	
Contingency (25%)	1	LS	\$ 9,038,000	\$ 9,038,000	
<b>Roadway Subtotal</b>					<b>\$ 56,040,000</b>
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
WB I-580 Greenville Overhead	6,694	SF	\$ 120	\$ 804,000	
WB I-580 Altamont Sidehill Viaduct	25,869	SF	\$ 120	\$ 3,105,000	
WB I-580 Grant Line Rd UC	1,480	SF	\$ 120	\$ 178,000	
WB I-580 Midway Rd UC	4,528	SF	\$ 120	\$ 544,000	
WB I-205 California Aqueduct	4,894	SF	\$ 120	\$ 588,000	
WB I-205 Aqueduct Service Rd UC	3,540	SF	\$ 120	\$ 425,000	
WB I-205 Delta Mendota Canal	4,877	SF	\$ 120	\$ 586,000	
WB I-205 Patterson Pass Rd OC	7,451	SF	\$ 120	\$ 895,000	
<b>Structure Subtotal</b>					<b>\$ 7,130,000</b>
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					<b>\$ 500,000</b>
<b>Subtotal "Hard Costs"</b>					<b>\$ 63,670,000</b>
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 3,821,000	\$ 3,821,000	
Design/Acquisition (13%)	1	LS	\$ 8,278,000	\$ 8,278,000	
Construction Administration (8%)	1	LS	\$ 5,094,000	\$ 5,094,000	
Construction Staking (2%)	1	LS	\$ 1,274,000	\$ 1,274,000	
Legal (Est) (1%)	1	LS	\$ 637,000	\$ 637,000	
<b>Subtotal "Soft Costs"</b>					<b>\$ 19,110,000</b>
<b>Grand Total</b>					<b>\$ 82,780,000</b>

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 2: Recommended Long Term Improvements**

Project Number: 1d

Project Description: Extend Single HOT lanes: EB between Greenville Road and I-205/ Mountain House Parkway

Roadway Items:	Quantity	Unit	March 2009 Estimate		Total
			Unit Cost	Extended	
Roadway excavation	190,800	CY	\$ 15	\$ 2,862,000	
Remove Pavement	82,000	SY	\$ 50	\$ 4,100,000	
Remove Barrier	-	LF	\$ 15	\$ -	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	791,500	SF	\$ 15	\$ 11,873,000	
New Pavement - PCC	698,000	SF	\$ 25	\$ 17,450,000	
Coldplane HMA Pavement	8,400	SY	\$ 8	\$ 68,000	
Hot Mix Asphalt (2" Overlay)	75,100	SF	\$ 2	\$ 151,000	
Storm drain	1	LS	\$ 431,300	\$ 432,000	
Sound wall	-	SF	\$ 16	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ 431,300	\$ 432,000	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 2,646,000	\$ 2,646,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	-	LS	\$ 150,000	\$ -	
Signing & Striping	1	LS	\$ 431,300	\$ 432,000	
Minor & Misc. items (10%)	1	LS	\$ 4,055,000	\$ 4,055,000	
Roadway Additions (10%)	1	LS	\$ 4,055,000	\$ 4,055,000	
Mobilization (10%)	1	LS	\$ 4,055,000	\$ 4,055,000	
Contingency (25%)	1	LS	\$ 10,137,000	\$ 10,137,000	
<b>Roadway Subtotal</b>					<b>\$ 62,850,000</b>
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
EB I-580 Greenville Overhead	3,154	SF	\$ 120	\$ 379,000	
EB I-580 Stone Cut Underpass	6,230	SF	\$ 120	\$ 748,000	
EB I-580 Stone Cut Overhead	2,994	SF	\$ 120	\$ 360,000	
EB I-580 Grant Line Rd UC	1,942	SF	\$ 120	\$ 234,000	
EB I-205 California Aqueduct	3,600	SF	\$ 120	\$ 432,000	
EB I-205 Aqueduct Service Rd UC	2,833	SF	\$ 120	\$ 340,000	
EB I-205 Delta Mendota Canal	5,264	SF	\$ 120	\$ 632,000	
<b>Structure Subtotal</b>					<b>\$ 3,130,000</b>
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					<b>\$ 500,000</b>
<b>Subtotal "Hard Costs"</b>					<b>\$ 66,480,000</b>
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 3,989,000	\$ 3,989,000	
Design/Acquisition (13%)	1	LS	\$ 8,643,000	\$ 8,643,000	
Construction Administration (8%)	1	LS	\$ 5,319,000	\$ 5,319,000	
Construction Staking (2%)	1	LS	\$ 1,330,000	\$ 1,330,000	
Legal (Est) (1%)	1	LS	\$ 665,000	\$ 665,000	
<b>Subtotal "Soft Costs"</b>					<b>\$ 19,950,000</b>
<b>Grand Total</b>					<b>\$ 86,430,000</b>

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 2: Recommended Long Term Improvements**

Project Number: 2a

Project Description: Extend Dual HOT lanes: WB between Santa Rita and I-680

Roadway Items:	Quantity	Unit	March 2009 Estimate		Total
			Unit Cost	Extended	
Roadway excavation	-	CY	\$ 15	\$ -	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	-	LF	\$ 15	\$ -	
Clearing and Grubbing	-	LS	\$ -	\$ -	
Develop water supply	-	LS	\$ -	\$ -	
New Pavement - HMA	-	SF	\$ 15	\$ -	
New Pavement - PCC	-	SF	\$ 25	\$ -	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	-	SF	\$ 2	\$ -	
Storm drain	-	LS	\$ -	\$ -	
Sound wall	-	SF	\$ 16	\$ -	
Retaining wall	-	LF	\$ 900	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	-	LS	\$ -	\$ -	
Concrete Barrier	-	LF	\$ 80	\$ -	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 1,609,000	\$ 1,609,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	-	LS	\$ 150,000	\$ -	
Signing & Striping	1	LS	\$ 295,000	\$ 295,000	
Minor & Misc. items (10%)	1	LS	\$ 190,400	\$ 190,400	
Roadway Additions (10%)	1	LS	\$ 190,400	\$ 190,400	
Mobilization (10%)	1	LS	\$ 190,400	\$ 190,400	
Contingency (25%)	1	LS	\$ 476,000	\$ 476,000	
<b>Roadway Subtotal</b>					\$ 2,951,200
<b>Structure items:</b>	quantity	unit	unit cost	extended	total
		SF	\$ 120	\$ -	
<b>Structure Subtotal</b>					\$ -
<b>Right of way Items:</b>	quantity	unit	unit cost	extended	total
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	1	LS	\$ -	\$ -	
<b>Right of way subtotal</b>					\$ -
<b>Subtotal "Hard Costs"</b>					\$ 2,951,200
<b>Soft Costs</b>	quantity	unit	unit cost	extended	total
Preliminary Eng/Envir (6%)	1	LS	\$ 177,072	\$ 177,072	
Design/Acquisition (13%)	1	LS	\$ 383,656	\$ 383,656	
Construction Administration (8%)	1	LS	\$ 236,096	\$ 236,096	
Construction Staking (2%)	1	LS	\$ 59,024	\$ 59,024	
Legal (Est) (1%)	1	LS	\$ 29,512	\$ 29,512	
<b>Subtotal "Soft Costs"</b>					\$ 885,360
<b>Grand Total</b>					\$ 3,836,560

**MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN**  
**ENGINEERING DIVISION**  
**DRAFT DELIVERABLE 4-D**

**Project Name: Exhibit 2: Recommended Long Term Improvements**

Project Number: 2b

Project Description: Extend Dual HOT lanes: EB between First St and Vasco Road

March 2009 Estimate

<b>Roadway Items:</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extended</b>	<b>Total</b>
Roadway excavation	-	CY	\$ 15	\$ -	
Remove Pavement	-	SY	\$ 50	\$ -	
Remove Barrier	-	LF	\$ 15	\$ -	
Clearing and Grubbing	1	LS	\$ 75,000	\$ 75,000	
Develop water supply	1	LS	\$ 25,000	\$ 25,000	
New Pavement - HMA	-	SF	\$ 15	\$ -	
New Pavement - PCC	-	SF	\$ 25	\$ -	
Coldplane HMA Pavement	-	SY	\$ 8	\$ -	
Hot Mix Asphalt (2" Overlay)	-	SF	\$ 2	\$ -	
Storm drain	1	LS	\$ -	\$ -	
Sound wall	-	SF	\$ 16	\$ -	
Landscape/Irrigation	-	SF	\$ 6	\$ -	
Erosion control	1	LS	\$ -	\$ -	
Minor concrete	-	CY	\$ 250	\$ -	
Ramp Metering	-	EA	\$ 75,000	\$ -	
Electronic Toll Collection	1	LS	\$ 1,059,000	\$ 1,059,000	
Traffic Signal (New)	-	EA	\$ 175,000	\$ -	
Street lighting	1	LS	\$ 150,000	\$ 150,000	
Signing & Striping	1	LS	\$ 153,000	\$ 153,000	
Minor & Misc. items (10%)	1	LS	\$ 147,000	\$ 147,000	
Roadway Additions (10%)	1	LS	\$ 147,000	\$ 147,000	
Mobilization (10%)	1	LS	\$ 147,000	\$ 147,000	
Contingency (25%)	1	LS	\$ 366,000	\$ 366,000	
<b>Roadway Subtotal</b>					<b>\$ 2,270,000</b>
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
NAME OF BRIDGE	-	SF	\$ 120	\$ -	
<b>Structure Subtotal</b>					<b>\$ -</b>
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	-	LS	\$ 500,000	\$ 500,000	
<b>Right of way subtotal</b>					<b>\$ 500,000</b>
<b>Subtotal "Hard Costs"</b>					<b>\$ 2,770,000</b>
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 167,000	\$ 167,000	
Design/Acquisition (13%)	1	LS	\$ 361,000	\$ 361,000	
Construction Administration (8%)	1	LS	\$ 222,000	\$ 222,000	
Construction Staking (2%)	1	LS	\$ 56,000	\$ 56,000	
Legal (Est) (1%)	1	LS	\$ 28,000	\$ 28,000	
<b>Subtotal "Soft Costs"</b>					<b>\$ 840,000</b>
<b>Grand Total</b>					<b>\$ 3,610,000</b>

# MTC/CALTRANS I-580 CORRIDOR SYSTEMS MANAGEMENT PLAN

## ENGINEERING DIVISION

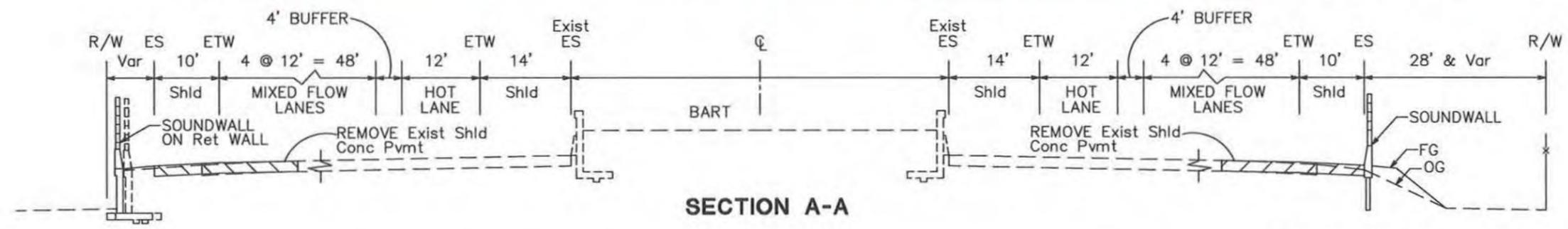
### DRAFT DELIVERABLE 4-D

<b>Project Name: Exhibit 2: Recommended Long Term Improvements</b>
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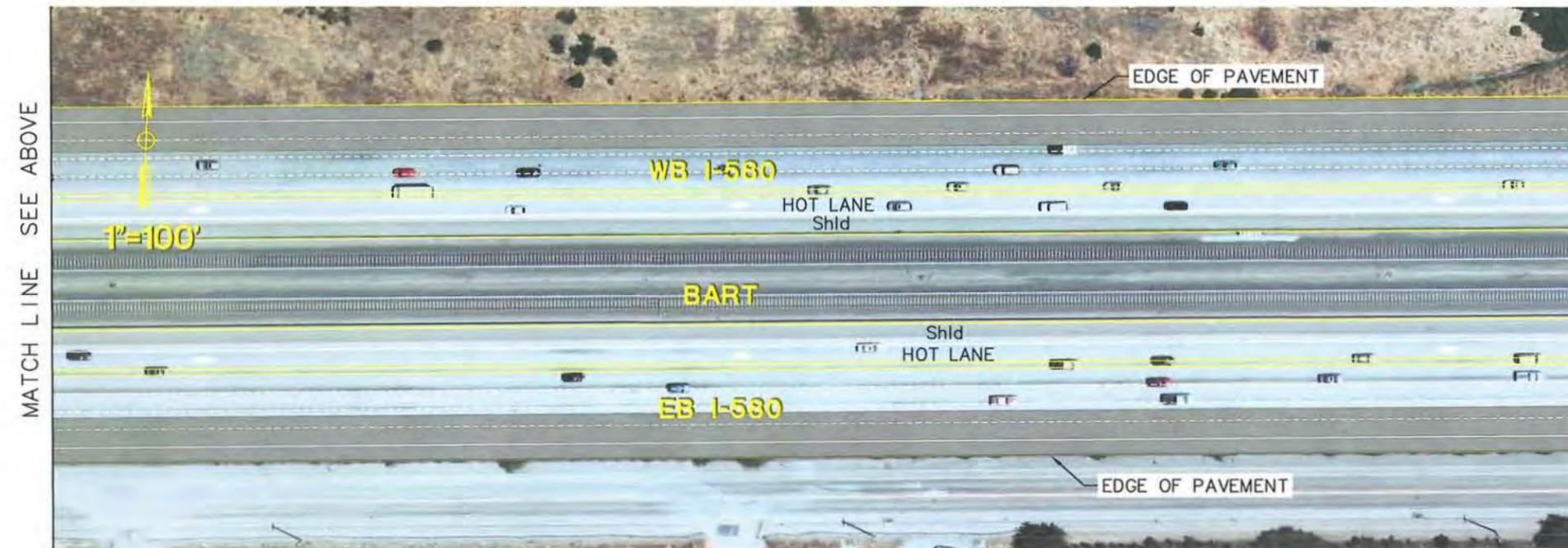
Project Number: 16

Project Description: Double Track Union Pacific (ACE) rail line Tracy to Livermore

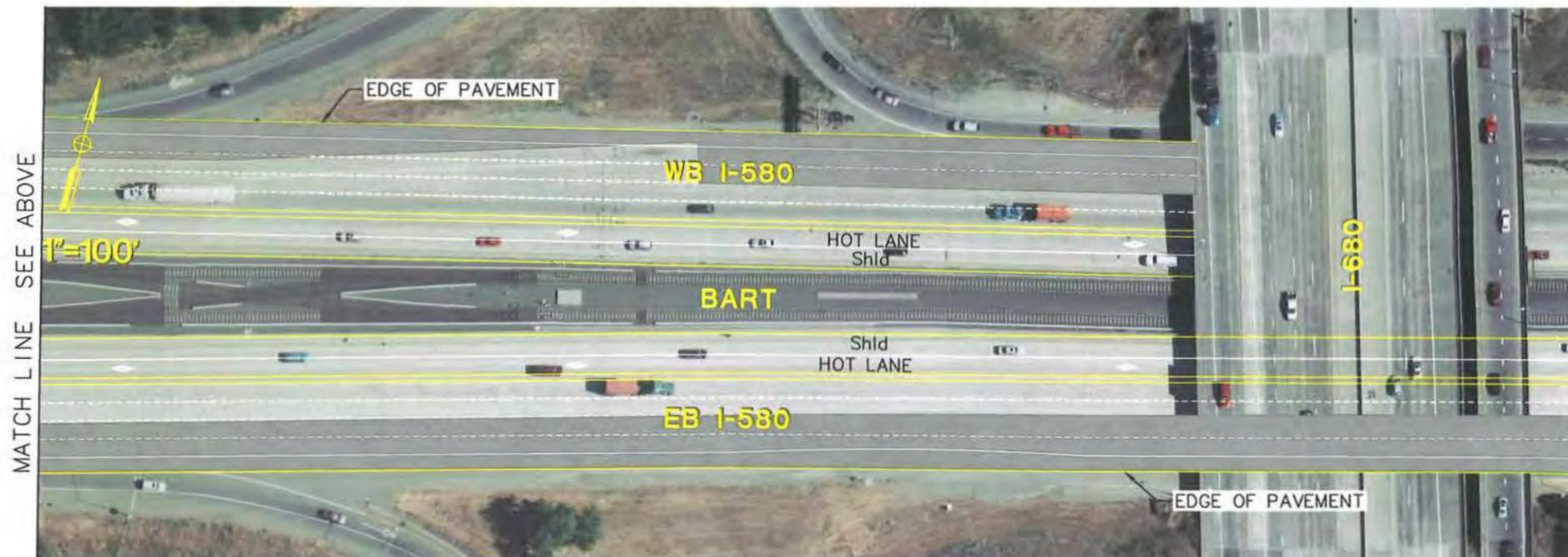
			March 2009 Estimate		
<b>Roadway Items:</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Extended</b>	<b>Total</b>
Minor Grading	1	LS	\$ 650,000	\$ 650,000	
At Grade Crossing	7	EA	\$ 115,000	\$ 805,000	
RR Xing Signal	7	EA	\$ 50,000	\$ 350,000	
Clearing and Grubbing	1	LS	\$ 50,000	\$ 50,000	
Mainline Track - Ballasted (single)	71,600	TF	\$ 140	\$10,024,000	
Mainline Track - Paved (double)	940	DTF	\$ 370	\$ 348,000	
Signals	14	MI	\$ 300,000	\$ 4,050,000	
Erosion control	1	LS	\$ 152,600	\$ 153,000	
Communications	71,600	LF	\$ 5	\$ 358,000	
Minor & Misc. items (10%)	1	LS	\$1,679,000	\$ 1,679,000	
Mobilization (10%)	1	LS	\$1,679,000	\$ 1,679,000	
Contingency (20%)	1	LS	\$3,358,000	\$ 3,358,000	
<b>Roadway Subtotal</b>					\$ 23,510,000
<b>Structure items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
NAME OF BRIDGE	1	LS	\$ 3,000,000	\$ 3,000,000	
<b>Structure Subtotal</b>					\$ 3,000,000
<b>Right of way Items:</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Acquisition costs	-	SF	\$ 8	\$ -	
Title/escrow fees	1	LS	\$ -	\$ -	
Contingencies (20%)	1	LS	\$ -	\$ -	
Utility Relocation (Est)	-	LS	\$ -	\$ -	
<b>Right of way subtotal</b>					\$ -
<b>Subtotal "Hard Costs"</b>					\$ 26,510,000
<b>Soft Costs</b>	<b>quantity</b>	<b>unit</b>	<b>unit cost</b>	<b>extended</b>	<b>total</b>
Preliminary Eng/Envir (6%)	1	LS	\$ 1,591,000	\$ 1,591,000	
Design/Acquisition (13%)	1	LS	\$ 3,447,000	\$ 3,447,000	
Construction Administration (8%)	1	LS	\$ 2,121,000	\$ 2,121,000	
Construction Staking (2%)	1	LS	\$ 531,000	\$ 531,000	
Legal (Est) (1%)	1	LS	\$ 266,000	\$ 266,000	
<b>Subtotal "Soft Costs"</b>					\$ 7,960,000
<b>Grand Total</b>					\$ 34,470,000



**RECOMMENDED LONG TERM IMPROVEMENTS**



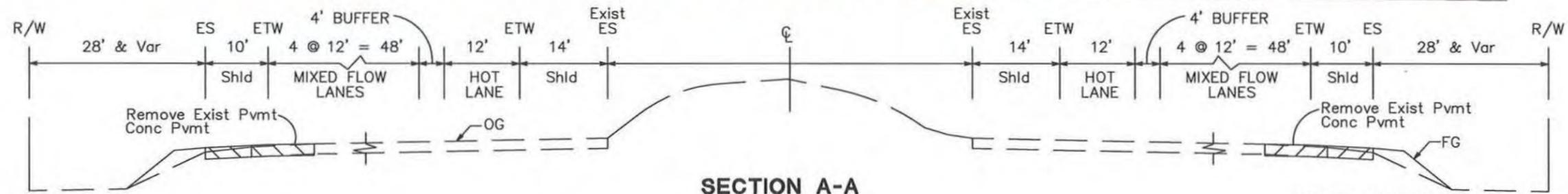
**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**

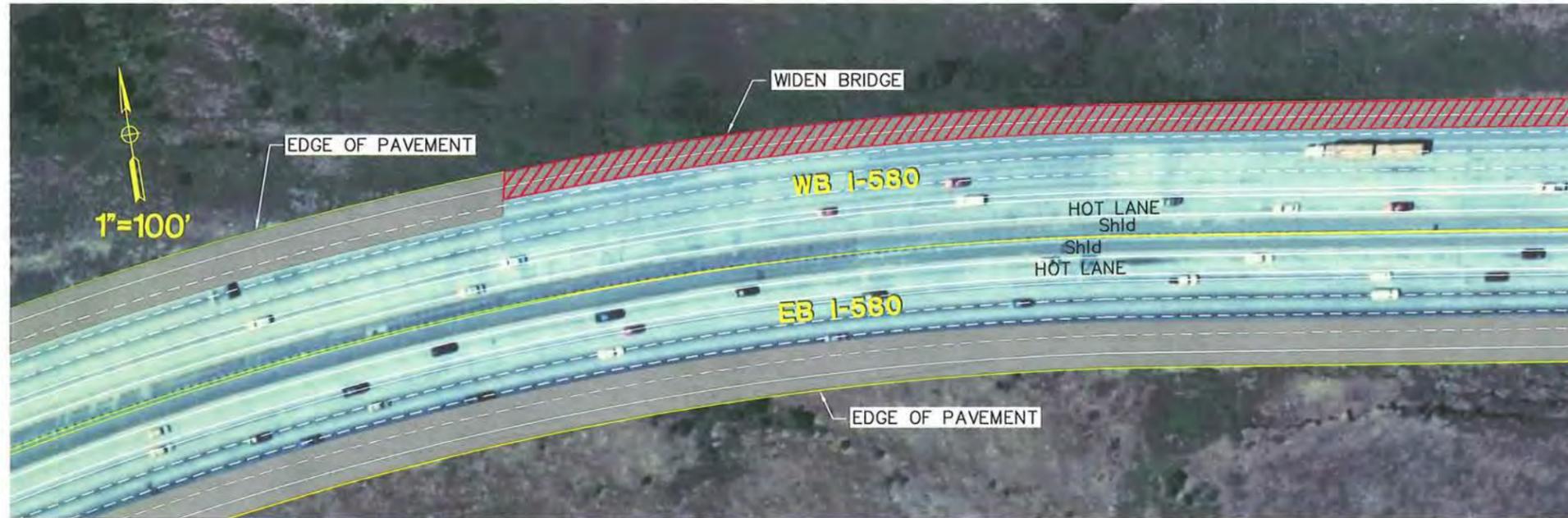


**RECOMMENDED LONG TERM IMPROVEMENTS**



SECTION A-A

RECOMMENDED LONG TERM IMPROVEMENTS



RECOMMENDED LONG TERM IMPROVEMENTS

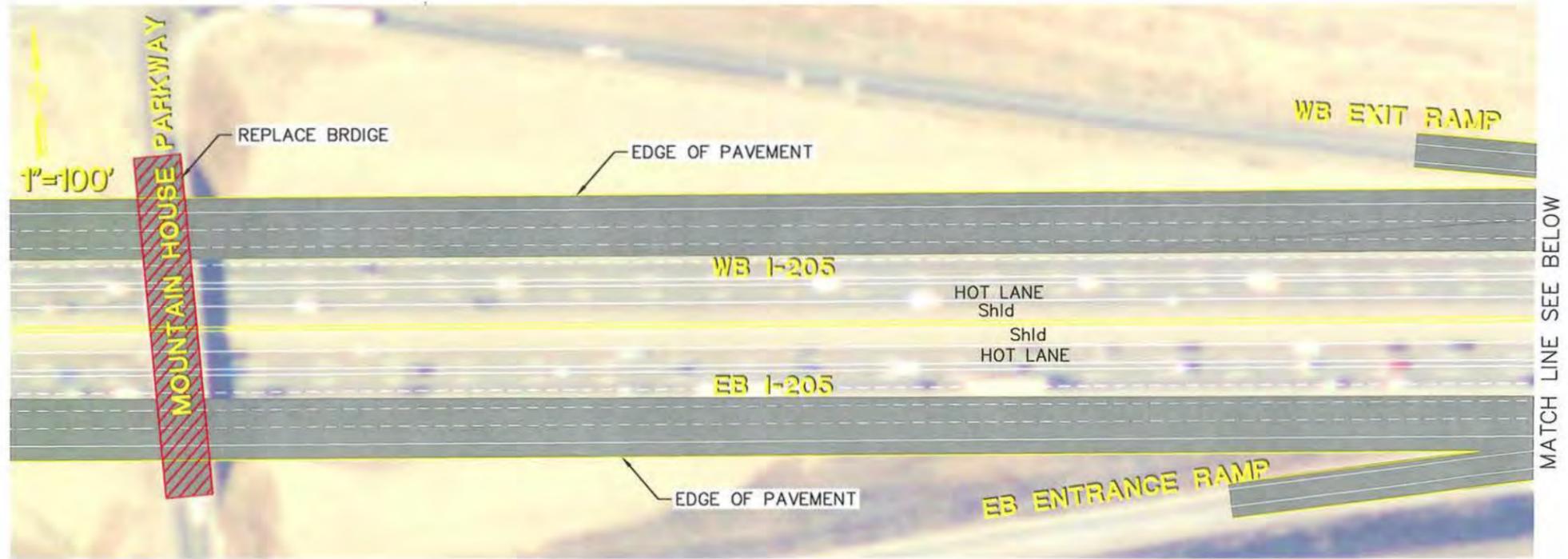


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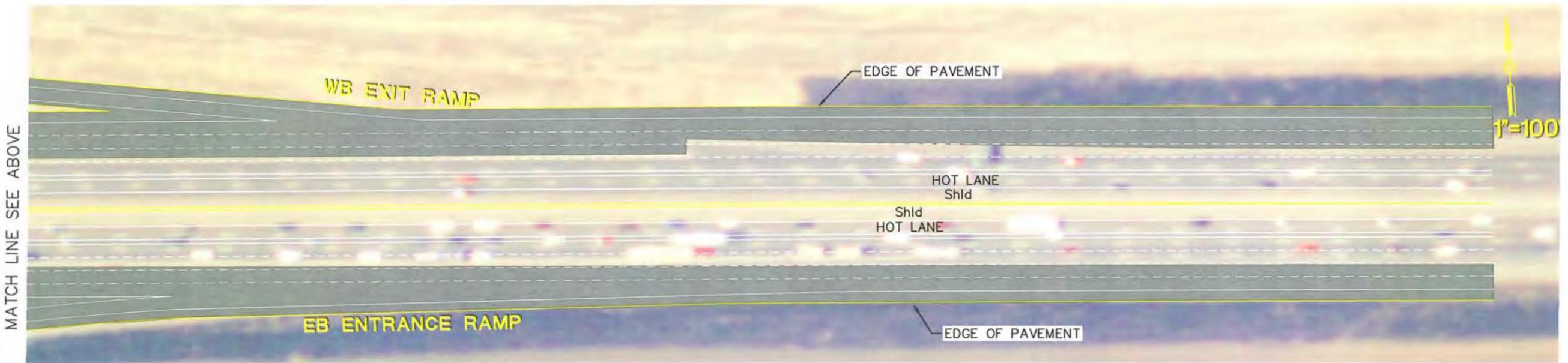
CALTRANS / MTC  
 I-580 CORRIDOR SYSTEM MANAGEMENT PLAN / FREEWAY PERFORMANCE INITIATIVE  
 SCHEMATIC PLANS FOR ALTERNATIVES ANALYSIS

BETWEEN GREENVILLE ROAD AND MOUNTAIN HOUSE PKWY

PROJECT #1c,1d  
 SHEET 2 OF 3

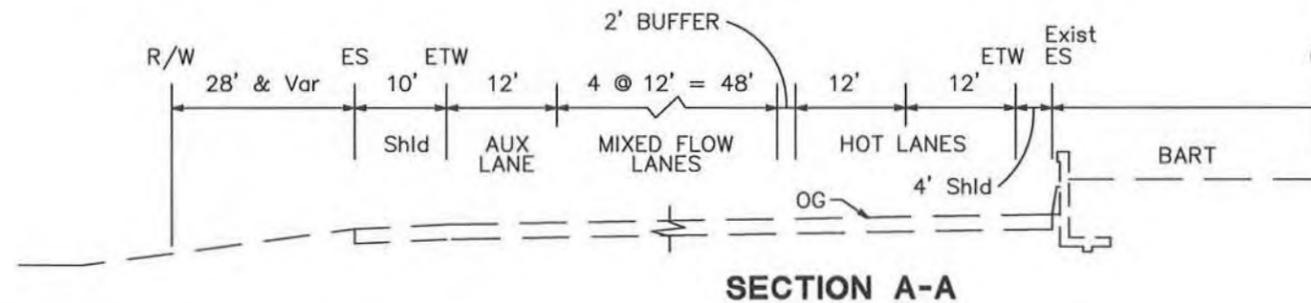


MATCH LINE SEE BELOW



MATCH LINE SEE ABOVE

**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**

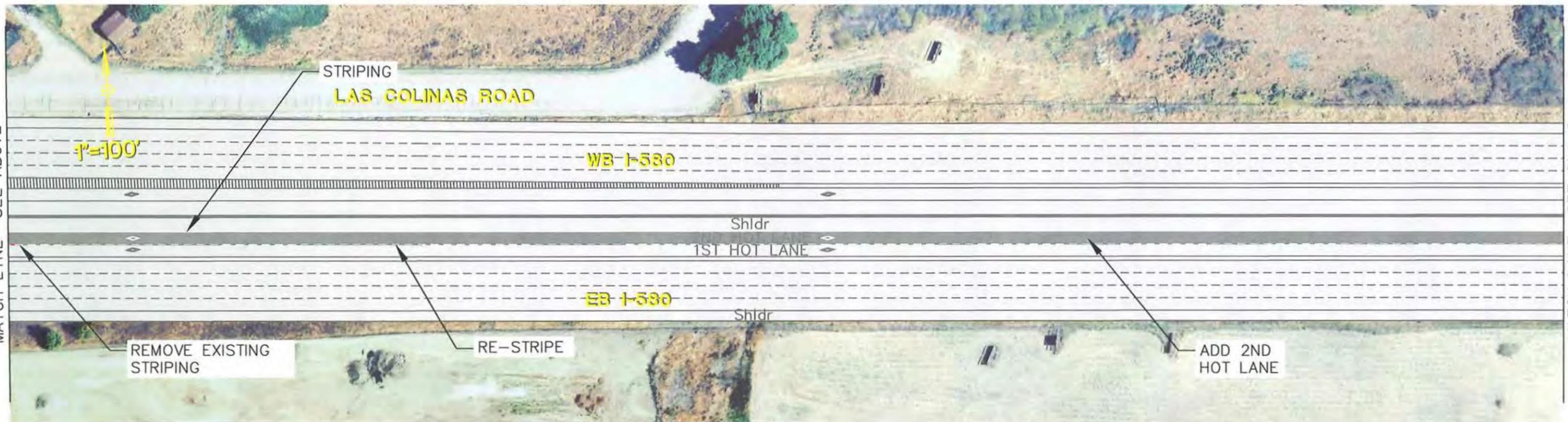
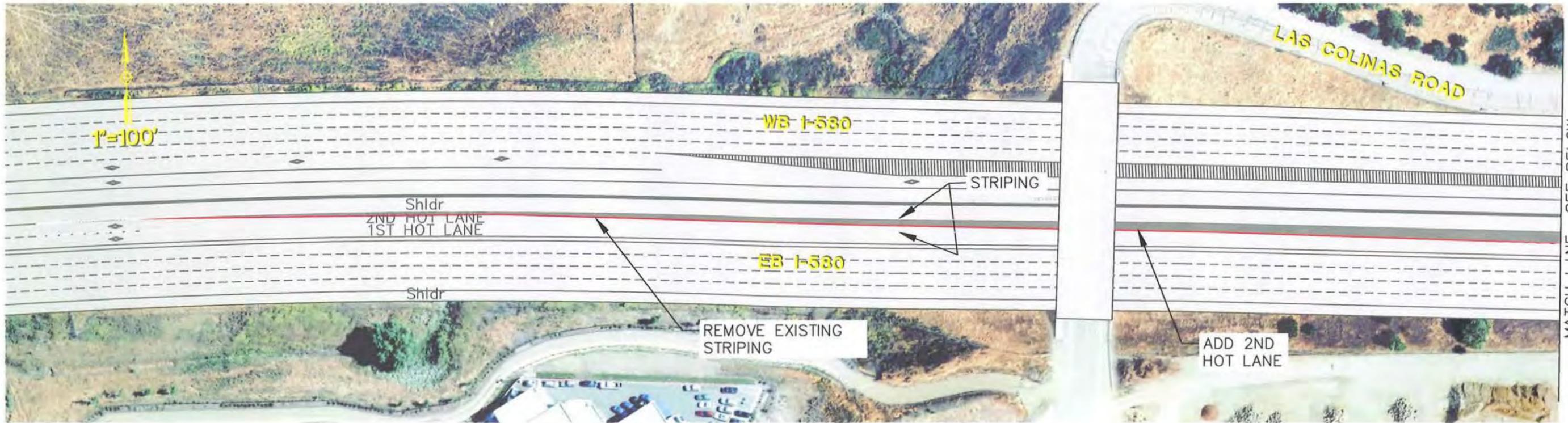


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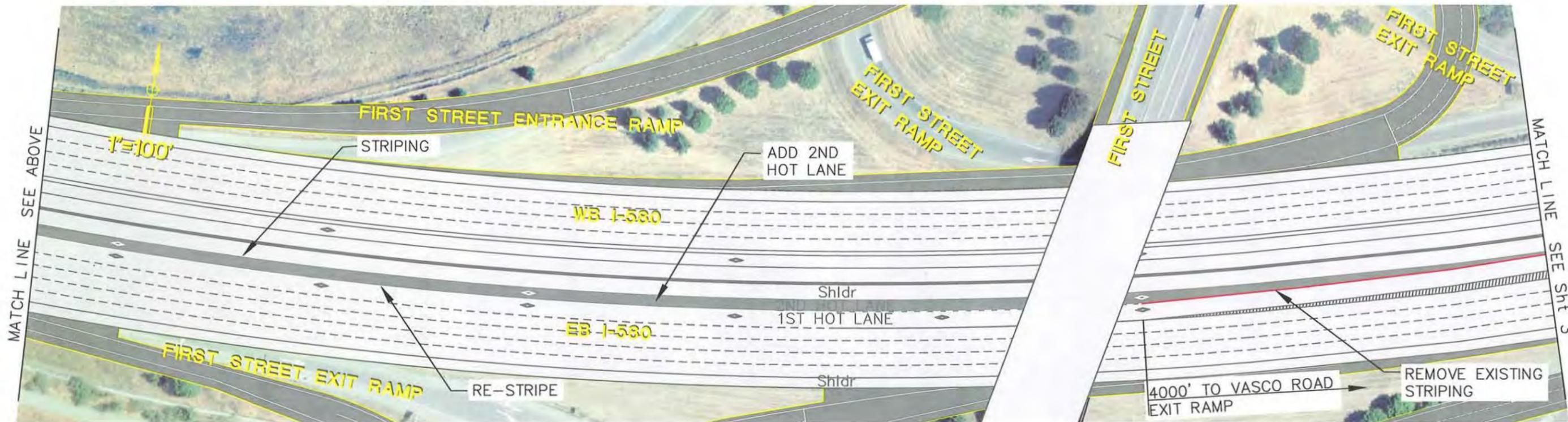
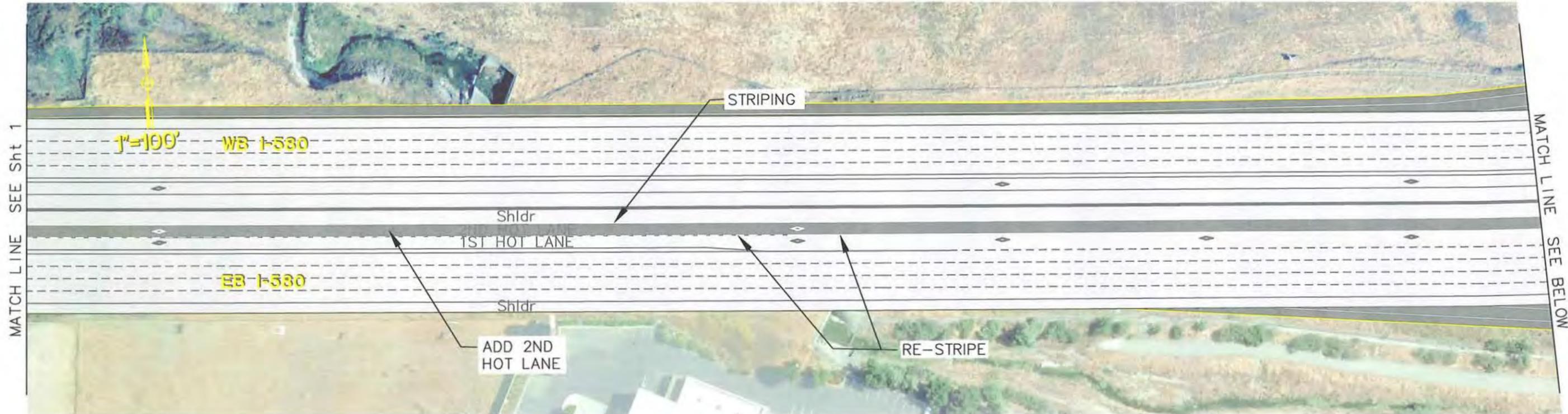


MATCH LINE SEE ABOVE

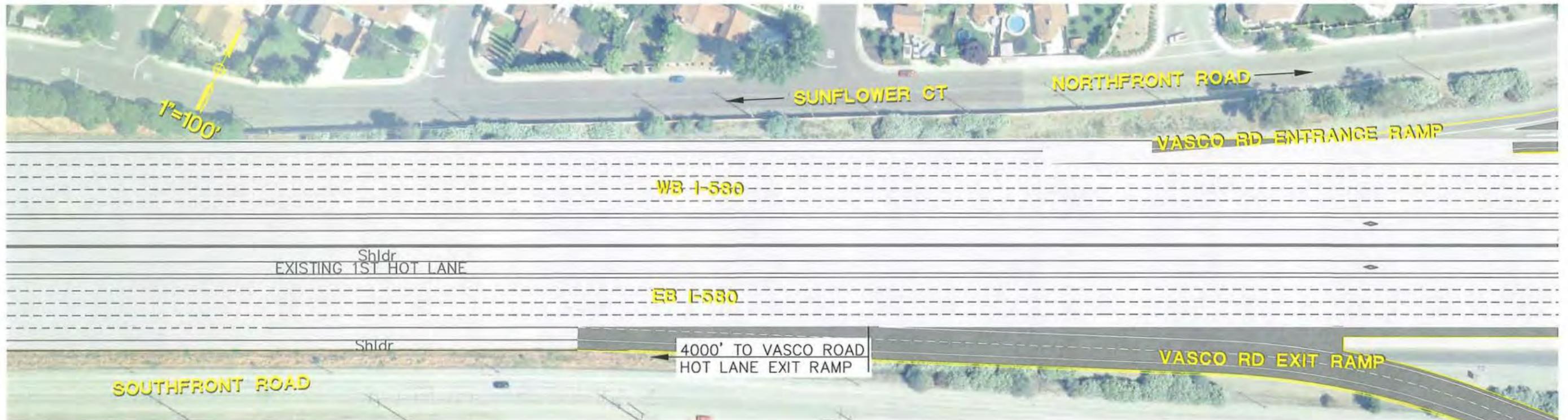
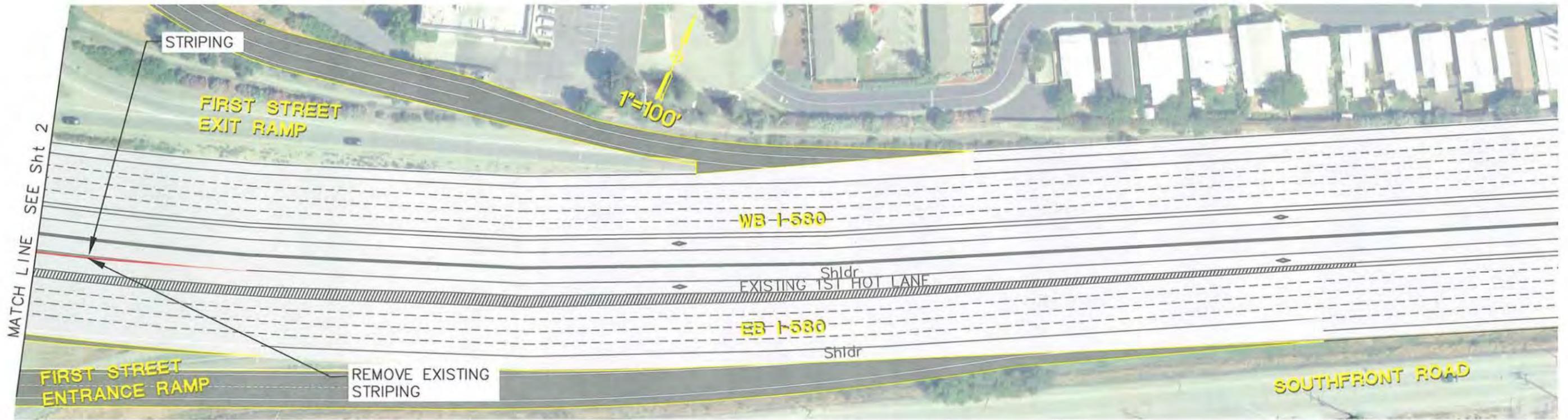
**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**



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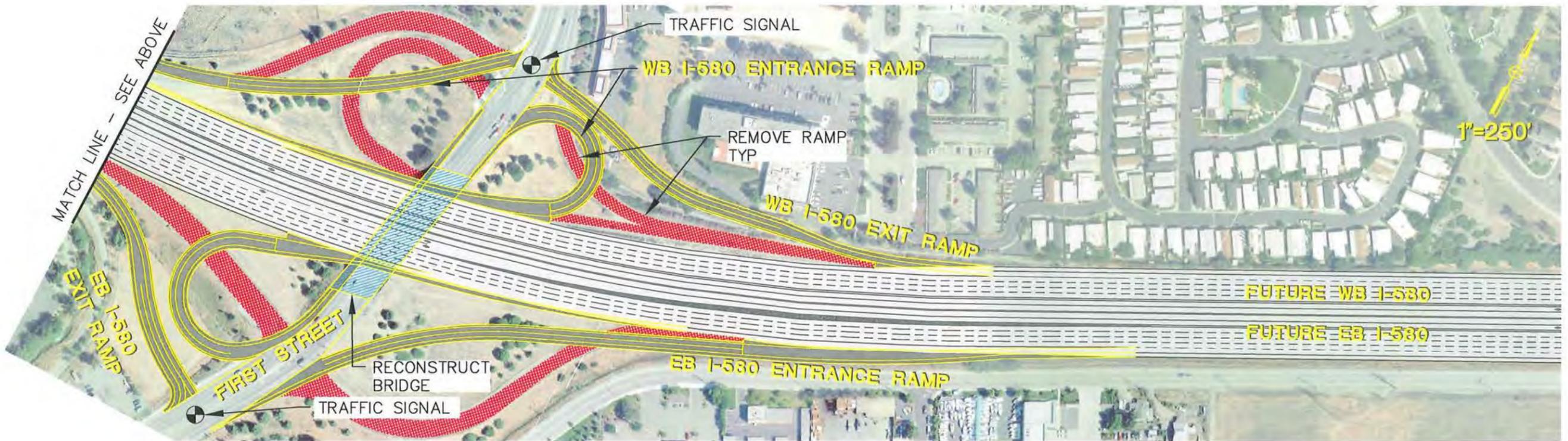
CALTRANS / MTC  
 I-580 CORRIDOR SYSTEM MANAGEMENT PLAN / FREEWAY PERFORMANCE INITIATIVE  
 SCHEMATIC PLANS FOR ALTERNATIVES ANALYSIS

**EASTBOUND BETWEEN FIRST STREET AND VASCO ROAD**

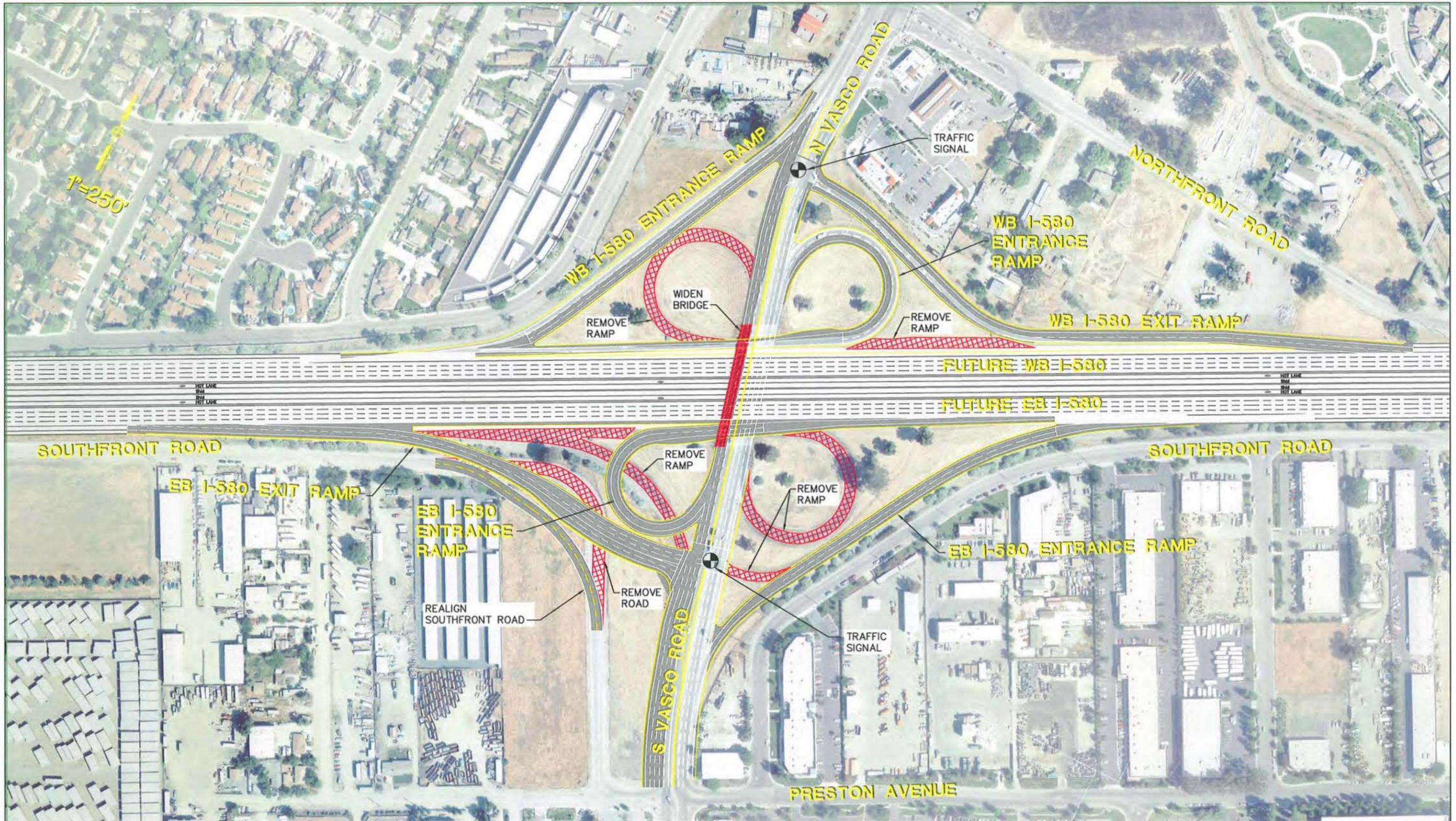
PROJECT #2b  
 SHEET 3 OF 3



**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**



**RECOMMENDED LONG TERM IMPROVEMENTS**

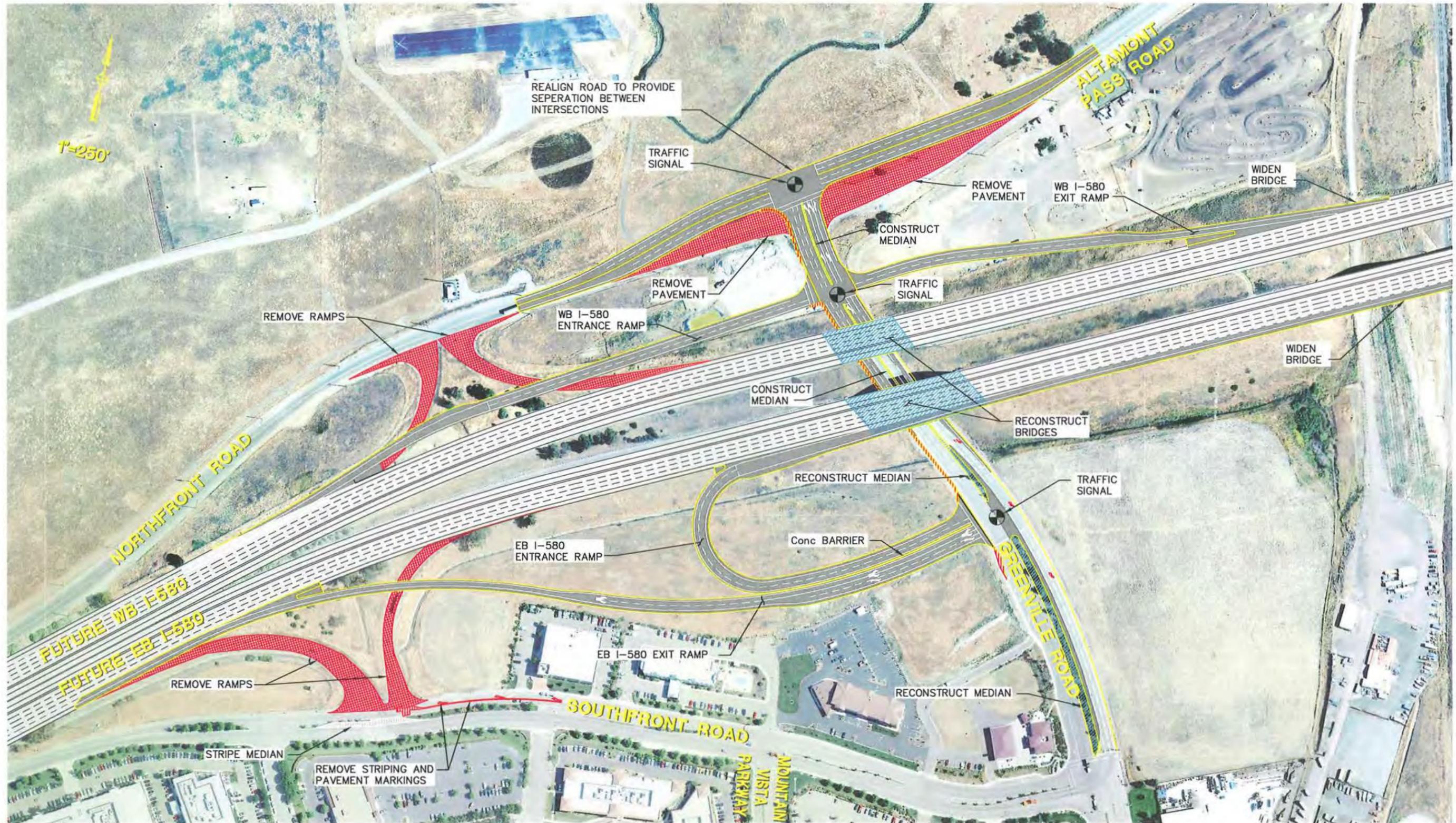


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 SCHEMATIC PLANS FOR ALTERNATIVES ANALYSIS

**RECONSTRUCT VASCO ROAD INTERCHANGE**

PROJECT #8  
 SHEET 1 OF 1



RECOMMENDED LONG TERM IMPROVEMENTS