

# Interstate 580 East

## Corridor System Management Plan May 2010

### CSMP summary

**CALTRANS DISTRICT 4**

corridor system management plans





# interstate 580 east corridor system management plan

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5/7/10  
Date

*I accept this Corridor System Management Plan for the Interstate 580 East Corridor as a document informing the regional transportation planning process.*

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**ACCEPTED BY:**

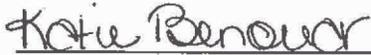
  
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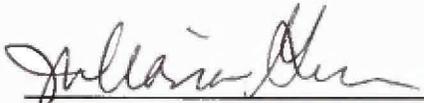
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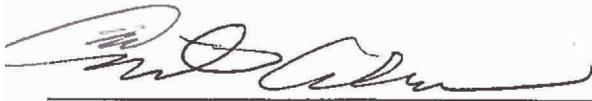
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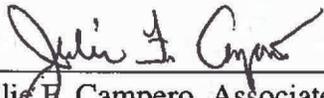
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# stakeholder acknowledgement

District 4 wishes to acknowledge the time and contributions of stakeholder groups and partner agencies. Current and continuing Corridor System Management Plan (CSMP) development is dependent upon the close participation and co-operation of all major stakeholders. This CSMP represents a cooperative commitment to develop a corridor management vision for the I-580 East Corridor. The strategies evaluated have the potential to impact the local arterial system and the regional and local planning agencies that have the corridor within their jurisdiction. These representatives participated in the Technical Advisory Committee (TAC) and provided essential information, advice and feedback for the preparation of this CSMP. The stakeholders/partners include:

- Metropolitan Transportation Commission
- Alameda County Congestion Management Agency
- City of Dublin
- City of Livermore
- City of Pleasanton
- Alameda County
- Alameda County Transportation Improvement Authority

A website, [www.corridormobility.org](http://www.corridormobility.org), has been created to support the development of the CSMPs and to provide stakeholders and the public with more information and an opportunity to provide input and review documents.

Disclaimer: The information, opinions, commitments, policies and strategies detailed in this document are those of Caltrans District 4 and do not necessarily represent the information, opinions, commitments, policies and strategies of partner agencies or other organizations identified in this document.

# dedication

## **To Patricia “Pat” Weston (1951—2009)**

Caltrans District 4 Planners dedicate this Corridor System Management Plan (CSMP) to the memory of Pat Weston, Chief, Caltrans Office of System Planning, whose seemingly limitless energy and passion for transportation system planning in California has been an inspiration to countless transportation planners within Caltrans and its partner agencies. Pat's efforts elevated the importance of corridor-based system planning, performance measurement for system monitoring, and the blending of long-range planning with near-term operational strategies. This has resulted in stronger planning partnerships with Traffic Operations in Caltrans and led directly to the requirement to conduct comprehensive corridor planning through CSMP documents. This is but one of a long list of major achievements in Pat's lengthy Caltrans career. She generously shared her knowledge, wisdom and guidance with us over the years. She will be sorely missed as a planner, mentor and friend.



## introduction

This Corridor System Management Plan (CSMP) represents a cooperative commitment to develop a corridor management vision for the I-580 East Corridor. The CSMP development process was a joint effort of the Department of Transportation (Caltrans), the Metropolitan Transportation Commission (MTC), and the Alameda County Congestion Management Agency (ACCMA). This Core Stakeholder Group worked with local planning agencies, through a Technical Advisory Committee (TAC) to develop this plan. The goal is to propose strategies to achieve the highest mobility benefits to travelers across all jurisdictions and modes along the I-580 East CSMP Corridor.

### PLANNING AND POLICY FRAMEWORK

Since passage of the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act, known as Proposition 1B, in November 2006, Caltrans has implemented the CSMP process statewide for all corridors with projects funded by the Corridor Mobility Improvement Act (CMIA) Program. The California Transportation Commission (CTC) requires that all corridors with a CMIA-funded project have a CSMP that is developed with regional and local partners. The CSMP recommends how the congestion-reduction gains from the CMIA projects will be maintained with supporting system management strategies. The CTC has also provided guidance in the 2008 RTP Guidelines that the CSMPs are an important

input to the development of the Regional Transportation Plans (RTP).

In the San Francisco Bay Area, Caltrans is completing nine CSMPs. This I-580 CSMP reflects data and projects from MTC's current RTP, *Change in Motion, Transportation 2035 Plan*, adopted April 2009. The CSMP recommends strategies that could potentially become projects through the regional transportation project development and prioritization process. In the San Francisco Bay Area, the CSMP process has taken place in coordination with the MTC's Freeway Performance Initiative (FPI), a commitment to invest \$1.6 billion over 25 years to deploy technology to manage congestion on the freeway system. The FPI has provided the technical freeway performance analyses for the CSMPs.

This CSMP focuses on highway mobility within the context of the State's most congested urban corridors. While the CSMP describes the arterials and other modes in the corridor, the focus of the recommended strategies is on maximizing the existing infrastructure through coordinated application of system management technologies such as ramp metering, coordinated traffic signals, changeable message signs for traveler information and incident management. It describes the current land use, transit, bicycle/pedestrian facilities, and the FOCUS regional blueprint Priority Development and Conservation

Areas. These are provided as a backdrop for understanding how the highway corridor works.

### THE I-580 EAST CSMP

The objectives of the I-580 East CSMP are to reduce delay within the corridor (**mobility**), reduce variation of travel time (**reliability**), reduce accident and injury rates (**safety**), restore lost lane miles (**productivity**), and reduce distressed lane miles (**system preservation**). The limits of the I-580 East CSMP were determined, in collaboration with MTC, by identifying the key travel corridor in which CMAA-funded projects are located. The CMAA-funded projects are:

- Eastbound High Occupancy Vehicle (HOV) Lane, Hacienda to Greenville
- I-580/84 Isabel Interchange
- Westbound HOV Lane, Greenville to Foothill

The I-580 East CSMP addresses State Highways, local parallel roadways, the bicycle and pedestrian network, and regional transit services pertinent to corridor mobility. The CSMP also identifies gaps in the bicycle and pedestrian network and regional transit services and discusses opportunities for the future.

The CSMP makes some recommendations for increasing other modal services that can make the highway operate more efficiently, but the main thrust of the strategies is to enable better system management of the highway. By focusing on more efficient operation of the highway network, the CSMP moves toward optimizing current infrastructure, improving our ability to analyze and identify what leads to congestion in a corridor, and strengthening interagency partnerships to ensure that all parts of the transportation system work together well.

### METHODOLOGY

A corridor performance assessment and technical analysis of the I-580 East CSMP Corridor was conducted through the Freeway Performance Initiative (FPI), a partnership between MTC and Caltrans. The performance assessment evaluated the current highway performance

along the corridor and determined causes of performance problems.

Simulation modeling was used to forecast future travel conditions along the corridor. Traffic analysis methods were used to identify bottlenecks and to predict the impacts of a variety of operational strategies and investment scenarios. The microsimulation model was limited to four intersections at each freeway interchange and could not feasibly model the diversion effects outside of their impacts on the surface streets in the immediate vicinity of each interchange.

The comprehensive corridor analysis results consisting of existing and future traffic conditions were first discussed at the TAC in January 2009. The TAC met at regular intervals to provide further input on conclusions and recommendations for short and long-term corridor management improvement strategies.

The proposed short-term and long-term improvement strategies include:

- Intelligent Transportation System (ITS) improvements
- Corridor-wide ramp metering
- Signal optimization
- Augmented Freeway Service Patrol (FSP)
- Accelerated planned auxiliary lane and ramp improvements
- Extend and enhance HOV/HOT operations
- Major interchange improvements
- Additional transit and TDM improvements

### FIRST GENERATION CSMP

This CSMP represents the “first generation” of corridor system management plans informing the Transportation Planning process. This CSMP identifies corridor management strategies applied on a network wide basis. The selected strategies address existing and forecasted mobility, lost productivity, bottlenecks and reliability problems. The CSMP recognizes that transit services

and goods movement are also adversely affected by the same problems. To implement some of these strategies, key capital projects are identified. This list is not meant to be inclusive of all potential projects in the corridor. The CSMP builds upon the capital project recommendations of the Tri-Valley Triangle Study, the Central County Freeway Study, the Countywide Plan and the MTC Regional Transportation Plan (T2035). These recommendations add system management and other strategies to provide additional benefit and efficiencies.

Since Caltrans and the regions launched this first cycle of corridor system management planning in 2007 (called *first generation CSMPs*), the statewide planning policy context has evolved significantly. AB 32 policy on reducing greenhouse gas emissions has moved into implementation with passage of SB 375, landmark legislation requiring the regions to meet state-designated greenhouse gas emissions reduction targets. The CTC has developed guidance on how the regions will develop Sustainable Community Strategies (SCS) in their next RTP cycle; MTC's next RTP is slated for completion in 2013. The SCS will promote strategies to reduce greenhouse gas emissions through more efficient land use patterns, reduce vehicle travel, support transit, bicycle and pedestrian mode choices, and improve supply and affordability of housing within the Bay Area to reduce commuting into the region.

The *second generation CSMPs* will reflect the SCS and the 2013 RTP, and will grapple with the issue of providing mobility and reducing highway congestion within the context of a new regional planning framework. The *second generation CSMP* scope will expand to include integrated land-use and transportation, in the context of Sustainable Community Strategy required by SB 375, and a more comprehensive look at transit and non-motorized travel strategies and options.

## STAKEHOLDER ISSUES AND CONCERNS

Stakeholder concerns, following the CSMP development process, focused on SB 375 requirements, CSMP analysis scope, and the local arterial network. Stakeholders

commented that recommended improvements in the CSMP do not emerge from a multi-modal and integrated transportation land use planning effort, such as integrating transit, bicycle and pedestrian networks, and demand management. Local jurisdictions point out impacts of poor freeway performance to the local jurisdictions stretch far beyond the Corridor limits. Local jurisdictions want to improve circulation on the local streets without attracting regional and interregional cut-through traffic from the freeway.

This represents a summary of the issues and concerns shared by Stakeholders during the CSMP External Review Process. A full listing of Stakeholder issues and concerns are located in Volume 1, 1.16 CSMP Overview.

## CSMP DOCUMENT

The CSMP document is organized in two Volumes (Volume 1 and Volume 2). Volume 1 includes the CSMP Summary, the CSMP Overview, and the CSMP technical analysis report. The CSMP Summary serves as a stand-alone document and provides corridor facts and description summaries, key findings and recommended improvements from the technical analysis. The CSMP Overview contains a more detailed description of the corridor and its significance within the highway system and other modes. The CSMP technical analysis report presents existing conditions and trends, transit service description, corridor management issues and strategies, detailed results of the micro-simulation and operational analysis, and recommendations based on this analysis. Volume 2 includes two Appendices. Appendix I contains information about corridor segments, freeway agreements, CMIA projects, maintenance plans, and corridor concept. Appendix II contains memorandums that further describe methodologies used for the technical analysis.



The I-580 East Corridor system will be continuously monitored using identified performance measures and Traffic Operations Systems (TOS) data, and will be reported in subsequent CSMP updates. This information will be used to continually improve system performance. As discussed above, new strategies may emerge as the SCS is implemented to reflect new development and travel patterns that impact the operations of the highway corridor.



# Interstate 580 East

## CSMP Summary

1. I-580 East CSMP Corridor Facts/Segment Data Summary
2. CSMP Overview
3. Corridor Description
4. Comprehensive Corridor Performance Assessment
5. Recommended Corridor Management Improvement Strategies

## 1. I-580 EAST CSMP CORRIDOR FACTS

### Corridor Limits

I-580 at the I-580/I-205 I/C near the San Joaquin/Alameda County line to the I-880/I-238 I/C

### Corridor Description

The I-580 East CSMP Corridor is an east/west route in Alameda County that begins at the I-580/I-205 interchange near the San Joaquin / Alameda County line and traverses westward at the I-580/I-238 split, continues along I-238, and ends at the I-880/ I-238 interchange. The corridor is 33 miles long, operates six to ten freeway lanes, and provides direct connections to two major north-south freeways: I-680 and I-880. The corridor also intersects State Route (SR)-84, SR-238, and SR-185.

### Corridor Concept (2035)

6F – 12F (3H/1TCL)\*

\*F=Freeway, H=HOV/ HOT Ln, TCL=Truck Climbing Ln

### Route Designation and Regional Setting

<b>Functional Classification</b>	Principal Arterial – Interstate Freeway
<b>Trucking Designations</b>	STAA National Network Route: Yes Terminal Access Route: Yes SHELL Route: No
<b>Other Designations</b>	Interstate Freeway
<b>Interregional Road System</b>	Yes: High Emphasis Route
<b>Life Line</b>	Yes
<b>MPO</b>	Metropolitan Transportation Commission
<b>Air Quality District</b>	Bay Area Air Quality Management District
<b>Mode-Split*</b>	67% SOV, 10% Rideshare, 11% Transit, 4% Walk, 3% Other Means, 5% Wk Home

\*2007 American Community Survey

### Multi-Modal Service

There are park-and-ride facilities in Livermore and Castro Valley. Bus transit is provided by Alameda-Contra Costa Transit (AC Transit) and Wheels in the Tri-Valley. Intercity has scheduled service through Greyhound bus lines. Rail transit is provided by Bay Area Rapid Transit (BART) and Altamont Commuter Express (ACE).

### Interregional Significance

The I-580 freeway is the primary east/west route connecting the Bay Area with Tri-Valley housing, Central Valley commerce, and access to the I-5 freeway in order to transport goods to Southern California and points beyond. It also serves as a significant regional and interregional commuter route. With connections to the interstate network, I-580 is a major gateway for goods movement into and out of the Bay Area's five seaports (including the Port of Oakland), three commercial airports, and four rail freight terminals, as well as a primary route for eastbound travelers destined for the Sierra Nevada Mountains and Southern California.

### Corridor Specific Issues

- Many segments are ranked among the most congested in the Bay Area during peak hours.
- Serves as a major transportation corridor between the Bay Area and Central Valley regions.
- Is a major route for the movement of goods/freight into and out of the Bay Area region.
- High volume of regional and interregional commuter, freight, and recreational traffic creates operational challenges.

### Corridor Objectives-Desired Outcomes

- Reduce delay within the corridor
- Reduce variation of travel time
- Reduce accident and injury rate
- Restore lost lane miles (productivity)
- Reduce distressed lane miles

Performance Measure	Description
Mobility	Vehicle Hours of Delay (VHD)
Reliability	Travel time
Safety	TASAS data
Productivity	Equivalent lost lane miles
System Preservation	Pavement condition data

### Current Performance

Top 3 Congested Locations (2008)

Location	VHD
EB PM I-680 to N. Livermore Ave.	5,250
WB AM I-205 to Airway Blvd/Route 84	4,240
WB AM Crow Canyon Rd. to I-580/I-238 off-ramp	2,530

Source: State of the System (MTC)

### Key Bottlenecks

Route/Location/Direction	AM/PM
I-580/I-205 Merge to Grant Line Rd/WB	AM
I-580/Airway Blvd to Tassajara Rd WB	AM
I-580/Dougherty Rd to I-680 WB	AM
I-580/Santa Rita Rd to Fallon EB	PM
I-238/I-580 to I-880 NB/WB*	AM/PM
I-238/I-880 NB to Lewelling SB/EB*	PM

\* Data pending on impact of I-238 widening on bottlenecks

### Recommended Corridor Management Strategies

- Enhance HOV / HOT Operations
- Signal Optimization, ITS Improvements
- Corridor-Wide Ramp Metering
- Augment Freeway Service Patrol
- Accelerate planned freeway capacity improvements
- Preserve transit improvements

CORRIDOR SYSTEM MANAGEMENT PLAN ALA I-580 EAST

Segment Data Summary

CSMP Segment	CO/RTE/PM Start	VHD (AM/PM)	Peak Period Demands		AADT (2007)	Truck %	Accident Rate (Actual / Statewide Average)	HOV	Aux	Bottleneck Location	
			Eastbound Volume (2008/2035)	Westbound Volumes (2008/2035)						WB	EB
A	ALA/580/00.39	5,607 / 4,056	33,596 / 58,205	22,637 / 47,306	41,000-144,000	12.5	.19 / .20	N		X	
B	ALA/580/05.98	5,607 / 4,056	32,837 / 57,967	23,098 / 43,818	144,000-153,000	10.4	.27 / .29	N	X	X	
C	ALA/580/09.68	5,607 / 4,056	39,323 / 57,606	28,217 / 45,509	182,000-195,000	11.2-12.2	.26 / .31	Y			
D	ALA/580/14.20	5,607 / 4,056	39,323 / 54,302	30,443 / 46,561	195,000-212,000	6.7-9.1	.32 / .33	N	X	X	X
E	ALA/580/21.43	4,451/7,336	30,027 / 38,954	23,851 / 34,858	182,000	6.7	.18 / .30	N			
F	ALA/580/23.72	4,451/7,336	30,312 / 39,664	23,865 / 34,826	181,000-182,000	6.7	.13 / .30	N			
G	ALA/580/28.75	4,451 / 7,336	35,362 / 39,916	24,146 / 32,850	180,000-196,000	5.7-6.1	.31 / .30	N	X	X	X
H	ALA/238/14.46	301 / 202	20,126 / 32,588	14,653 / 24,787	82,000-133,000	7.6-13.3	.52 / .36	N	X	X	X

Sources: CO/RTE/PM Start: From CSMP segmentation modified from 2002 TCCR segments. Start of segment only.

VHD: CSMP technical analysis Mobility Trends Tables 40, 41, 42

Volumes, AADT, Truck %: <http://www.dot.ca.gov/hq/traffops/saferes/trafdata/>

Accident Rate: Traffic Accident Surveillance and Analysis System (TASAS) Table B (09-01-04 to 08-31-07)

HOV / Auxiliary lane: X in the box if present in the corridor

Bottleneck Location: X in the box per technical analysis report

## 2. CSMP OVERVIEW

A CSMP is a transportation planning document that provides for the safe, efficient and effective mobility of people and goods within the most congested transportation corridors. Each CSMP presents an analysis of existing and future traffic conditions and proposes traffic management strategies and capital improvements to maintain and enhance mobility within each corridor. The corridor management planning strategy is based on the integration of system planning and system management. Each CSMP will address State Highways, local parallel roadways, regional transit services, and other regional modes pertinent to corridor mobility.

CSMPs are being developed throughout the State for corridors within which funding is being used from the CMIA and Highway 99 Bond Programs created by the passage of the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, approved by the voters as Proposition 1B in November 2006. The intent is to eventually develop CSMPs for all urban free-way corridors.

The CSMP transportation network is defined to include, but is not limited to, State Highways, major arterials, intercity and regional rail service, regional transit services, and regional bicycle facilities.

### Purpose and Need Statement

On March 15, 2007, the CTC adopted *Resolution CMIS-P-0607-02*. In Sections 2.12 and 2.13 of this resolution, the CTC resolved that "...the Commission expects Caltrans and regional agencies to preserve the mobility gains of urban corridor capacity improvements over time that will be described in CSMPs, which may include the installations of traffic detection equipment, the use of ramp metering, operational improvements, and other traffic management elements as appropriate..." and "...the nominating agencies including the installations of detection equipment and other supporting elements, to the project delivery council on a semiannual basis...."

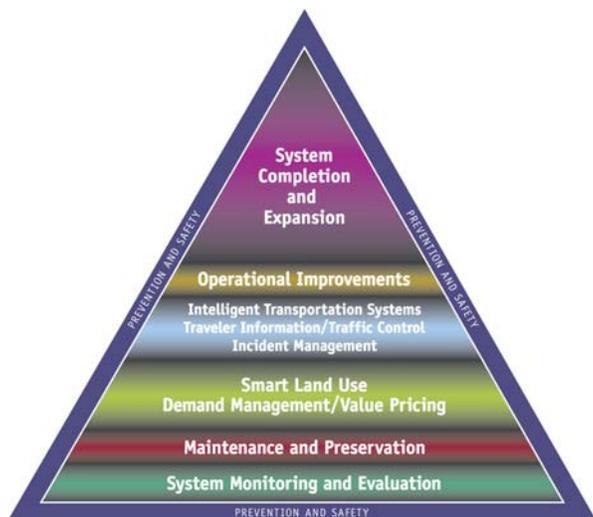
The immediate purpose of preparing CSMPs is to satisfy the requirements to qualify for funding highway improvements under the CMIA and Highway 99 Bond programs. The CTC adopted guidelines and a program of projects for funding. CSMPs are prepared based on the need to efficiently and effectively use all transportation modes and facilities in congested corridors so as to maximize mobility, improve safety and reduce delay costs.

### Consistency with Strategic Growth Plan

CSMPs support the Governor's Strategic Growth Plan (SGP), which calls for an infrastructure improvement program that includes a major transportation component (GoCalifornia). The CMIA and other elements of the November 2006 transportation infrastructure bond are a down payment toward funding the most important of these infrastructure needs. The objectives of these investments are to decrease congestion, improve travel times and safety, and accommodate expected growth in the population and economy. The SGP is based on the premise that investments in mobility throughout the system will yield significant improvements in congestion relief.

The philosophy of system management is to make the most effective use of the transportation system. The system management pyramid represents a comprehensive range of strategies to improve mobility within a transportation corridor.

It includes system monitoring at its base, followed by maintenance, smart land use, technology and operational strategies, and traditional system expansion. Simply put, the value of any investment decision made higher up in the pyramid is limited without a good foundation from the strategies below.



The System Management Pyramid

Performance Measures

Caltrans worked with stakeholders to develop performance measures that together serve to focus directed action on desired corridor strategies and improvements. Performance Measures are illustrated in Table 1, and were used in discussions with stakeholders.

- **Mobility** describes how well the corridor moves people and freight.
- **Reliability** captures the relative predictability of the public’s travel time.
- **Safety** captures the safety characteristics in the corridor including crashes (fatality, injury, property damage).
- **Productivity** captures the loss of capacity due to congestion and resulting reductions in traffic flow rates.

Performance Measure	Performance Measure Description	Objective
		Desired Outcome
Mobility	Vehicle Hours of Delay	Reduce delay within the corridor
	(PeMS*, Probe Vehicles)	
Reliability	Travel Time (PeMS, Buffer Index)	Reduce variation of travel time
Safety	TASAS** Data	Reduce accident and injury rate
Productivity	Equivalent lost lane miles	Restore lost lane miles
System Preservation	Pavement condition data	Reduce distressed lane miles

Table 1: Corridor Performance Measures  
 \*Freeway Performance Measurement System  
 \*\*Traffic Accident Surveillance and Analysis System

Relationship to Other Plans

A number of Caltrans system planning documents were used as the foundation for the preparation of the CSMP. These included the 2005 California Transportation Plan (CTP) and the 1998 Interregional Transportation Strategic Plan (ITSP). Also, a number of related Caltrans system management documents were used including the 2006 SGP, the 2004 TMSMP, and the 2004 SWITSA.

System and regional planning documents prepared by other agencies that influence CSMP development included the 2005 RTP and the 2004 Bay Area Regional ITS Plan.

Most notably, the MTC FPI, a regional program, has influenced corridor-level performance-based decision making for the 2009 RTP. Important documents in this effort are the 2007 FPI Performance & Analysis Framework and the 2007 FPI Prioritization Framework.

The FPI corridor-specific documents are noted below:

US-101 North (MRN/SON)	I-580 East (ALA)
US-101 Peninsula/South (SM/SCL)	SR-4 (CC)
I-880 (ALA/SCL)	I-680 North (ALA/CC)
I-80 East (SOL)	I-680 South (ALA/SCL)

### Stakeholder Engagement

Current and continuing CSMP development is dependent upon the close participation and cooperation of all major stakeholders. The strategies evaluated have the potential to impact the local arterial system, the transit service along the corridor, and the regional and local planning agencies that have the corridor within their jurisdiction. The goal of the stakeholder engagement process is consensus among key stakeholder groups to develop the CSMP. The CSMP follows a workplan unique to the needs of the CSMP Corridor and identified stakeholders. Each stakeholder category group has a role during the CSMP development process. The Core Stakeholder Group provides policy and technical guidance throughout the process. Additional planning agency partners are brought in to review and comment at key junctures, and help evaluate corridor improvement strategies.

The stakeholder engagement process framework for the current CSMP considered stakeholders in two categories:

- I. Core Stakeholder Group: Agencies primarily responsible for conducting planning efforts in the corridor.
- II. Planning Agency Partners: Additional agencies responsible for implementing and monitoring CSMP strategies.

### District 4 CSMP Overview

Caltrans and MTC are committed to assist each other in the development of CSMPs and MTC's related FPI corridor studies. This cooperation is documented in MTC Resolutions 3792 and 3794. Figure 1 on the following page illustrates the nine CSMPs being developed for the San Francisco Bay Area, Caltrans District 4:

The I-580 East CSMP

US-101 North (MRN/SON)	I-580 East (ALA)
US-101 Peninsula/South (SM/SCL)	SR-4 (CC)
I-880 (ALA/SCL)	SR-24 (ALA/CC)
I-80 West (ALA/CC)	SR-12 (NAP/SOL)
I-80 East (SOL)	

This CSMP represents a cooperative commitment to develop a corridor management vision for the I-580 East Corridor. The CSMP development process is a joint effort of Caltrans, MTC, and the ACCMA. This Core Stakeholder Group is working with local planning agencies through a TAC. The goal is to achieve the highest mobility benefits to travelers across all jurisdictions and modes along the I-580 East CSMP Corridor.

The I-580 East CSMP addresses State Highways, local parallel roadways/major arterials, the bicycle and pedestrian network, and regional transit services pertinent to corridor mobility. The CSMP also identifies gaps in the bicycle and pedestrian network and regional transit services and discusses opportunities for the future.

The limits of the I-580 East CSMP were determined, in collaboration with MTC, by identifying the key travel corridor in which CMIA-funded projects are located. Figure 2, page 21, illustrates the three CMIA-funded projects on the I-580 East CSMP Corridor. The CMIA-funded projects in the I-580 East CSMP Corridor are:

- ALA-580 Eastbound HOV Lane, Hacienda to Greenville
- ALA-580/84 Isabel I/C
- ALA-580 Westbound HOV Lane, Greenville to Foothill

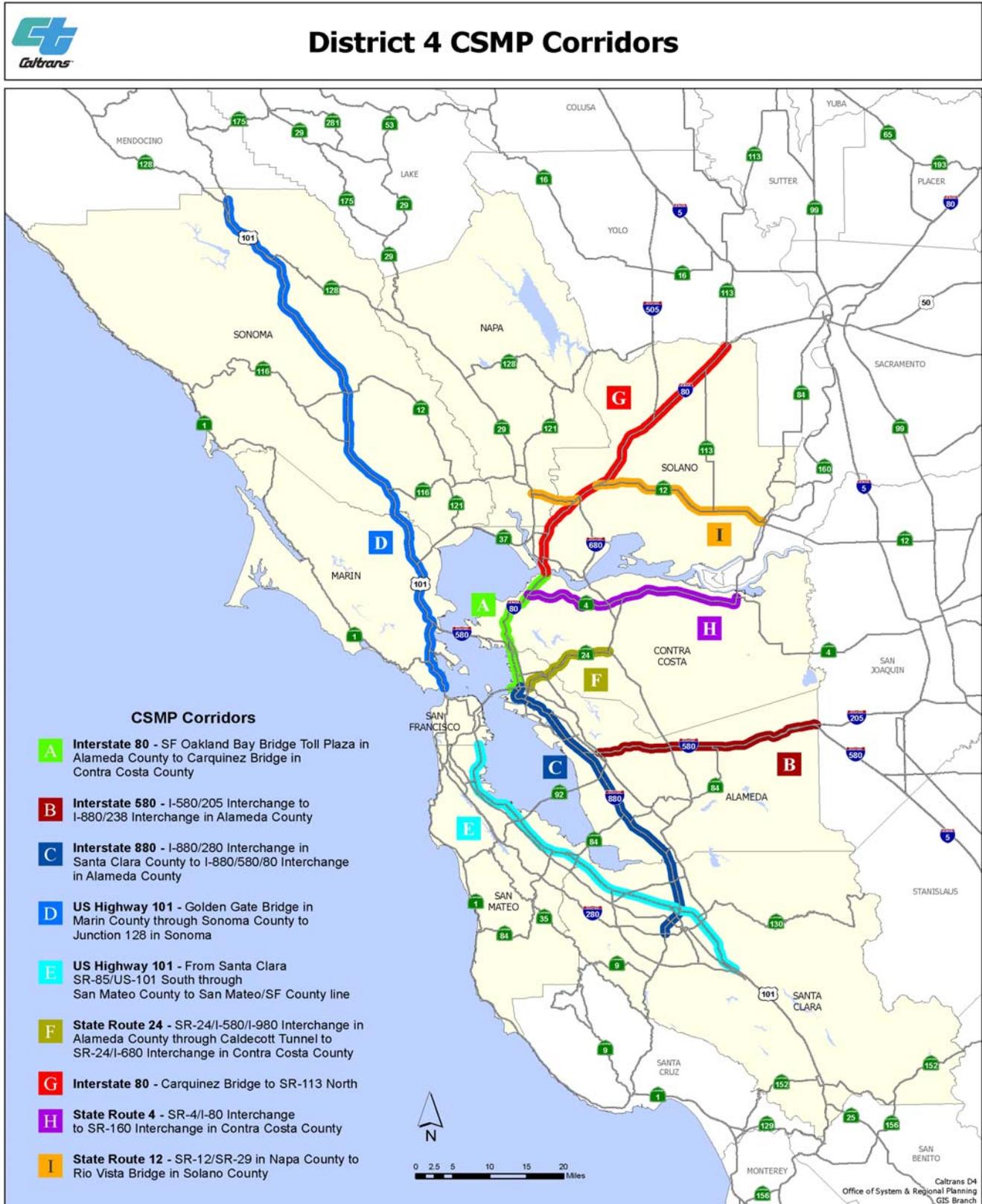


Figure 1: District 4 CSMP Corridors

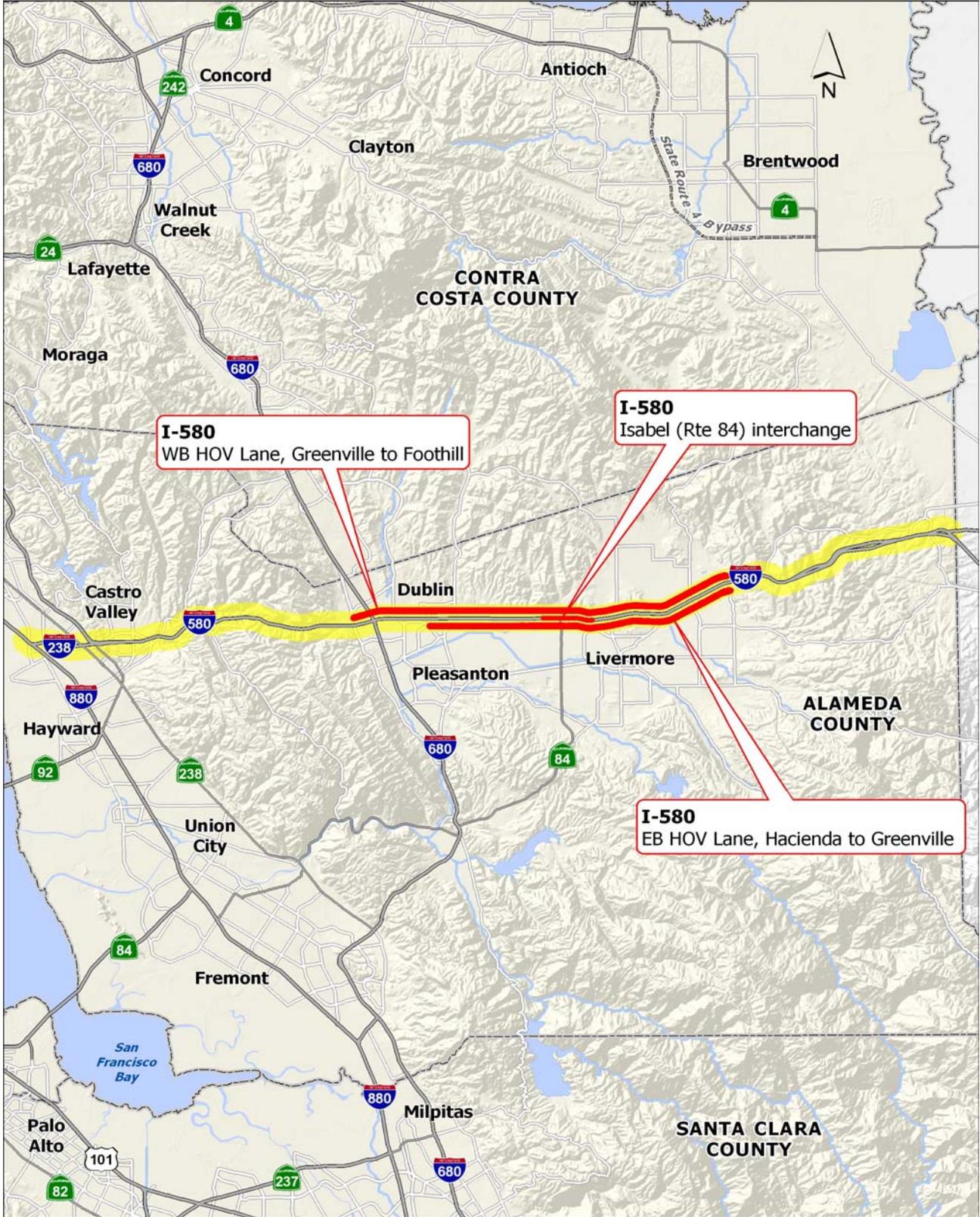


Figure 2: CMIA-Funded Projects on the I-580 East CSMP Corridor

### I-580 East CSMP Corridor Team

The Core Stakeholder Group for the I-580 East CSMP Corridor is identified as Caltrans, MTC and ACCMA. Representatives met early in the development process to discuss the goals, objectives and schedule of the CSMP. This group met regularly to review and approve operational and micro-simulation data collection and analysis methodology, technical reports, and identified additional planning agency partners for further CSMP development. This Stakeholder Group and key local jurisdictions along the corridor met as a TAC at regular intervals, and provided valuable input on the recommended improvement strategies for the Corridor. The key stakeholders listed below were identified for involvement in the engagement process.

#### **Key Stakeholders**

##### **Core Stakeholder Group**

- Caltrans
- Metropolitan Transportation Commission
- Alameda County Congestion Management Agency

##### **Additional Planning Agency Partners**

- City of San Leandro
- City of Hayward
- City of Dublin
- City of Pleasanton
- City of Livermore
- Alameda County
- Alameda County Transportation Improvement Authority
- Transit Agencies (BART, LAVTA-WHEELS, AC Transit)
- Altamont Commuter Express
- Association of Bay Area Governments
- Bay Area Air Quality Management District

### 3. CORRIDOR DESCRIPTION

The I-580 East CSMP Corridor is the primary east/west route connecting the Bay Area with Central Valley commerce and provides access to the I-5 freeway. Histori-

cally, the Corridor was part of old U.S. 50. The Corridor comprises one of the segments in the primary highway path between the San Francisco Bay Area and Southern California metropolitan areas. The Corridor serves the growing number of commuters living outside the Bay Area, provides access for the movement of goods and freight into and out of the region, and serves significant recreational travel during weekends and summer months, to and from the Central Valley, the Sierras and Southern California. The cities of Livermore, Pleasanton, Dublin and the community of Castro Valley are the main urban centers along the Corridor. Livermore, Pleasanton, Dublin are included in what is referred to as the “Tri-Valley” region.

The Corridor is characterized by steep grades from I-205 to the west side of the Altamont Pass then continues through the highly urbanized, Tri-Valley area, including the interchange with I-680. West of the Tri-Valley area, the corridor is again characterized by another steep grade referred to as the Dublin Grade. Finally, the corridor passes through the urbanized area of Castro Valley and closely spaced interchanges including the roughly two-mile segment of I-238 that connects to I-880 in the city of Hayward.

The Corridor is functionally classified as a Principal Arterial – Interstate Freeway. The I-580 freeway segment is primarily an eight-lane freeway facility, with four mixed flow lanes in each direction, from the I-205 Interchange in the east to the I-238 Interchange to the west. Auxiliary lanes are constructed between certain interchanges of the I-580 segment of the Corridor. A new eastbound HOV lane from the Portola Overcrossing to Greenville Rd. was constructed and open to traffic as of Fall of 2009. There is ramp metering along the I-580 facility. The I-238 segment of the Corridor is a six-lane facility with three lanes in each direction (as of Fall 2009). There is no ramp metering along the I-238 segment of the corridor.

#### Goods Movement

The Corridor is a National Network Route, allowing Surface Transportation Assistance Act (STAA) trucks, and

designated as a High Emphasis Route on the Inter-regional Road System (IRRS). The Corridor is the primary connection between the Bay Area and the national interstate truck network and experiences the second highest volume of truck traffic in the region, most of it long-haul in nature and involving the heaviest trucks. The Corridor serves as a major conduit for freight being transported to and from the Port of Oakland, other origin and destination points and to manufacturing industries, farms and distribution centers in the Central Valley. Trucks consist of 5.7 to 13.3 percent of the total vehicle volume along the Corridor.

The Corridor includes the Altamont Pass (elevation 755 feet<sup>1</sup>) located in the Diablo Range between the San Joaquin Valley and the Livermore/Pleasanton area and is characterized by steep grades. Trucks traveling through the Altamont Pass are unable to maintain typical freeway speeds on the upgrades, causing congestion. It is also a Union Pacific rail corridor accommodating UP freight traffic. The ACE operates along the corridor on the Union Pacific owned rail line between the San Joaquin Valley and the San Francisco Bay Area.

Trucks over 4.5 tons are prohibited on I-580 between the San Leandro border and Grand Avenue in the City of Oakland (beyond the I-580 East CSMP Corridor limits). These heavy trucks are thus required to take I-238 and I-880 as an alternative route through Oakland. This location is essentially at the Foothill Boulevard off-ramp where westbound trucks must exit I-580.

According to the CSMP technical analysis, the most critical issues for truck movement in the Corridor are the unpredictable levels of congestion in the westbound direction during the morning peak hours and in the eastbound direction during the afternoon peak hours.

#### Transit

The transit network along the Corridor includes express commuter services connecting the Central Valley to the Bay Area and local transit services that provide connections within the Tri-Valley region, specifically Dublin, Pleasanton and Livermore. The major providers are

BART, ACE, and the Livermore Amador Valley Transit Authority (LAVTA) bus service, also known as WHEELS. Transit comprises eleven percent of the mode-share along the Corridor.

#### Major Arterials

The Corridor intersects with I-680 in the city of Dublin, SR-84 near the City of Livermore, and SR-238 and SR-185 near the cities of San Leandro and Hayward. The I-580 freeway segment of the Corridor has ten full interchanges. The Livermore, Pleasanton and Castro Valley local area arterial network experiences bypass traffic from the Corridor. The use of these alternate routes from the mainline freeway is referred to in the Livermore General Plan as “cut-through” traffic, because the traffic generated does not stop to patronize local business or job center in the area. Stanley Boulevard and Stoneridge Drive are main alternative parallel routes between Livermore and Pleasanton. Other local parallel arterials to the Corridor are Altamont Pass Road, Dublin Boulevard and Castro Valley Boulevard.

#### Bicycle and Pedestrian Network

Bicycling is prohibited on the I-580 and I-238 facilities. Existing bicycle facilities are located along local arterials and mainly provide access to employment centers, shopping centers, colleges and transit stations. Bicycle facility types include Class 1 (multi-use bikeway), Class 2 (designated bike lanes), and Class 3 (bike route). BART stations along the Corridor have bicycle parking and storage facilities. The Livermore area in particular has many bike paths and hiking trails that permit bicycling, primarily in the major regional parks.

Pedestrian walkways are provided across I-580 at Santa Rita Road, Airway Boulevard and First Street interchanges in the Livermore area. The Isabel Avenue interchange (under construction) will also provide pedestrian walkways. Major gaps in the bicycle and pedestrian network include limited utility across freeway interchanges, the need for continuous, connected facilities and access to transit. Opportunities to improve the bicycle and pedestrian network are addressed in county-wide plans.

<sup>1</sup> United States Geological Survey (USGS) Geographic Names Information System (GNIS) Index

Most general plans for jurisdictions along the Corridor encourage non-motorized transit.

#### Land Use/Major Traffic Generators

The Alameda County population reached 1.5 million in 2005, making it the second most populous county in the region behind Santa Clara County. Sixty-seven percent of Alameda County workers drive to work alone. Historically, the cities of Livermore, Pleasanton, Dublin, and Hayward are prominent along the I-580 East CSMP Corridor, as well as the community of Castro Valley. Various land uses along the Corridor include a mix of single and multi-family residential, undeveloped residential, commercial, light industrial, recreational, agricultural and open space. Commercial and light industrial uses are clustered around interchange areas. Three publicly owned parks are located adjacent to the Corridor. Major trip generators include: The Lawrence Livermore National Lab (LLNL), the Livermore Municipal Airport, the Stoneridge Regional Shopping Mall, Hacienda Crossings Shopping Center, and Las Positas College.

#### Environmental Characteristics/Constraints

It is important to note that the CSMP is general in concept; potential environmental and cultural resource issues would need more detailed scoping and coordination when project development activities occur. The natural environment along the I-580 East CSMP Corridor is highly diversified in terms of its resources and related sensitivities. Seven historical bridges and two wetland areas are located along the eastern segments of the Corridor.

Native American archaeological sites, especially frequent in the western portion of the Amador/Livermore valley area, are likely to be buried beneath the ground surface. Threatened or endangered species are identified in specific areas, and streams along the Corridor have the potential to contain habitat for threatened species such as the California Red-Legged Frog, the California Tiger Salamander and the San Joaquin Kit Fox.

Two major land areas, included in the East Bay Regional Park system are located along or near western segments of the Corridor.

#### Intelligent Transportation System (ITS) and Detection

Existing ITS infrastructure on the I-580 East CSMP Corridor includes Ramp Metering (RM) stations, Traffic Monitoring Stations (TMS), Wireless Magnetometer Vehicle Detection Stations, Changeable Message Signs (CMS), Highway Advisory Radio (HAR), Extinguishable Message Signs (EMS), and Closed-Circuit Television (CCTV) cameras. Weigh-in-motion (WIM) sensors are in place at both weigh stations located between the Greenville Road/North Frontage Road interchanges and the Vasco Road Interchange; eastbound and westbound directions. Caltrans strives for traffic detection to be located at one-third to one half-mile intervals along the corridor. There is no detection between the I-205 interchange and the North Flynn Road Overcrossing. Key gaps in the detection network exist for approximately 6 miles between Schafer Ranch Road Undercrossing, just west of the I-680 Interchange, to just east of the I-238 split (there is one TMS midway). Figure 3 on the next page illustrates TMS along the Corridor.

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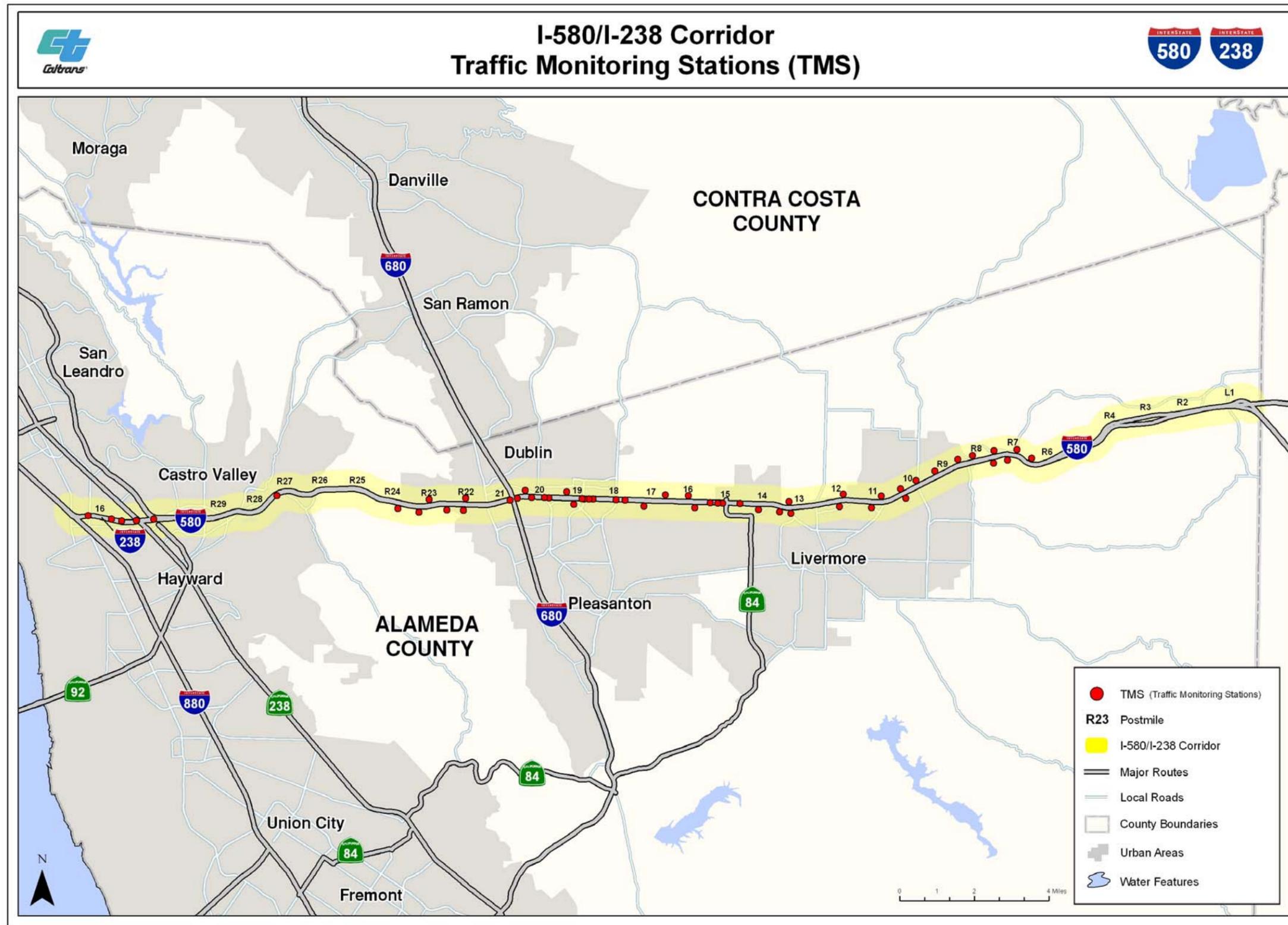


Figure 3: Traffic Monitoring Stations along the I-580 East CSMP Corridor

#### 4. COMPREHENSIVE CORRIDOR PERFORMANCE ASSESSMENT

##### Freeway Performance Initiative (FPI)

A corridor performance assessment and technical analysis of the I-580 East CSMP Corridor was contracted through the FPI partnership between MTC and Caltrans. The consultant, Dowling Associates, Inc., evaluated the current performance along the corridor and determined causes of performance problems.

Simulation modeling was used to forecast future travel conditions along the corridor. Traffic analysis methods were used to predict the impacts of a variety of operational strategies and investment scenarios. The micro-simulation model was limited to four intersections at each freeway interchange and could not feasibly model the

diversion effects outside of their impacts on the surface streets in the immediate vicinity of each interchange. The interaction between corridor improvement strategies and their impacts on parallel surface streets are modeled in the ACCMA demand model, which also takes into account mode shift effects.

The ACCMA model has extensive enough geographic coverage to accurately model impacts on arterials such as Stanley Boulevard, Stoneridge Drive, SR-84 (Isabel Parkway), and Dublin Boulevard.

The consultant presented comprehensive analysis results of existing and future traffic conditions to the TAC in January 2009 and presented conclusions and recommendations for phased corridor management improvement strategies to the TAC in April 2009.

##### I-880 to Fallon Road



##### Fallon Road to I-205

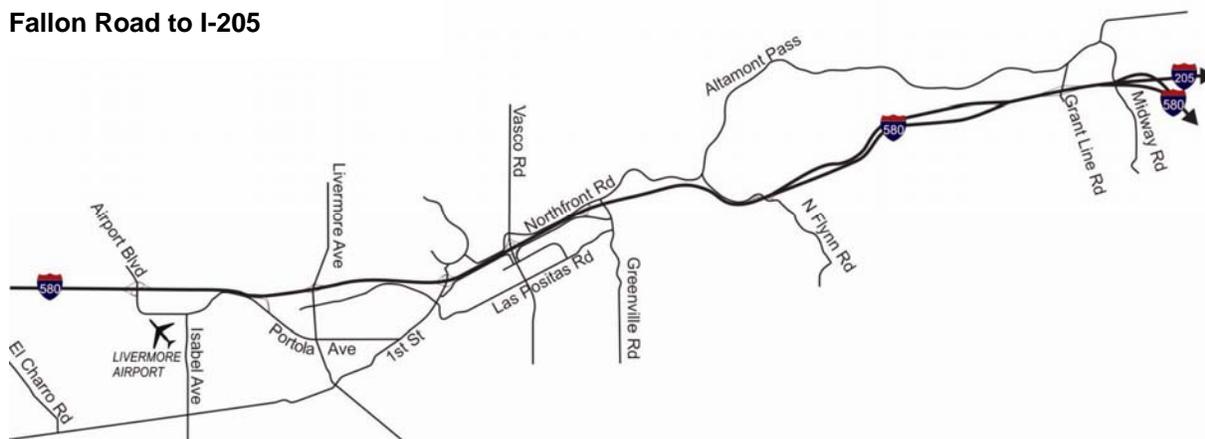


Figure 4: Alameda 580/238 Study Corridor (from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2, Figure 1, page 9)

Dowling Associates, Inc., completed the tasks and deliverables associated with the FPI from April 2008 to April 2009. The final technical analysis report, *ALA-238/580 Corridor System Management Plan Technical Analysis Report*, dated May 2009, is located in Volume 1. Memorandums related to project schematics and cost estimates, travel demand forecasting and traffic operations analysis methodology, and traffic micro-simulation approached are located in Volume 2, Appendix II.

Key Findings and Conclusions

Baseline conditions and performance trends are presented in *ALA-238/580 Corridor System Management Plan Technical Analysis Report*, in areas of Mobility, Reliability, Safety, Productivity and Preservation. Performance trends are reported for 2008 (existing conditions), 2015 (assuming completion of currently programmed and under construction projects), and 2035 (assuming only improvements up to 2015).

The following existing conditions and trends are summarized in the CSMP technical analysis (Volume 1; Section 2; page 3):

- Current programmed capacity, traffic management, and transit improvements for 2015 will solve much of the existing traffic congestion problems in the corridor by the year 2015.
- New bottlenecks will arise in other locations as a result of increased demand between now and 2015, and the increased ability of traffic to move on the freeway after the existing bottlenecks are resolved.
- Increased demand after 2015 will soon greatly exceed the available capacity of the corridor. Congestion will increase significantly and reliability will deteriorate appreciably.
- Additional capacity, traffic management, demand management, and transit improvement will be required to address post-2015 needs.

The following existing conditions, performance trends and forecasts are extracted from the CSMP technical analysis (Volume 1; Section 2; Chapters 4 and 5, pages 29-87):

- The overwhelming majority of incidents on the Corridor are non-accident incidents. The section of I-580 between I-680 and I-205 experiences the greatest number of incidents (see Table 2).
- Future pavement conditions will be impacted favorably by improvements planned during the next five years along the corridor.
- Daily transit boardings are forecasted to increase by 145% between 2008 and 2035 (see Table 3).

Eastbound				
	I-580 I-205 to I-680	I-580 I-680 to I-238	I-238 I-580 to I-880	Entire Corridor
Accident, Injury	58	9	5	72
Accident, Non-injury	280	58	12	350
Accident, Other	157	39	9	205
Other Incident	768	306	57	1,131
Any Incident	1,263	412	83	1,758
Westbound				
	I-580 I-205 to I-680	I-580 I-680 to I-238	I-238 I-580 to I-880	Entire Corridor
Accident, Injury	71	17	7	95
Accident, Non-injury	299	94	36	429
Accident, Other	188	56	16	260
Other Incident	774	361	75	1,210
Any Incident	1,332	528	134	1,994

Table 2: Summary of Total Incidents I-580 (from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2, Tables 29 and 30, page 38)

Daily Boardings	2008	2015	2035	Growth
<b>BART</b>				
Castro Valley	2,500	2,690	3,950	58%
West Dublin	0	2,400	3,570	infinite
Dublin/Pleasanton	7,800	12,940	19,880	155%
BART Subtotal	10,300	18,030	27,400	166%
Wheels	6,900	7,120	11,560	68%
Tri-Delta Transit	150	155	251	68%
ACE Train	3,750	3,690	11,690	212%
San Joaquin RTD	1,310	1,290	4,090	212%
<b>Total Corridor</b>	<b>22,410</b>	<b>30,285</b>	<b>54,991</b>	<b>145%</b>

*Table 3: Daily Transit Ridership Trends  
(from ALA-238/580 Corridor System Management Plan  
Technical Analysis Report-Volume 1, Section 2, Table 37,  
page 47)*

- Peak period traffic demand on the I-580/I-238 freeways is forecasted to grow by between 32% and 110% between 2008 and 2035.
- The daily vehicle hours of delay (VHD) on the freeways is forecasted to increase by up to 89% in the AM Peak and by up to 38% in the PM Peak in 2015.
- Lost peak period productivity is projected to experience increase along the Corridor.
- 75% increase on I-238; I-880 to I-580 from 3.3% (2008) to 5.7% (2035).
- 41% increase on 580; I-238 to I-680 from 3.3% (2008) to 48% (2035).
- 338% increase on I-580; I-680 to I-205 from 26% (2008) to 114% (2035).
- This corridor experiences the second-highest volume of truck traffic in the region (about 12,000 trucks a day); most of it is long haul and involves the heaviest trucks.

### Surface Street Management and Operations

(pages 61, 67-69):

The CSMP technical analysis also addresses surface street operational issues on several of the major arterials leading to the I-580 freeway, particularly in the Pleasanton and Hayward areas.

- The daily vehicle-hours of delay on the surface streets are forecasted to increase marginally or even decrease in 2015 due to roadway network improvements. However, by 2035, severe congestion would occur given no additional improvements.
- Key surface street bottlenecks near the I-580 and I-238 freeways are located at Hopyard and Hacienda Roads (at Owen Drive), Santa Rita Road at I-580 EB; Castro Valley Blvd. at Crow Canyon Rd., and Grove Way and Foothill Blvd.
- These bottlenecks at signalized intersections are operating at peak hour volume capacity (V/C) ratios greater than 1.00 or delays greater than LOS "E".\*

*\*According to the Caltrans Highway Capacity Manual, V/C ratio of 0.85 is considered under capacity and over 1.00 is considered over capacity.*

### Surface Street Management Improvements

(pages 165-169):

The CSMP technical analysis recommends improvements to surface streets and notes that studies of signal timing optimization have shown surface street management to be highly cost-effective.

- Short-term surface street management improvements consist of continued improvement of signal system coordination and optimization with integration as appropriate with freeway operations.
- Long-term surface street management improvements consist of continuing to improve signal coordination, incident detection, and incident management on surface streets.

The CSMP technical analysis also describes the following operations issues, goods movement issues, short-term and long-term forecasted performance, and the causes of existing congestion along the Corridor (source pages are provided):

**Existing 2008 Corridor Operations Issues (page 103)**

- Insufficient through capacity on I-238 between I-880 and I-580 in San Leandro.
- Insufficient through capacity on I-580 between the Tassajara Road/Santa Rita Road interchange in Dublin/Pleasanton and the Airway Boulevard interchange in Livermore.
- Upgrade operational problems on the approaches to the Altamont Pass between Livermore and Tracy.
- An off-ramp capacity bottleneck for westbound I-580 at the I-680 interchange.

**Goods Movement Issues**

- Increasingly, regional distribution centers have located in the San Joaquin Valley and trucks providing goods to the Bay Area use this corridor for access (page 86).
- The growing competition between freight rail needs and passenger rail needs in the Altamont Pass Corridor (I-580) (page 87).
- Unpredictable levels of congestion in the westbound direction during the morning peak and in the eastbound direction during the afternoon peak (page 123).

**Short Term 2015 Forecasted Performance (pages 103-104)**

- Performance along the I-580 East Corridor is forecasted to deteriorate modestly between 2008 and 2015 due to the many projects to be constructed in this time period.

- Many of the bottlenecks currently active in 2008 will dissipate in 2015 due to the widening of I-238, the addition of HOV lanes in the Dublin/Pleasanton, ramp metering, and the construction of the east-bound truck climbing lane east of Greenville Road leading up to the Altamont Pass.
- Some new bottlenecks will result from increased demands expected between 2008 and 2015.

**Long-Term 2035 Forecasted Performance (page 104)**

- Performance along the I-580 East Corridor deteriorates dramatically after 2015, assuming that no additional projects are built.
- No additional capacity or traffic management improvements past 2015 will result in re-activating all of the existing bottlenecks relieved by the 2015 improvements.

**Causes of Existing Congestion**

Freeway bottlenecks throughout the I-580 East CSMP Corridor, and associated recurring congestion, cause delay upstream of the bottleneck locations and create various operational challenges.

High traffic volumes occur as two major freeway mainlines join together (I-205 and I-580) at the eastern limit, and at the I-880 connector with I-238 at the western limit. Traffic delays, along the corridor, occur upstream of Greenville Road, Hacienda Drive, I-680, Strobridge Avenue, and Crow Canyon Road. Operational challenges include lane drops near off-ramps, short weaving distances between on- and off-ramps and high diverging off-ramp volumes. Table 4 and Figure 5, from the CSMP technical analysis report, illustrate and describe existing bottleneck locations along the Corridor.

Direction	No.	Bottleneck Location	Peak	Main Cause
I-238 SB*	A	I-880 NB on to Lewelling off-ramp	PM	Insufficient capacity lane drop
I-238 NB*	B	I-580 EB on to I-880 SB off-ramp	AM	Insufficient capacity
			PM	
I-580 EB	C	Santa Rita Road to Fallon off-ramp	PM	Recurring, over-capacity
	G	East of Greenville	PM	Upgrade to pass
I-580 WB	D	Dougherty Rd on-ramp to I-680 off-ramp	AM	Recurring, weaving
	E	Airway Blvd on-ramps to Tassajara Rd off-ramp	AM	Recurring, over-capacity
	F	I-205 merge to Grant Line Road	AM	Recurring, major merge

Table 4: Existing Bottleneck Locations (summarized from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2, Table 50, page 70)

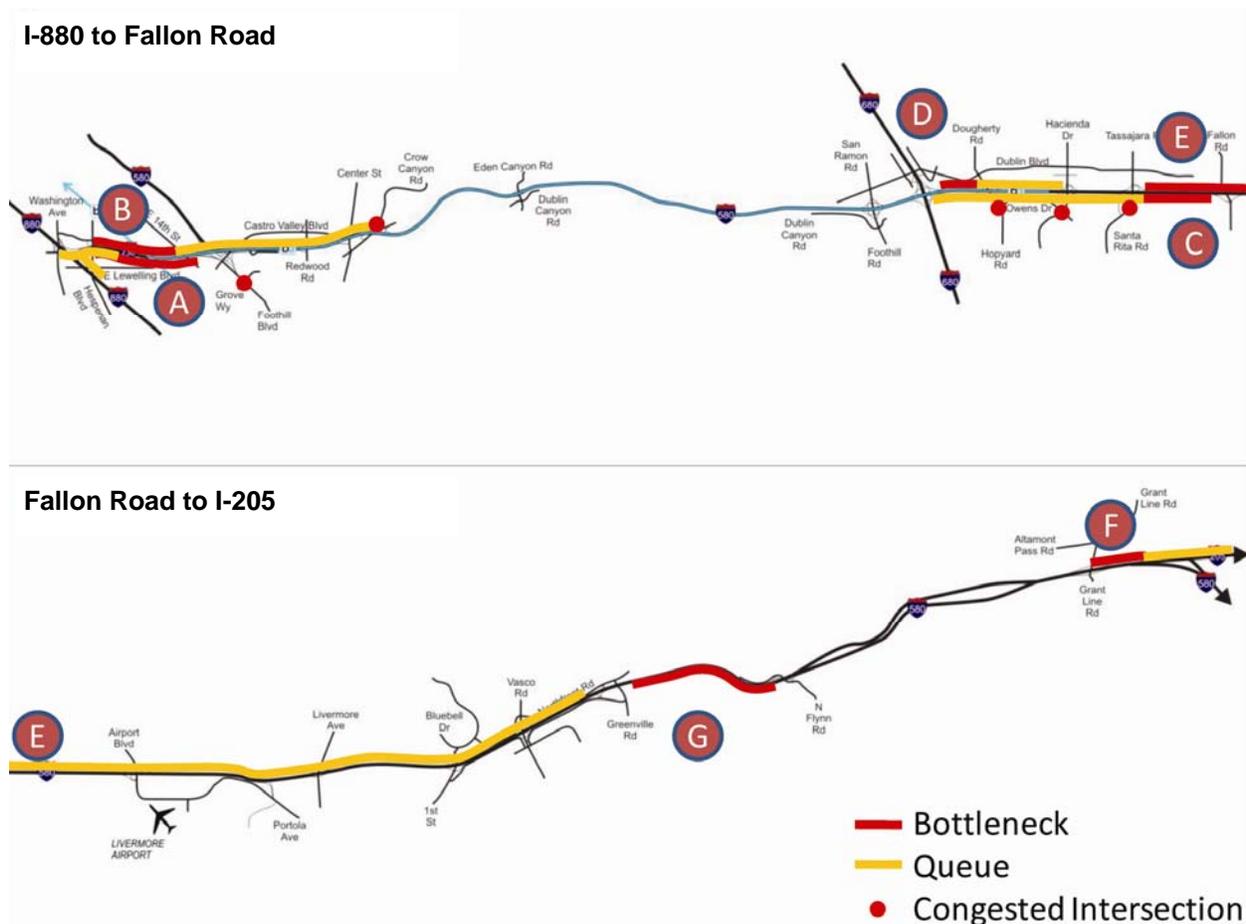


Figure 5: Existing 2008 Recurrent Weekday Congestion on I-580 (from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2, Figure 21, page 69)

### 5. RECOMMENDED CORRIDOR MANAGEMENT IMPROVEMENT STRATEGIES

The CSMP technical analysis report recommends short-term and long-term improvements in six categories: Freeway Management, Surface Street Management, Freeway Capacity, Surface Street Capacity, Transit, and Additional Demand Management and Other Measures. Recommended ITS improvements are also presented (See Tables 5, 6 and 7). The corridor-wide mobility performance is illustrated in Table 8 for short- and long-term recommended improvements.

#### Corridor Management Strategies

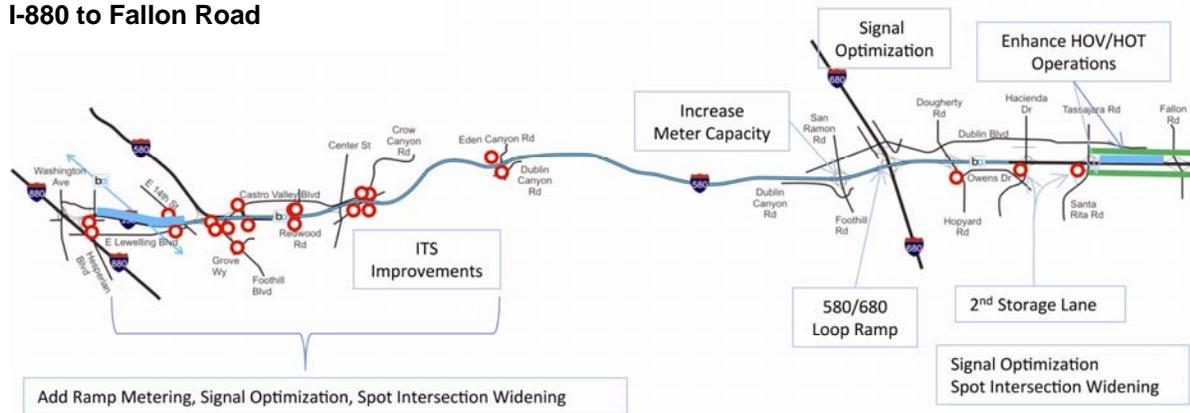
Corridor management strategies selected for the I-580 East CSMP Corridor address the existing and forecasted mobility, lost productivity, bottleneck, and reliability problems identified in the comprehensive performance assessment.

Transit service and goods movement within the Corridor are also adversely affected by the same problems.

Based on the comprehensive corridor performance assessment and CSMP technical analysis, the following corridor management improvement strategies were presented to the TAC for consideration. These recommended corridor improvement strategies are also illustrated in Figure 6.

- ITS improvements
- Corridor-wide ramp metering
- Signal optimization
- Augmented FSP
- Accelerated planned auxiliary lane and ramp improvements
- Extended and enhance HOV/HOT Operations
- Major interchange improvements
- Additional transit and TDM improvements

#### I-880 to Fallon Road



#### Fallon Road to I-205

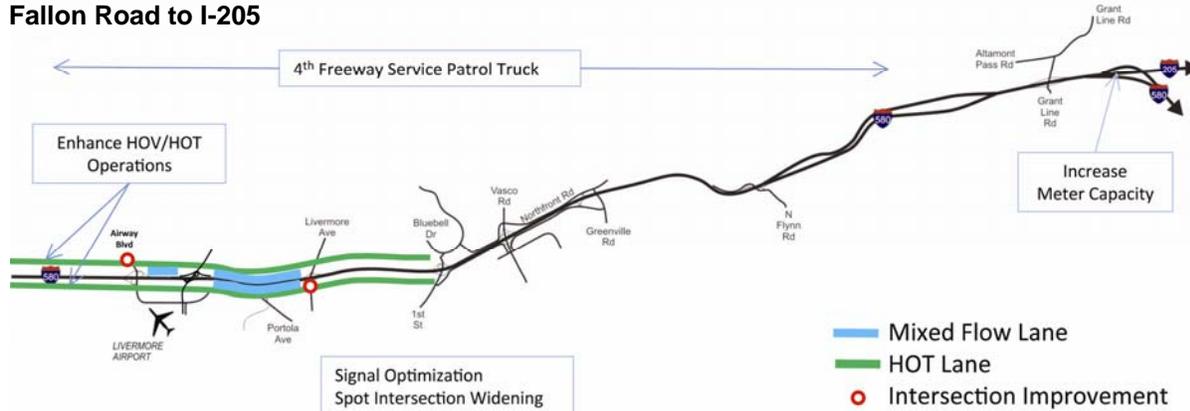


Figure 6: Recommended Corridor Improvement Strategies (Source: Dowling Associates, Inc. PowerPoint Presentation to the I-580 East CSMP TAC, April 8, 2009)

## Recommended Short-Term Improvements

A total of \$62.3 million of short-term improvements are recommended in addition to currently programmed projects expected to be in place by 2015. These improvements would preserve corridor mobility at current levels through 2015. The recommended short-term improvements from the CSMP technical analysis are listed in Table 5 below.<sup>2</sup>

Freeway Management Improvements		Construction Cost (\$million)*
1	Increase ramp meter capacity above 900 vph at the following metered on ramps:	1.0 (1)
	a. San Ramon/Foothill Road On	
	b. I-580 Westbound on-ramp at I-205	
2	Increase storage capacity for following metered on-ramps:	2.6
	a. Hacienda Loop On to EB 580 (increase storage to 2 lanes)	
	b. Tassajara Loop On to EB 580 (increase storage to 2 lanes)	
3	Install ramp meters with HOV lanes (where Right of Way allows) at the following on-ramps:	35.0
	a. Hesperian Blvd. to I-238 SB	
	b. East 14th Street to I-238 WB	
	c. East Lewelling Blvd. to I-238 WB	
	d. Foothill Blvd. to I-238 NB	
	e. Foothill Blvd. to I-580 EB	
	f. Strobridge Avenue to I-580 EB	
	g. Redwood Road to I-580 EB	
	h. Redwood Road to I-580 WB	
	i. Grove Way Loop On to I-580 EB	
	j. Grove Way direct On to I-580 EB	
	k. East Castro Valley Blvd. to I-580 WB	
	l. Eden Canyon Road to I-580 EB	
	m. Eden Canyon Road to I-580 WB	
4	Install ITS Improvements in corridor (see section on Recommended ITS Improvements below).	0.5
5	Improve eastbound HOT lane operations between Santa Rita/Tassajara On and First Street Off to address forecasted capacity shortfall.	3.8 (2)
6	Improve westbound HOT lane operations between First Street On and Santa Rita/Tassajara Off to address forecasted capacity shortfall.	3.8 (2)
7	Add 4th truck to Freeway Service Patrol Beat #22 (I-580: Hacienda to Grant Line) to keep average customer wait time below 10 minutes. Increase operating hours to 5:30 AM to 9:30 AM and 3:30 PM to 7 PM to be consistent with adjacent beat #27.	(3)
<b>Surface Street Management Improvements</b>		
8	Continue Improvement of Signal System Coordination and Optimization with integration as appropriate with freeway operations.	5.0

\* The basis for cost estimates are provided in Volume 2, Appendix II, Memorandum: I-580 CSMP Recommended Improvement Projects Schematics and Cost Estimates

*continues on next page*

<sup>2</sup> ALA-238/580 Corridor System Management Plan Technical Analysis Report, Volume 1, Section 2

continued from previous page

Freeway Management Improvements		Construction Cost (\$million)*
<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 auxilliary lane between N. Livermore and Isabel.	(4)
11	Accelerate Construction of WB auxilliary lane between Isabel direct on and Airway Off.	(4)
12	Accelerate Construction of WB auxilliary lane between Fallon/EI Charro Off and Tassajara/ Santa Rita Loop On. <sup>3</sup>	(4)
13	Add 4th lane WB from Mission/East 14th off to I-880 SB off.	5.6
14	Accelerated Construction of EB auxilliary lane between Isabel direct on and N. Livermore off.	(4)
<b>Surface Street Capacity Improvements</b>		
15	Spot Intersection capacity improvements:	4.7
a.	East Lewelling Blvd. and Hesperian Blvd	
b.	Castro Valley Blvd. and Foothill Blvd	
c.	Foothill Blvd. and Grove Way	
d.	Castro Valley Blvd. and Stanton Avenue	
e.	Redwood Road and I-580 WB Off-ramp	
f.	Castro Valley Blvd. and Grove Way/Crow Canyon Road	
g.	Hopyard Road and Owens Drive	
h.	Airway Blvd. and North Canyon Parkway	
<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.	(5)
17	Preserve frequency and number of routes of County Connection and Tri-Delta express bus service to Dublin/Pleasanton BART Station.	(5)
<b>Additional Demand Management and 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>

- (1) Cost estimate is for adding lane to ramp.
- (2) Cost estimate is for adding second HOT lane, but excludes right-of-way costs that might be necessary to preserve BART in median option. Other options available for increasing capacity.
- (3) No capital costs if vehicle is leased.
- (4) Possible reduction in construction costs if work is moved up to earlier year.
- (5) No capital costs involved in preservation of existing routes and services.

\* The basis for cost estimates are provided in Volume 2, Appendix II, Memorandum: I-580 CSMP Recommended Improvement Projects Schematics and Cost Estimates

Table 5: Recommended Short-Term Improvements  
(from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2, Table 4, page 5)

## Recommended ITS Improvements

A total of \$500,000 of ITS enhancements is recommended for the corridor. This cost estimate is in addition to the costs of completing implementation of the on-going Caltrans Ramp Meter Deployment Plan (RMDP) and the I-580 Transportation Management Plan (TMP) programs. The recommended ITS improvements from the CSMP technical analysis are listed below.<sup>4</sup>

Item	Description
Caltrans Ramp Meter Deployment Plan (RMDP)	Continue Implementation of Caltrans RMDP for corridor. This involves metering all remaining on-ramps in corridor, and the metering of selected freeway to freeway connectors at I-680/I-580 and I-580/I-205 interchanges.
I-580 TMP	Continue implementation and integration of I-580 Corridor Transportation Management Plan ITS Improvements (see Figure 29 for details).
TMS (Traffic Monitoring stations)	Furnish, install and maintain RTMS units for monitoring 8-lane freeway facility at the following locations:
	• I-580/EI Charro
	• I-580/North Flynn
CCTV (Closed Circuit Television)	Furnish, install and maintain CCTV cameras with PTX control, CODEC, camera tower and mounting and utilities at the following locations:
	• I-238/Hesperian
	• I-580/North Flynn
Fixed CMS (Changeable message signs)	Furnish, install and maintain fixed CMS units and utilities for overhead structure spanning one direction of travel at the following locations:
	• I-580 westbound at Eden Canyon Road

*Table 6: Recommended I-580/I-238 ITS Improvements  
(from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2, Table 5, page 7)*

Recommended Long-Term Improvements

A total of \$2,394 million of long-term improvements are recommended for the corridor (these long-term improvements are in addition to currently programmed projects expected to be in place by 2015 and the additional short-term improvements recommended in Table 5). These long term improvements would not be sufficient to preserve the mobility of single-occupant vehicles in the corridor, but would greatly enhance mobility for the alternative modes in the corridor (high occupancy vehicles, highway transit, and rail transit). The recommended long-term improvements from the CSMP technical analysis are listed in Table 7 below.<sup>5</sup>

<b>Freeway Management Improvements</b>		<b>Construction Cost (\$million)*</b>
19	Extend Single HOT lanes:	365.3
a.	Westbound between I-680 and Redwood Road	
b.	Eastbound between Redwood Road and Hacienda	
c.	Westbound between I-205/Mountain House Parkway and Greenville Road	
d.	Eastbound between Greenville Road and I-205/Mountain House Parkway.	
20	Improve operations of HOT lanes to address forecasted capacity shortfalls for following sections:	7.4
e.	Westbound between Santa Rita and I-680	
f.	Eastbound between First Street and Vasco Road	
21	Construct Direct Ramp I-580 WB to I-680 SB - w/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	(This project number Not Used)	
<b>Surface Street Capacity Improvements</b>		
30	Widen SR-84 to 4 lanes divided expressway I-680 to Isabel Avenue to Stanley (off loads I-680/I-580 Interchange).	129.6
31	Widen SR-84 (Isabel Parkway) to 6-lane expressway Stanley to Jack London.	(1)
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).	15.5
33	El Charro Road extension to Stanley Blvd. (off loads Santa Rita interchange)	18.5

\* The basis for cost estimates are provided in Volume 2, Appendix II, Memorandum: I-580 CSMP Recommended Improvement Projects Schematics and Cost Estimates

<sup>5</sup> ALA-238/580 Corridor System Management Plan Technical Analysis Report, Volume 1, Section 2

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Freeway Management Improvements		Construction Cost (\$million)*
<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 <sup>6</sup>
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.	(2)
41	Bus Rapid Transit between major Livermore employers and BART/ACE train Livermore Station	23.0
<b>Additional Demand Management and Other Measures</b>		
42	Restrict I-580 over Altamont pass to 8 mixed-flow lanes (4 each direction).	(3)
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.	6.0
<b>Total</b>		<b>2,394.4</b>

Notes:

- (1) Cost is included in cost estimate for Project #30. Widen SR-84 to 4 lanes divided expressway.
- (2) Capital costs would depend on fare reading equipment requirements.
- (3) No capital cost for this measure.

\* The basis for cost estimates are provided in Volume 2, Appendix II, Memorandum: I-580 CSMP Recommended Improvement Projects Schematics and Cost Estimates

*Table 7: Recommended Long-Term Improvements*  
*(from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2, Table 6, page 8)*

<sup>6</sup> Estimate based on the *BART to Livermore Extension EIR Notice of Preparation* (June 2008). The *BART to Livermore Extension DEIR* (November 2009) estimates various alternatives to cost up to \$3.6 billion.

Performance with Recommended Improvements

The recommended strategies and improvements were evaluated using the Paramics micro-simulation model. The I-580/I-238 corridor-wide results are shown in Table 8 and Table 9. See the CSMP technical analysis, Volume 1, Section 2, pages 165 to 179 for more details regarding recommended strategies, program benefits and impacts.

The CSMP technical analysis concluded that the recommended short-term freeway management improvements generally preserve current freeway congestion levels through 2015 with some improvement in average delay per person. The recommended long-term improvements provide as much improvement of congestion problems

as feasible, but are insufficient to serve the anticipated growth in travel between the San Joaquin Valley and the San Francisco Bay Area.

Table 8 shows short-term freeway performance results for mobility. The 2008 figures represent existing conditions. The 2015 programmed figures include all programmed improvements for the corridor and compare results with existing conditions. The 2015 recommended figures then show further results with recommended short-term improvements.

Table 9 shows long-term freeway performance results for mobility. The 2035 figures compare results with and without recommended long-term improvements.

Performance Measure	2008	2015	% Change existing to 2015 program		2015	% Change 2015 program to recommend	
	Existing	Programmed			Recommended		
<b>Mobility</b>							
Person Miles of Travel (PMT)	3,849,400	4,369,300	13.5%	↑	4,369,300	0.0%	same
Person Hours of Travel (PHT)	91,900	108,700	18.3%	↑	104,312	-4.0%	↓
Person Hours of Delay (PHD)	30,400	38,500	26.6%	↑	34,112	-11.4%	↓
Mean Person Speed (mph)	42	40	-4.8%	↓	42	5.0%	↑
Mean Delay/Person (mins)	20	24	20.0%	↑	17	-29.2%	↓

Table 8: Short-Term Freeway Performance with Recommended Improvements

2035				
Performance Measure	w/o Improvements	w/ Recommended Long-Term Improvements	% Change	
<b>Mobility</b>				
Person Miles of Travel (PMT)	6,358,700	6,177,000	-2.9%	↓
Person Hours of Travel (PHT)	560,300	462,574	-17.4%	↓
Person Hours of Delay (PHD)	457,500	363,974	-20.4%	↓
Mean Person Speed (mph)	11	13	18.2%	↑
Mean Delay/Person (mins)	284	245	-13.7%	↓

Table 9: Long-Term Freeway Performance with Recommended Improvements



Figure 7 illustrates the comparative impacts of phased recommend improvements on identified bottlenecks along the Corridor. Existing bottlenecks (2008) are compared to bottlenecks in 2015 with programmed improvements, and

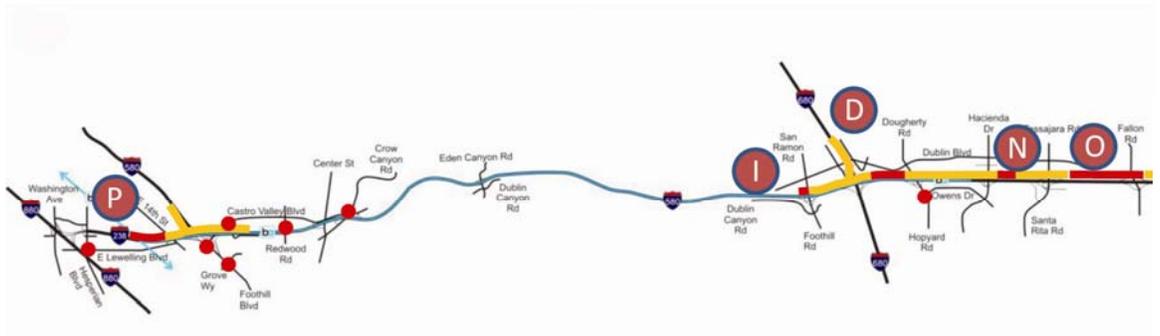
then with programmed plus recommended improvements. After 2015, increased demand will greatly exceed the available capacity of the corridor. Bottlenecks in 2035 if no further improvements are implemented, are illustrated.

**I-880 to Fallon Road**

Existing Bottlenecks in 2008



2015 Bottlenecks with Programmed Improvements



2015 Bottlenecks with Programmed plus Recommended Improvements



2035 Bottlenecks if no further Improvements



Figure 7: Existing and Future Bottlenecks Comparison (summarized from ALA-238/580 Corridor System Management Plan Technical Analysis Report-Volume 1, Section 2; Figure 21 page 69, Figure 22 page 73, Figure 23 page 76 and Figure 37 page 148)

### Fallon Road to I-205

