



## INTRODUCTION

The 2003 *Comprehensive County Expressway Planning Study* provided a long-term plan for the improvement and maintenance of the County Expressway System. It included all areas of need: capacity and operational improvements, signal operations, high-occupancy vehicle (HOV) lanes, bicycle and pedestrian improvements, and finishing elements such as landscaping and sound walls. It also included a summary of ongoing operating and maintenance needs and funding strategy recommendations.

On March 3, 2009, the Board of Supervisors adopted the *Comprehensive County Expressway Planning Study – 2008 Update*. The 2008 Update was primarily an administrative update of the 2003 Expressway Study. It included updating project lists and cost estimates for all elements, providing an expanded approach for the pedestrian element, and adding improvement needs for the Santa Teresa Blvd-Hale Avenue corridor in South County.

The 2008 Update listed 74 Capacity and Operational Improvement projects at a total estimated cost range of \$2.2 billion to \$2.6 billion. Twenty-five of these projects, estimated cost of \$166 million, were designated as Tier 1A projects, the highest priority projects. The 2008 Update also listed the following needs:

**Table 1**  
**2008 Update Project List and Costs**

Element	# of Projects	Cost ('08 millions)
Capacity/Operational – Tier 1A	26	\$179
Capacity/Operational – Tier 1B	5	\$253
Capacity/Operational – Tier 1C	20	\$76
Capacity/Operational – Tier 2	15	\$875 - 930
Capacity/Operational – Tier 3	9	\$861 - 1,126
Capacity/Operational – Total	75	\$2,244 - 2,564
Bicycle	6	\$16.5
Pedestrian		\$76.3 – 84.3
Finishing: Sound Walls		\$63
Finishing: Landscaping		\$24 - 29
O&M Annual Shortfall		\$16

The 2003 Expressway Study and 2008 Update reports are available at [www.expressways.info](http://www.expressways.info).

## EXPRESSWAY STUDY IMPLEMENTATION PROGRESS

Implementation is linked to the availability of funding. As identified in the 2008 Update Funding Strategy, the primary sources of funding for the expressways are the County Road Fund (fuel excise taxes or gas tax), federal and state grants, and local city contributions (e.g., development traffic impact fees or mitigation projects). The 2008 Update identified a funding strategy that relied primarily on a significant infusion of State Transportation Improvement Program (STIP) funds for capital improvements and initiatives to increase the annual revenue stream for operations and maintenance. Unfortunately, the STIP has been a victim of the economy and has not had any new funding capacity for a number of years. Initiatives to increase the operations and maintenance revenue streams have only resulted in the voter-approved annual vehicle registration fee, which is not enough funding to make up for the declining value of the gas tax.

County staff has aggressively pursued a variety of funding opportunities and has made some progress in advancing projects identified in the 2008 Update Expressway Study. As shown in Table 2, over \$46 million in funding has been acquired or committed to expressway system improvements since the 2008 Update was adopted. In addition, \$10 million in grant funding was obtained for pavement rehabilitation as well as \$10 million for the San Tomas Expressway Culvert Rehabilitation project.

Following Table 2 is a status report on signal system capital improvements and expressway operations and maintenance. A list of improvements completed, in progress, or funded for each expressway since adoption of the 2008 Update is also provided.

**Table 2**  
**Expressway Improvements Grants and Contributions**  
**2009 to 2012**

Project Type	Major Funding Sources	Funding/ Improvements Value
ITS/Signal System	<ul style="list-style-type: none"> <li>❖ Transportation Fund for Clean Air</li> <li>❖ MTC Program for Arterial System Synchronization</li> <li>❖ Proposition 1B</li> <li>❖ SB83 Vehicle Registration Fee</li> <li>❖ OBAG</li> </ul>	\$4.01 million
Bicycle	<ul style="list-style-type: none"> <li>❖ Federal Congestion Mitigation and Air Quality (CMAQ)</li> <li>❖ State Transportation Development Act Article 3 (TDA-3)</li> <li>❖ State Bicycle Transportation Account</li> <li>❖ OBAG</li> </ul>	\$6.76 million
Pedestrian (includes Santa Teresa Blvd/Hale Ave project)	<ul style="list-style-type: none"> <li>❖ State TDA-3</li> <li>❖ Cities</li> <li>❖ Proposition 1B</li> <li>❖ Measure B Sales Tax</li> <li>❖ Federal Surface Transportation Program (STP)</li> <li>❖ VTA LRT Project</li> </ul>	\$5.58 million
Finishing Program (Pedestrian, Landscaping, Lighting)	<ul style="list-style-type: none"> <li>❖ VTA Capitol Expressway BRT/LRT Project</li> </ul>	\$20.0 million
Level of Service	<ul style="list-style-type: none"> <li>❖ City Development Traffic Impact Fees</li> <li>❖ North San Jose Agreement</li> <li>❖ VTA Local Program Reserve</li> </ul>	\$19.12 million
Pavement Rehabilitation (includes Santa Teresa Blvd/Hale Ave projects)	<ul style="list-style-type: none"> <li>❖ 2009 American Recovery and Reinvestment Act (ARRA)</li> <li>❖ Rubberized Asphalt Concrete (RAC)</li> <li>❖ Federal STP</li> <li>❖ Proposition 1B</li> <li>❖ SB83 Vehicle Registration Fee (2012)</li> </ul>	\$10.26 million
San Tomas Expressway Culvert Rehabilitation	<ul style="list-style-type: none"> <li>❖ Federal STP</li> </ul>	\$10.0 million

## **Vision**

To maintain high capacity traffic flow on the expressways and accommodate the mobility needs of all users of the expressways and cross streets consistent with the needs of adjacent communities.

## **Signal Operations**

The goal of synchronization along expressways is to time traffic signal lights to turn green as traffic moves along the expressways. It's designed to progress large volumes of through traffic in the peak directions, especially during the peak hour periods, from one end of each group to another. There are 134 signalized intersections along the eight expressways.

## **Traffic Operations System (TOS)**

TOS is an operational system for managing and operating transportation systems with technologies. It is a system made up of various Intelligent Transportation Systems (ITS) components such as surveillance, monitoring equipment, highway advisory radio, and changeable message signs.

## **Status of Improvements**

### **Traffic Responsive Coordination**

All expressways except for Oregon Expressway have implemented traffic responsive coordination. Oregon Expressway will be implemented after the construction of improvements is complete in 2014. With the installation of ITS equipment along Capitol Expressway in 2016, the County will be able to fine-tune and monitor the traffic responsive coordination more effectively for this expressway, which is currently the only expressway without cameras and real time traffic counts.

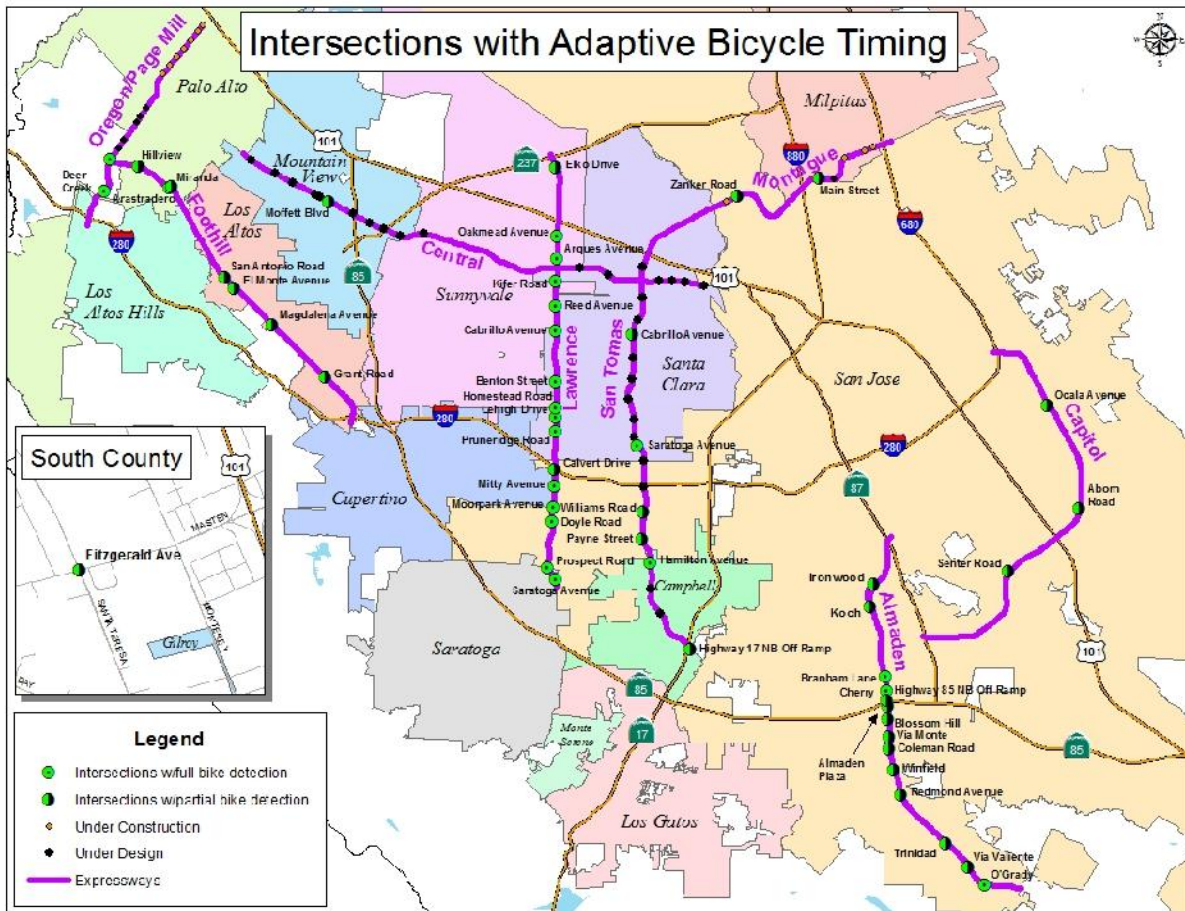
### **Bicycle Detectors and Adaptive Signal Timing**

Bicycle detectors at signalized intersections on the expressway are installed at every opportunity, with either capital improvement projects or as grant opportunities arise. To date, 147 total bicycle detectors have been installed along 56 intersections. A video showing how bicycle detectors help us to provide bicycle timing dynamically is available on our website at [www.countyroads.org](http://www.countyroads.org) under "Related Links". Figure 4 provides a map of the intersections with bicycle signal timing

### **Pedestrian Sensors**

This new program provides additional pedestrian clearance time when needed to accommodate slower pedestrians. The safety net of pedestrian extension time allows for a use of faster crossing times in most cases, resulting in more efficient signal operations and traffic flow. Currently 24 crosswalks at 10 intersections are equipped with microwave pedestrian sensors. These sensors will eventually be installed with every signal project along the expressways that have crosswalks. A video of how pedestrian sensors provide additional timing dynamically is available on our website at [www.countyroads.org](http://www.countyroads.org) under "Related Links".

Figure 4



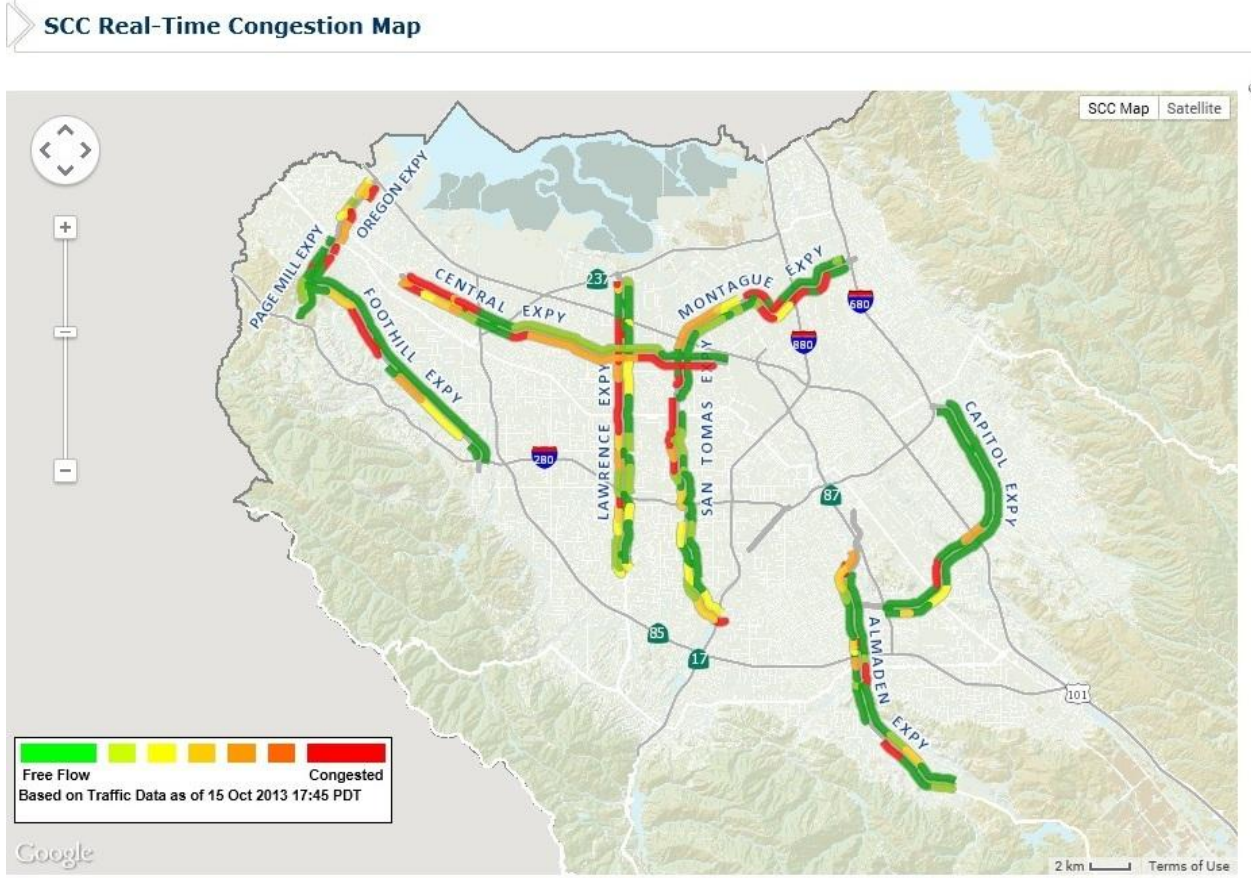
### Traffic Light Synchronization Program (TLSP)

The County received a \$990,000 grant to collect traffic data on the expressways. This project included installation of high definition video cameras replacing the old analog cameras, improved communication network to handle the high band width communication, and video analytics software to extract traffic count data from live video images. A new software program, Arterial PeMS (A-PeMS), allows for storage of traffic and signal timing data, and to view expressway performance in almost real time by displaying current levels of congestion. A real time congestion map is located on the County website: <http://www.sccgov.org/sites/scc/Pages/SCC-Congestion-Map.aspx>. A sample of the congestion map is displayed in Figure 5.

### Side Street Coordination

At various locations on the expressways, notably in Los Altos along Foothill, the County maintains the City signals located close to the expressway intersection, using cable connections to operate side street coordination linked to the expressway operations plan.

**Figure 5**  
**Real-Time Congestion Map**



Real Time Congestion can be viewed on [www.CountyRoads.info](http://www.CountyRoads.info). This screenshot was taken on Tuesday, October 15, 2013, at 5:45 PM.

## Operations and Maintenance

Operations and maintenance (O&M) includes all activities and materials necessary to keep the expressways functioning safely and efficiently while looking presentable. It includes signal operations, sweeping, pavement maintenance, landscape maintenance, enforcement, and aging infrastructure replacement. The 2008 Update noted that \$27.2 million was needed annually to meet target levels of efforts for all O&M activities, but that only around \$10.8 million was available from sustainable revenue sources, leaving a \$16.4 million annual shortfall. This shortfall is expected to grow as real gas tax revenue declines.

The 2008 Update highlighted two O&M needs that were imminent and presented major funding challenges. These needs and their status are as follows:

- San Tomas Expressway Box Culvert Rehabilitation – The 4-mile long culvert that runs in the median of and under San Tomas Expressway is in need of significant repairs to avoid failure. This project is now funded thanks to a federal earmark that covered project design and a recent allocation of \$10 million in federal Surface Transportation Program funds from the OBAG block grant program administered by VTA. The project began construction in Spring 2013.
- Expressway Pavement Maintenance – There is not enough annual gas tax revenue to meet the preventive maintenance pavement needs of the expressway system; therefore, expressway pavement maintenance has been dependent on one-time funding sources, such as grants and sales tax measures. The federal ARRA stimulus grants, federal STP grants, and the County's share of the new Vehicle Registration Fee have contributed \$10 million toward expressway pavement needs over the last four years. However, nearly \$25 million was needed over these same four years to maintain the preventive maintenance schedule of the expressway system. The consequences of deferring maintenance will be an escalating rate of pavement deterioration and greater costs for pavement repairs.

Other significant O&M activities identified in the 2008 Update were signal operations, traffic control/safety devices infrastructure replacement, and landscaping maintenance. As noted in the funding table, signal timing grants have helped significantly in not only updating signal timing plans but in implementing new signal timing technologies and replacing aging infrastructure. Most of these grant sources are recurring and should continue to help keep the signal timing current for the expressways. The new VRF ITS program is a new recurring fund source that can help with infrastructure repairs and replacement.

The dollar amount needed for landscape maintenance is overstated as it is based on the assumption that a basic level of landscaping is provided on all expressways. The County's policy is to only allow installation of new landscaping if full recovery of capital and maintenance costs can occur. The most significant advancement in landscaping has been for Capitol Expressway between Capitol Avenue and Quimby Road where VTA is paying for the installation and the City of San Jose is paying for maintenance. There have also been other landscaping improvements where developers and property owners with expressway frontage have installed and are maintaining landscaping.



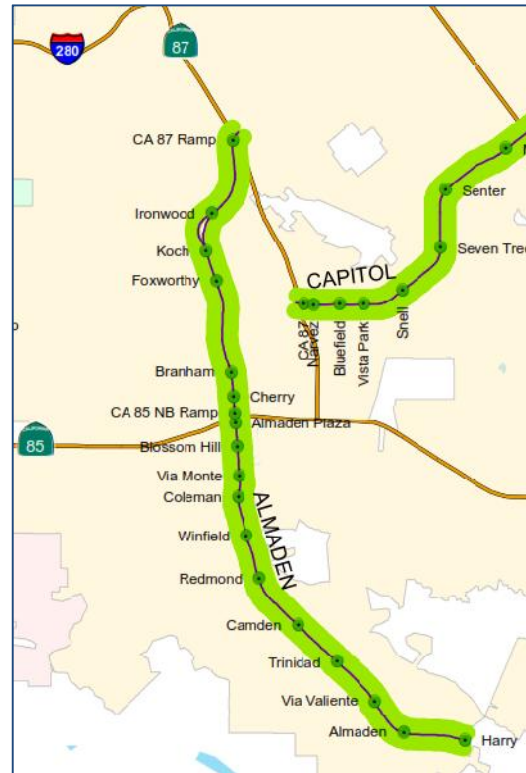
# Almaden Expressway

## Vision Statement

High-end express arterial with freeway-like segments

## Expressway Characteristics

- ❖ 8.5 miles long
- ❖ 4-8 lanes wide
- ❖ 19 Signalized intersections
- ❖ 2 freeway connections (SR 85, SR 87)
- ❖ 1 city served (San Jose)



## Status of Improvements

Project	Status
Widening and operational improvements between Branham and Blossom Hill through SR 85 interchange, including traffic signal, sound wall, and sidewalk improvements	Completed
Bicycle signal detection at all signalized intersections, bicycle adaptive signal timing, and moving signal controller boxes at Trinidad and Via Valiente to improve vehicle and bicycle line of sight	Completed

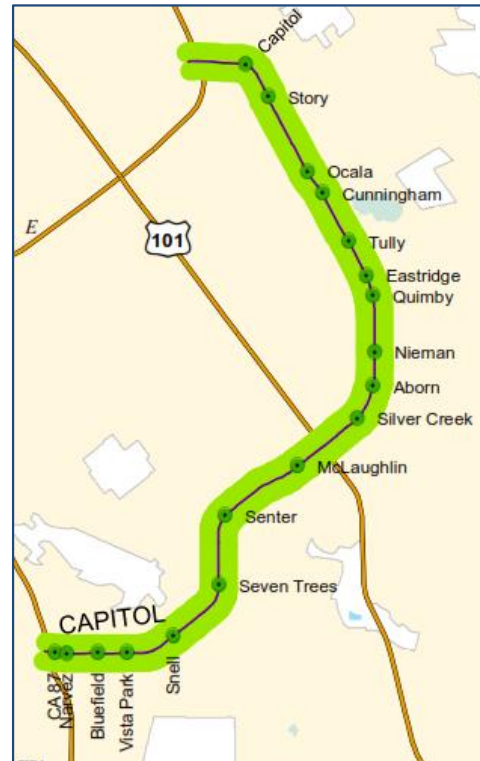
# Capitol Expressway

## Vision Statement

Corridor in transition to high-capacity arterial with light rail transit in median.

## Expressway Characteristics

- ❖ 8.7 miles long
- ❖ 68 lanes wide, including HOV lanes
- ❖ 18 signalized intersections
- ❖ 3 freeway connections (SR 87, US 101, I-680)
- ❖ 1 city served (San Jose)



## Status of Improvements

Project	Status
Pavement rehabilitation between Quimby and Silver Creek	Completed
Pedestrian improvements along future LRT segment from Capitol Ave to Quimby; includes installing landscaping and pedestrian scale lighting to be maintained by City of San Jose (consistent with pedestrian route plan)	Completed
Third left-turn lane from NB Aborn to WB Capitol Expwy and second right-turn lane from EB Capitol Expwy to SB Aborn	Completed
US 101/Capitol Expressway interchange improvements	In Design
New sidewalk and sound wall to fill in gaps between Jackson Avenue and Capitol Avenue (through I-680 interchange area)	In Design
Pavement rehabilitation between Tully and Quimby and between US 101 and Seven Trees Blvd	Funded
Capitol ITS Infrastructure and Sidewalk Project	Funded

# Central Expressway

## Vision Statement

High-end express arterial with freeway-like segments

## Expressway Characteristics

- ❖ 9.6 miles long
- ❖ 4-6 lanes wide
- ❖ 17 signalized intersections
- ❖ Access to 3 freeways (US 101, SR 237, SR 85) and 2 expressways (San Tomas, Lawrence)
- ❖ 5 cities served (Palo Alto, Mountain View, Sunnyvale, Santa Clara, San Jose)



## Status of Improvements

Project	Status
Conversion of HOV queue jump lane at Bowers to mixed flow	Completed
Installation of median and frontage curbs where needed	Completed
Widening between Mary and Lawrence to provide auxiliary and/or acceleration/deceleration lanes to improve ramp operations and safety (may also include a turning lane improvement at Central/Mary)	WB auxiliary lane between Fair Oaks and Mathilda -- Completed  EB auxiliary lane between Mathilda and Fair Oaks – In Design
Pedestrian improvements <ul style="list-style-type: none"> <li>• Westbound from Lawson Lane to San Tomas Expressway overcrossing bridge</li> <li>• North side at Stender Way to Coronado Drive</li> <li>• Westbound from Coronado Drive to Bowers Avenue</li> <li>• Eastbound just west of Northwestern Parkway to Northwestern Parkway (dedication of right-of-way for future sidewalk)</li> <li>• Eastbound from Condensa Court to Southbound San Tomas Ramp to San Tomas Expressway</li> </ul>	To be provided by developers
Pedestrian improvements between Moffett Blvd to Gemini Ave in Mountain View	In design by Mountain View

# Foothill Expressway

## Vision Statement

Attractive express arterial, not freeway-like, that also plays an important role as a regional bicycle facility

## Expressway Characteristics

- ❖ 7.3 miles long
- ❖ 4 lanes wide
- ❖ 11 signalized intersections
- ❖ 1 freeway connection (I-280)
- ❖ 4 cities served (Cupertino, Los Altos, Los Altos Hills, Palo Alto)



## Status of Improvements

Project	Status
Widened Foothill Expressway shoulder under Loyola Bridge	Completed
Loyola Bridge widening, including bicycle, pedestrian and channelization improvements	In design

# Lawrence Expressway

## Vision Statement

Southern end more arterial-like; mid-section more high-end expressway with freeway-like segments; and northern end more high-end express arterial

## Expressway Characteristics

- ❖ 8.7 miles long
- ❖ 6-8 lanes wide, including HOV lanes
- ❖ 23 signalized intersections
- ❖ 3 freeway connections (I-2480, US 101, SR 87)
- ❖ 5 cities serviced (Saratoga, San Jose, Cupertino, Santa Clara, Sunnyvale)



## Status of Improvements

Project	Status
Bicycle signal detection at all signalized intersections and bicycle adaptive signal timing.	Completed
Interim channelization improvement to reduce crossing conflicts at Granada Ave	Completed
Grade Separation study for Reed/Monroe, Kifer, and Arques	Study in Progress
Pavement rehabilitation between Homestead and SR 237	Funded

# Montague Expressway

## Vision Statement

Multimodal, pedestrian friendly arterial roadway in Milpitas east of I-880, west of I-880, high-end express arterial with freeway-like segments.



## Expressway Characteristics

- ❖ 6 miles long
- ❖ 6-8 lanes wide, including HOV lanes
- ❖ 13 signalized intersections
- ❖ 3 freeway connections (US 101, I-880, I-680)
- ❖ 3 cities served (Santa Clara, San Jose, Milpitas)

## Status of Improvements

Project	Status
Pavement rehabilitation along entire length of expressway	Completed
Par-clo interchange at US 101/ At-grade improvements at Mission College Intersection	Project Study Report under review by Caltrans
Widen to 8 lanes between Orchard Drive (west of North 1 <sup>st</sup> Street) and Zanker Road	Under construction by San Jose
Widen to 8 lanes from Great Mall to I-680	Coordinating with VTA and other agencies for joint project with BART. Collecting \$11 million from City of San Jose
I-680 interchange modifications	Project Study Report under development

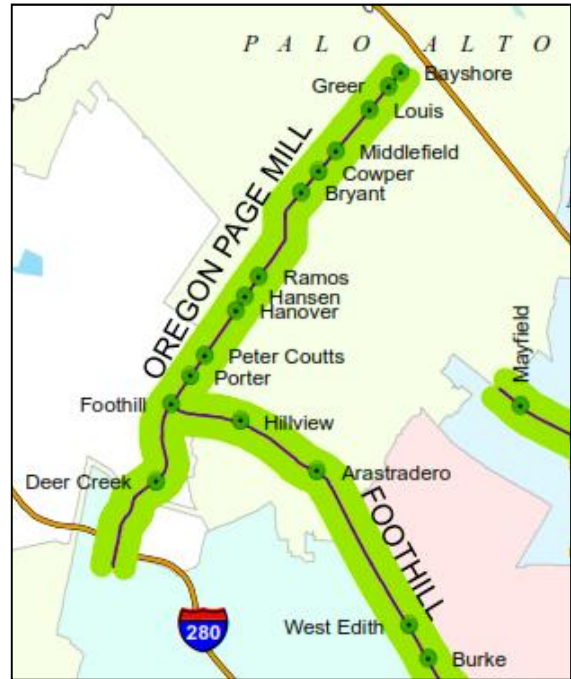
# Oregon-Page Mill Expressway

## Vision Statement

Multimodal, pedestrian friendly arterial roadway with slower, smooth-flowing traffic

## Expressway Characteristics

- ❖ 4.7 miles long
- ❖ 4 lanes wide
- ❖ 14 signalized intersections
- ❖ 2 freeway connections (US 101, I- 280)
- ❖ 2 cities served (Palo Alto, Los Altos Hills)



## Status of Improvements

Project	Status
New sidewalks to fill in four gaps along south side of Oregon Expressway.	Completed
Stanford Trail segment east side of Page Mill Road (part of parallel route system identified in pedestrian route plan)	Completed
Operational improvements between West Bayshore Road and Bryant Street, including traffic signal upgrades, intersections reconfigurations, and bicycle and pedestrian improvements; followed by pavement rehabilitation	To begin construction by December 2013
I-280 interchange modification to improve operations and enhance bicycle safety	Signalization of I-280 SB & NB off-ramp – In design by Caltrans  Ultimate configuration concept under development

# San Tomas Expressway

## Vision Statement

High-end express arterial with freeway-like segments

## Expressway Characteristics

- ❖ 8.5 miles long
- ❖ 6-8 lanes wide, including HOV lanes
- ❖ 19 signalized intersections
- ❖ 2 freeway connections (SR 17, US 101)
- ❖ 3 cities served (Campbell, San Jose, Santa Clara)



## Status of Improvements

Project	Status
Installation of median and frontage curbs where needed	Completed
Bicycle delineation and improvements from Camden Avenue through SR 17 interchange	Completed
San Tomas Aquino Creek Trail between Scott and Monroe (part of parallel route system identified in pedestrian route plan)	Completed
San Tomas Aquino Spur Trail Class I bicycle/pedestrian path along west side of San Tomas Expressway (part of parallel route system identified in pedestrian route plan) <ul style="list-style-type: none"> <li>• Cabrillo Avenue to El Camino Real</li> <li>• El Camino Real to Homestead</li> </ul>	<ul style="list-style-type: none"> <li>• Under construction by Santa Clara</li> <li>• In design</li> </ul>
El Camino Real intersection improvements (second left turn lanes for all four legs)	In design
Widening to 8 lanes between El Camino Real and Homestead Road, including pedestrian and sound wall improvements	In design
San Tomas Expressway Box Culvert rehabilitation	To begin construction in March 2013
Pedestrian Improvements <ul style="list-style-type: none"> <li>• Northbound from old westbound Central Expressway off-ramp to Lawson Lane</li> <li>• Southbound from eastbound Central Expressway off-ramp to Walsh Ave</li> </ul>	Ro be provided by developers



# Santa Teresa Blvd-Hale Avenue Corridor

## Vision Statement

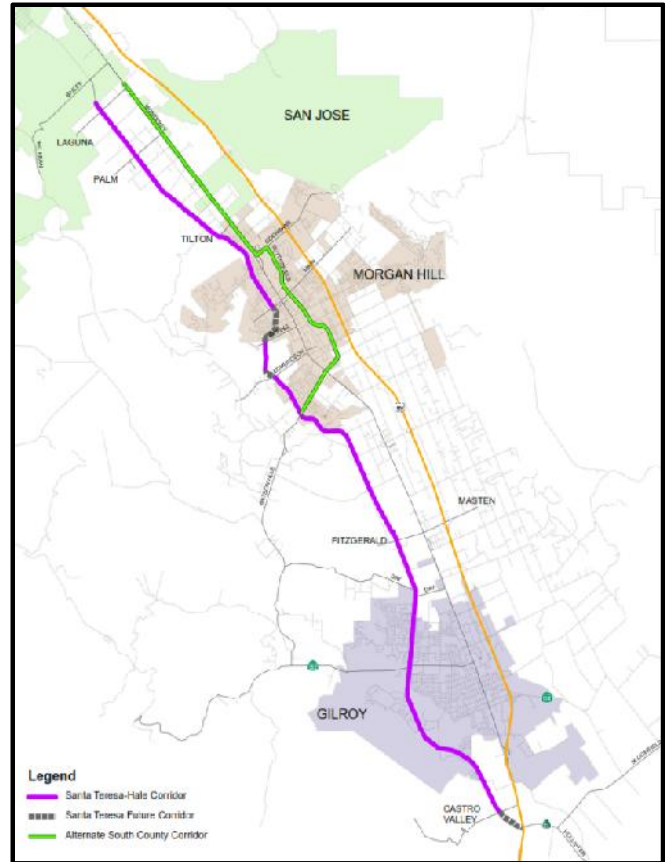
Continuous 4-lane arterial with some expressway-like features.

## Corridor Characteristics

- ❖ 26 miles long
- ❖ 2-4 lanes wide
- ❖ 19 signalized intersections
- ❖ 3 cities served (Gilroy, Morgan Hill, San Jose)

## South County Corridor

### Alignment Options



The Santa Teresa-Hale corridor (in purple on the above map) was established as a multi-jurisdiction arterial (in-lieu of expressway) on the legacy alignment during the 2003 Expressway Study process. Improvements for this alignment were added to the project list in the Expressway Study 2008 Update and to the VTA 2035 Expressway Program as appropriate. For many years, though, Morgan Hill has indicated a preference to redirect the corridor traffic to Butterfield Boulevard within their jurisdiction (shown in the map in green). The preferred alignment for this corridor and list of potential improvements to be incorporated into planning documents will be determined as part of the Expressway Plan 2040 process.

## Status of Improvements

Project	Status
Pavement rehabilitation between Watsonville Road and Day Road and between 3 <sup>rd</sup> Street and Castro Valley Road	Completed
Pavement repair from Laguna Avenue to Palm Avenue, rubberized asphalt concrete (RAC) overlay from Palm Avenue to Main Avenue, and pedestrian improvements from Via Loma to Main Avenue	Completed
DeWitt S-Curve realignment between Origilia Lane and Spring Avenue to improve operations and safety	In design

## Summary

As indicated in this report, progress has been made in acquiring funding and delivering improvements for the expressway system; however, it represents only a small percentage of total needs as identified in the 2008 Update. Table 3 below compares the Capacity and Operational Improvements identified to what has been accomplished:

**Table 3**  
**Summary of Progress**

Tiers	# of Projects	Cost (2008 millions)	# of Projects Completed/Funded	Total Cost of Completed Projects (millions)
<b>1A</b>	25	\$166	5 fully completed 6 partially completed	\$42
<b>1B</b>	5	\$253	0	0
<b>1C</b>	20	\$76	0	0
<b>2</b>	15	\$875-930	0	0
<b>3</b>	9	\$861-1,126	0	0
<b>Totals</b>	<b>74</b>	<b>\$2,231-2,551</b>	<b>11</b>	<b>\$42</b>

As noted in the table, while 44% of the Tier 1A projects have made progress, they represent only 25% of the total funding needed. In addition, none of the projects in the other tiers have progressed, though in some cases, funding commitments have been received from development.

On a comparative basis, much more significant progress has been made in securing funding for bicycle, pedestrian, and signal systems improvements, reflecting the current trends in grant funding toward these types of projects and away from capacity increasing projects.

The shortfall in O&M funding remains critical. While the infusion of Measure B, ARRA, Proposition 1B, and STP grants helped provide pavement rehabilitation along portions of some expressways and the Santa Teresa-Hale corridor, many expressways missed their scheduled preventive maintenance pavement work scheduled for the 2009-2013 timeframe due to lack of funding. The County has already committed the first four years (2012-2016) of its share of the new VRF pavement funding to the expressways, but at \$1.5 million a year, it represents a small percentage of the O&M shortfall.