



SECTION TWO

EXPRESSWAY SYSTEM CHARACTERISTICS & NEEDS

To determine potential improvements for the expressways, it was necessary to document current conditions and needs. This included technical research related to traffic conditions and general operating characteristics of the expressways. It also involved collecting information from users of the expressways and the cities/agencies served by the expressways.

This section summarizes the key findings from these efforts. It starts with an overview of the expressway system providing key characteristics of each expressway. Needs are described based on both traffic data and public opinion surveys, followed by findings related to potential expansion of the expressway system. Concluding the section are the vision statements that were developed for each expressway, reflecting that expressway's unique characteristics and needs.

Expressway System Characteristics

The expressways were designed to relieve local streets and supplement the freeway system. The expressway system consists of 8 expressways serving residents and employees in 11 cities and carrying 1.5 million vehicles daily. Table 2-1 lists key characteristics of each expressway ranging from basic statistics such as length and number of users to presence of high-occupancy vehicle (HOV) lanes and surrounding land uses. Key findings include:

- ❖ Length of each expressway varies from a high of 9.6 centerline miles for Central to a low of 4.7 miles for Oregon-Page Mill.
- ❖ Most of the expressways average from 2.1 to 2.6 signals per centerline mile. Central and Foothill have fewer (1.5 to 1.8 signals/mile) reflecting Central's freeway-like segment through Sunnyvale and Foothill's wide spacing between cross streets. The highest ratio is along Oregon-Page Mill (3.0 signals/mile) with the Oregon segment having closely spaced signals.
- ❖ The highest use expressways are Capitol, Lawrence, and Montague with 280,000 to 300,000 daily users. San Tomas is close behind at 220,000. Central, Foothill, and Almaden are in the mid-range (110,000 to 150,000) and Oregon-Page Mill is the lowest used expressway at 50,000.
- ❖ The posted speed limit is 45 or 50 miles per hour (mph) for all but Oregon-Page Mill Expressway. However, due to congestion and signal wait times, the average speed during commute hours is generally much lower. Montague and Lawrence experience the lowest average speeds (12 and 17 mph, respectively) due to high demand, limited capacity, and the resulting congestion levels.
- ❖ Residential land uses, mixed with some commercial, are predominant along three of the expressways while one expressway is surrounded mostly by industrial uses. The remaining four expressways serve a fairly equal mix of residential/commercial and industrial land uses.

Table 2-1: Expressway Characteristics

Expressway	Length (miles)	# of Lanes	HOV Lanes	Signals	Speed Limit	Average Peak Hour Speed ⁽¹⁾	Daily Users ⁽¹⁾	Cities Served	Major Surrounding Land Uses
Almaden	8.5	4-8	None	19	45	25	150,000	1	Predominately residential with some commercial in Blossom Hill area and north of Capitol
Capitol	8.7	6-8	Capitol Ave. to Silver Creek	18	45	24	300,000	1	Predominately residential mixed with commercial throughout
Central	9.6	4-6	Queue jump lanes at Bowers and Scott	17	45/50	27	110,000	5	Residential with commercial on west end; industrial on east end
Foothill	7.3	4	None	11	45	26	110,000	4	Residential with some commercial
Lawrence	8.7	6-8	Stevens Creek to Arques Lakehaven to Tasman	23	50	17	280,000	5	Residential with some commercial on southern and northern ends; industrial in center
Montague	6.0	6-8	Mission College to McCarthy Main to Milpitas Blvd	13	45	12	290,000	3	Mostly industrial with some residential and commercial
Oregon-Page Mill	4.7	4	None	14	35/50	19	50,000	2	Industrial along Page Mill; residential along Oregon with commercial near El Camino Real
San Tomas	8.5	6-8	Budd to Walsh	19	45	23	220,000	3	Residential with some commercial on southern end; industrial on northern end
Expressway System	62	---	---	134	---	---	1.51 million	11	---

(1) Based on 2001 Data



Multimodal Uses

In addition to single-occupant automobiles, bicycles, pedestrians, carools, and transit use the expressways. Bicycles are accommodated on all expressways with Foothill Expressway in particular being a high-use bicycle facility. Pedestrians use the expressways for a variety of reasons, with high pedestrian demand in some areas and only emergency/occasional use in others. Carpools are supported on five of the expressways with HOV lanes. Additional information about the use of these travel modes on the expressways can be found in the Plan's Bicycle, Pedestrian, and HOV System Elements.

Transit services on expressways are provided by the Santa Clara Valley Transportation Valley (VTA). VTA operates bus and shuttle services on the expressways and collects federal fixed guideway funds where buses run in expressway HOV lanes. VTA has plans to extend light rail transit (LRT) into the median of Capitol Expressway. There are also regional transit services that use the expressway system, including one inter-county express bus service.

The County of Santa Clara, governed by the five-member, elected Board of Supervisors, is responsible for improving, operating, and maintaining the expressway system. The VTA, governed by the twelve-member, appointed Board of Directors, is responsible for planning, funding, and operating transit services in the county, including on the expressways. In its role as Congestion Management Agency (CMA), VTA also determines the apportionment of discretionary transportation funding. Therefore, the Expressway Study does not make recommendations related to the amount, routing, or funding of transit services; however, it does include improvements to support transit services.

Table 2-2 provides a description of current and planned transit services using the expressways. In summary, six of the expressways have a bus route or a combination of bus routes that serve almost the entire length of the expressway. Buses on the remaining two expressways only use small segments of the expressways. Many of the bus routes on the expressways are limited stop or express routes providing a few trips each AM and PM commute period rather than all-day service. In addition to the LRT planned for one expressway, there are Caltrain and LRT stations located adjacent to five expressways.

Table 2-2: Transit Services Using Expressways

This information is based on the transit services provided and/or planned as of June 2003 with some notation where appropriate about proposed service cuts that may occur in 2004.

Expressway	Transit Services
Almaden	<ul style="list-style-type: none"> • Bus service is provided along almost the entire corridor with one bus route serving the area from Harry Road to Coleman Road and a second route serving the area from Coleman Road to Lincoln Avenue. Frequency of service ranges from 30 to 60 minutes. • Another line travels a short segment of Almaden from Via Valiente to Camden Avenue.
Capitol	<ul style="list-style-type: none"> • One bus route travels from SR 87 to Eastridge along Capitol every 15 minutes and a peak-period express bus route uses Capitol from Snell Avenue to US 101. • North of Eastridge to the Capitol Avenue/I-680 area, one express route and one limited stop route make a total of 7 trips each peak period, but service could be reduced to 3 trips per peak period in 2004. • Eastridge Transit Center is adjacent to Capitol at Eastridge Mall and has direct access to the expressway. Neighborhood access to the center is across and along the expressway. • The Caltrain and LRT Capitol Stations are easily accessible from Capitol. • LRT is planned to travel the entire length of Capitol Expressway.
Central	<ul style="list-style-type: none"> • Four bus lines use small segments of Central Expressway. There is no bus service along the length of Central. • Caltrain and Tasman LRT run parallel to parts of Central with the rail stations at the Downtown Mountain View Transit Center easily accessible from Central.
Foothill	<ul style="list-style-type: none"> • Three bus lines use small segments of Foothill Expressway. There is no bus service on most of Foothill Expressway.
Lawrence	<ul style="list-style-type: none"> • A limited stop bus route runs one AM and one PM peak hour trip along the entire length of Lawrence Expressway. • Two bus routes use segments of Lawrence south of I-280 and 3 use segments north of US 101, mostly during the peak commute periods. • The Lawrence Caltrain station is easily accessible from Lawrence.
Montague	<ul style="list-style-type: none"> • A limited stop bus route travels the entire length of Montague, providing 3 trips during the peak commute periods. In 2004, a new route that uses Montague from Mission College Boulevard to Great Mall Parkway may replace this route. • Three other bus routes use short segments of Montague (two from US 101 to Mission College Boulevard and one from Trade Zone Boulevard to Milpitas Boulevard) and a LRT shuttle travels on Montague from Mission College Boulevard to North First Street. • A future BART and LRT multimodal station is planned near the Montague/Great Mall Parkway intersection. VTA may route additional bus service on Montague in the future to serve these rail stations.

Table 2-2: Transit Services Using Expressways (continued)

This information is based on the transit services provided and/or planned as of June 2003 with some notation where appropriate about proposed service cuts that may occur in 2004.

Expressway	Transit Services
Oregon-Page Mill	<ul style="list-style-type: none"> • The Dumbarton Express uses almost the entire length of Oregon-Page Mill Expressway. It provides several trips each AM and PM commute period. • Three VTA bus routes travel on segments of the expressway and when combined, they cover almost the entire length. Two of the routes are express peak-period only service. • The California Caltrain Station is accessible from Oregon.
San Tomas	<ul style="list-style-type: none"> • A limited stop route travels the entire length of San Tomas, providing 3 trips each commute period. It may be reduced to two trips in 2004. • Two other routes use a segment of San Tomas near SR 17 during commute periods.

To support transit services, the Expressway Study *Implementation Plan* includes adding sidewalks and intersection pedestrian crossing enhancements to help transit users access stops (see Pedestrian Element). HOV lane and bus stop pavement maintenance costs are included in the Maintenance/Operations Element. The Capacity/Operational Improvements Element lists grade separation projects at LRT/expressway crossings, which would enhance LRT operations.

Additional transit service needs are difficult to quantify at this time given ongoing transit line rerouting and fleet redeployment; however, the County closely cooperates with VTA's transit plans as they are developed. For example, the County made available a portion of Central Expressway right-of-way for the Tasman LRT line; worked collegially with VTA on at-grade LRT crossings of Montague, Lawrence, and Central; and repairs failed pavement at bus stops. Expressway roadway capacity/operational projects will include transit service needs (e.g., bus stops) when the projects are designed and built.

Usage of Expressways

As noted previously, 1.5 million vehicles use the expressway system daily. The telephone public opinion survey conducted in December 2001 provides some insight into why the expressways are so well used:

- ❖ 55% of respondents used an expressway almost daily and another 29% use an expressway a few times a week.
- ❖ Of several expressway characteristics rated, “convenience” received the highest percentage of “excellent/good” ratings both systemwide and for each expressway. The excellent/good ratings ranged from 91% for Foothill to 74% for Montague with all other expressways over 80%.
- ❖ The primary purposes of using the expressways are work trips (37% of respondents) and shopping trips (27%). Not surprisingly, those expressways serving major employment centers had the highest percentage of work trips, including Montague (60%) and Central (52%). Almaden, which serves some major commercial facilities, had the highest shopping use (41%).

Expressway System Needs

A key finding from the December 2001 telephone survey was that expressways are convenient but congested. Congestion consistently received the highest percentage of “fair/poor” ratings systemwide and for each expressway. Almaden, Capitol, Lawrence, Montague, and San Tomas users expressed the greatest dissatisfaction with congestion levels (over 70%), while Foothill and Central were seen as less of a congestion problem (around 55% rating as fair/poor) and Oregon-Page Mill fell in the middle (61%).

Traffic Conditions

The technical data on level of service (LOS) confirms the users’ perceptions. LOS is a measure of traffic flow and congestion levels. LOS A is the best condition representing freely flowing traffic. LOS F is the worst condition representing excessive delays and jammed conditions. Out of 134 signalized intersections, 30 intersections were operating at LOS F in 2001. The number of LOS F intersections is projected to increase to 50 by 2025.

Table 2-3: Level of Service F Intersections by Expressway (2001& 2025)

Expressway	LOS F Intersection	2001 Existing		2025 Baseline	
		AM Peak	PM Peak	AM Peak	PM Peak
Almaden	Camden Ave (CMP)			F (287)	F (260)
	Coleman Rd (CMP)			F (174)	F (79)
	Blossom Hill Rd (CMP)		F (68)		F (70)
	Hwy. 85 (North Ramp) (CMP)		F (352)		
Capitol	Senter Rd. (CMP)				F (63)
	McLaughlin Ave. (CMP)			F (155)	
	Silver Creek Rd. (CMP)	F (76)	F (75)	F (82)	F (217)
	Aborn Rd. (CMP)				F (74)
	Quimby Rd			F (**) ⁽¹⁾	F (**) ⁽¹⁾
	Tully Rd			F (**) ⁽¹⁾	F (**) ⁽¹⁾
	Ocala Ave			F (85)	F (104)
	Story Rd (CMP)	F (89)	F (66)	F (162)	F (270)
	Capitol Ave (CMP)				F (75)
Central	Bowers Ave. (CMP)	F (80)	F (63)	F (125)	
	Lafayette St. (CMP)		F (62)	F (60)	
	De La Cruz Blvd. (CMP)		F (82)		F (77)
Foothill	Oregon-Page Mill Expressway (CMP) ⁽²⁾		F (90)		F (111)
	El Monte Ave. (CMP)	F (69)		F (181)	F(183)
	Grant Rd./St. Joseph Ave.				F (64)
Lawrence	Saratoga Ave. (CMP)			F (73)	F (206)
	Prospect Rd. (CMP)			F (68)	F (65)
	Moorpark Ave./Bollinger Rd. (CMP)	F (99)		F (96)	F (81)
	Calvert Dr. (CMP)			F (63)	
	Homestead Rd. (CMP)			F (73)	F (92)
	Lochinvar Ave				F (123)
	Benton St				F (160)
	Reed Ave./Monroe Ave. (CMP)		F (66)	F (64)	F (195)
	Kifer Rd.		F (122)		F (107)
	Arques Ave. (CMP)		F (63)		F (67)
	Duane Ave/Oakmead Pkwy				F (67)
	Sandia Dr/Lakehaven Dr.				F (60)

Table 2-3: Level of Service F Intersections by Expressway (2001& 2025) (continued)

Expressway	LOS F Intersection	2001 Existing		2025 Baseline	
		AM Peak	PM Peak	AM Peak	PM Peak
Montague	Mission College Boulevard (CMP)	F(67)		F (78)	F (95)
	First St. (CMP)	F(74)	F (113)	F (133)	F (161)
	Zanker Road (CMP)			F (91)	F (101)
	Trimble Rd. (CMP)	F(148)	F (160)	F (160)	F (149)
	McCarthy Blvd./O'Toole Ave. (CMP)	F(97)	F (137)	F (153)	F (134)
	I-880 SB Ramps			F (112)	F (121)
	Main St./Old Oakland Rd. (CMP)	F(120)	F (94)		F (84)
	McCandless Dr./Trade Zone Blvd. (CMP)	F(88)			
	Great Mall Pkwy/Capitol Ave. (CMP)	F(119)		F (91)	F (68)
	Milpitas Blvd (CMP)	F (104)			
Oregon-Page Mill	Foothill Expressway (CMP) ⁽²⁾		F (90)		F (111)
San Tomas	Curtner Ave. (CMP)	F (82)		F (90)	
	SR 17 SB Ramps (CMP)			F(127)	F(>300)
	Campbell Ave. (CMP)	F(82)			
	Hamilton Ave. (CMP)		F(60)	F(93)	F(74)
	Moorpark Ave. (CMP)			F (62)	
	Stevens Creek Blvd. (CMP)		F (137)		F (143)
	Saratoga Ave. (CMP)		F (109)		F (103)
	Pruneridge Ave.	F (70)	F (63)	F (86)	F (97)
	Homestead Rd. (CMP)	F (79)	F (66)	F (74)	F (92)
	Benton St.				F (74)
	El Camino Real (CMP)	F (92)	F (74)	F (75)	F (103)
	Monroe St. (CMP)	F (113)		F (99)	
	Scott Blvd. (CMP)			F (66)	
	Total LOS F Intersections by Peak Period	19	22	33	42
	Total LOS F Intersections	30		50	

Notes:

(CMP) = Intersection monitored by Congestion Management Program.

F = Indicates which intersections are at LOS F, and (# #) indicates delay (seconds/vehicle)

(1) (**) = Final determination of seconds of delay is pending release of VTA's Capitol LRT environmental document

(2) The LOS for the Foothill and Oregon-Page Mill intersection is listed under both expressways, but is only counted as one LOS F intersection in the totals.

Source: CCS Planning & Engineering, Inc. (2002)

User Opinions

Listed below are the key findings from the December 2001 and January 2003 telephone surveys:

- ❖ After congestion, timing of lights and landscaping received the highest percentage of “fair/poor” ratings (48% and 44% of respondents, respectively). The individual expressway ratings for timing of lights were similar for all expressways. Landscaping on 6 of the expressways was also rated similar to the system results. The exceptions are Foothill and Oregon-Page Mill users who are quite satisfied with landscaping (over 80% rating “excellent/good”). (December 2001 Survey)
- ❖ Synchronizing the traffic signals was the most important proposed change for all expressways in both surveys. In the 2003 survey, 69% of respondents rated synchronizing traffic signals as “very important.”
- ❖ Eliminating dangerous merges and maintaining pavement also received a large amount of “very important” ratings (66% and 62%, respectively). (January 2003 Survey)
- ❖ More landscaping (16% very important), decreasing the number of traffic lights (24%), and building more sound walls (26%) were the least popular of the proposed improvements among respondents. (January 2003 Survey)

Potential Expansion of the System

The 1960’s build-out plan for the expressway system included at least one additional expressway and extending three other existing expressways. The concept was that the expressways should connect with the freeways and with other expressways. In the last 40 years, local plans and policies have changed. In the 1990’s, Capitol Expressway, between State Route (SR) 87 and Almaden Expressway, was relinquished to San Jose to become Auto Mall Parkway. Questions have continued to be asked about other expressway extensions and these issues were discussed with the cities, the Policy Advisory Board (PAB), and the Technical Working Group (TWG) early in the study process. Described below are the key system expansion issues and status.

Almaden Expressway

Almaden Expressway will eventually be extended to Bailey Avenue where people can connect to US 101 via the future Bailey interchange. The timing of the Almaden extension will be determined by San Jose land use decisions. The likely trigger will be Coyote Valley development. It is anticipated that development traffic impact fees will pay for the extension. The trigger may or may not occur within the 30-year timeframe of this study. Future updates of the Expressway Study *Implementation Plan* will include the extension once more is known about the timing and funding.

Central Expressway

The original plans for Central called for it to continue through Palo Alto on Alma Avenue to terminate at Oregon-Page Mill Expressway. Palo Alto does not support extending Central Expressway onto Alma. Alma has four lanes, like Central Expressway, and already connects to Oregon-Page Mill. The land along Alma is completely developed with Caltrain along one side and residences and several residential side streets along the other. Therefore, Palo Alto wants Alma to remain a city arterial with relatively slower speeds and narrower lanes than the expressway. Extending Central through Palo Alto will not be pursued.

Lawrence Expressway

Lawrence was originally slated to continue down Quito Road in Saratoga to connect with the future SR 85 under the assumption that there would be an interchange at Quito. When SR 85 was built, the interchange was moved to Saratoga Avenue. The City of Saratoga does not support converting Saratoga Avenue into an extension of Lawrence Expressway. Extending Lawrence onto Saratoga Avenue will not be pursued. The study does include a signal coordination project for Lawrence Expressway and Saratoga Avenue that will help with traffic flow to the SR 85/Saratoga Avenue interchange.

South County

There have been various plans for a north-south expressway on the west side of US 101 since the 1960's. By the 1980's, County transportation planning documents began to recommend a north-south arterial rather than a formal expressway. These new recommendations

occurred due to a lack of funding for building and maintaining new expressways, and due to conflicting plans and policies at the local cities.

The City of Morgan Hill does not support having expressways in Morgan Hill. The City of Gilroy is in favor of having an expressway. Gilroy's Circulation Element identifies Santa Teresa as an expressway meeting all expressway standards including limited access and no parking. It would be a loop expressway beginning and ending at US 101 at the south and north ends of Gilroy. Gilroy is currently funding and constructing the widening of Santa Teresa Boulevard to expressway standards and will provide for maintenance of the widened facility.

The PAB South County small group arrived at the following agreements:

- ❖ Regional travel demand from south of Gilroy heading into South San Jose should be accommodated on US 101.
- ❖ A South County "local corridor" is needed to facilitate travel between Gilroy and Morgan Hill. It does not necessarily need to be called an "expressway" or fall under single-jurisdiction ownership, but it does need consistent standards and an identifiable alignment.
- ❖ Some kind of regional transportation plan is needed for the South County area – a "South County Circulation Study."
- ❖ All five government agencies need to be involved in the development of a Circulation Study – VTA, County of Santa Clara, and the Cities of Gilroy, Morgan Hill, and San Jose.

VTA has recently established a South County Roadways Policy Advisory Board to discuss roadway projects and issues for the South County area and provide policy input into the proposed South County Circulation Study. Among several other issues, the Circulation Study will determine the need and support for new Santa Teresa Boulevard connections to US 101 in Gilroy. The results of this study will help facilitate the decision making about whether the Santa Teresa loop should be considered part of the County's expressway system. The results of the Circulation Study will be considered in the Valley Transportation Plan (VTP) 2030 and in the next update of the Expressway Study *Implementation Plan*.

Expressway Vision Statements

A key finding from the data gathering and city/community outreach is that each expressway has its own unique character, function, and community relationship. Therefore, the ultimate build-out of each expressway must vary to meet community needs. To guide the expressway plans, a vision was developed for each expressway, through a collaborative process involving the cities, TWG, and PAB.

The visions are listed in Table 2-4. There are three key terms used that are critical to an understanding of the visions:

- ❖ Arterial – An expressway that is arterial-like would be similar to a major city street. It will tend to carry relatively less traffic than other expressways and is likely to be 4 to 6 lanes wide. Other potential attributes include more multimodal use (such as a major transit presence or high use bike corridor), higher pedestrian demand, somewhat slower moving traffic, and very few grade separations. It may have commercial or other land uses directly accessed from the expressway.
- ❖ High-end express arterial – These expressways would be similar to how most people define the term “expressway.” They move high volumes of traffic and may be 6 to 8 lanes wide. Most intersections are signalized rather than grade separated. There are few land uses accessed directly from the expressway and less demand for pedestrian travel.
- ❖ Freeway-like – As the name implies, these expressway segments would be similar to a freeway. No expressway is envisioned to be converted completely into a freeway, but some have segments with such high traffic demand, that freeway-like treatments would be warranted. Generally, this means building interchanges to replace congested at-grade intersections. The land uses along these segments tend to be industrial or commercial with buildings fronting on other roadways, not the expressway.

One of the defining features of these three types of roadways is the relationship between traffic mobility and land access. As shown in Figure 2-2, consistent and continuous access control from abutting property is desirable for those expressways which need a high degree of vehicle mobility.

Table 2-4: Expressway Vision Statements

Expressway	Vision Statement
Almaden	High-end express arterial with freeway-like segments.
Capitol	Corridor in transition to high-capacity arterial with light rail transit in median.
Central	High-end express arterial with freeway-like segments.
Foothill	Attractive express arterial, not freeway-like, that also plays an important role as a regional bicycle facility.
Lawrence	Southern end more arterial-like; mid-section more high-end expressway with freeway-like segments; and northern end more high-end express arterial.
Montague	Multimodal, pedestrian friendly arterial roadway in Milpitas east of I-880; west of I-880, high-end express arterial with freeway-like segments.
Oregon-Page Mill	Multimodal, pedestrian friendly arterial roadway with slower, smooth-flowing traffic.
San Tomas	High-end express arterial with freeway-like segments.

Figure 2-2: Proportion of Service

