CHAPTER 3: TRANSPORTATION AND TRANSIT

3.1 INTRODUCTION

This chapter discusses existing and future transportation conditions in the Silicon Valley Rapid Transit Corridor (SVRTC), and quantifies the expected long-term adverse transportation effects from the No Build Alternative, Berryessa Extension Project (BEP) Alternative, and Silicon Valley Rapid Transit Project (SVRTP) Alternative. Existing and projected future transit services, forecasts of transit patronage, and effects on travel patterns and the transportation environment are described along with existing and projected vehicular traffic, circulation, parking, and non-motorized conditions in the modeled area.[1] Traffic operations during the peak hour are evaluated, with emphasis on intersection levels of service (LOS), and measures are identified for mitigating substantial adverse effects on the roadway network. Short-term construction-phase effects are discussed in Chapter 6, Construction.

3.2 IMPACT THRESHOLDS

The following describes the adverse effects of the alternatives upon the transportation and transit network. An adverse transportation effect would occur under the following conditions:

Parking

- Result in a loss of parking spaces such that the loss results in substantial adverse economic impacts to businesses in the area.
- Construct park-and-ride lot improvements where demand is projected to be 105 percent or more of the lot's capacity.

Pedestrian Accessibility

- Result in substantial overcrowding on public sidewalks, create hazardous conditions for pedestrians, or eliminate pedestrian access to adjoining areas.

Bicycle Accessibility

- Create particularly hazardous conditions for bicyclists, eliminate bicycle facilities, or eliminate adequate facilities to serve the community's needs.

[1] The modeled area includes the nine county San Francisco Bay Area region.

Vehicular Traffic

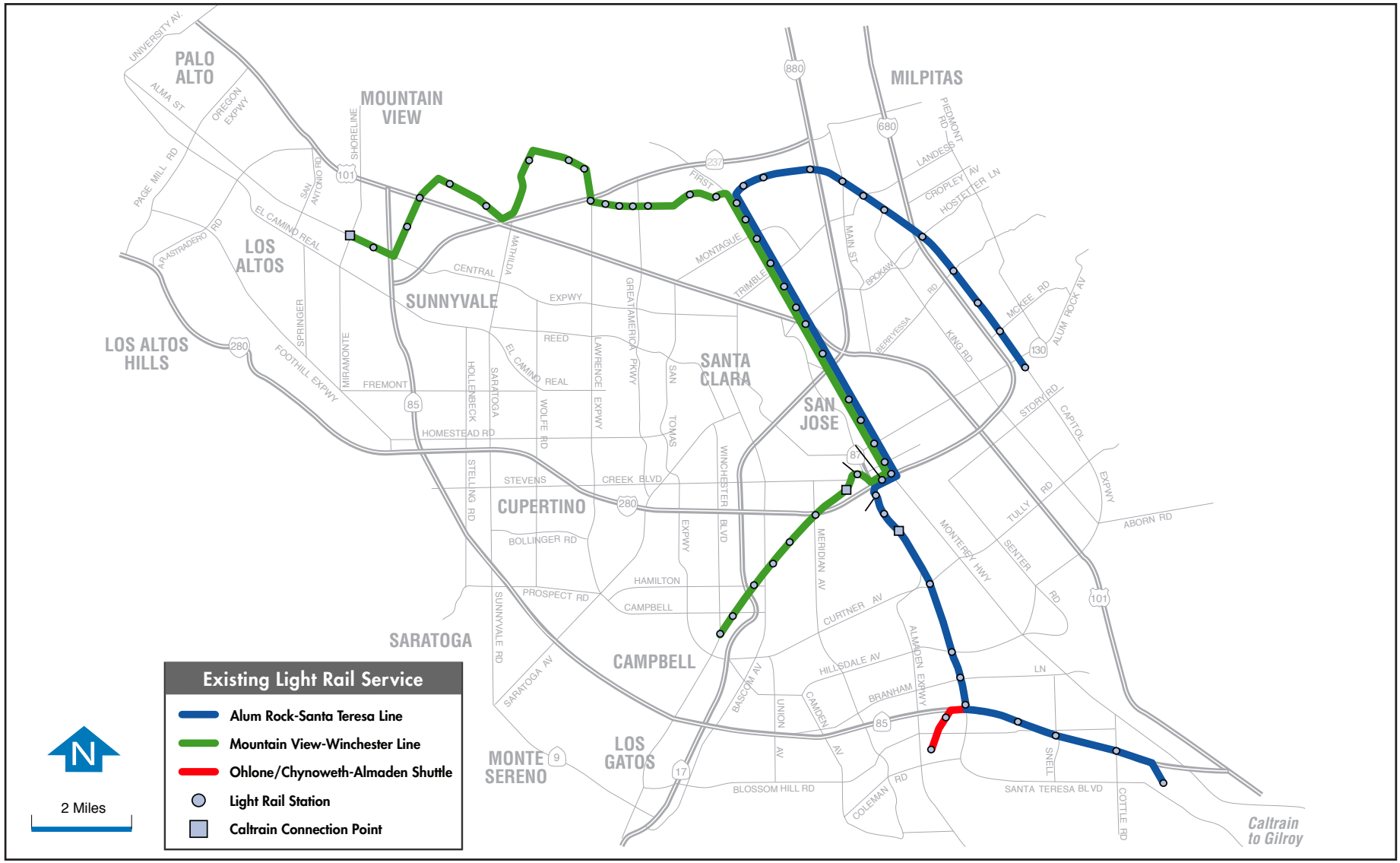
- Cause a Congestion Management Program designated intersection's level of service to deteriorate from LOS E (when compared to the No Build).
- Cause an increase in the critical volume delay by 4 seconds or more, and increase the critical traffic volume to capacity (V/C) ratio by 0.01 or more at a Congestion Management Program designated intersection already operating at LOS F under No Build conditions.
- Cause a local intersection's level of service to deteriorate from LOS D (when compared to the No Build).
- Cause an increase in the critical volume delay by 4 seconds or more, and increase the critical V/C ratio by 0.01 or more at a local intersection already operating at LOS E or F under No Build conditions.
- Result in a change of two letter grades at an intersection operating at LOS A or LOS B under No Build conditions.
- Add new trips totaling more than 1 percent of the freeway capacity if a freeway segment is already operating at LOS E.
- Cause a substantial increase in regional vehicle miles of travel (VMT) or vehicle hours of travel (VHT).
- Cause a substantial diversion of traffic onto a residential street.
- Substantially disrupt traffic operations and/or substantially affect emergency vehicle response.

3.3 TRANSIT

3.3.1 EXISTING CONDITIONS

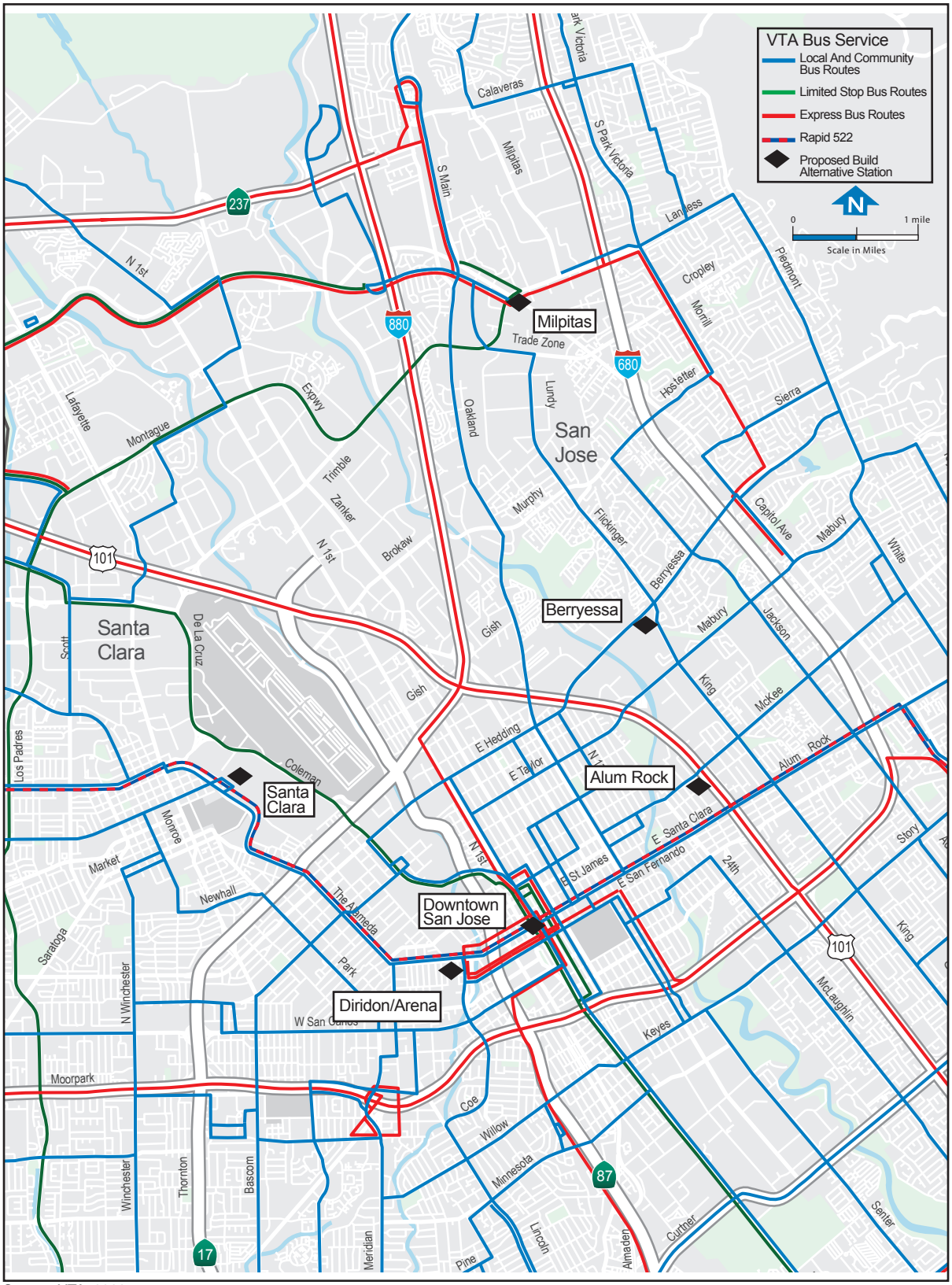
Rail and Bus Services

VTA operates light rail transit (LRT) and bus service in the SVRTC (see Figures 3-1 and 3-2). As of January 1, 2008, VTA operates three light rail lines, 48 Local bus lines, 11 Community Bus lines, five Limited Stop bus lines, nine express bus lines, and one Bus Rapid Transit (BRT) line in its approximately 326-square-mile service area. VTA's Express bus lines 120, 140, 180, and 181 provide service between the Fremont BART Station and Santa Clara County via I-680 and I-880. The total fleet size to operate these fixed-route transit services is 525 buses and 100 light rail vehicles, including spare vehicles.



Source: VTA, 2008.

Figure 3-1: Existing VTA Light Rail System



Source: VTA, 2008.

Figure 3-2: Existing VTA Bus Service

VTA's LRT service in Santa Clara County includes the Mountain View – Winchester Line, which provides a direct link between the cities of Mountain View, Sunnyvale, and Santa Clara in northern Santa Clara County to San Jose and Campbell. The Alum Rock– Santa Teresa Line connects northeast San Jose and Milpitas to south San Jose.

Both lines operate on North First Street via downtown San Jose, providing 7 ½ minute service frequencies during peak commute hours. VTA also provides light rail shuttle service for major Santa Clara County employment destinations and paratransit service for seniors and the disabled community.

Other transit operators in the SVRTC include BART (regional rail), Caltrain (commuter rail), ACE (intercity/commuter rail), Capitol Corridor (intercity rail), Amtrak (interstate rail), and AC Transit (bus). VTA is a member of the Peninsula Corridor Joint Powers Board, which operates Caltrain service between Santa Clara, San Mateo, and San Francisco counties; the Capitol Corridor Joint Powers Board, which operates intercity rail service between Placer and Santa Clara counties; and supports the Altamont Commuter Express (ACE) commuter rail service between San Joaquin, Alameda, and Santa Clara counties.

The BART system is 104 miles in length with 43 stations serving origins and destinations in four counties: Alameda, Contra Costa, San Francisco, and San Mateo. BART's existing terminus in the SVRTC is the Fremont BART Station. A planned extension to Warm Springs (also in Fremont) is expected to be in service prior to construction of the BEP or SVRTP alternatives. BART operates approximately 20 hours daily, with peak train service varying from approximately 7 minutes to 15 minutes, depending upon the BART line.

Caltrain commuter rail service is provided seven days a week between San Jose and San Francisco, offering five- to 30-minute headways during commute hours. During weekday commuting hours, Caltrain also serves the south county, including Gilroy, San Martin, and Morgan Hill. Caltrain provides shuttle service to businesses in the Silicon Valley and on the San Francisco Peninsula. Potential expansion includes the extension of Caltrain service farther south to Pajaro, Castroville, and Salinas and relocation of the existing San Francisco terminus, currently south of the city's downtown core, approximately 1.5 miles north into downtown.

The Diridon Caltrain Station in downtown San Jose, located near the Montgomery Street/Santa Clara Street intersection, provides service to the central business district via connections with VTA bus lines 63, 64, 65, 68, 168,180, 181, and the Downtown Area Shuttle (DASH). The Santa Clara Caltrain Station, located in the City of Santa Clara on Benton Street east of El Camino Real, provides service to the San Jose International Airport and VTA LRT via VTA Airport Flyer 10. Service is provided to the central business district via connections with VTA bus line 22 and BRT line 522. Both Caltrain Stations would be served by a proposed BART station under the SVRTP Alternative.

ACE provides commuter rail service between the Central Valley and Santa Clara County, serving the Great America ACE/Amtrak Station, Santa Clara Caltrain/ACE Station, and Diridon Caltrain Station. Four trains operate during weekday commute hours, with shuttle service from the stations to employment centers provided by various public agencies.

Capitol Corridor trains provide rail service seven days a week between Sacramento and San Jose, with seven daily round trips serving the Great America ACE/Amtrak Station and Diridon Caltrain Station.

AC Transit operates bus service in the eastern portions of Alameda and Contra Costa counties and transbay commuter bus service to downtown San Francisco. Various local routes provide weekday and weekend service in Fremont, Newark, and to a lesser extent, Union City. Line 217 provides bus service between Fremont and Milpitas from the Fremont BART Station to the Great Mall Transit Center in Milpitas, via Mission and Warm Springs boulevards on 30-minute headway.

Rail and Bus Patronage

Table 3-1, on the following page, summarizes the weekday transit boardings of these agencies, which total over 775,000 per day.

3.3.2 NO BUILD ALTERNATIVE (2030)

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed improvements in the SVRTC that are identified in the Bay Area's Regional Transportation Plan (RTP)—*Mobility for the Next Generation – Transportation 2030 Plan for the San Francisco Bay Area* (Transportation 2030 Plan), adopted by MTC in February 2005, and in the *Valley Transportation Plan 2030* (VTP, 2030), adopted by VTA in February 2005. Existing transit services include bus services, light rail transit (LRT), shuttle services, paratransit service, and intercounty services, and are described in detail in Chapter 2, Alternatives, Section 2.3.1. A complete description of existing VTA services is included in VTA's *Short Range Transit Plan FY 2006-2015* (VTA, 2006).

New transit services and capital projects planned and programmed for the SVRTC through 2030 are provided in Chapter 2, Alternatives, Tables 2-1 and 2-2, and include BRT projects, an LRT extension, rail service upgrades, and the Airport People Mover to the San Jose International Airport. Also included in the No Build Alternative is the approved extension of BART to Warm Springs Station in Fremont.

Table 3-1: 2007 Average Weekday Transit Boardings by Operator in the SVRTC

Operator/Service	Boardings[a]
BART	339,359
ACE Commuter Rail	
ACE Trains	2,993
ACE Shuttles	858
Subtotal, ACE	3,851
Capitol Corridor Intercity Rail	3,973
VTA LRT System	
Santa Teresa/Alum Rock LRT (includes Almaden LRT1 Shuttle)	20,747
Winchester/Downtown Mountain View LRT	11,820
Subtotal, VTA LRT	32,567
VTA Bus System	
VTA Express	2,600
BRT/Limited	6,500
Local Bus	93,023
Subtotal, VTA Bus System	102,123
VTA System Total	134,690
Caltrain Commuter Rail	33,841
AC Transit	227,000
TOTAL	775,281

[a] Total boardings on average weekday. Boardings by operator are systemwide and not necessarily made in SVRTC. Whereas BART and other rail services typically exclude internal transfers in boarding counts, they thereby reflect linked trips. Bus services include all vehicle boardings, including transfers, and thereby reflect unlinked trips.

Source: VTA, 2008.

Total Ridership

Travel demand forecasts, based on the 2030 transit network assumptions described above, were developed for the No Build, BEP, and SVRTP alternatives. Forecasts include estimates of transit ridership in the SVRTC and the broader area covered by the travel demand model. Tables 3-2 and 3-3 summarize modeled area transit projections for 2030 under the No Build condition. Transit trips for all transit operators in the travel forecast area are projected to grow approximately 70 percent between 2000 and 2030, increasing from 1.25 million in 2000 to 2.12 million in 2030. Transit trips between Alameda and Santa Clara counties are expected to increase by more than 236 percent over the same period, from about 7,000 per day to 23,000 per day. Systemwide BART trips are projected to increase 92 percent to over 650,000 transit trips in 2030.

Table 3-2: Total Weekday Boardings – No Build Alternative

Performance Measure	2000	2030	% Growth
Weekday Boardings: All Transit Operators in Area [a]	1,246,782	2,116,784	70%
Transit Trips Between Alameda and Santa Clara Counties [b]	6,799 [c]	22,851	236%

[a] Includes total daily transit boardings for all transit operators within the modeled area, including transit users coming over the Altamont Pass on either trains or express buses.

[b] Estimated from 2000 and No Build model forecast by Hexagon, February 2008.

[c] Estimated from model calibration data by VTA, 2005.

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Table 3-3: Average Weekday Boardings by Transit Operator for No Build Alternative

Operator/Service	2007	2030 No Build Alternative	% Growth
BART	339,359	650,256	92%
ACE	2,993	11,164	273%
Caltrain	33,841	66,578	97%
Capitol Corridor	3,973	11,282	184%
VTA Express Bus	2,600	15,908	512%
VTA Local Bus	99,523	278,321	180%
VTA LRT	32,567	139,586	329%
Dumbarton Rail Corridor	-	8,632	-

Source: VTA, March 2008.

3.3.3 BEP ALTERNATIVE

The BEP Alternative would consist of the design, construction, and future operation of a 9.9 mile extension of the BART system. The BEP Alternative would begin south of the planned BART Warm Springs Station in Fremont (to be implemented by 2013) and proceed on the former Union Pacific Railroad (UPRR) right-of-way (ROW) through Milpitas to near Las Plumas Avenue in San Jose (Figure 2-3). Two stations are proposed, one in Milpitas and one in San Jose. The BEP Alternative is described in detail in Chapter 2, Alternatives, Section 2.4.

A total of seven new express bus routes are proposed to support the BEP Alternative. In addition, a total of four park-and-ride lots would be provided to accommodate parking associated with the express buses. The express buses and related parking facilities are described in detail in Chapter 2, Alternatives, Section 2.4.2.

Total Ridership

Total ridership includes trips made all or in part on the BEP Alternative. This includes trips by riders originating in the SVRTC and riding BART to locations outside Santa Clara County (e.g., internal boardings at BEP Alternative stations and external alightings); riders originating their trips outside Santa Clara County and destined to BART stations within the SVRTC (external boardings and internal alightings); and riders on the BEP Alternative whose trips on BART begin and end within Santa Clara County (internal boardings and alightings). The first two types of trips represent intercounty trips; the third type represents intracounty trips.

On the average weekday in 2030, approximately 46,500 riders would use the BEP Alternative. As shown in Table 3-4A, the majority, approximately 81 percent, would have one end of their trip located outside Santa Clara County. About 19 percent of riders would travel within Santa Clara County on the BEP Alternative.

Table 3-4A: Average Weekday Ridership on BEP Alternative in 2030

Location	Number of Riders	Percent
Between Other Counties and Santa Clara County	37,708	81%
Within Santa Clara County	8,750	19%
Total Average Weekday Ridership on BEP Alternative	46,458	100%

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Average weekday ridership by station is shown in Table 3-4B.

Table 3-4B: Average Weekday Ridership by Station on BEP Alternative in 2030

Station Name	Number of Riders
Milpitas	20,659
Berryessa	25,798
Total Average Weekday Ridership on BEP Alternative	**46,457**

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Boardings and Alightings

The BEP Alternative would include two BART stations at the following locations. Chapter 2, Alternatives, describes the stations in more detail.

- Milpitas – above ground (with BART tracks in a retained cut) in the former Union Pacific railroad right-of-way between Montague Expressway and Capitol Avenue
- Berryessa – above ground at Berryessa Road and the former Union Pacific railroad right-of-way.

Table 3-5 shows the number of projected average weekday boardings and alightings at each planned station for the BEP Alternative, including home-based work (i.e., to or

from work) and non-work trips. Boardings and alightings demonstrate the level of passenger traffic that will pass through each station on an average weekday. Therefore, one rider could result in both a boarding and alighting at the BEP Alternative stations. The highest-volume station for the BEP Alternative, Berryessa Station, has more than 30,000 average weekday projected boardings and alightings. The Milpitas Station would have over 25,000 projected boardings and alightings. This station offers the best transfer opportunities to light rail (with the adjacent Montague LRT station) and would be well served by VTA buses.

Table 3-5: Average Weekday Boardings and Alightings on BEP Alternative in 2030

SVRTP Alternative Station	Home-Based Work	Non-Work	Total
Milpitas	17,421	7,613	25,034
Berryessa	21,033	9,140	30,173

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Mode of Access at Stations

Table 3-6 presents projected mode of access at the BEP Alternative stations for the average weekday. Transit modes would account for 35 percent of the access trips, while 5 percent of access trips would be made by pedestrians and bicyclists. The high use of non-auto modes, approximately 45 percent, is due to the convenience of transit connections, including VTA local bus service, VTA LRT, and VTA BART express and feeder buses (referred to as SVRT express/feeder as they are new services implemented in conjunction with the BEP Alternative).

Table 3-6: Mode of Access at BEP Alternative Stations

Stations	Walk/ Bike	Bus	LRT	Auto KNR[a]	Auto PNR[b]	Auto Subtotal	Total
Milpitas	9%	18%	16%	9%	47%	57%	100%
Berryessa	3%	44%	–	9%	44%	54%	100%
Total	**5%**	**35%**	**5%**	**9%**	**45%**	**55%**	**100%**

[a] Kiss-and-Ride.

[b] Park-and-Ride.

Source: Hexagon Transportation Consultants, Inc., February 2008.

Drive access is projected to make up 55 percent of all BEP Alternative access trips. At each of the stations, park-and-ride lots and kiss-and-ride drop-off areas would be provided for passengers accessing the stations by auto. Section 3.3, Parking, presents the park-and-ride demand for both build alternative stations, while Chapter 8, BART Core System Parking Analysis, addresses parking demands at existing BART stations resulting from the BEP Alternative.

BART System Boardings

The projected change in BART 2030 total system ridership is shown in Table 3-7. The BEP Alternative is projected to increase BART systemwide ridership by approximately 35,000 average weekday boardings (5.4 percent) compared to the No Build Alternative.

Table 3-7: Total Average Weekday BART System Boardings in 2030

Performance Measure	No Build Alternative	BEP Alternative
Total Average Weekday Boardings[a]	650,256	685,486
Change from No Build Alternative[b]	NA[c]	35,230

[a] Boardings on BART reflect linked trips--or individual riders.

[b] Change represents new BART system boardings

[c] NA = Not applicable.

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008

Change in Total Ridership on Other Transit Modes

BART system boardings would increase under the BEP Alternative. Some new BART riders, however, would be attracted from other transit modes and not be entirely new to transit. The extension of BART would replace certain bus services; BART would provide faster, better access to certain locations than other existing commuter rail and express bus services, thereby encouraging a shift in modes.

Table 3-8 was developed by examining the projected change in transit ridership (i.e., weekday boardings) for the set of transit services most relevant to the travel demand in the SVRTC. The transit services used for this comparison, besides BART, include ACE, Caltrain, Capitol Corridor, Dumbarton Corridor, VTA, LRT and express and local buses, and BART express/feeder bus services. Results are compared to No Build Alternative 2030 ridership as well as 2007 “existing” ridership.

The BEP Alternative is projected to reduce the rate of growth on rail services operated by other agencies in the area due to diversion of transit trips to BART. Growth in total weekday boardings on ACE, Caltrain, Capitol Corridor and Dumbarton Corridor rail is forecast to be a total of approximately 56,850 between 2007 and 2030 under the No Build Alternative, an increase of 139 percent. Under the BEP Alternative, growth of these services during this period would be approximately 46,530, an increase of 114 percent. Thus, although the rate of growth in ridership would be less, the absolute number of transit boardings on these services would still be substantially higher under the BEP Alternative relative to current levels.

Table 3-8: Average Weekday Boardings by Transit Operator for BEP Alternative[a]

Operator/Service	2007	No Build Alternative	BEP Alternative	% Change (BEP-No Build)
BART	339,359	650,256	685,486	5%
ACE	2,993	11,164	8,624	-23%
Caltrain	33,841	66,578	62,274	-7%
Capitol Corridor	3,973	11,282	8,245	-27%
VTA Express Bus	2,600	15,908	3,270	-79%
VTA Local Bus	99,523	278,321	305,571	10%
VTA LRT	32,567	139,586	135,497	-3%
VTA BEP Express/Feeder	NA	NA	17,224	NA
Dumbarton Rail Corridor	NA	8,632	8,194	-5%
Total[b]	**514,856**	**1,181,727**	**1,234,385**	**5%**

[a] Boardings by operator are system wide and not necessarily made in SVRT corridor. Whereas BART and other rail services typically exclude internal transfers in boarding counts, they thereby reflect linked trips. Bus services include all vehicle boardings, including transfers, and thereby reflect unlinked trips.

[b] AC Transit boardings are not included in total and in subsequent tables.

Source: VTA, March 2008.

VTA LRT and bus services would experience a redistribution in boardings, with LRT weekday demand lower under the BEP Alternative compared to the No Build condition and total express and local bus demand, including BART express/feeder, substantially higher. VTA non-project related express bus service would experience the largest ridership diversion, and decrease after implementation of the BEP Alternative because these service corridors run parallel. However, new BEP Alternative BART express/feeder services would generate over 17,000 bus trips and, along with growth in VTA local bus service, would more than offset the loss in regular express bus ridership.

Intercounty Movements: Santa Clara County-Alameda County Screenline Volumes

An important movement in the SVRTC is intercounty travel, primarily between Santa Clara and Alameda counties. Santa Clara County, being job-rich, tends to draw commuters from adjacent counties, with the highest volumes coming from Alameda County. The BEP Alternative would make intercounty commuting on transit more attractive.

Table 3-9 summarizes estimated transit ridership in 2030 on transit services offering connections between Santa Clara County and southern Alameda County under both the No Build and BEP alternatives. Transit services used for this comparison include "Valley" express buses destined to/from Santa Clara County, VTA express buses, VTA light rail, ACE, and BART. Approximately 25,000 riders would cross the county line on

intercity transit services on the typical weekday in 2030 in order to access work, home or other locations in Santa Clara County under the No Build Alternative. The number would increase to over 53,000 following implementation of BART service provided by the BEP Alternative. This represents over a 100 percent increase in intercounty trips made on transit. Many of these trips represent auto trips on congested I-880 and I-680 that are diverted to BART.

Table 3-9: Total Weekday Transit Trips Crossing Santa Clara County-Alameda County Line in 2030

Performance Measure	No Build Alternative	BEP Alternative
Weekday Transit Trips Across Screenline	24,727	53,383
Change from No Build Alternative	NA	28,656

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

New Linked Transit Trips ("New Riders")

Table 3-10 compares the year 2030 transit ridership forecasts for the No Build Alternative and BEP Alternative in terms of new linked transit trips. Linked transit trips exclude transfer boardings so that a transit rider who uses more than one transit line or mode is counted only as one trip. New linked transit trips are primarily trips that are diverted from the automobile but can include trips previously made on other non-transit modes (pedestrian and bicycle) or trips that are entirely new.

The BEP Alternative would generate a considerable number of new linked transit trips, approximately 27,135 on the average weekday. The row labeled "Average Weekday Trips" represents total daily linked transit ridership for all the transit operators within the modeled area, including transit users coming over the Altamont Pass on either ACE trains or express buses.

Table 3-10: Total Weekday Boardings and New Linked Transit Trips in 2030

Performance Measure	No Build Alternative	BEP Alternative
Weekday Boardings: All Operators in Area[a]	2,116,784	2,143,919
New Linked Transit Trips[b]	NA	27,135

[a] Includes total daily transit boardings for the all transit operators within the modeled area, including transit users coming over the Altamont Pass on either ACE or express buses.

[b] Linked transit trips exclude transfer boardings, they are diverted almost entirely from auto trips and represent new riders on transit.

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Travel Time Savings

Daily Travel Time

Travel time savings to commuters in the SVRTC reflect the effectiveness of the transportation services provided by the BEP Alternative relative to the No Build Alternative. Transit travel time savings are achieved through minimizing waiting, riding, and transfer time for transit trips. Roadway travel time savings are achieved through reductions in traffic congestion. Highway/roadway travel time savings are negative (i.e., travel times increase) as traffic congestion gets worse. The net change in travel time in 2030, in terms of the number of hours saved for all users of the transportation system (transit and roadway) when comparing the BEP Alternative to the No Build Alternative, is presented in Table 3-11. The BEP Alternative would generate travel time savings of almost 44,000 hours per day in comparison to No Build conditions.

Table 3-11: Daily Travel Time Savings in 2030

Performance Measure	No Build Alternative	BEP Alternative	BEP Alternative Travel Time Savings
Daily Travel Time (Hours)	8,143,534	8,099,926	43,608

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Travel Time between Selected Origin-Destination Pairs

One of the key objectives for the SVRTC is to reduce transit travel times. Because travel time is a key factor in mode choice decisions (e.g., using an automobile versus public transit), traffic congestion and air pollution would be reduced if more people chose to use transit rather than their private automobile. More trips on transit can also lead to improved roadway travel because of reduced congestion.

Table 3-12 presents a comparison of total door-to-door auto, shared-ride and transit travel times between nine selected origins and either of three selected destinations (nine origin-destination pairs) in the modeled area. The trips to downtown San Jose were from locations as close as Berryessa to as far away as Pleasanton. Trips to Oakland and San Francisco were from the Alum Rock area of east San Jose and Santa Clara near the existing Caltrain Station.

The No Build Alternative would rely on the transportation and transit improvements planned or programmed in the RTP and VTP 2030, excluding the extension of BART service. These improvements would result in drive-alone travel times ranging from 14 to 127 minutes depending on trip origin and destination. The longest auto trip was between Alum Rock and downtown San Francisco. Times for shared rides range between 14 and 98 minutes, the longest also between Alum Rock and San Francisco. No Build transit travel times range between 36 and 125 minutes for the same origins-destinations, with the longest transit trip between Santa Clara and downtown Oakland.

Table 3-12: 2030 AM Peak Door-to-Door Travel Time (Minutes) for Selected Origin-Destination Pairs: No Build Alternative vs. BEP Alternative

From	To	Drive-Alone Auto No Build Alternative	Drive-Alone Auto BEP Alternative	Shared-Ride Auto No Build Alternative	Shared-Ride Auto BEP Alternative	Transit No Build Alternative	Transit BEP Alternative
North Milpitas Boulevard	Downtown San Jose	20	20	18	18	52	33
Hostetter-Berryessa	Downtown San Jose	14	13	14	13	48	39
East San Jose	Downtown San Jose	20	20	18	19	36	36
South Fremont	Downtown San Jose	33	31	23	23	73	36
Newark	Downtown San Jose	41	39	29	29	58	50
Union City	Downtown San Jose	49	48	36	35	62	48
Pleasanton	Downtown San Jose	81	80	65	64	85	83
Alum Rock	Downtown Oakland	80	79	62	61	118	80
Alum Rock	Downtown San Francisco	127	125	98	97	113	88
Santa Clara	Downtown San Francisco	118	116	94	93	102	102
Santa Clara	South Fremont	33	33	25	25	115	88
Santa Clara	Downtown Oakland	79	78	62	61	125	97

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008 and August 2009.

The BEP Alternative provides a high-speed, high-quality transit linkage between San Francisco, Oakland, Fremont and downtown San Jose with measurable travel time savings when compared to existing transit services. This linkage includes the BART extension to Berryessa and VTA express bus service from the station to downtown San Jose and Santa Clara. The average transit travel time savings for all 12 origins-destinations was projected to be about 17 minutes, with a maximum savings of 38 minutes from Alum Rock to downtown Oakland, followed by 37 minutes from south Fremont to downtown San Jose. Transit travel times into downtown San Jose from various points in northeastern Santa Clara County do not show material improvement due to the BART-to-express bus transfer required for the downtown San Jose destination. Transit connections between Pleasanton in east Alameda County and downtown San Jose, and Santa Clara and San Francisco also do not show a material

improvement in travel times; these origin-destination pairs are projected to be well served by express buses and Caltrain, respectively, in the No Build Alternative.

Auto travel times show negligible improvement for many origin-destination pairs. Under the BEP Alternative, the average auto travel time savings for both drive-alone and shared-ride modes for all origin-destination pairs would remain virtually unchanged compared to No Build conditions. This is due in part to the projected increase in freeway traffic congestion and resulting poor level of service that would occur by 2030 under both the No Build and BEP alternatives[2] See Section 3.5.2 for a summary of roadway conditions forecasted for 2030.

Conclusion

Overall transit ridership in the SVRTC would increase with the BEP Alternative. Some of this growth would be diverted ridership from other transit modes, reducing their growth in 2030.

Increase in Transit Trips in SVRTC

Total transit system ridership, meaning all modes and service providers, would increase by 52,658 riders in the SVRTC on the average weekday in 2030 compared to the No Build Alternative, a 4 percent increase.

BART System Boardings

The BEP Alternative is expected to serve over 46,000 average daily riders in Santa Clara County in 2030. This number includes new trips on BART as a result of its service to and within Santa Clara County as well as trips diverted to BART from other transit service providers.

Increase in New Transit Riders

The BEP Alternative would generate 27,135 new linked transit trips, or new transit riders, compared to No Build conditions. New linked trips are diverted from non-transit modes (primarily auto) and represent new riders on BART.

Non-VTA Transit Ridership

The BEP Alternative would reduce the growth in non-VTA transit (ACE, Caltrain, Capitol Corridor, future Dumbarton Rail) ridership in the SVRTC by approximately 11 percent over No Build conditions, with these riders diverting to the faster, more convenient

[2] Roadway congestion would in theory lessen if the BEP Alternative diverted a substantial volume of auto trips to transit. However, on SVRTC freeways, the shifted volumes tend to be immediately replaced by autos that had diverted to other roadways because peak hour freeway demand exceeds available capacities—under both the No Build and BEP Alternatives. The roadway network tends to reach equilibrium under both alternatives, which results in freeway operations almost always at capacity.

BART service. However, non-VTA transit ridership would still grow by approximately 114 percent over 2007 conditions.

VTA Transit Ridership

The BEP Alternative would result in a redistribution of VTA transit ridership. VTA local bus trips would be about 10 percent higher than No Build conditions. SVRTP Alternative express/feeder bus services to BART rail stations would generate over 17,000 average weekday boardings. In contrast, VTA LRT ridership growth would be 3 percent less than forecast under the No-Build Alternative. Overall VTA transit ridership would grow by 6 percent over the 2030 No Build Alternative.

Conclusion

The diversion of riders from other transit services would not be considered adverse because total system boardings increase.

3.3.4 SVRTP ALTERNATIVE

The SVRTP Alternative would extend BART approximately 16.1 miles from the Warm Springs station in Fremont, south through Milpitas, west through downtown San Jose, and north to Santa Clara to a terminus just west of San Jose International Airport. Six stations are proposed. Compared to the BEP Alternative, the SVRTP Alternative extends the BART alignment approximately seven more miles and has four more stations. In addition to these improvements, the SVRTP Alternative would include local feeder bus service to stations and six express routes connecting BART with major activity centers off the alignment, including two park-and-ride lots in western Santa Clara County locations not adjacent to the alignment.

Total Ridership

As shown in Table 3-13A, the SVRTP Alternative is projected to serve over 98,000 average daily riders in 2030. Approximately 50,000 (51 percent) of these trips would be between other counties and Santa Clara County (internal boarding and external

alighting or external boarding and internal alighting). The SVRTP Alternative is also projected to serve over 48,000 (49 percent) weekday trips made completely within Santa Clara County (internal boarding and internal alighting).

An estimated 85,486 (87 percent) of the SVRTP Alternative's projected 98,751 trips would be new trips on BART as a result of its service to and within Santa Clara County.[3] The remaining 13,265 trips (13 percent) are projected to ride BART in the absence of an

[3] New trips on BART are not the same as new transit trips, which are entirely new to all modes of transit. See New Linked Transit Trips section.

extension, for example boarding/alighting at Warm Springs or other BART stations in Fremont or Union City. These riders would board/alight BART in Santa Clara County.

Table 3-13A: Average Weekday Ridership on SVRTP Alternative in 2030

Location	Number of Riders	Percent
Between Other Counties and Santa Clara County	50,197	51%
Within Santa Clara County	48,554	49%
Total Average Weekday Trips on BART Extension SVRTP Alternative	98,751	100%

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Average weekday ridership by station is shown in Table 3-13B.

Table 3-13B: Average Weekday Ridership by Station on SVRTP Alternative in 2030

Station Name	Number of Riders
Milpitas	19,613
Berryessa	17,315
Alum Rock	9,814
Downtown San Jose	20,960
Diridon/Arena	14,538
Santa Clara	16,510
Total Average Weekday Ridership on SVRTP Alternative	**98,751**

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Boardings and Alightings by Station

The SVRTP Alternative would have six stations at the following locations.

- Milpitas – Above ground (with BART tracks in a retained cut) in the rail right-of-way between Montague Expressway and Capitol Avenue
- Berryessa – In an aerial guideway at Berryessa Road and the rail right-of-way
- Alum Rock – In subway at 28th Street between East Julian and East Santa Clara streets
- Downtown – In subway at West Santa Clara Street between 1st Street and San Pedro Street
- Diridon/Arena – In subway south of and parallel to West Santa Clara Street between Autumn and White Street and Diridon rail yard
- Santa Clara – Above ground at Benton Street/Brokaw Road between El Camino Real and Coleman Avenue

Each transit trip includes one boarding and one alighting. Table 3-14 shows the number of projected average weekday boardings and alightings at stations on the SVRTP Alternative, including home-based work and non-work trips. The three highest-volume stations would each have more than 26,000 average weekday boardings and alightings. These stations offer the best intermodal transfer opportunities to bus, light rail, and commuter rail services. Note that total boardings and alightings are not double the weekday ridership estimate since many riders have one trip end outside the SVRTP Alternative extension.

Table 3-14: Average Weekday Boardings and Alightings on SVRTP Alternative in 2030

SVRTP Alternative Stations	Home-Based Work	Non-Work	Total
Milpitas	17,408	8,964	26,372
Berryessa	18,115	5,776	23,891
Alum Rock	10,776	7,417	18,193
Downtown San Jose	21,579	10,007	31,586
Diridon/Arena	13,382	7,638	21,020
Santa Clara	17,427	8,815	26,242

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Mode of Access at Stations

Table 3-15 presents projected mode of access at stations on the average weekday. Transit modes would account for 30 percent of the access trips while 11 percent of access trips would be by pedestrians or bicycles. The high use of non-auto modes is due to the convenience of transit connections and the proximity of jobs and housing to SVRTP Alternative stations in downtown San Jose.

Table 3-15: Mode of Access at SVRTP Alternative Stations

Station	Walk/ Bike	Bus	LRT	APM[a]	Commuter Rail[b]	Auto KNR[c]	Auto PNR[d]	Auto Subtotal	Total
Milpitas	12%	19%	9%	–	0%	10%	50%	60%	100%
Berryessa	7%	14%	–	–	–	9%	70%	79%	100%
Alum Rock	11%	32%	-	–	0%	17%	40%	57%	100%
Downtown	35%	40%	25%	–	–	–	–	–	100%
Diridon	10%	12%	10%	–	15%	9%	44%	53%	100%
Santa Clara	5%	21%	0%	8%	5%	11%	51%	62%	100%
Total	11%	21%	5%	1%	3%	10%	48%	58%	100%

[a] APM = Automated People Mover.

[b] Commuter Rail = Caltrain, ACE, and Capitols.

[c] Kiss-and-Ride.

[d] Park-and-Ride.

Source: Hexagon Transportation Consultants, Inc., February 2008.

BART System Boardings

The projected change in BART systemwide 2030 ridership has been forecasted. Table 3-16 compares BART ridership for the SVRTP Alternative with No Build and BEP alternative conditions. The SVRTP Alternative is projected to increase BART systemwide ridership by approximately 85,500 average weekday boardings (13.2 percent) by 2030, an increase more than twice that generated by the BEP Alternative.

Table 3-16: Average Weekday BART System Boardings in 2030

Performance Measure	No Build Alternative	BEP Alternative	SVRTP Alternative
Total Average Weekday Boardings[a]	650,256	685,486	735,742
Change from No Build Alternative[b]	NA[c]	35,230	85,486

[a] Boardings on BART reflect linked trips—or individual riders

[b] Change represents new BART system boardings.

[c] NA = Not applicable

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Change in Total Ridership on Other Transit Modes

BART system boardings would increase under the SVRTP Alternative. However, as with the BEP Alternative, some new BART riders would be diverted from other transit modes due to BART's greater convenience and better access to important Santa Clara County activity centers, such as downtown San Jose.

Table 3-17 shows the riders on BART plus other major transit services in the study area after the SVRTP Alternative is operational. For comparison, existing and future No Build and BEP Alternative weekday boardings by operator are listed. The SVRTP Alternative is estimated to attract approximately 17,950 trips that would otherwise (i.e., under the No-Build condition) be made on rail services operated by other agencies in the study area. These other modes include ACE and Caltrain commuter rail, Capitol Corridor intercity regional rail, and proposed Dumbarton commuter rail. This diversion of rail trips to BART and the proposed SVRT extension from Warm Springs to Santa Clara would not reduce the absolute level of ridership on these other modes but instead slow the estimated growth on these modes.

For example, the change in boardings between 2007 and 2030 under the No-Build Alternative is forecast to be 56,865, an increase of 139 percent. The forecast change in boardings between 2007 and 2030 under the SVRTP Alternative would be approximately 38,900, an increase of 95 percent.

The SVRTP Alternative would also result in a redistribution of transit trips on VTA operated bus and light rail services, with a shift to BART and BART express and feeder bus travel.

Table 3-17: Average 2030 Weekday Boardings by Transit Operator for SVRTP Alternative[a]

Operator/Service	2007 Boardings	No Build Alternative	BEP Alternative	SVRTP Alternative	% Change (SVRTP – No Build)
BART	339,359	650,256	685,486	735,742	13%
ACE	2,993	11,164	8,624	7,213	-35%
Caltrain	33,841	66,578	62,274	56,586	-15%
Capitol Corridor	3,973	11,282	8,245	7,928	-30%
VTA Express Bus	2,600	15,908	3,270	3,633	-77%
VTA Local Bus	99,523	278,321	305,571	290,076	4%
VTA LRT	32,567	139,586	135,497	126,359	-10%
VTA SVRTP Express/Feeder	NA	NA	17,224	19,236	NA
Dumbarton Rail Corridor	NA	8,632	8,194	7,981	-8%
Total[b]	**514,856**	**1,181,727**	**1,234,385**	**1,254,754**	**6%**

[a] Boardings by operator are systemwide and not necessarily made in the SVRT corridor. Whereas BART and other rail services typically exclude internal transfers in boarding counts, they thereby reflect linked trips. Bus services include all vehicle boardings, including transfers, and thereby reflect unlinked trips.

[b] AC Transit boardings are not included in total as the proposed project has little effect on this service.

Source: VTA, March 2008.

Overall, compared to the No-Build Alternative, ridership on major transit services in the SVRTC would increase by approximately 73,000 boardings in 2030 with the SVRTP Alternative in place.

Intercounty Movements: Santa Clara County-Alameda County Screenline Volumes

Table 3-18 was developed by examining the projected change in transit ridership for transit services offering connections between Santa Clara County and southern Alameda County. The transit services used for this comparison include “Valley” express buses, VTA express buses, VTA light rail, ACE, and BART. Table 3-18 presents the results by showing comparisons to the No Build Alternative ridership forecasts as well as to the BEP Alternative. With SVRTP Alternative service, just fewer than 40,000 additional riders would cross the county line on intercity transit services on the typical weekday in 2030 in order to access work, home, or other locations in Santa Clara County, compared to the No Build Alternative.

Table 3-18: Total Weekday Transit Trips Crossing Santa Clara County-Alameda County Line in 2030

Performance Measure	No Build Alternative	BEP Alternative	SVRTP Alternative
Weekday Transit Trips Across Screenline	24,727	53,383	63,629
Change from No Build Alternative	NA	28,656	38,902

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

New Linked Transit Trips ("New Riders")

New linked transit trips indicate how many new riders would actually divert from other non-transit modes to transit following implementation of the SVRTP Alternative. They could be riders on any of the transit modes listed above but are in reality almost entirely new riders on BART. Table 3-19 compares the year 2030 transit ridership forecasts for the SVRTP Alternative with the No Build and BEP alternatives in terms of new linked transit trips only. Linked transit trips exclude transfer boardings so that a person who uses more than one transit line or mode is counted only once. As a result, new linked transit trips are trips that are diverted from the automobile or non-motorized modes or they were previously never made.

The SVRTP Alternative would generate approximately 49,000 more transit trips in comparison to the No Build Alternative. The row in Table 3-19 labeled "Average Weekday Linked Trips" represents daily linked transit ridership for all the transit operators within the modeled area, including transit users coming over the Altamont Pass from the Central Valley on either ACE trains or express buses.

Table 3-19: Total Weekday Boardings and New Linked Transit Trips in 2030

Performance Measure	No Build Alternative	BEP Alternative	SVRTP Alternative
Weekday Boardings: All Operators in Area[a]	2,116,784	2,143,919	2,165,381
New Linked Transit Trips[b]	NA	27,135	48,597

[a] Includes total daily transit boardings for the all transit operators within the modeled area, including transit users coming over the Altamont Pass on either ACE or express buses

[b] Linked transit trips exclude transfer boardings. New linked trips are diverted almost entirely from auto trips and represent new riders on transit.

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Travel Time Savings

Daily Travel Time

Travel time savings to all travelers in the SVRTC reflect the effectiveness of the transportation services provided by the SVRTP Alternative relative to the No Build Alternative. Transit travel time savings are achieved through minimizing waiting, riding, and transfer time for transit trips. Roadway travel time savings are achieved through reductions in traffic congestion. Roadway travel time savings are negative (i.e., travel times increase) as traffic congestion gets worse. Net changes in travel time in 2030 for the SVRTP Alternative relative to the No Build Alternative, and the value of those savings in terms of the number of hours saved for all users of the transportation system, are presented in Table 3-20. The SVRTP Alternative would generate travel time savings of almost 57,000 hours per day in comparison to the No Build Alternative.

Table 3-20: Daily Travel Time Savings in 2030

Performance Measure	No Build Alternative	BEP Alternative	SVRTP Alternative	SVRTP Alternative Travel Time Savings (SVRTP-No Build)
Daily Travel Time (Hours)	8,143,534	8,099,926	8,086,185	57,349

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

Travel Time between Selected Origin-Destination Pairs

One of the key objectives is to reduce transit travel times within the SVRTC. Because travel time is a key factor in mode choice decisions (e.g., using an automobile versus public transit), traffic congestion and air pollution would be reduced if more people chose to use transit rather than their private automobile. More trips on transit also lead to faster highway travel because of reduced congestion.

Table 3-21 presents a comparison of total door-to-door auto, shared-ride, and transit travel times between selected origins and destinations in the SVRTC.

Table 3-21: 2030 AM Peak Door-to-Door Travel Time (Minutes) for Selected Origin-Destination Pairs: No Build Alternative vs. SVRTP Alternative

From	To	Drive-Alone No Build Alternative	Drive-Alone SVRTP Alternative	Shared Ride No-Build Alternative	Shared Ride SVRTP Alternative	Transit No Build Alternative	Transit SVRTP Alternative
North Milpitas Boulevard	Downtown San Jose	20	20	18	18	52	20
Hostetter-Berryessa	Downtown San Jose	14	13	14	13	48	14
East San Jose	Downtown San Jose	20	19	18	18	36	23
South Fremont	Downtown San Jose	33	31	23	23	73	23
Newark	Downtown San Jose	41	39	29	29	58	37
Union City	Downtown San Jose	49	48	36	35	62	35
Pleasanton	Downtown San Jose	81	80	65	64	85	69
Alum Rock	Downtown Oakland	80	78	62	61	118	68
Alum Rock	Downtown San Francisco	127	124	98	96	113	76
Santa Clara	Downtown San Francisco	118	116	94	92	102	82
Santa Clara	South Fremont	33	32	25	25	115	63
Santa Clara	Downtown Oakland	79	78	62	61	125	75

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008 and August 2009.

The SVRTP Alternative would provide a high-quality seamless transit linkage between San Francisco, Oakland, Fremont, and downtown San Jose and offer measurable travel time savings. The average transit travel time savings for all 12 origin-destinations was projected to be about 33 minutes, with a maximum savings of 52 minutes, for the origin-destination pairs used in the analysis. Notable transit travel time improvements are projected for transit trips to downtown San Jose from various points in Alameda County, including Fremont (50 minutes faster), Union City (27 minutes faster), and Newark (21 minutes faster). Travel times into Santa Clara are also projected to improve by 50 to 52 minutes from various points in the East Bay (South Fremont and Downtown Oakland). Additionally, the long-distance transit connection between Pleasanton in east Alameda County and downtown shows a measurable improvement in transit travel time (16 minutes faster), despite the express bus service for these origin-destination pairs

projected in the No Build condition. Transit travel from east San Jose to downtown Oakland and downtown San Francisco would also improve markedly, by 50 and 37 minutes, respectively.

For longer distance trips, transit would be faster than many single-occupant auto trips. For shorter trips, including to/from Milpitas and east San Jose, transit would be more competitive but auto times would still be shorter door-to-door in many instances. Auto travel times before and after SVRT Alternative service show negligible improvement for many origin-destination pairs. Under the SVRTP Alternative compared with the No Build Alternative, the average auto travel time saving for both drive-alone and shared-ride modes for all origin-destination pairs remained virtually unchanged due in part to the projected increase in the freeway traffic congestion projected for 2030. Also, see Section 3.2.6 for a summary of freeway level of service.

Conclusion

Overall transit ridership in the SVRTC would increase with the SVRTP Alternative. Some of this growth would be diverted ridership from other transit modes, reducing their growth in 2030.

Increase in Transit Trips in SVRTC

Total transit system ridership would increase by 73,027 riders in the SVRTC on the average weekday in 2030 compared to the No Build Alternative, a 6 percent increase.

BART System Boardings

The SVRTP Alternative is expected to serve over 98,000 average daily riders in Santa Clara County in 2030. This number includes new trips on BART as a result of its service to and within Santa Clara County as well as trips diverted to BART from other transit service providers.

Increase in New Transit Riders

The SVRTP Alternative would generate 48,597 new linked transit trips, or new transit riders, compared to No Build conditions. New linked trips are diverted from non-transit modes (primarily auto) and represent new riders on BART.

Non-VTA Transit Ridership

The SVRTP Alternative would reduce the growth in non-VTA transit (ACE, Caltrain, Capitol Corridor, future Dumbarton Rail) ridership in the SVRTC by approximately 18 percent over No Build conditions, with these riders diverting to the faster, more convenient BART service. However, non-VTA transit ridership would still grow by approximately 95 percent over 2007 conditions.

VTA Transit Ridership

The SVRTP Alternative would result in a redistribution of VTA transit ridership. VTA local bus trips would be about 4 percent higher than No Build conditions. SVRTP Alternative express/feeder bus services to BART rail stations would generate over 19,000 average weekday boardings. In contrast, VTA LRT ridership growth would be 9 percent less than forecast under the No-Build Alternative. Overall VTA transit ridership would grow by 1 percent over the 2030 No Build Alternative.

Conclusion

The diversion of riders from other transit services would not be considered adverse because total system boardings increase.

3.4 PARKING

Parking considerations fall within two areas: (1) parking demand and proposed supply associated with proposed stations and related Express/Feeder bus service under the Build Alternatives, and (2) parking demand and proposed supply at existing (or, in the case of the Warm Springs Extension, programmed) stations in the BART system outside of Santa Clara County. This section discusses the parking demand, adverse effects, and mitigation measures associated with proposed stations for the Build Alternatives. The second type of effects pertain to anticipated increases in parking demand at BART "core system" stations generated by riders traveling to Santa Clara County from Alameda, Contra Costa, San Francisco and San Mateo counties, and elsewhere. Core system parking effects are described separately in Chapter 8, BART Core System Parking Analysis. Permanent displacement of parking is discussed in Section 5.12, Socioeconomics. Effects related to the temporary displacement of parking during construction are discussed in Chapter 6, Construction, Section 6.1.3.

3.4.1 EXISTING CONDITIONS

Parking available within a ½-mile radius of proposed BART stations is a combination of on-street curbside parking and off-street private and public parking lots associated with businesses and offices. At the proposed Milpitas Station in southern Milpitas, the Great Mall and Heald College provide parking for their patrons and students, respectively, north of Montague Expressway. At the Berryessa Station in east San Jose, there are two large surface parking lots northwest and southwest of the planned station site. These lots provide parking to patrons of the San Jose Flea Market, located immediately west of the station.

In downtown San Jose, there are several public parking facilities and several large, privately- owned parking facilities with public access. At the proposed Diridon/Arena Station, Caltrain provides parking for its patrons on three surface lots located immediately east of the existing train station. VTA owns a 1.3 acre site south of Santa Clara Street and between Montgomery Street and Cahill Street. This site is currently

leased to others and provides approximately 185 parking spaces. In addition, a large parking lot is located immediately west of HP Pavilion for patrons of this facility.

At the proposed Santa Clara Station, there are three surface parking lots, one north, one south, and another west of the site. The west lot is jointly owned by the City of Santa Clara and VTA and designated for Caltrain patrons.

3.4.2 NO BUILD ALTERNATIVE

Transit projects planned and programmed under the No Build Alternative include BRT projects, an LRT extension, commuter rail service upgrades, highway capacity projects, and the Airport People Mover to the San Jose International Airport, described in Section 2.3, Future No Build Alternative. The LRT extension and Airport People Mover projects would likely require parking facilities and would need to undergo separate environmental review to define adverse parking effects and mitigation measures for those projects.

3.4.3 BEP ALTERNATIVE

Adequate parking at proposed BART stations along the BEP Alternative alignment is important to prevent spillover into surrounding neighborhoods. Station park-and-ride demand was projected as part of the ridership modeling. The analysis considered any parking supply limitations at stations as well as how far passengers would be willing to drive to ride BART. When the total parking demand is limited to a planned supply, it is said to be a constrained analysis. Otherwise, the parking demand analysis is referred to as "unconstrained," meaning that the parking supply is not a limiting factor.

Table 3-22 summarizes park-and-ride space requirements for BEP Alternative stations. The higher end of the range assumes unconstrained 2030 parking demand, or a base "worst case" scenario for adverse parking effects at stations. The lower end of the range indicates unconstrained opening year parking demand. VTA would initially construct parking facilities at stations to accommodate parking demand estimated for the opening year and several years thereafter. Facilities would be expanded when demand approaches supply.

As in the BART core system, parking at BEP Alternative stations would be monitored annually to determine demand and evaluate whether supply is adequate. The information would be used by VTA to establish a parking management program, including phased facility expansion where necessary.

Parking demand for the Milpitas Station under the BEP Alternative would be approximately 2,300 spaces under unconstrained 2030 conditions. This demand would be accommodated with a two- to eight- level parking structure and future transit facility/surface parking in the station area. Parking demand for the Berryessa Station would be approximately 4,800 spaces. This demand would be accommodated with a four- to eight-level parking structure and future transit facility/surface parking in the

station area. The unconstrained parking demand reflects ridership of 46,458 for the BEP Alternative.

Table 3-22: Opening Year and 2030 BEP Alternative Park-and-Ride Space Demand and Supply

Station Name	Opening Year Parking Demand (spaces)	2030 Parking Demand (spaces)	2030 Parking Supply (spaces)
Milpitas	1,260	2,260	2,260
Berryessa[a]	2,505	4,835	4,835
Total	3,765	7,095	7,095

[a] Includes park-and-ride spaces for BEP Alternative express/feeder service (approximately 750 in 2030). See Section 2.4.2 of Alternatives.

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc. and VTA February 2008.

Opening year parking demand of approximately 1,260 spaces at Milpitas Station and 2,505 spaces at Berryessa Station (3,765 spaces combined) would be accommodated in proposed surface parking lots. Surface parking for up to 1,880 vehicles at Milpitas Station and up to 3,750 vehicles at Berryessa Station would be provided. There would be capacity for parking growth at each location. With an 8-level parking garage and surface parking at the Milpitas Station, the BEP Alternative is designed to accommodate up to 2,260 parking spaces to meet the 2030 demand. With an 8-level parking garage and surface parking at the Berryessa Station, the BEP Alternative is designed to accommodate up to 4,835 parking spaces to meet the 2030 demand.

BEP Alternative stations would include curb areas for shuttle and feeder bus stops and temporary parking for kiss-and-ride drop off and pick-up. These spaces, not included in the above totals, would be provided in designated areas near station entrances, and be accessible via surface roadways, as shown in station graphics in Appendix D, Station Designs (BEP and SVRTP).

Projected demand for riders who board and alight BEP Alternative Express/Shuttle services at stations would be accommodated in park-and-ride areas at stations and off-site bus transit parking facilities. The BEP Alternative would require four park-and-ride parking lots for the additional bus service. Demand for three of the four park-and-ride lots would be met within existing facilities located at the approved Warm Springs BART Station (303 spaces), the Berryessa BART Station (753 spaces), and the existing Evelyn LRT Station in Mountain View (49 spaces). The fourth parking facility would be constructed in downtown Sunnyvale to accommodate 91 spaces and meet projected demand. The bus park-and-ride spaces are included in the totals shown in Table 3-22. See Chapter 2, Alternatives, for more information on the BEP Alternative bus routes. Figure 2-3 shows the locations of the park-and-ride lots.

Adverse visual effects from BEP Alternative station parking are described in Section 5.14, Visual Quality and Aesthetics. The BEP Alternative vehicular traffic analysis discussed in Section 3.4.3 includes vehicle trips generated by park-and-ride and kiss-and-ride activity at these two stations under unconstrained conditions.

Conclusion

Station design plans include adequate parking to accommodate projected parking demand. Therefore, no adverse parking effects, such as spillover into nearby areas, are anticipated and no mitigation measures would be required. However, in the event parking demand is determined to be greater than estimated and approaches supply, VTA would, in association with BART and the local jurisdiction, help institute parking control programs. These could include time-restricted or neighborhood-only-parking zones around stations. The programs would be designed to reduce or eliminate excess demand spilling over onto adjacent land uses.

VTA would also consider parking charges as a parking management strategy when demand approaches the 2030 parking supply. The same parking control programs would be instituted as necessary to prevent vehicles from parking in neighborhoods around the station in order to avoid parking charges.

Parking conditions at each station would be monitored post start-up of BEP Alternative service at least annually to determine whether corrective actions would be necessary to avoid spillover.

The Milpitas Station poses a special parking situation as it would offer a convenient intermodal transfer location to LRT and bus services. VTA would continue to work with the City of Milpitas to implement appropriate parking policies to coordinate non-project related parking demand adjacent to this station.

3.4.4 SVRTP ALTERNATIVE

Table 3-23 summarizes base case park-and-ride space requirements for planned SVRTP Alternative stations. The higher end of the total range assumes unconstrained parking demand in 2030 and the lower end of the range assumes unconstrained opening year demand. Berryessa Station parking demand assumes a shift of parking from the Alum Rock station due to community concerns (ridership has been adjusted for this planning assumption). The parking tables do not include kiss-and-ride demand at stations. Space for that activity is provided, along with spaces for bus passenger boarding and alighting, as part of overall station access design (see Chapter 2, Alternatives). VTA Express/Feeder bus services, more limited under the SVRTP Alternative compared to the BEP Alternative, would not generate substantial park-and-ride requirements. The 2030 unconstrained parking demand reflects ridership of 98,751 for the SVRTP Alternative.

Table 3-23: Opening Year and 2030 SVRTP Alternative Park-and-Ride Demand and Supply

Station Name	Opening Year Parking Demand (spaces)	2030 Parking Demand (spaces)	2030 Parking Supply (spaces)
Milpitas	1,680	3,140	3,140
Berryessa	2,820	6,590	6,590
Alum Rock	2,500	2,500	2,500
Diridon/Arena	1,610	2,585	1,300
Santa Clara	1,560	2,465	2,465
Total	**10,170**	**17,280**	**15,995**

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc. and VTA, February 2008.

Projected demand for riders who board and alight SVRTP Alternative Express/Shuttle services at stations would be accommodated in park-and-ride areas at stations and an off-site parking facility. The SVRTP Alternative would require three park-and-ride parking lots for the additional bus service. Demand for two of the three park-and-ride lots would be met within existing facilities located at the approved Warm Springs BART Station (291 spaces) and the existing Evelyn LRT Station in Mountain View (47 spaces). The third site would be located at the southeast corner of Carroll Street and Evelyn Avenue in downtown Sunnyvale to accommodate 61 spaces. The Berryessa Station would not require any additional park-and-ride parking to support the bus service for this alternative. See Chapter 2, Alternatives, for more information on the SVRTP Alternative bus routes. Figure 2-15 shows the locations of the park-and-ride lots.

Park-and-ride demand for the SVRTP Alternative under these conditions would be approximately 17,280 spaces in 2030 for the five stations with park-and-ride facilities (park-and-ride parking is not being provided for the Downtown San Jose station). The Milpitas Station is projected to require approximately 3,140 spaces that would be accommodated by a six- to eight-level parking structure and future transit facility/surface parking in the station area. Berryessa Station demand is estimated to be just fewer than 6,600 spaces. This includes demand for 2,580 spaces shifted from the Alum Rock Station to Berryessa Station to address community concerns about site impacts at the Alum Rock Station. As a result, Alum Rock Station demand is limited to 2,500 spaces. Without the shift in demand, Berryessa and Alum Rock station parking demand would be approximately 4,000 and 5,100 spaces, respectively.

Berryessa Station parking would be accommodated with an eight-level parking structure and future transit facility/surface parking in the station area. The Alum Rock Station parking demand would be accommodated by a four- to five-level parking structure and additional future transit facility/surface parking in the station area.

Unconstrained 2030 parking demand for the Diridon/Arena Station is projected at 2,585 spaces. Diridon/Arena Station parking would be provided by an eight-level parking structure for approximately 1,300 spaces. The facility would not accommodate the projected parking demand, which could exceed the capacity of the structure by approximately 1,300 spaces by 2030.

Construction of additional single purpose user parking facilities would not be consistent with the City of San Jose's Master Plan for the Diridon area, which includes high-density residential and commercial redevelopment. The Diridon area includes the existing San Jose Diridon Caltrain Station, the HP Pavilion event center, and the proposed SVRTP Alternative Diridon/Arena Station.

In July 2008, the San Francisco Bay Area Metropolitan Transportation Commission awarded a Regional Transit Expansion Program grant to the City of San Jose to develop a Diridon Station Transit Area Plan. One element of the plan is to complete a parking demand analysis and program for the Diridon/Arena Station area. This plan would address the provision, location, and management of parking in the area, including SVRTP Alternative parking demand. This would include an overall strategy in meeting current and future parking needs with stakeholders. VTA, in partnership with the City of San Jose, Caltrain, and area stakeholders would work together to develop a parking management plan that allows for shared parking among area transit providers, the HP Pavilion, and future development. The transit area plan would also evaluate strategies that would encourage transit-supportive access to the area and non-auto travel. VTA will provide a financial contribution to meet 2030 SVRTP Alternative parking demand within an overall parking strategy for the Diridon/Arena Station area. The Diridon Station Transit Area Plan study would begin in 2009 and be completed by 2011. This will allow sufficient time to implement the parking strategies prior to the 2018 opening of the BART extension.

If the Diridon Station Transit Area Plan does not result in meeting the remaining BART demand, VTA will pursue a leasing option. VTA has conducted a parking survey of existing available parking in the area. There are nine publicly owned parking facilities with ½ mile walking distance of the Diridon/Area Station. These lots provide 3,258 parking spaces, with 687 parking spaces vacant during the survey. In addition, another 187 on street parking spaces were unoccupied during the survey. Also, VTA owns property adjacent to the proposed garage that accommodates approximately 185 parking spaces. Therefore, these unoccupied spaces plus the adjacent lot and the parking garage total 2,359 parking spaces or 91 percent of 2030 parking demand. After revenue service begins, parking demand would be monitored to ensure there is sufficient supply is provided to meet the 2030 parking demand. If necessary, additional parking management strategies would be developed.

The Santa Clara Station projected demand is approximately 2,500 spaces. This demand would be accommodated by a five- to six-level parking structure and future transit facility/surface parking in the station area.

Except for the Downtown Station in San Jose, SVRTP Alternative stations would include curb areas for shuttle and feeder bus stops and temporary parking for kiss-and-ride drop-off and pick-up (temporary parking is not provided at the Diridon/Arena Station). These spaces would be provided in designated areas near station entrances, and be accessible via surface roadways, as shown in Appendix D, Station Designs (BEP and SVRTP). Adverse visual effects from parking lots and structures are described in Chapter 5, Section 5.14, Visual Quality and Aesthetics, and traffic effects from park-and-ride trips, included in 2030 roadway volumes, are discussed in Section 3.2.6, Vehicular Traffic.

Conclusion

The Milpitas, Berryessa, and Santa Clara stations design include sufficient parking to accommodate opening year and 2030 parking demand. Therefore, no adverse effects related to parking in surrounding areas would be anticipated and no mitigation measures are warranted.

A portion of parking demand at the Alum Rock Station would be shifted to the Berryessa Station where sufficient capacity would be provided to handle the shifted demand from Alum Rock. These stations are less than one mile apart and therefore, no adverse effects related to parking in surrounding areas would be anticipated and no mitigation measures are warranted.

Parking would not be provided at the Downtown San Jose Station since it is located in a highly urbanized commercial area that would support the ridership projections. Access would be almost entirely by transit, walk/bicycle, and auto/taxi drop-off and pick-up. Only limited short-term on-street metered parking is available as another option. There are no neighborhoods in the immediate area that would be adversely impacted by spill over parking. No mitigation is warranted.

The Diridon/Arena Station parking structure would have a capacity of 1,300 parking spaces, which is 310 parking spaces less than the opening year parking demand of 1,610 spaces. As a result, without mitigation, the lack of sufficient parking capacity to meet the demand would be considered a substantial adverse effect of the SVRTP Alternative at this location. However, the following mitigation measure would reduce this effect to less than adverse. Similarly, the 2030 parking demand can also be accommodated with implementation of the parking demand management strategies identified in this mitigation measure.

> Mitigation Measure TR-1 (SVRTP Alternative): VTA will make a financial contribution (up to the capital cost allowance) to implement the parking demand management strategies identified in the City of San Jose's Diridon Station Transit Area Plan to meet opening year and 2030 demand as part of a comprehensive parking management strategy for the specific plan area, or pursue leased parking options at underutilized parking facilities in the area. VTA will monitor parking demand and supply and institute parking demand management strategies as required.

Nevertheless, VTA would closely monitor parking activity at all stations and institute control measures in the event parking demand approaches available supply. Possible measures include parking charges, parking time and location restrictions to prevent long-term parking in neighborhoods, and/or other actions.

Santa Clara Station would offer opportunities for intermodal transfers to Caltrain, ACE train, and the planned People Mover connection to Norman Y. Mineta San Jose International Airport. Special policies and arrangements to prevent long-term airport parking would be implemented at the station. VTA would also continue to work with Santa Clara and other transit agencies to implement appropriate parking policies to manage non-project related parking demand adjacent to these stations.

The Milpitas, Alum Rock, and Diridon/Arena stations would offer convenient intermodal transfer locations to LRT, BRT, and commuter rail service, respectively. VTA would continue to work with the cities and other transit agencies to implement appropriate parking policies to manage non-project related parking demand adjacent to these stations.

3.5 PEDESTRIANS

3.5.1 EXISTING CONDITIONS

Pedestrian facilities in the SVRTC station areas consist primarily of sidewalks along roadways, including arterials and local collector streets, pedestrian push buttons, and signal heads at intersections. Marked crossings are provided at signalized intersections. A list of existing regional multi-use trails is included in Section 3.6, Bicycles.

Downtown San Jose, including the area in the vicinity of the proposed Downtown San Jose Station, experiences the highest pedestrian volumes within the SVRTC and has streets/sidewalks on a grid pattern, which facilitates pedestrian movements. Diridon/Arena Station area pedestrian activity is primarily individuals proceeding to/from the Diridon Caltrain station and, during special events, to and from HP Pavilion. At Milpitas, Berryessa, Alum Rock, and Santa Clara station locations, pedestrian facilities are less dense and lightly used due to the low density development and wider spacing of roadways. The environments generally would be viewed as not pedestrian friendly.

3.5.2 NO BUILD ALTERNATIVE

The No Build Alternative transit and highway projects would be designed to accommodate pedestrian access consistent with American's with Disabilities Act (ADA) requirements. These types of facilities do not typically result in substantial adverse environmental effects but subsequent environmental clearances would be required.

3.5.3 BEP ALTERNATIVE

Milpitas and Berryessa Stations

Development of the Milpitas and Berryessa stations for BART service to Santa Clara County under the BEP Alternative would not cause substantial overcrowding on public sidewalks, create hazardous conditions for pedestrians or eliminate pedestrian access to adjoining areas. The projected volume of pedestrians can be estimated for BEP Alternative stations by assuming that pedestrians account for approximately 88 percent and 82 percent of the bike/walk share for the Milpitas and Berryessa Stations, respectively. See Section 3.3.3 for boardings and alightings by station, and mode share projections. Pedestrian mode share assumptions for the BEP Alternative are based on an analysis of existing comparable BART station mode of access and non-motorized mode of access projections for the Build Alternatives.

Sidewalks leading to and from the station entrances would be developed and/or improved. A pedestrian over-crossing is proposed to connect the Capitol LRT Station and the Milpitas Station plaza. A second pedestrian over-crossing, to be provided by others, is proposed to span Montague Expressway providing a connection from future residential development to the north with the station area. Pedestrian walkways through station areas would be well defined, signed and lighted, and include designated protected crosswalks (through signing/striping and/or signals if warranted to ensure adequate safety) where pedestrians would be required to cross traffic lanes. In addition, BEP Alternative stations and related pedestrian facilities would be constructed consistent with ADA requirements.

Areas surrounding these stations are planned for redevelopment, including transit oriented housing and commercial development. Although not a part of the BEP Alternative, it is anticipated that such development would improve pedestrian facilities within the limits of the planned improvements and include pathways to and from nearby BART stations. VTA would coordinate station planning with area redevelopment proposals to ensure pedestrian circulation is convenient, safe, and secure. Therefore, no adverse affects to pedestrians are anticipated for the BEP Alternative and no mitigation is required.

3.5.4 SVRTP ALTERNATIVE

The projected volume of pedestrians can be estimated for SVRTP Alternative stations by assuming that pedestrians account for the following percentages of the bike/walk mode shares at stations: 88 percent (Milpitas); 82 percent (Berryessa); 82 percent (Alum Rock); 94 percent (Downtown San Jose); 84 percent (Diridon/Arena); and 88 percent (Santa Clara). See Section 3.3.4 for boardings and alightings by station, and mode share projections. Pedestrian mode share assumptions for the SVRTP Alternative are based on an analysis of comparable existing BART station mode of access and non-motorized mode of access projections for the Build Alternatives.

Milpitas and Berryessa Stations

Development of the Milpitas and Berryessa stations under the SVRTP Alternative would have similar effects as under the BEP Alternative. No adverse effects on the pedestrian environment are anticipated.

Station area improvements would be expected to improve pedestrian circulation and safety relative to existing and future No Build conditions.

Alum Rock Station

The proposed Alum Rock Station is underground with riders using stairs and escalators to access the mezzanine and train platform levels from ground level. General station area access, including to surface entrances and exits, would be along surface roadways and walkways within the station campus. Sidewalks and designated pathways would be provided for pedestrians proceeding to and from the station and connect to sidewalks on nearby arterials such as East Julian Street, East Santa Clara Street, and North 28th Street. North 28th Street would be improved as part of the SVRTP Alternative, with new sidewalks constructed adjacent the station site and improved pedestrian crossings at signalized intersections. New internal circulation roadways would also include sidewalks for pedestrians to access station entrances. In addition, all station pedestrian facilities would be provided to meet ADA requirements.

Pedestrian capacity of sidewalks and walkways at and surrounding the station would have capacity to handle anticipated volumes without crowding or creating hazardous conditions or eliminating access to adjoining areas.

Downtown San Jose Station

Downtown San Jose Station is underground with access from street-level entrances/exits along Santa Clara Street. Pedestrians would use existing sidewalks and crosswalks to reach station entrances/exits. The Santa Clara streetscape will be enhanced from Market Street to 2nd Street including street furniture, landscaping and rehabilitated sidewalks. Analysis was conducted that concluded that the projected passenger demand would be adequately served by the existing capacity of sidewalks around the Downtown San Jose Station. The Downtown San Jose Station would not create hazardous conditions for pedestrians or eliminate pedestrian access to adjoining areas.

Diridon/Arena Station

Diridon/Arena Station is the third underground station on the SVRTP Alternative. Station entrances/exits would be at surface level and accessed by local sidewalks and crosswalks. An analysis of station passenger demand and resulting street level pedestrian activity concluded that the existing capacity of sidewalks around the station is adequate to handle pedestrian movements associated with peak travel times. Therefore, the SVRTP Alternative would not result in an adverse effect on pedestrians in this area.

Santa Clara Station

At the Santa Clara Station, the SVRTP Alternative proposes to construct a pedestrian over-crossing over existing passenger and freight tracks between the existing Santa Clara Caltrain Station and the Santa Clara BART Station, parking garage and bus transit center. No east-west pedestrian connection currently exists. Caltrain has approved the construction of a pedestrian undercrossing (tunnel) from the west side of the rail tracks to a new mid-platform as part of funded improvements for the Santa Clara Caltrain Station to be completed by 2011. VTA has identified an extension of the pedestrian undercrossing as a planned improvement in the VTA Bicycle Master Plan; however this improvement is not associated with the SVRTP Alternative. The study and construction of a pedestrian undercrossing extension is currently unfunded. This pedestrian over-crossing would facilitate pedestrian traffic between the existing Santa Clara Caltrain Station/Bus Transit Center and Santa Clara BART Station. A second pedestrian over-crossing would be provided to connect the station's elevated mezzanine to the multi-story parking structure located east of the station, with a connection to the proposed Automated People Mover (APM) on Brokaw Road. The APM would connect with the San Jose International Airport.

Passenger demand at Santa Clara Station would not cause substantial overcrowding on public sidewalks or create unsafe pedestrian conditions. The proposed pedestrian over-crossing at the Santa Clara Station would have a beneficial effect for non-BART riders who desire to cross at this location since the over-crossing would be available to the general public. The proposed pedestrian over-crossing connecting the BART station, parking structure and APM would have a beneficial effect for BART riders accessing the station, parking structure and San Jose International Airport APM.

Conclusion

Neither the BEP Alternative nor the SVRTP Alternative would adversely affect pedestrian facilities in the SVRTC. Improvements to these facilities would be made within the station areas to improve access by non-motorized modes. Sidewalks would be part of new roadways providing internal circulation at stations, and they would connect to sidewalks on nearby roadways. VTA will continue to work with city partners to encourage the development of pedestrian facilities that connect to the BART stations from surrounding areas. Overall, the pedestrian environment should be enhanced as a result of proposed improvements under this alternative. No mitigation measures are warranted. Therefore, no adverse effects to pedestrians are anticipated for the SVRTP Alternative and no mitigation is required.

3.6 BICYCLES

Bicycle facilities are implemented by the City of Fremont, City of Milpitas, City of San Jose, City of Santa Clara, County of Santa Clara, and VTA within the SVRTC. Bicycle facilities identified in this section include Class I and Class II. Caltrans designates Class I bicycle facilities (referred to as bike paths), as those which are separated from vehicle

traffic and shared with pedestrians. Class II bicycle facilities (referred to as bike lanes) are designated as striped bike lanes on roadways. Facilities that are located approximately two miles from BART stations are described under Existing Conditions.

A Cross-County Bicycle Corridors network is identified in VTA's *Santa Clara Countywide Bicycle Plan.* The purpose of the Cross–County Bicycle Corridors network is to provide continuous connections between Santa Clara County jurisdictions and to adjacent counties, and to serve the major regional trip-attractors in the County. Bike paths of regional significance are identified in the plan as Regional Trails. City bicycle master plans identify planned bicycle facilities. Local cities' planned bicycle facilities and VTA's Cross-County Bicycle Corridors and Regional Trails located in the vicinity of the station areas are discussed under No Build Alternative conditions.

Bicycle parking demand has been calculated for the build alternatives using AM peak ridership projections for each station, and applying mode share assumptions for riders accessing the station by bicycle. Mode share assumptions for the BEP and SVRTP alternatives are based on an analysis of existing BART station mode of access and non-motorized mode of access projections for the Build Alternatives.

Bicycle facilities such as bike lanes, bike paths, and bike parking, are planned as part of station campuses, and described in the BEP and SVRTP alternatives sections, respectively. Bicycle facilities for the Build Alternatives would be planned, designed, and constructed consistent with BART Facilities Standards.

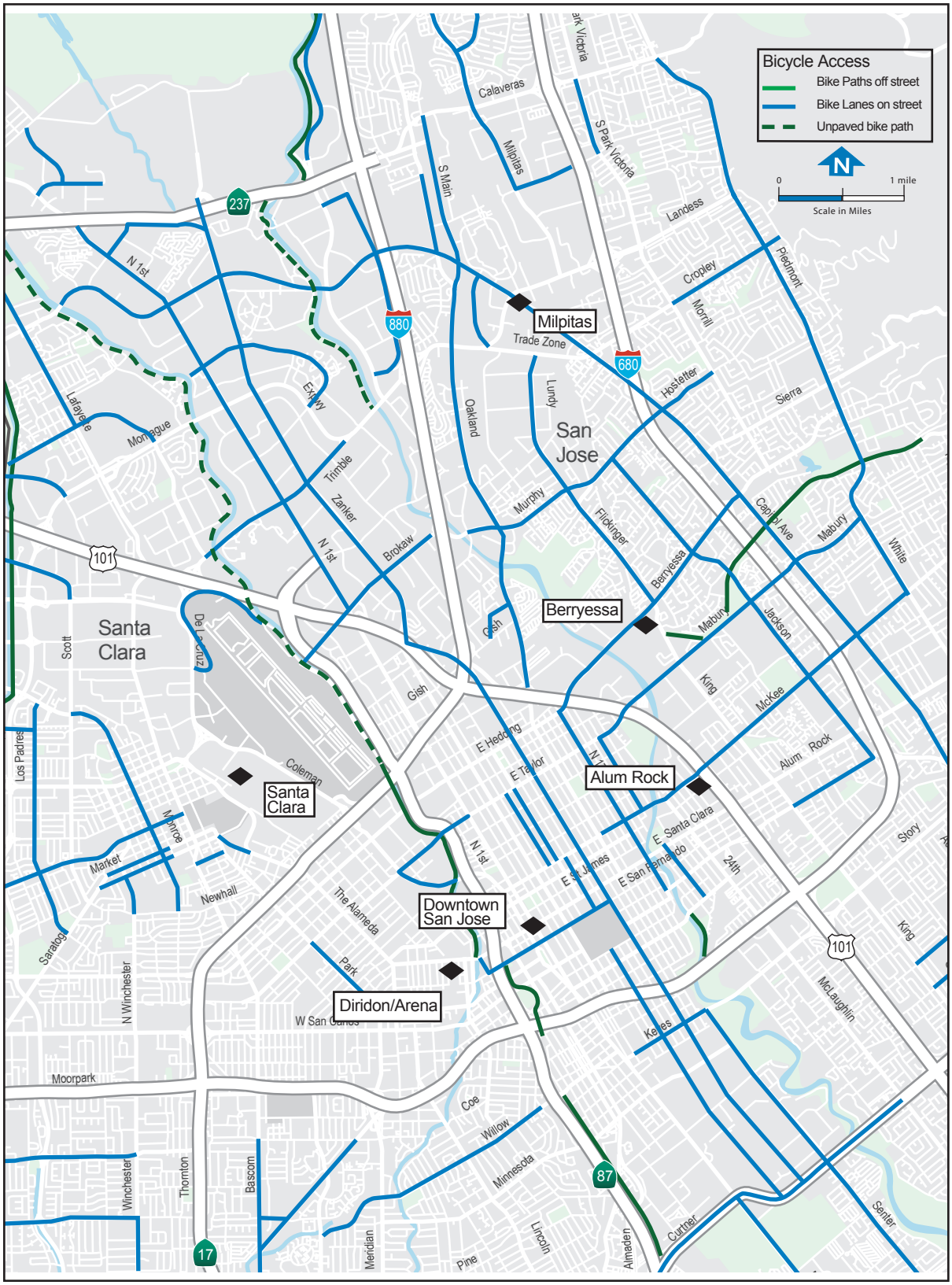
3.6.1 EXISTING CONDITIONS

There are bicycle facilities located in the vicinity of each of the station areas. Existing bicycle facilities are based on the *Santa Clara Valley Bikeways Map* (VTA, 2008). Bike lanes and bike paths located approximately two miles from the stations are described below and illustrated in Figure 3-3.

Milpitas Station Area

Bike lanes:

- Yosemite Road; east/west between Milpitas Boulevard and I-680
- Great Mall Parkway; north/south between I-880 and Montague Expressway
- Capital Avenue; north/south between Montague Expressway and Capital Expressway
- Abel Street; north/south between Junipero Drive and Great Mall Parkway
- McCandless Drive; north/south between Great Mall Parkway and Montague Expressway
- Oakland Drive; north/south between Great Mall Parkway and US 101



Source: VTA, 2008.

Figure 3-3: Existing Bicycle Access

- Milpitas Boulevard; north/south between Yosemite Drive and the City of Fremont
- Lundy Avenue; north/south between Trade Zone Boulevard and Berryessa Road

County Expressways:

- Montague Expressway extends from I-680 in the vicinity of the station area south to the City of Campbell

Berryessa Station Area

Bike Lanes:

- Berryessa Road; east/west between 17th Street (near US 101) and Capitol Avenue
- Murphy Avenue; east/west between Ridder Park Drive (near I-880) and Capitol Avenue
- Old Bayshore Highway; north/south between Brokaw Road and Taylor Street
- Old Oakland Road; north/south between US 101 and The Great Mall
- Lundy Avenue; north/south between Berryessa Road and Trade Zone Boulevard
- Flickinger Road; north/south between Murphy Road and Commodore Drive (near Penitencia Creek Trail)
- Capitol Avenue; north/south between Capital Expressway and Montague Expressway
- Mabury Road; east/west between North 21st Street and White Road
- Jackson Avenue; north/south between Penitencia Creek Trail and Montpelier Drive (near Mckee Road)
- North 21st Street; north/south between Mabury Road and East Julian Street
- North 17th Street; north/south between Berryessa Road and East San Antonio Street

Bike Paths:

- Penitencia Creek Trail; east/west between King Road and Mabury Road, continuing between Mabury Road and Toyon Avenue

Alum Rock Station Area

Bike Lanes:

- San Antonio Road; east/west between King Road and Jackson Avenue
- Jackson Avenue, north/south between Alum Rock Avenue and San Antonio Street, continuing between Montpelier Drive (near Mckee Road) and Mabury Road
- Capitol Avenue; north/south between Capitol Expressway and Montague Expressway
- North 21st Street; north/south between East Santa Clara Street and William Street
- North 17th Street; East San Antonio and Berryessa Road

Bike Paths:

- Coyote Creek Trail; north/south between William Street and I-680
- Five Wounds Trail; north/south between William Street and I-680

Downtown San Jose and Diridon/Arena Station Areas

Bike Lanes:

- North 3rd Street; north/south between Jackson Street and East Julian Street
- North 2nd Street; north/south between Jackson Street and East Julian Street
- 7th Street; north/south between East St. James and East San Fernando, continuing between East San Salvador and Tully Road
- Park Avenue; north/south between Naglee Avenue and Race Street
- Coleman Avenue; north/south between West Taylor Street and the Guadalupe River Trail
- West Taylor Street; east/west between Walnut Street (near Coleman Avenue) and North 1st Street

Bike Paths:

- Guadalupe River Trail; north/south between Alviso at the San Francisco Bay and Downtown San Jose (adjacent to SJIA)

Santa Clara Station Area

Bike lanes:

- Monroe Street; north/south between Scott Boulevard and Newhall Street
- Homestead Road; east/west between Lafayette Street and the City of Cupertino
- Market Street; east/west between Saratoga Avenue and Jackson Street
- Bellomy Street; east/west between Saratoga Avenue and Jackson Street
- Poplar Street; east/west between Washington Street and Park Avenue
- Ewert Road; north San Jose International Airport (SJIA) perimeter between Airport Boulevard and De La Cruz Boulevard at Martin Avenue

Bike paths:

- Guadalupe River Trail; north/south between Alviso at the San Francisco Bay and Downtown San Jose (adjacent to SJIA)

3.6.2 NO BUILD ALTERNATIVE

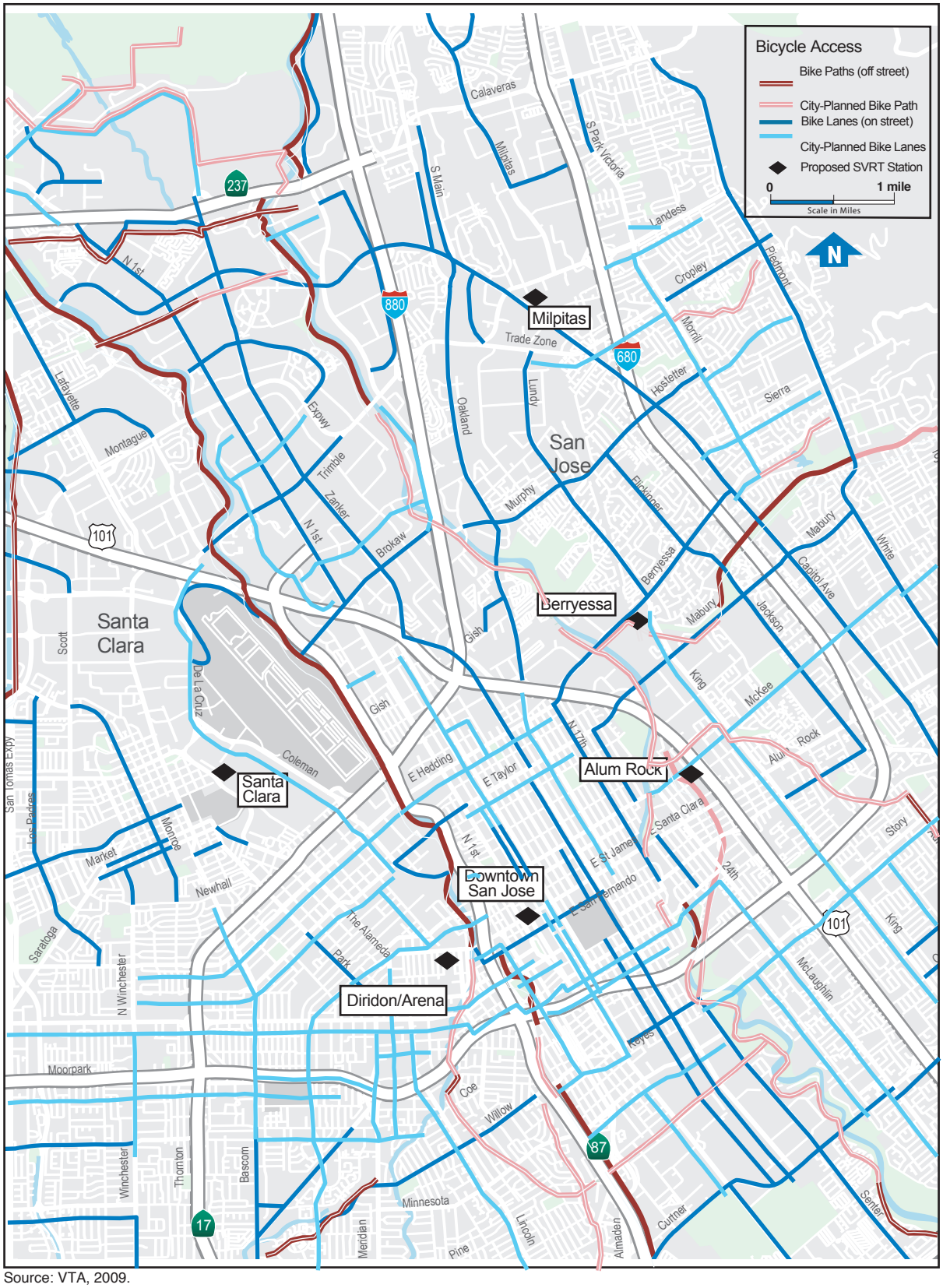
The No Build Alternative includes any planned bicycle facility that could be implemented if funding were identified. City planned bicycle access improvements as identified in local bicycle master plans are illustrated in Figure 3-4.

The following VTA Cross-County Bicycle Corridors and Regional Trails are located within the vicinity of the station areas. The routes are for planning purposes and have no dedicated funding source for improvements. The cities of Fremont, Milpitas, San Jose and Santa Clara, and the County of Santa Clara and VTA, could implement bicycle facility improvements near SVRT stations. Should new facilities be constructed or modifications be required for existing bike facilities, separate environmental documentation would be prepared by the lead agency.

Milpitas Station Area

Cross-County Bicycle Corridors:

- *Tasman/Alum Rock Light Rail Corridor*; Mountain View to East San Jose extends along the Great Mall Parkway/Capitol Avenue
- *I-880/I-680 Corridor*; Alameda County Line to Los Gatos, extends along Oakland Drive
- *I-680 Corridor to Silver Creek*; extends from Milpitas to South San Jose



Source: VTA, 2009.

Figure 3-4: Existing and City-Planned Bicycle Access

Regional Trails:

- *Coyote Creek Trail;* Milpitas to Morgan Hill
- *SR 237 Bike Path*; North Santa Clara to Ed R. Levin County Park

Berryessa and Alum Rock Station Area

Cross-County Bicycle Corridors:

- *Tasman/Alum Rock Light Rail Corridor;* extends from Mountain View to East San Jose
- *I-280 Corridor;* extends from Los Altos to Northeast San Jose
- *Homestead/Hedding/Brokaw Road Corridor; extends* along Hedding Street and Mabury Road to the foothills of East San Jose
- *North US 101/Caltrain;* extends along the extent of Hostetter Road
- *SR 237/Tasman and Capitol Rail*; extends along the extent of Capitol Avenue
- *I-880/I-680 Corridor*; Alameda County Line to Los Gatos, extends along Oakland Drive
- *I-680 Corridor to Silver Creek;* extends from Milpitas to South San Jose

Regional Trails:

- *Five Wounds/Brookwood Terrace Trail;* passes through the proposed site for the Alum Rock Station. The trail extends from Lower Silver Creek along the former UPRR line to the Coyote Creek Trail and Kelley Park.
- *Coyote Creek Trail;* Milpitas to Morgan Hill

Downtown San Jose and Diridon/Arena Station Area

Cross-County Bicycle Corridors:

- *I-880 Corridor;* extends from Alameda County to Downtown San Jose
- *I-880/I-680 Corridor*; Alameda County Line to Los Gatos extends along Oakland Drive
- *South of I-280 Corridor;* extends along Moorpark Avenue from the Los Gatos Creek Trail to Saratoga
- *Homestead/Hedding/Brokaw Road Corridor;* extends along Hedding Street and Mabury Road to the foothills of East San Jose

- *Valley Fair to Santa Teresa;* extends from Dixon Landing in Milpitas along Zanker/Old Bayshore Highway to south San Jose
- El Camino Real/Grand Boulevard Corridor; extends from Palo Alto to East San Jose

Regional Trails:

- *SR 87 Bike Path;* extends along the extent of SR 87 through the City of San Jose
- *Guadalupe River Trail;* passes in the vicinity of the proposed Downtown and Diridon/Arena stations along the Guadalupe River. .
- *Coyote Creek Trail;* Milpitas to Morgan Hill
- *Los Gatos Creek Trail;* extends from Downtown San Jose to Los Gatos
- *Calaveras Connector Trail (Trail Route C7);* north/south between San Francisco Bay Trail and Ed Levin County Park

Santa Clara Station Area

Cross-County Bicycle Corridors:

- *I-280/Stevens Creek Corridor;* extends along Benton Street, through the proposed station site, and along Coleman Avenue.
- *Homestead/Heading/Brokaw Road Corridor;* extends from San Mateo County to San Jose International Airport
- *El Camino/Grand Boulevard Corridor;* extends from Palo Alto to East San Jose
- *US 101 Corridor;* extends from San Mateo County to San Benito County
- *Alma Street/Caltrain Corridor;* extends from Palo Alto to Santa Clara along Alma Street/Capital Expressway
- *Calabazas Creek/Winchester Corridor;* extends from SR 237 to Blossom Hill Road in Los Gatos

Regional Trails:

- Guadalupe River Trail; passes in the vicinity of the proposed Downtown and Diridon/Arena stations along the Guadalupe River
- *San Tomas Aquino Creek Trail;* extends from SR 237 to Saratoga Creek

3.6.3 BEP ALTERNATIVE

The BEP Alternative would be constructed in a dedicated right-of-way with at-grade, retained cut, and aerial configurations. There are currently no bike paths located within the BEP Alternative proposed alignment. The BEP Alternative would not eliminate any existing bicycle facilities within this alternative's alignment, or within any of the station areas. No hazardous conditions would be created for bicyclists, and intersecting roadways would be grade-separated, improving the bicycle network. All stations would be designed and operated to accommodate bicyclists.

Bicycle Access

The BEP Alternative would not adversely effect existing bike lanes within the cities of Fremont, Milpitas, and San Jose in the vicinity of the rail alignment and proposed stations. The BEP Alternative would improve bicycle connectivity through station areas. VTA would construct bike lanes along existing and new streets that are a part of this alternative within the station area at both the Milpitas and Berryessa stations. Bicycles would be permitted within station elevators and walked up/down any stairs equipped with bicycle stair channels to access station platforms.

At the Milpitas Station, new bike lanes would be provided on both sides of the proposed extension of South Milpitas Boulevard, which would connect Montague Expressway to the north, through the station area, to existing bike lanes on Capitol Avenue to the southwest. At the Berryessa Station, new bike lanes would be provided on both sides of the proposed new roadway through the site. The road would run north to south connecting existing bike lanes on Berryessa Road to the north and Mabury Road to the south. Refer to Appendix D, Station Designs (BEP and SVRTP), for the BEP Alternative Station Conceptual Site Plans for an illustration of the station areas.

Bicycle Parking

BART guidelines yield a projection for future demand of approximately 165 bicycle parking spaces for the BEP Alternative during the opening year (see Table 3-24).

Table 3-24: Projected Bicycle Parking Demand for the BEP Alternative

Planned Station Locations	Opening Year Parking Demand (spaces)	2030 Parking Demand (spaces)
Milpitas	85	115
Berryessa	80	110
Total	165	225

Source: VTA, 2008.

BART Facilities Standards design criteria require bicycle racks be grouped for a minimum of 20 bicycles, however do not specify recommended quantities of long-term bicycle lockers and short-term bicycle racks for each station. The ratio of bicycle

parking type (percent of bike racks and bike lockers) at existing BART stations varies. Existing BART bike racks are typically 35 percent used and approximately 89 percent of bike lockers are utilized. Demand for long-term, secured bike lockers at existing BART stations generally exceeds supply. The number of bike lockers provided at the proposed stations would be greater than the number of bike racks, if space permits. The provision of long-term secured bicycle parking would be provided, in part, by bike racks within the paid area of the stations.

The type and location of bicycle parking provided at proposed stations would depend on available space within the station area, and be determined in final design. BEP Alternative bicycle parking supply would accommodate opening year demand. Usage would be monitored and the amount of bicycle parking adjusted based on actual demand observed at the stations.

3.6.4 SVRTP ALTERNATIVE

The SVRTP Alternative would be constructed in a dedicated right-of-way with at-grade, retained cut, aerial, and subway configurations. There are currently no bike paths located within the SVRTP Alternative proposed alignment. A subway alignment would be constructed for this alternative in Downtown San Jose. The SVRTP Alternative would not eliminate any existing bicycle facilities within this alternative's alignment, or within the any of the station areas. No hazardous conditions would be created for bicyclists, and intersecting roadways would be grade-separated, maintaining and not conflicting with the existing bicycle network. All stations would be designed and operated to accommodate bicyclists.

Bicycle Access

The SVRTP Alternative would not adversely effect existing bike lanes within the cities of Fremont, Milpitas, San Jose, and Santa Clara in the vicinity of the rail alignment and proposed stations. In addition, to improve bicycle connectivity through station areas, VTA would construct bike lanes along existing or new streets at the stations as part of this alternative. Bicycles would be permitted within station elevators and walked up/down any stairs equipped with bicycle stair channels to access station platforms. At the Milpitas and Berryessa Stations, new bike lanes would be provided as described under the BEP Alternative.

At the Alum Rock Station, new bike lanes would be installed along both sides of 28th Street between East Santa Clara Street and East Julian Street. A bike path would be constructed within VTA ROW west of 28th Street from East Julian Street to East Santa Clara Street as part of the Five Wounds Trail system. At Santa Clara Station, VTA would install bike lanes for the alternative's portion of improvements along Brokaw Road between Coleman Avenue and the terminus of Brokaw Road.

These SVRTP Alternative bicycle access improvements would improve access within the station area and expand the bicycle network. Refer to Appendix D, Station Designs

(BEP and SVRTP), for the SVRTP Alternative Station Conceptual Site Plans for an illustration of the station areas.

Bicycle Parking

BART bicycle parking design guidelines yield projections for future demand of approximately 700 bicycle parking spaces for opening year. The actual number of bicycle parking spaces provided for 2030 conditions would be influenced by other factors such as available space within station areas and observed demand. Table 3-25 shows projections for the number of bicycle parking spaces for each station for opening year and 2030 conditions.

BART Facilities Standards do not quantify the type of bicycle parking (i.e. bike racks versus bike lockers) required for stations. The ratio of bike racks to bike lockers at existing BART stations comparable to SVRTP Alternative stations are generally 2:1, however wait lists exist for bike lockers at about 60 percent of the existing BART stations that offer bike lockers. Where space permits, the provision of bike lockers would be preferred over bike racks at SVRTP Alternative stations.

Table 3-25: Projected Bicycle Parking Demand for the SVRTP Alternative

Planned Station Locations	Opening Year Bicycle Parking Demand (spaces)	2030 Bicycle Parking Demand (spaces)
Milpitas	110	160
Berryessa	160	240
Alum Rock	175	260
Downtown/San Jose	65	100
Diridon/Arena	120	180
Santa Clara	35	50
Total	**665**	**990**

Source: VTA, 2008.

The type and location of bicycle parking provided at proposed stations would depend on station configuration, available space within the station area, and would be determined in final design. SVRTP Alternative bicycle parking supply would accommodate opening year demand. Usage would be monitored, and the amount of bicycle parking adjusted based on actual demand observed at the stations.

Neither the BEP Alternative nor the SVRTP Alternative would adversely affect bicycle facilities in the SVRTC. Improvements to these facilities would be made within the station areas to improve access by passengers arriving by bicycle. New bike lanes would be provided through station campuses and connect to nearby facilities. Bicycle parking is planned at the stations. Overall, the bicycle environment would be enhanced

as a result of proposed improvements under this alternative. Therefore, no mitigation measures would be warranted.

3.7 VEHICULAR TRAFFIC

Vehicular traffic volumes were obtained from two sources: (1) existing peak-hour manual turning movement traffic counts on the existing roadway network and (2) future (year 2030) traffic projections using a traffic model on the future roadway network. Year 2030 traffic forecasts were developed using an enhanced version of the Metropolitan Transportation Commission (MTC) regional model (the VTA 2030 SVRTC traffic model). The near-term (existing) traffic information is presented merely to identify possible constraints to development near the proposed BART Station sites. Year 2030 traffic conditions were analyzed in order to identify traffic adverse affects attributable to the Build Alternatives on the future roadway network and transportation facilities. Transportation modeling approaches, assumptions, baseline projects, and projections for conditions under the No Build, BEP, and SVRTP alternatives are described in the three traffic reports addressing the station areas. The three traffic reports are listed below and form the basis for much of the information in this section.

- Milpitas BART Station Transportation Impact Analysis, Draft, Hexagon Transportation Consultants, Inc., December 23, 2008.
- San Jose BART Stations Transportation Impact Analysis, Draft, Hexagon Transportation Consultants, Inc., December 23, 2008.
- Santa Clara BART Station Transportation Impact Analysis, Draft, Hexagon Transportation Consultants, Inc., December 23, 2008.

3.7.1 EXISTING ROADWAY SYSTEM

The traffic analysis is based on peak-hour level of service for signalized intersections and freeway segments. A total of 127 signalized intersections and 94 directional freeway segments within the cities of Milpitas, San Jose, and Santa Clara were analyzed. These are grouped by proposed BART Station areas below:

- Milpitas Station: 36 study intersections/20 directional freeway segments
- Berryessa Station: 12 study intersections/10 directional freeway segments
- Alum Rock Station: 19 study intersections/20 directional freeway segments
- Diridon/Arena Station: 34 study intersections/18 directional freeway segments
- Santa Clara Station: 26 study intersections/26 directional freeway segments

The study intersections were selected by local cities for inclusion in the traffic analysis because of their proximity to the proposed stations, they are located along anticipated station access traffic routes, or/and their concern regarding potential adverse affects at these locations. It should be noted that the Downtown San Jose Station is omitted from the traffic analysis since this station will not provide park-and-ride (PNR) facilities.

Freeways

Regional access to the Station sites is provided via various freeways. Regional access to the Milpitas Station is provided via I-680 and I-880, to the San Jose Stations via I-680, I-280, US 101, and SR-87, and to the Santa Clara Station via US 101 and I-880. These facilities are described below.

- **Interstate-680** is an eight-lane freeway providing regional access to the cities of Milpitas and San Jose. It extends in a north-south direction from its junction with I-280 and US 101 near Downtown San Jose through the East Bay to its junction with I-80 in Fairfield. Near the Milpitas Station, the peak direction of travel is southbound during the morning commute and northbound during the afternoon commute. In San Jose, both directions of I-680 serve as peak commute travel during both the AM and PM peak hours. Access to I-680 from the Milpitas Station site is provided via its interchange with Montague Expressway, to the Berryessa Station site via its interchange at Berryessa Road, and to the Alum Rock Station site via interchanges at McKee Road and Alum Rock Avenue.

- **Interstate-880** provides regional access to the cities of Milpitas and Santa Clara. It extends in a north-south direction from its junction with I-280 near Downtown San Jose to I-80 in Oakland. Within the study area, I-880 consists of six mixed-flow lanes, three in each direction. In Milpitas, both directions of I-880 serve as peak commute travel during both the AM and PM peak hours, while the peak direction of travel is northbound during the morning commute and southbound during the afternoon commute near the Santa Clara Station. Access to I-880 from the Milpitas Station would be provided via its interchange with Montague Expressway and from the Santa Clara Station via its interchanges with Alameda and Coleman Avenue.

- **Interstate-280** provides regional access to the City of San Jose. It connects from US 101 in San Jose to I-80 in San Francisco. It is generally an eight-lane freeway in the vicinity of Downtown San Jose. It also has auxiliary lanes between some interchanges in San Jose. The section of I-280 just north of the Bascom Avenue overcrossing has six mixed-flow lanes and two high-occupancy-vehicle (HOV) lanes. Connections from I-280 to Downtown San Jose are provided via a full interchange at Bird Avenue, and partial interchanges at Seventh Street (no north on-ramp), at Almaden/Vine (ramps to/from north), First Street (ramp to south), and Fourth Street (ramp to north). I-280 provides access to the Diridon/Arena Station site via its interchange at Bird Avenue. Connections are also available indirectly via an interchange with SR 87.

- **US 101** provides regional access to the cities of San Jose and Santa Clara. It is a north-south freeway that extends northward through San Francisco and southward through Gilroy. Within the study area, US 101 is an eight-lane facility (three mixed-flow lanes and one HOV lane in each direction). During the peak commute hours, the mixed-flow lanes operate under stop-and-go conditions in the peak direction of travel – northbound in the AM and southbound in the PM. Within the HOV lane, traffic flows well, although volumes are approaching capacity during the peak periods. US 101 provides access to the Berryessa and Alum Rock Station sites via interchanges at Old Oakland Road, Julian Street, Santa Clara Street, and a potential interchange at Mabury Road. Access to the Santa Clara Station site from US 101 is provided via interchanges at Montague Expressway and De La Cruz Boulevard.

- **State Route 87** provides regional access to the City of San Jose. It connects from SR 85 in south San Jose to US 101 near the San Jose International Airport. It is generally a four-lane freeway with auxiliary lanes near the I-280 interchange. With the SR 87 HOV lane widening project recently completed, SR 87 provides HOV lanes between Julian Street and SR 85. Connections from SR 87 to Downtown San Jose and the Diridon/Arena Station are provided via a full interchange at Julian Street and partial interchanges at Park Avenue (ramps to/from north only), at Auzerais Avenue (ramps to/from south only), and at Santa Clara Street (northbound off-ramp only).

Refer to Figures 2-3 and 2-15 in Chapter 2, Alternatives for an illustration of the proposed SVRT stations, as well as all regional and local facilities providing access to the proposed station sites.

Other Roadways: Expressways, Arterials, Local Streets

The proposed station sites also are served by various roadways providing local access. These roadways are described below.

Milpitas Station

Montague Expressway is a six- to eight-lane expressway with full freeway interchanges at I-680 and I-880. East of I-680, Montague Expressway becomes Landess Avenue, which traverses eastward up to Piedmont Road. There is a directional HOV lane on Montague Expressway between McCarthy Boulevard and De La Cruz Boulevard that operates only in the peak commute direction. With the HOV lane, there are three mixed-flow lanes in the eastbound direction during morning peak hours and three mixed-flow lanes in the westbound direction during evening peak hours along most segments of Montague Expressway. Montague Expressway would provide direct access to the proposed Milpitas Station.

Milpitas Boulevard is a four-lane north-south roadway that runs between Dixon Landing Road and Montague Expressway, where it terminates as a T-intersection. Milpitas Boulevard is planned to be extended south of Montague Expressway to

connect to Capitol Avenue, south of Montague. With the planned extension, Milpitas Boulevard would run adjacent to the Milpitas Station providing direct access to the station via its intersections with Montague Expressway and Capitol Avenue.

Great Mall Parkway is a six-lane arterial extending from I-880 to Montague Expressway. West of I-880, Great Mall Parkway becomes Tasman Drive. South of Montague Expressway, Great Mall Parkway transitions into Capitol Avenue. VTA's Tasman East Light Rail line runs along Great Mall Parkway with a station and park-and-ride lot located at Great Mall Parkway and Main Street.

Capitol Avenue is a north-south divided roadway that extends from Montague Expressway south through the City of San Jose. Although the majority of Capitol Avenue is a four-lane divided roadway, some portions consist of six lanes. VTA's Tasman East Light Rail line runs along Capitol Avenue with a station located at Montague Expressway and Capitol Avenue.

Berryessa Station

Berryessa Road is an east-west roadway that extends from Piedmont Road to US 101. West of US 101, Berryessa Road becomes Hedding Street. This roadway has two lanes in each direction and a raised median. Berryessa Road provides access to and from I-680 via a full cloverleaf interchange.

Mabury Road extends in an east-west direction from east of White Road over I-680 to US 101. The Mabury overcrossings at I-680 and US 101 do not provide freeway access. At US 101, Mabury Road becomes Taylor Street. Mabury Road has one travel lane in each direction.

King Road is a north-south roadway extending from Aborn Road to Berryessa Road. At Aborn Road, King Road becomes Silver Creek Road, which traverses southward through the Yerba Buena Hills. At Berryessa Road, King Road becomes Lundy Avenue and traverses northward to Milpitas. King Road is generally a two-lane road in the vicinity of the station site.

Jackson Avenue is a four-lane north-south roadway that extends between Story Road and Berryessa Road. North of Berryessa Road, Jackson Avenue becomes Flickinger Avenue.

Alum Rock Station

McKee Road is an east-west roadway with full freeway interchanges at I-680 and US 101. McKee Road extends from the foothills in East San Jose to US 101. At US 101, McKee Road becomes Julian Street, which traverses westward through Downtown San Jose. McKee Road has four travel lanes between US 101 and King Road. East of King Road, McKee Road widens to six lanes. East of Jackson Avenue, it narrows back to two lanes in each direction.

Alum Rock Avenue is an east-west roadway with a partial cloverleaf interchange at I-680 and a diamond interchange at US 101. Alum Rock Avenue extends from Alum Rock Park near the foothills in East San Jose to US 101. At US 101, Alum Rock Avenue becomes Santa Clara Street, which traverses westward through downtown San Jose. Alum Rock Avenue has four travel lanes in the vicinity of the study area.

San Antonio Street is a two-lane east-west roadway that runs between San Jose State University and Capitol Expressway. At I-680, San Antonio Street merges to Capitol Expressway and traverses southward.

Diridon/Arena Station

Market Street is a north-south four-lane roadway that runs from Julian Street to Reed Street. North of Julian Street, Market Street becomes Coleman Avenue. South of Reed Street, Market Street becomes South First Street.

North First Street is a north-south roadway that is one-lane and one-way northbound between Reed Street and Julian Street. From San Carlos Street to Julian Street, the Guadalupe LRT line runs along the right side of First Street. North of Julian Street, First Street transitions from a one to a two-way/two-lane roadway that is divided by the Guadalupe LRT line. South of Reed Street, First Street transitions from a one to a two-way roadway and becomes Monterey Road.

Almaden Boulevard is a six-lane north-south roadway that runs from Julian Street to I-280. South of I-280, Almaden Boulevard provides access to and from the south via its connections to Vine Street and Almaden Avenue. Access to SR 87 is provided via its intersection with Notre Dame Street and Santa Clara Street.

Bird Avenue is a four-lane north-south arterial that provides access to I-280 and the Downtown area. Bird Avenue runs from the Willow Glen Area of San Jose to Park Avenue, where it transitions into the one-way couplet of Autumn and Montgomery Streets.

Julian Street is primarily a one-way westbound two-lane roadway within the Downtown core area. West and east of the Downtown core at SR 87 and 17th Street, respectively, Julian Street is generally a two-way two-lane facility. Julian Street provides regional access to the station site through its full interchange with SR 87.

The Alameda (State Route 82) is generally a four-lane north-south arterial that runs from Santa Clara University to the Downtown San Jose area where it becomes Santa Clara Street.

Santa Clara Street is a four-lane east-west roadway that provides access from the east and west of the downtown area. East of US 101, Santa Clara Street becomes Alum Rock Avenue and west of the Caltrain bridge it becomes The Alameda. Santa Clara Street provides direct access via Montgomery and Autumn Streets to the proposed station site.

San Fernando Street is a four-lane east-west arterial that runs from 17th Street to Montgomery Street. Outside of the Downtown area, specifically west of Almaden Boulevard and east of 10th Street, San Fernando Street is a two-lane roadway.

San Carlos Street is a four-lane east-west arterial that runs from 4th Street to Bascom Avenue, just east of I-880, at which point it becomes Stevens Creek Boulevard.

Santa Clara Station

El Camino Real (State Route 82) is a six-lane major arterial that is oriented in an east-west direction extending westward from The Alameda towards the City of Mountain View.

San Tomas Expressway is a six to eight-lane major arterial that is oriented in a north-south direction. There is one HOV lane along San Tomas Expressway (restricted hours only) in each direction of travel. Access to the proposed station site is provided via El Camino Real.

Lafayette Street is a four-lane roadway that is oriented in a north-south direction. Lafayette Street extends south from SR 237 through the City of Santa Clara to Market Street where it changes designation to Washington Street.

Benton Street is a two to four-lane roadway that is oriented in an east-west direction. Benton Street extends between the Santa Clara Caltrain Station, near El Camino Real, and Lawrence Expressway. West of Lawrence Expressway, Benton Street becomes a two-lane residential street.

Monroe Street is a two to four-lane roadway that is oriented in an east-west direction. Monroe Street starts at Tisch Way, near the I-280/Winchester interchange, and extends northward to Scott Boulevard, then traverses eastward to Lawrence Expressway.

De La Cruz Boulevard is a six-lane arterial that extends from US 101 to Coleman Avenue. North of US 101, De La Cruz Boulevard becomes Trimble Road. De La Cruz Boulevard transitions to Coleman Avenue at its interchange with El Camino Real.

Coleman Avenue is four to six-lane roadway that is oriented in a north-south direction. Coleman Avenue begins at De La Cruz Boulevard in Santa Clara and extends southward into Downtown San Jose where at its intersection with Julian Avenue becomes Market Street.

Brokaw Road is a two-lane east-west roadway that runs from Coleman Avenue west to its termination point at the railroad lines. Direct access to the station site is provided via

3.7.2 LEVEL OF SERVICE

Background

The VTA, which is the Congestion Management Agency of Santa Clara County, requires new development projected to generate 100 or more peak hour (AM and/or PM) trips, including both inbound and outbound trips, to complete a Transportation Impact Analysis (TIA). The TIA includes an evaluation of traffic conditions with the proposed project on the surrounding transportation network, and identifies potential adverse affects to the transportation network directly associated with the proposed project. Traffic conditions are evaluated using level of service (LOS). Level of Service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. Transportation facilities for which traffic conditions are evaluated using the LOS methodology include freeways (freeway segments) and local streets (intersections).

Freeway LOS Methodology and Standard

As prescribed in the VTA Congestion Management Plan (CMP) technical guidelines, the level of service for freeway segments is estimated based on vehicle density. Density is calculated by the following formula:

$$D = V / (N*S)$$

where:

D= density, in vehicles per mile per lane (vpmpl)
V= peak hour volume, in vehicles per hour (vph)
N= number of travel lanes
S= average travel speed, in miles per hour (mph)

The vehicle density on a segment is correlated to level of service as indicated in Table 3-26. The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from HOV (carpool) lanes. The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments six lanes or wider in both directions and a capacity of 2,200 vphpl be used for segments four lanes wide in both directions. The CMP defines an acceptable level of service for freeway segments as LOS E or better.

Other Roadway/Intersection LOS Medothology and Standard

Level of service methodology for local intersections within the fities of Milpitas, San Jose, and Santa Clara are based on the *Highway Capacity Manual* (HCM) method for signalized intersections. Signalized intersection operations are evaluated using the 2000 HCM Operations Method and TRAFFIX software. The method evaluates intersection LOS on the basis of average control delay time for all vehicles at the intersection. Since TRAFFIX is also the CMP-designated intersection level of service

software, the cities' methodology employs the CMP default values for the analysis parameters.

All local intersections within the three cities of Milpitas, San Jose, and Santa Clara have an LOS standard of LOS D or better; whereas the LOS standard for CMP intersections is LOS E or better. The correlation between average delay and level of service is shown in Table 3-27.

Table 3-26: Freeway Segment Level of Service Definitions Based on Density

Level of Service	Density (passenger cars/mile/lane)
A	density < 11.0
B	11.0 < density < 18.0
C	18.0 < density < 26.0
D	26.0 < density < 46.0
E	46.0 < density < 58.0
F	58.0 < density

Source: 2004 Monitoring and Conformance Report, Santa Clara Valley Transportation Authority, Congestion Management Program, March 2005.

Table 3-27: Intersection Level of Service Definitions Based on Delay

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths	Less than 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	Greater than 80.0

Source: Transportation Research Board, Highway Capacity Manual 2000, p. 16-2, 2000.

3.7.3 EXISTING CONDITIONS

Freeway Volumes and Levels of Service

All study freeway segments are within Santa Clara County and are therefore subject to the Santa Clara County CMP, which is administered by VTA.

Traffic volumes on the study freeway segments were obtained from the CMP Annual Monitoring Report, 2006. This is the latest available report.

The results of the freeway segment analysis under existing conditions for all proposed BART Stations is summarized in Table 3-28. The results show that 67 of the 94 directional freeway segments analyzed currently operate at an unacceptable level of service (LOS F) during at least one of the peak hours. The results are described by proposed station area.

Milpitas Station

In the vicinity of the Milpitas Station, the freeway segment analysis shows that 8 of the 20 directional freeway segments analyzed currently operate at an unacceptable LOS F during at least one peak hour. The study freeway segments and their corresponding level of service are shown graphically on Figure 3-5.

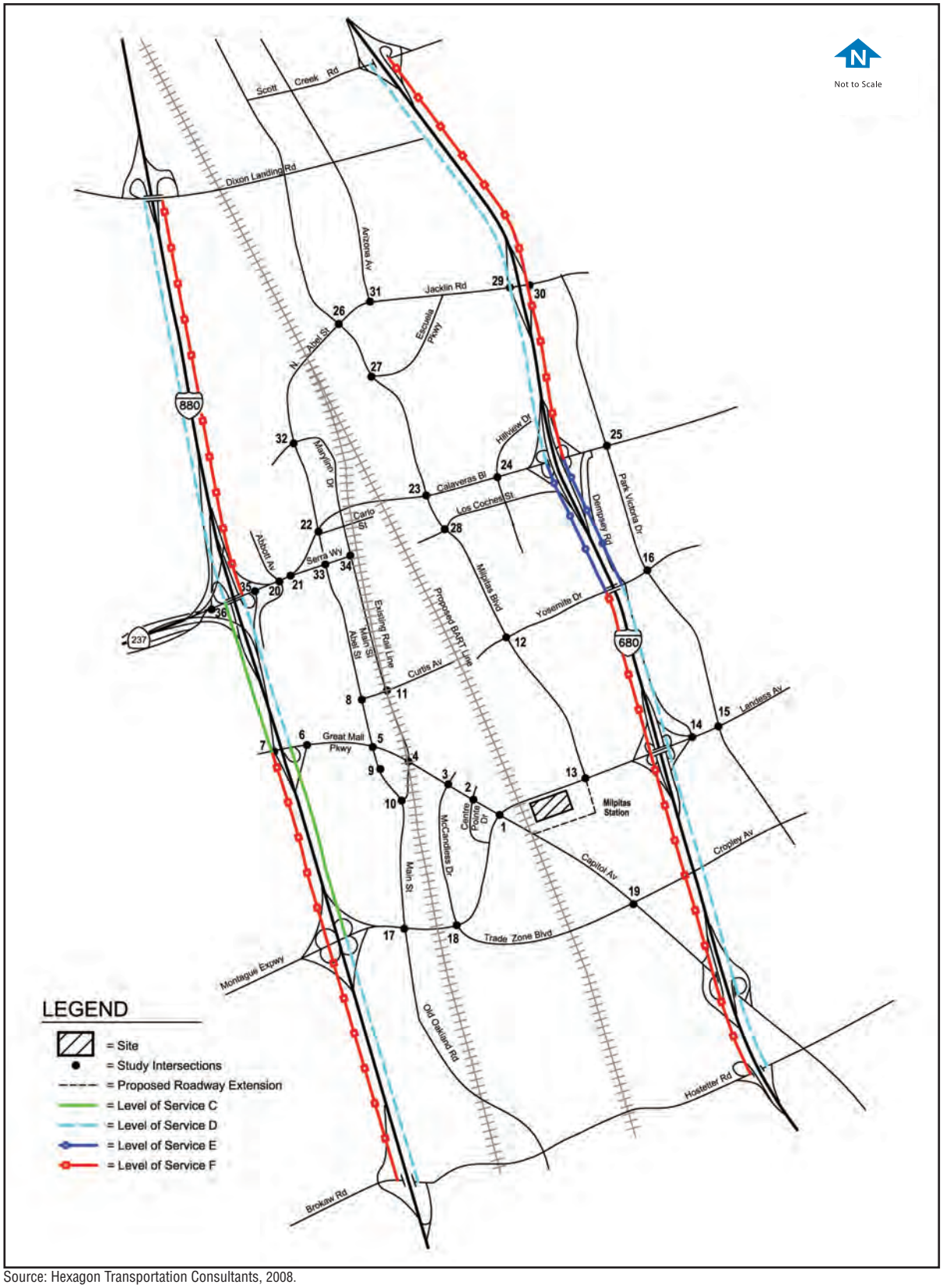
Table 3-28: Existing Freeway Levels of Service Results Summary

Station	Number of Study Freeway Segments	Unacceptable LOS Segments
Milpitas	20	8
Berryessa	10	8
Alum Rock	20	14
Diridon/Arena	18	15
Santa Clara	26	22
Total:	94	67

Source: Hexagon Transportation Consultants, Inc., 2008.

San Jose Stations

Within the City of San Jose, the results show that 8 of the 10 directional freeway segments analyzed in the vicinity of the Berryessa Station, 14 of 20 in the vicinity of the Alum Rock Station, and 15 of the 18 in the vicinity of the Diridon/Arena Station currently operate at an unacceptable LOS F during at least one peak hour. The study freeway segments and their corresponding level of service are shown graphically on Figures 3-6, 3-7, and 3-8.



Source: Hexagon Transportation Consultants, 2008.

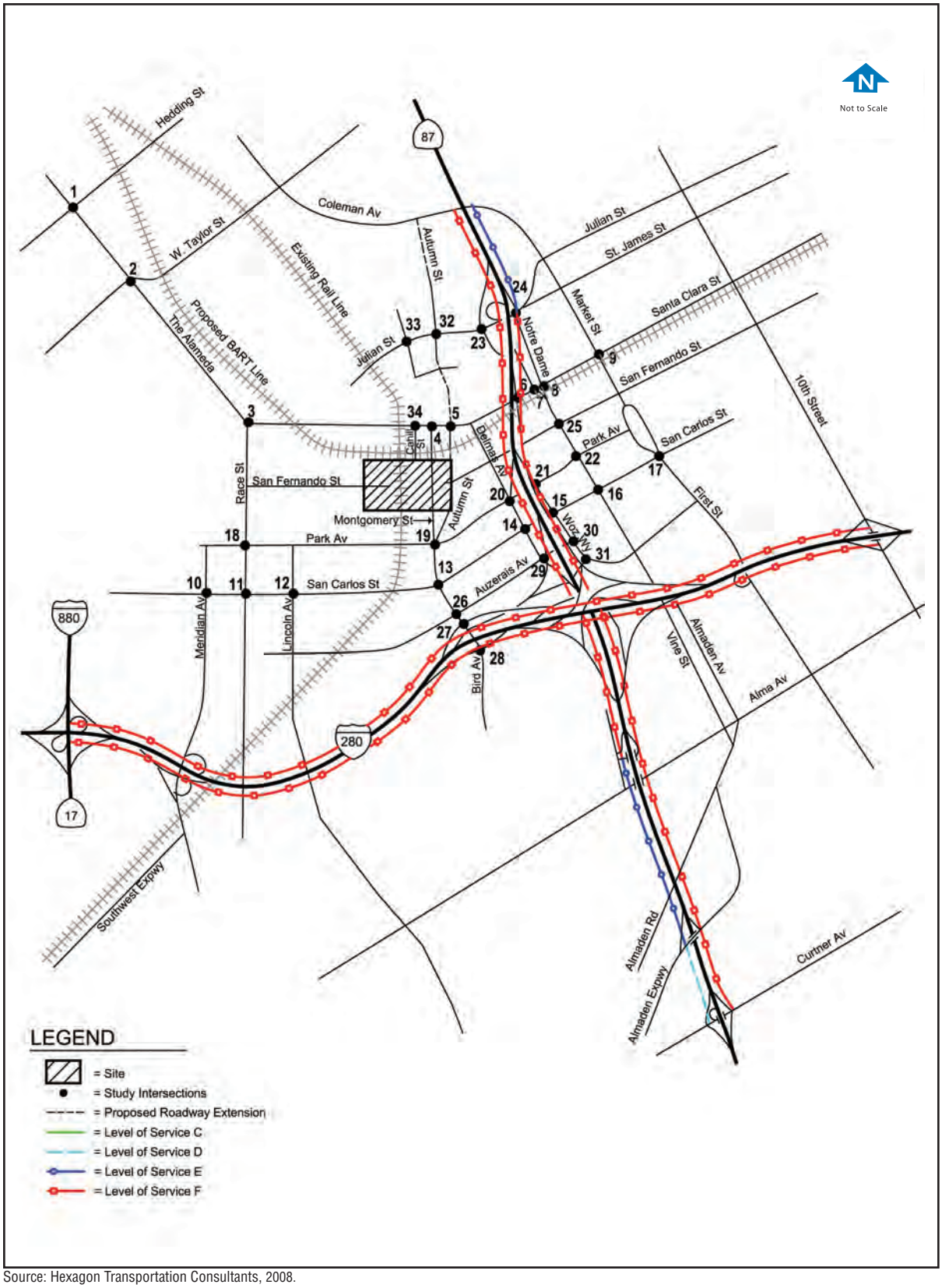
Figure 3-5: Milpitas Station Study Freeway Segments Existing Conditions

Source: Hexagon Transportation Consultants, 2008.

Figure 3-6: Berryessa Station Study Freeways Segments Existing Conditions

Source: Hexagon Transportation Consultants, 2008.

Figure 3-7: Alum Rock Station Study Freeway Segments Existing Conditions



Source: Hexagon Transportation Consultants, 2008.

Figure 3-8: Diridon Station Study Freeway Segments Existing Conditions

Santa Clara Station

In the vicinity of the Santa Clara Station, the results show that 22 of the 26 directional freeway segments analyzed currently operate at an unacceptable LOS F during at least one peak hour. The study freeway segments and their corresponding level of service are shown graphically on Figure 3-9.

Intersection Volumes and Levels of Service

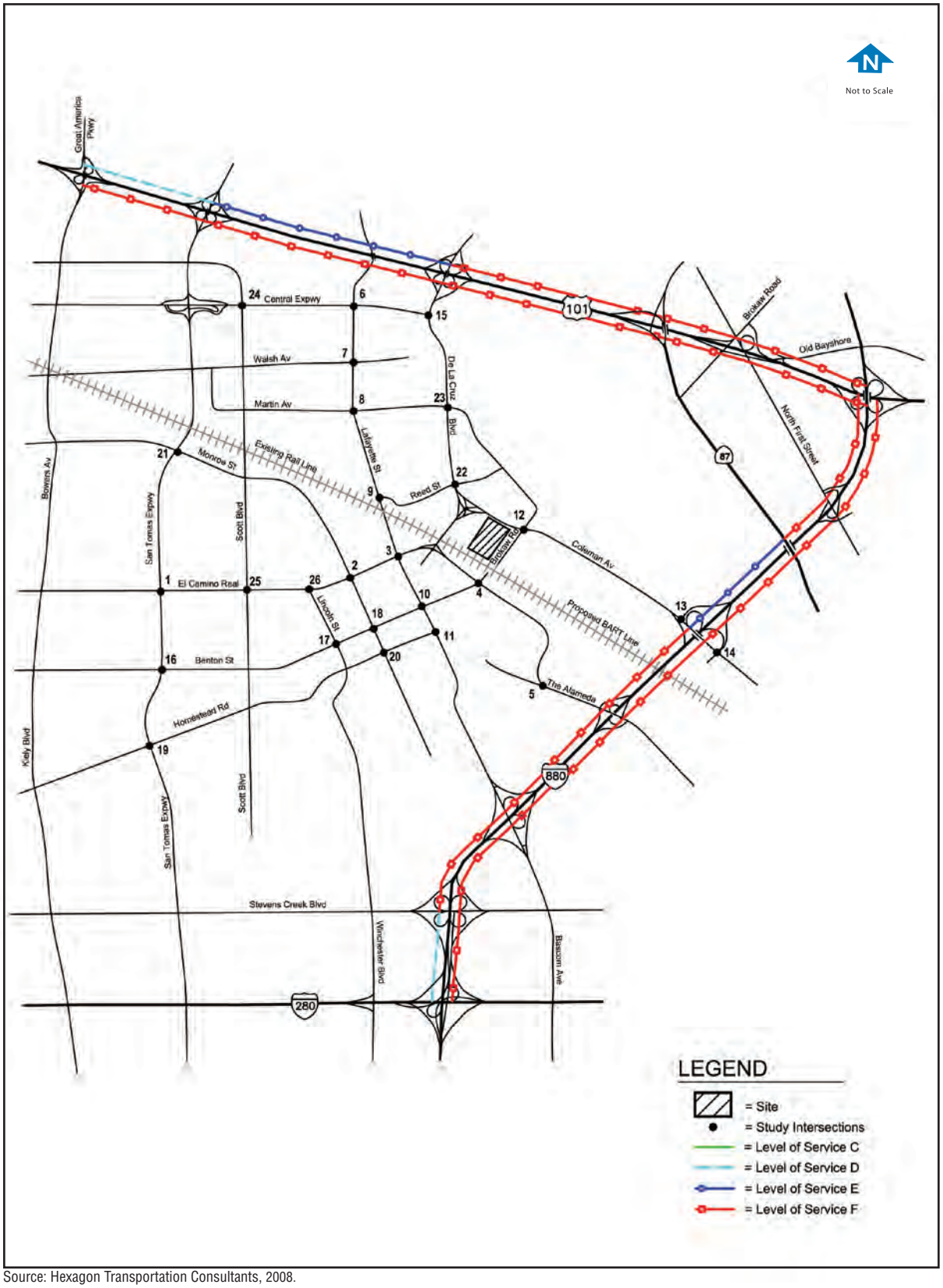
Existing peak-hour traffic volumes were obtained from the CMP and supplemented with manual turning-movement counts mainly conducted in September and October 2005. It should be noted that the near-term traffic information is presented merely to identify possible constraints to development near the proposed station site.

The results of the intersection level of service analysis under existing conditions for all proposed BART Stations is summarized in Table 3-29. The results show that 3 of the 127 study intersections currently operate at an unacceptable level of service (LOS E or F for local intersections and LOS F for CMP intersections) during at least one of the peak hours. CMP intersections are denoted with an asterisk (*). The results are described by proposed station area**.**

Table 3-29: Existing Intersection Levels of Service Results Summary

Station	Number of Study Intersections	Unacceptable LOS Intersections
Milpitas	36	2
Berryessa	12	0
Alum Rock	19	0
Diridon/Arena	34	0
Santa Clara	26	1
Total:	127	3

Source: Hexagon Transportation Consultants, Inc., 2008.



Source: Hexagon Transportation Consultants, 2008.

Figure 3-9: Santa Clara Station Study Freeway Segments Existing Conditions

Milpitas Station

A total of 36 intersections were evaluated in the vicinity of the proposed Milpitas Station. The results of the level of service analysis under existing conditions show that two of the signalized study intersections currently operate at an unacceptable LOS F according to CMP LOS standards. The CMP intersections are denoted with an asterisk (*). The intersections are:

(17) Old Oakland/Main Street and Montague Expressway*

(18) Trade Zone Boulevard and Montague Expressway*

All other CMP and local City of Milpitas signalized study intersections currently operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.) The study intersections are shown graphically on Figure 3-6.

Berryessa Station

A total of 12 intersections were evaluated in the vicinity of the proposed Berryessa Station. The results of the level of service analysis under existing conditions show that all of the signalized study intersections currently operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.) The study intersections are shown graphically on Figure 3-7.

Alum Rock Station

A total of 19 intersections were evaluated in the vicinity of the proposed Alum Rock Station. The results of the level of service analysis under existing conditions show that all of the signalized study intersections currently operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.) The study intersections are shown graphically on Figure 3-8.

Diridon/Arena Station

A total of 34 intersections were evaluated in the vicinity of the proposed Diridon/Arena Station. The results of the level of service analysis under existing conditions show that all of the signalized study intersections currently operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.) The study intersections are shown graphically on Figure 3-9.

Santa Clara Station

A total of 26 intersections were evaluated in the vicinity of the proposed Santa Clara Station. The results of the level of service analysis under existing conditions show that one of the signalized study intersections currently operates at unacceptable LOS F

according to CMP level of service standards. The CMP intersection is denoted with an asterisk (*). The intersection is:

(15) De La Cruz Boulevard and Central Expressway*

All other CMP and local City of Santa Clara signalized study intersections currently operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.) The study intersections are shown graphically on Figure 3-6.

3.7.4 CRITERIA FOR ASSESSMENT OF ADVERSE AFFECTS

Performance criteria are used to establish what constitutes an adverse effect. For this analysis there are two criteria by which freeway affects are determined and five criteria by which intersection affects are determined (described below). Affects of the Build Alternatives are based on 2030 projections with the BART Stations (2030 No Project conditions traffic volumes with the addition of station trips) and compared to 2030 No Build Alternative with Improvement conditions.

LOS Policies for Freeways

VTA's level of service goal for CMP facilities (including freeway segments) in the County is LOS D, although member agencies (Santa Clara County and all agencies within the county) are not required to conform to this goal. However, they are required to meet the CMP level of service standard. The CMP traffic level of service standard for freeway segments is LOS E or better.

The project is said to create a substantial adverse effect on a freeway segment if for either peak hour:

1. The level of service at a freeway segment degrades from an acceptable LOS E or better under 2030 No Build Alternative with Improvements conditions to an unacceptable LOS F with the addition of the project (VTA Criteria), or

2. The level of service on a freeway segment is an unacceptable LOS F and the number of project trips on that segment constitutes at least one percent of capacity on that segment. This calculation should be for each direction of travel. (VTA Criteria)

An adverse effect to a freeway segment is said to be satisfactorily mitigated when measures are implemented that would restore levels of operation to Year 2030 No Build Alternative with Improvements conditions or better.

LOS Policies for Other Roadways

All of the study intersections are located within the cities of Milpitas, San Jose, and Santa Clara, and are therefore subject to their local level of service standards. In addition, some of the study intersections are also CMP designated intersections. CMP intersections are subject to CMP level of service standards. All three cities have a level of service standard of LOS D or better, while the CMP level of service standard is LOS E or better.

The project is said to create a substantial adverse effect if for either peak hour:

1. The level of service at a local intersection degrades from an acceptable LOS D or better under 2030 No Build Alternative with Improvements conditions to an unacceptable LOS E or F with the addition of the project (Local Criteria).

2. The level of service at a local intersection is an unacceptable LOS E or F under 2030 No Build Alternative with Improvements conditions and the addition of station trips causes both the critical-movement delay at the intersection to increase by four or more seconds and the demand-to-capacity ratio (V/C) to increase by 0.01 or more.

   An exception to this threshold applies when the addition of station traffic reduces the amount of average control delay for critical movements (i.e. the change in average control delay for critical movements is negative). In this case, the threshold of significance is an increase in the critical V/C value by 0.01 or more (Local Criteria).

3. The addition of station traffic causes a local intersection operating at LOS A or B under 2030 No Build Alternative with Improvements conditions to degrade two letter grades with the addition of the project (VTA Criteria).

4. The level of service at a CMP designated intersection degrades from an acceptable LOS E or better under 2030 No Build Alternative with Improvements conditions to an unacceptable LOS F with the addition of the project (VTA Criteria).

5. The level of service at a CMP designated intersection is an unacceptable LOS F under 2030 No Build Alternative with Improvements conditions and the addition of station trips causes both the critical-movement delay at the intersection to increase by four or more seconds and the demand-to-capacity ratio (V/C) to increase by 0.01 or more.

   An exception to this threshold applies when the addition of station traffic reduces the amount of average control delay for critical movements (i.e. the change in average control delay for critical movements is negative). In this case, the threshold is an increase in the critical V/C value by 0.01 or more (VTA Criteria).

A substantial adverse effect to a local or CMP intersection is said to be satisfactorily mitigated when measures are implemented that would restore intersection levels of operation to Year 2030 No Build Alternative with Improvements conditions or better.

3.7.5 2030 NO BUILD ALTERNATIVE

Future Roadway Network

Several transportation improvements in the SVRTC are planned and would be operational by 2030. These improvements are identified in the Bay Area's Regional Transportation Plan (RTP), *Mobility for the Next Generation – Transportation 2030 Plan for the San Francisco Bay Area* (Transportation 2030 Plan), adopted by MTC in February 2005, and the *Valley Transportation Plan 2030* (VTP 2030), adopted by VTA in February 2005. The improvements consist of street and freeway widenings and interchange improvements. There are no new freeways planned. The planned improvements and implementation period are identified in Table 3-30.

In addition, other local improvements are planned and also were included as part of the future roadway network analyzed. These improvements include:

City of Milpitas

The existing Milpitas Boulevard and Montague Expressway T-intersection is expected to become a four-legged intersection that will provide access to future development south of Montague Expressway.

City of San Jose

The City of San Jose is currently undergoing a process with Caltrans known as a "relinquishment plan" to convert both Autumn and Montgomery Streets from State Routes to local city streets (these roadways are currently designated as State Route 82 and are under Caltrans jurisdiction.)

Table 3-30: 2030 Transportation Network Improvements

#	Project	Implementation Period 2015	Implementation Period 2030
1	Montague Expressway/San Tomas Expressway/U.S. 101/Mission College Boulevard Interchange	●	●
2	Montague Expressway/I-880 interchange reconfiguration improvements	●	●
3	I-680 Southbound HOV lanes: Alameda/Santa Clara County line to Calaveras Boulevard	●	●
4	Montague Expressway widening from 6 to 8 lanes; I-680 to U.S. 101	●	●
5	Montague Expressway grade-separation at Capitol Avenue		●
6	I-880/SR 237 freeway interchange (Stages A,B & C)	●	●
7	I-880 widening from Montague Expressway to U.S. 101	●	●
8	U.S. 101/Hellyer Avenue interchange modifications		●
9	U.S. 101/Blossom Hill Avenue interchange modifications	●	●
10	U.S. 101 Auxiliary lane widening; SR 87 to Great America Parkway		●
11	Fourth Street/Zanker Road/U.S. 101 overcrossing and ramp modifications		●
12	Tully Road/U.S. 101 interchange modifications	●	●
13	Tennant Avenue/U.S. 101 interchange improvements in Morgan Hill	●	●
14	SR 25/Santa Teresa Boulevard/U.S. 101 interchange construction	●	●
15	Buena Vista/U.S. 101 interchange construction		●
16	SR 237 widening for HOV lanes between SR 85 and U.S. 101		●
17	I-680 northbound HOV lane (Calaveras Boulevard to Alameda/Santa Clara County line)		●

Table 3-30: 2030 Transportation Network Improvements Cont'd

#	Project	Implementation Period 2015	Implementation Period 2030
18	Improvements to I-880/Stevens Creek Boulevard interchanges	●	●
19	SR 85 northbound to I-280 northbound and I-280 exit to Foothill Boulevard - braided ramp	●	●
20	SR 152 safety improvements between U.S. 101 and SR 156 (westbound SR 152 to westbound SR 156)	●	●
21	Trimble Road/De La Cruz Boulevard/U.S. 101 Interchange improvements	●	●
22	Montague Expressway/Trimble Road flyover ramp	●	●
23	Central Expressway widening for HOV lanes from SR 237 to De la Cruz Avenue	●	●
24	Widen US 101 southbound from Story Road to Yerba Buena Road	●	●
25	Widen US 101 from SR 25 to Santa Clara/San Benito County line		●
26	US 101/Capitol Expressway interchange improvements	●	●
27	Widen westbound SR 237 on-ramp from SR 237 to northbound US 101		●
28	SR 85 to SR 237 northbound connector ramp improvements	●	●
29	SR 237 westbound to SR 85 southbound connector ramp		●
30	SR 237 westbound on-ramp at Middlefield Road	●	●
31	Widen San Tomas Expressway between SR 82 and Williams Road		●
32	Widen US 101 from I-880 to McKee Road/Julian Street	●	●
33	SR 85/Fremont Avenue ramp improvements	●	●
34	Construct SR 237 eastbound to Mathilda Avenue flyover offramp		●
35	Oakland Road widening from US 101 to Montague Expressway	●	●

Source: Transportation 2030 Plan for the San Francisco Bay Area (Transportation 2030 Plan) and Valley Transportation Plan 2030 (VTP 2030), 2008.

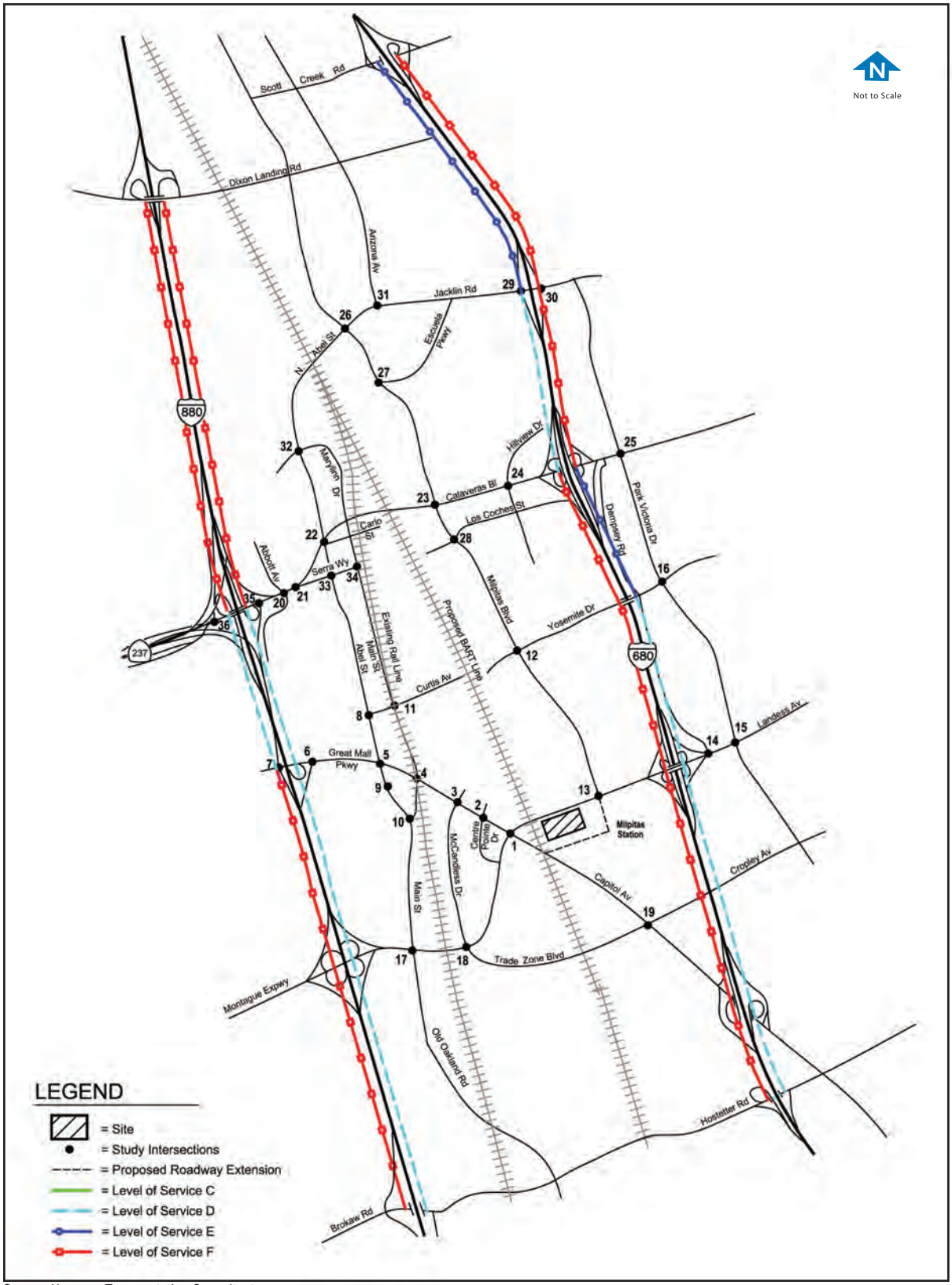
Currently, Autumn Street and Montgomery Street are one-way couplets (Autumn provides northbound access and Montgomery provides southbound access) from Park Avenue to Santa Clara Street. The City of San Jose anticipates Autumn Street to be relinquished and converted to a 2-way operation, 4-lane facility by the year 2009. Montgomery Street is anticipated to be relinquished and converted to a 2-lane, 2-way commercial street with on-street parking by the year 2016. Therefore, the anticipated future lane configurations at the intersection of these two roadways with Santa Clara Street was assumed under the Year 2030 conditions.

Other roadway improvements assumed for the Year 2030 roadway network include the extension of Autumn Street from its current termination point north of Julian Street to Coleman Avenue, as well as the construction of the potential future US 101 interchange at Mabury Road.

Freeway Volumes and Level of Service

Year 2030 No Build Alternative traffic volumes for the study freeway segments were obtained from the VTA 2030 (SVRTC) traffic model. It should be noted that with the assumption of the US 101 interchange at Mabury Road in place by the year 2030, two additional directional freeway segments were created and analyzed for the Berryessa Station, for a total of 96 study directional freeway segments.

The results of the freeway segment analysis under the Year 2030 No Build Alternative for all proposed BART Stations is summarized in Table 3-31. The results show that 72 of the 96 directional freeway segments analyzed would operate at an unacceptable level of service (LOS F) during at least one of the peak hours under the Year 2030 No Build Alternative. Overall, the freeway levels of service is projected to deteriorate from existing conditions (more freeway segments are projected to operate at unacceptable levels of service). This is generally due to the expected increase in traffic on freeways by the year 2030 and the lack of additional freeways to serve the projected traffic growth. The study freeway segments and their corresponding levels of service under the Year 2030 No Build Alternative are shown graphically on Figure 3-10 for the segments in the vicinity of the Milpitas Station, on Figures 3-11, 3-12, and 3-13 for the segments in the vicinity of the San Jose Stations, and on Figure 3-14 for the segments in the vicinity of the Santa Clara Station.



Source: Hexagon Transportation Consultants, 2008.

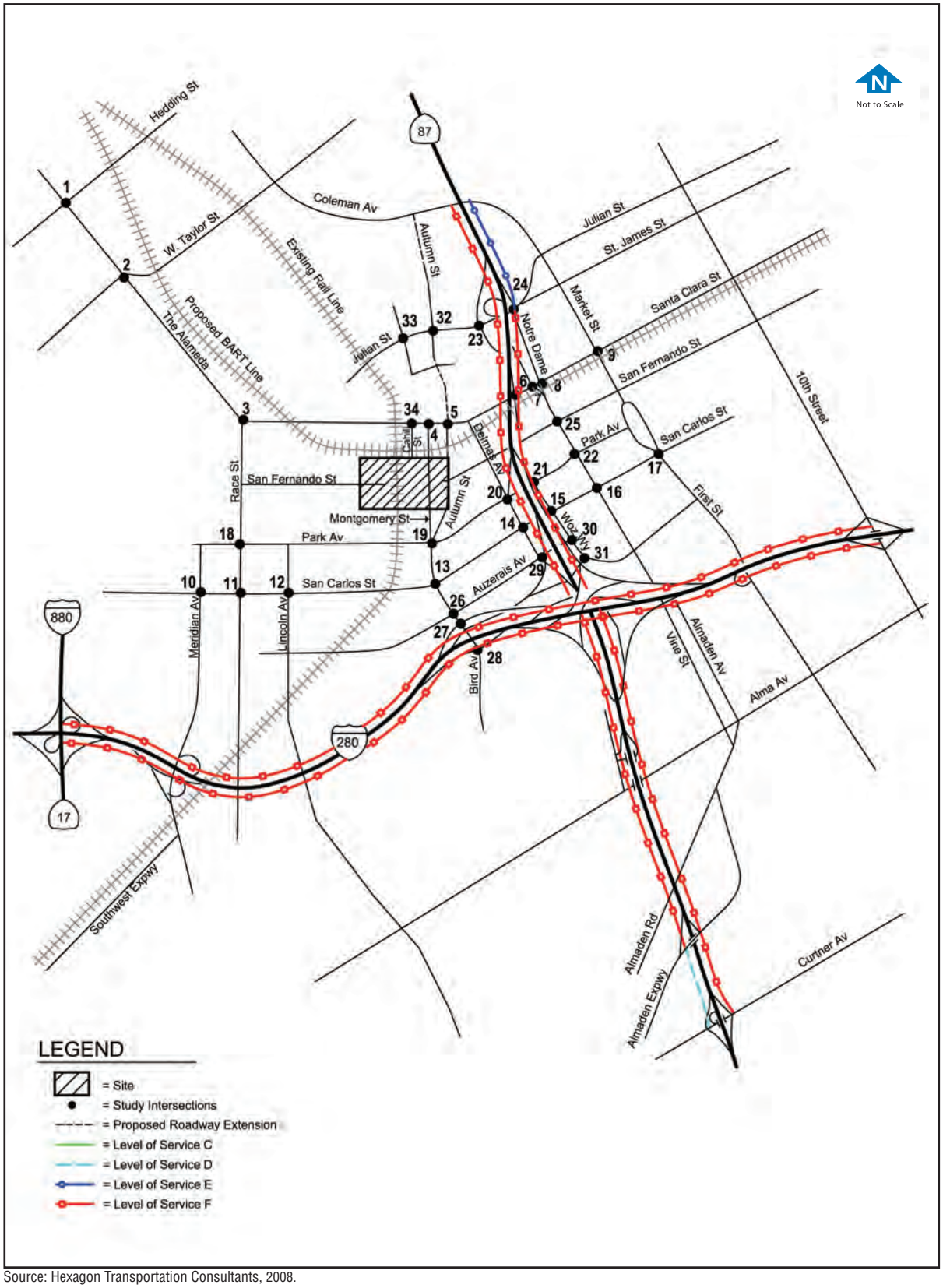
Figure 3-10: Milpitas Freeway Level of Service 2030 No Build with Improvements

Source: Hexagon Transportation Consultants, 2008.

Figure 3-11: Milpitas Freeway Level of Service 2030 No Build with Improvements

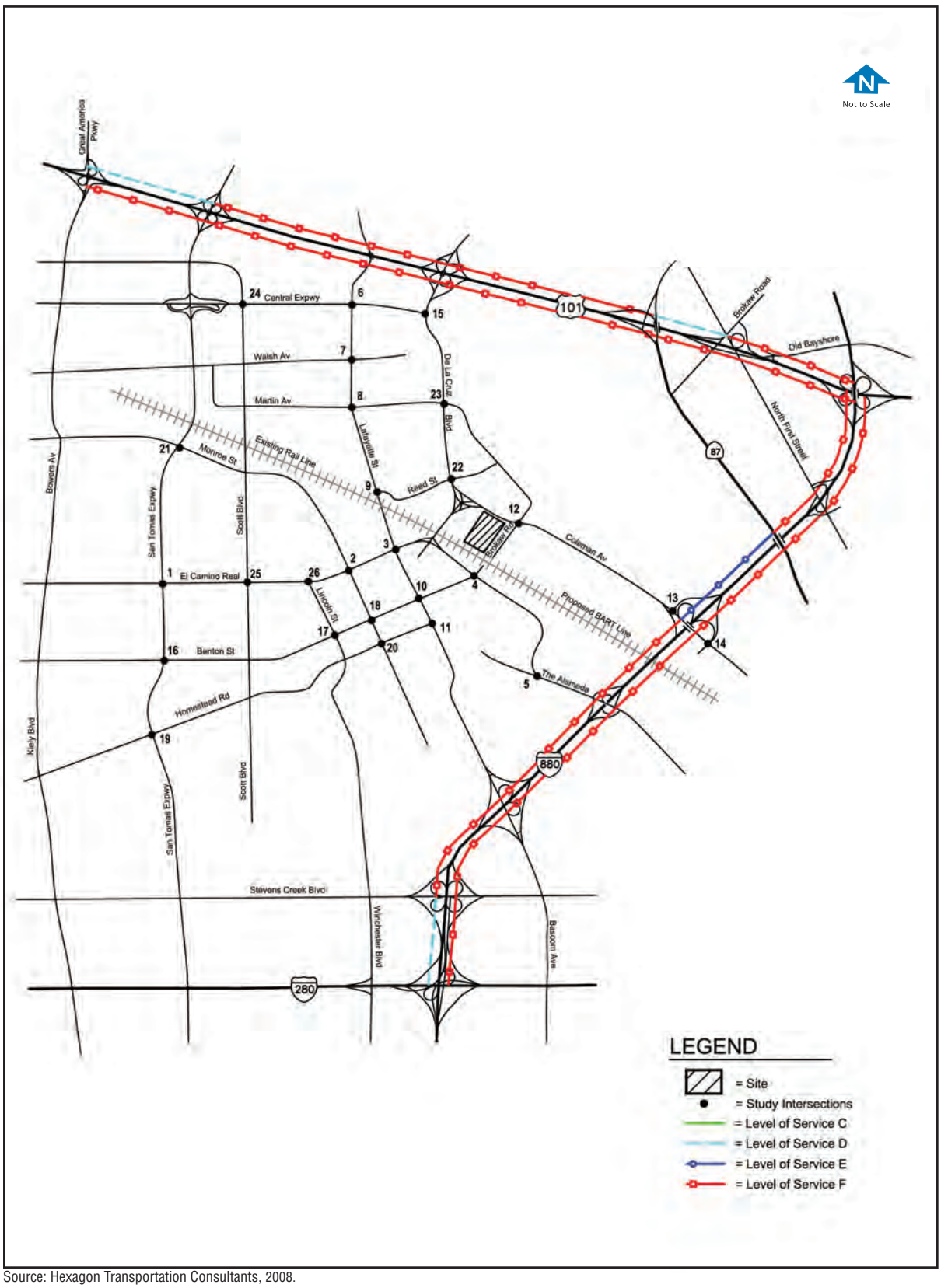
Source: Hexagon Transportation Consultants, 2008.

Figure 3-12: Alum Rock Station Freeway Level of Service 2030 No Build with Improvements



Source: Hexagon Transportation Consultants, 2008.

Figure 3-13: Diridon Station Freeway Level of Service 2030 No Build with Improvements



Source: Hexagon Transportation Consultants, 2008.

Figure 3-14: Santa Clara Station Freeway Level of Service 2030 No Build with Improvements

Table 3-31: Year 2030 No Build Alternative Freeway Levels of Service Results Summary

Station	Number of Study Freeway Segments	Existing Unacceptable LOS Segments	2030 No Build Unacceptable LOS Segments
Milpitas	20	8	10
Berryessa	10/12	8	9
Alum Rock	20	14	15
Diridon/Arena	18	15	16
Santa Clara	26	22	22
Total:	94/96	67	72

Source: Hexagon Transportation Consultants, Inc., 2008.

Intersection Traffic Volumes and Levels of Service

Peak-hour traffic volumes for the year 2030 were produced using the VTA 2030 SVRTC traffic model. The 2030 traffic volumes include traffic associated with future development included in the ABAG projections and the projected future transportation network, as described above.

Adjustments were made to the forecasted volumes to account for the coarse turn-movements produced by the model. Although the model used for this analysis was updated to include all of the study intersections, the general regional roadway network used by the model does not represent all minor streets. The lack of coding of these minor facilities causes the model to over assign traffic volumes to those facilities that are represented in the network. This results in inaccurate forecasted turn-movement volumes that require adjustments to calibrate them with actual travel patterns and use of proper facilities

The results of the intersection level of service analysis under the Year 2030 No Build Alternative for all proposed BART Stations is summarized in Table 3-32. The results show that 51 of the 127 study intersections would operate at an unacceptable level of service (LOS E or F for local intersections and LOS F for CMP intersections) during at least one of the peak hours. The results of the intersection analysis are described by proposed station area. Study intersections' numbers (in parenthesis) in the following lists, correpond to the numbered intersections throughout figures in this section. CMP intersections are denoted with an asterisk (*).

Table 3-32: 2030 No Build Alternative Intersection Levels of Service Results Summary

Station	Number of Study Intersections	Existing Unacceptable LOS Intersections	2030 No Build Unacceptable LOS Intersections
Milpitas	36	2	19
Berryessa	12	0	3
Alum Rock	19	0	8
Diridon/Arena	34	0	8
Santa Clara	26	1	14
Total:	127	3	52

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station

The intersection level of service results for 2030 No Build Alternative conditions show that 19 of the 36 study intersections in the Milpitas Station area are projected to operate at unacceptable levels (LOS E or F for local intersections and LOS F for CMP intersections) during at least one peak hour, according to City of Milpitas and CMP level of service standards. The intersections are:

(1) Great Mall Parkway and Montague Expressway*

(5) Abel Street and Great Mall Parkway

(6) I-880 NB ramps and Great Mall Parkway

(12) Milpitas Boulevard and Yosemite Drive

(13) Milpitas Boulevard and Montague Expressway*

(14) Dempsey Road and Landess Avenue

(15) Park Victoria Drive and Landess Avenue

(16) Park Victoria Drive and Yosemite Drive

(17) Old Oakland/Main Street and Montague Expressway*

(18) Trade Zone Boulevard and Montague Expressway*

(19) Capitol Avenue and Cropley Avenue

(20) Abbott Avenue and Calaveras Boulevard

(22) Abel Street and Calaveras Boulevard*

(23) Milpitas Boulevard and Calaveras Boulevard*

(24) Hillview Drive and Calaveras Boulevard

(25) Park Victoria Drive and Calaveras Boulevard

(26) Milpitas Boulevard and Jacklin Road

(27) Milpitas Boulevard and Escuela Drive

(30) I-680 NB Ramps and Jacklin Road

All other CMP and local City of Milpitas signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Berryessa Station

The intersection level of service results for 2030 No Build Alternative conditions show that 3 of the 12 study intersections in the Berryessa Station area are projected to operate at unacceptable levels (LOS E or F for local intersections and LOS F for CMP intersections) during at least one peak hour, according to City of San Jose and CMP level of service standards. The intersections are:

(2) Flickinger Avenue and Berryessa Road

(3) Lundy Avenue and Berryessa Road*

(9) Oakland Road and Commercial Street

All other CMP and local signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Alum Rock Station

The intersection level of service results for 2030 No Build Alternative conditions show that 8 of the 19 study intersections in the Alum Rock Station area are projected to operate at unacceptable levels (LOS E or F for local intersections and LOS F for CMP intersections) during at least one peak hour, according to City of San Jose and CMP level of service standards. The intersections are:

(3) US 101 and Julian Street

(5) King Road and McKee Road

(6) Capitol Avenue and McKee Road

(13) Capitol Avenue and Alum Rock Avenue*

(14) McLaughlin Avenue and Story Road

(15) King Road and Story Road

(17) King Road and San Antonio Street

(19) Capitol Expressway and Capitol Avenue*

All other CMP and local signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.)

Diridon/Arena Station

The intersection level of service results for 2030 No Build Alternative conditions show that 8 of the 34 study intersections in the Diridon/Arena Station area are projected to operate at unacceptable levels (LOS E or F for local intersections and LOS F for CMP intersections) during at least one peak hour, according to City of San Jose and CMP level of service standards. The intersections are:

(1) The Alameda and Hedding Street*

(2) The Alameda and Taylor Street/Naglee Avenue*

(9) Market Street and Santa Clara Street

(10) Meridian Avenue and San Carlos Street

(12) Lincoln Avenue and San Carlos Street

(13) Bird Avenue and San Carlos Street*

(28) Bird Avenue and I-280 (S)*

(34) Cahill Street and Santa Clara Street

All other CMP and local signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.)

Santa Clara Station

The intersection level of service results for 2030 No Build Alternative conditions show that 14 of the 26 study intersections in the Santa Clara Station area are projected to operate at unacceptable levels (LOS E or F for local intersections and LOS F for CMP intersections) during at least one peak hour, according to City of Santa Clara and CMP level of service standards. The intersections are:

(1) San Tomas Expressway and El Camino Real*

(2) Monroe Street and El Camino Real*

(3) Lafayette Street and El Camino Real*

(6) Lafayette Street and Central Expressway*

(10) Lafayette Street and Benton Street

(15) De La Cruz Boulevard and Central Expressway*

(16) San Tomas Expressway and Benton Street

(17) Lincoln Street and Benton Street

(19) San Tomas Expressway and Homestead Road*

(21) San Tomas Expressway and Monroe Street*

(23) De La Cruz Boulevard and Martin Avenue

(24) Scott Boulevard and Central Expressway*

(25) Scott Boulevard and El Camino Real*

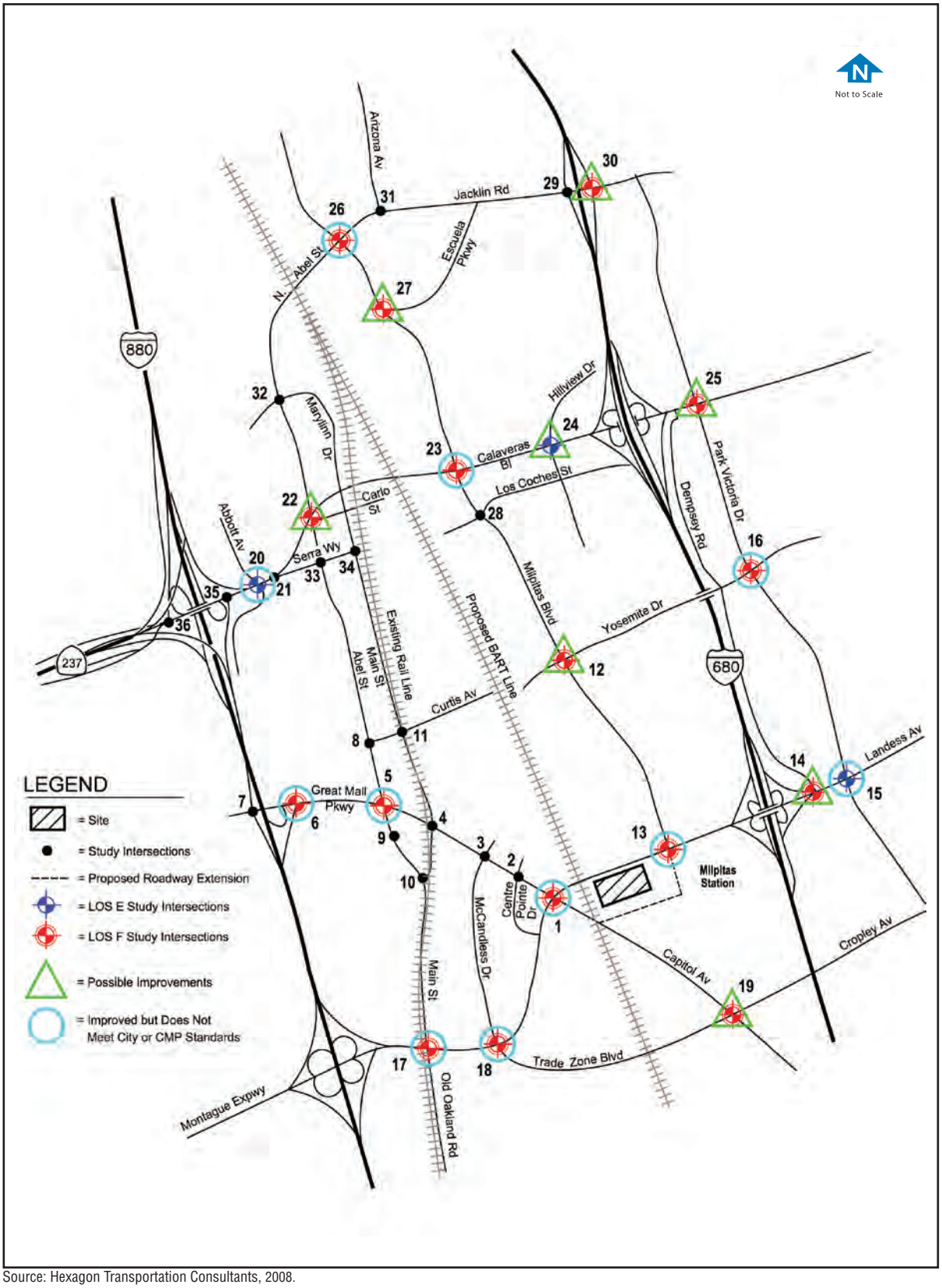
(26) Lincoln Street and El Camino Real*

All other CMP and local City of Santa Clara signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.)

Year 2030 No Build Alternative With Improvements

Based on the results of the year 2030 No Build Alternative level of service analysis, necessary improvements to support year 2030 projected traffic volumes were determined for all study intersections projected to operate at LOS E or F (previously listed and identified on Figures 3-15 (Milpitas Station), 3-16 (Berryessa Station), 3-17 (Alum Rock Station), 3-18 (Diridon/Arena Station), and 3-19 (Santa Clara Station). The resulting year 2030 No Build with Improvements conditions will serve as a base from which to determine substantial adverse affects attributable to the Build Alternatives. Without the improvements in place, level of service conditions with the Build Alternatives will not accurately reflect adverse affects due solely to station traffic, but rather show problem areas under 2030 No Build Alternative compounded by the Build Alternatives. The basis for assessing adverse affects associated with the Build Alternatives was agreed upon by the study corridor cities (cities of Milpitas, San Jose, and Santa Clara).

Described below are the necessary improvements to improve 2030 No Build Alternative conditions levels of service to acceptable levels. The identified improvements are based on level of service calculations but their feasibility may be questionable at this time. It should be noted that the projected intersection levels of service and identified improvements are based on traffic projections some 22 years into the future. Intersections for which feasible improvements are not possible and intersections where feasible improvements do not improve the intersection to acceptable levels are also discussed and identified on Figures 3-15- to 3-19. The statement ‘Not feasible due to ROW constraints’ refers to conditions where structures or parking would be displaced to provide sufficient area for the improvements. Table 3-33 shows the resulting levels of service with the necessary improvements.

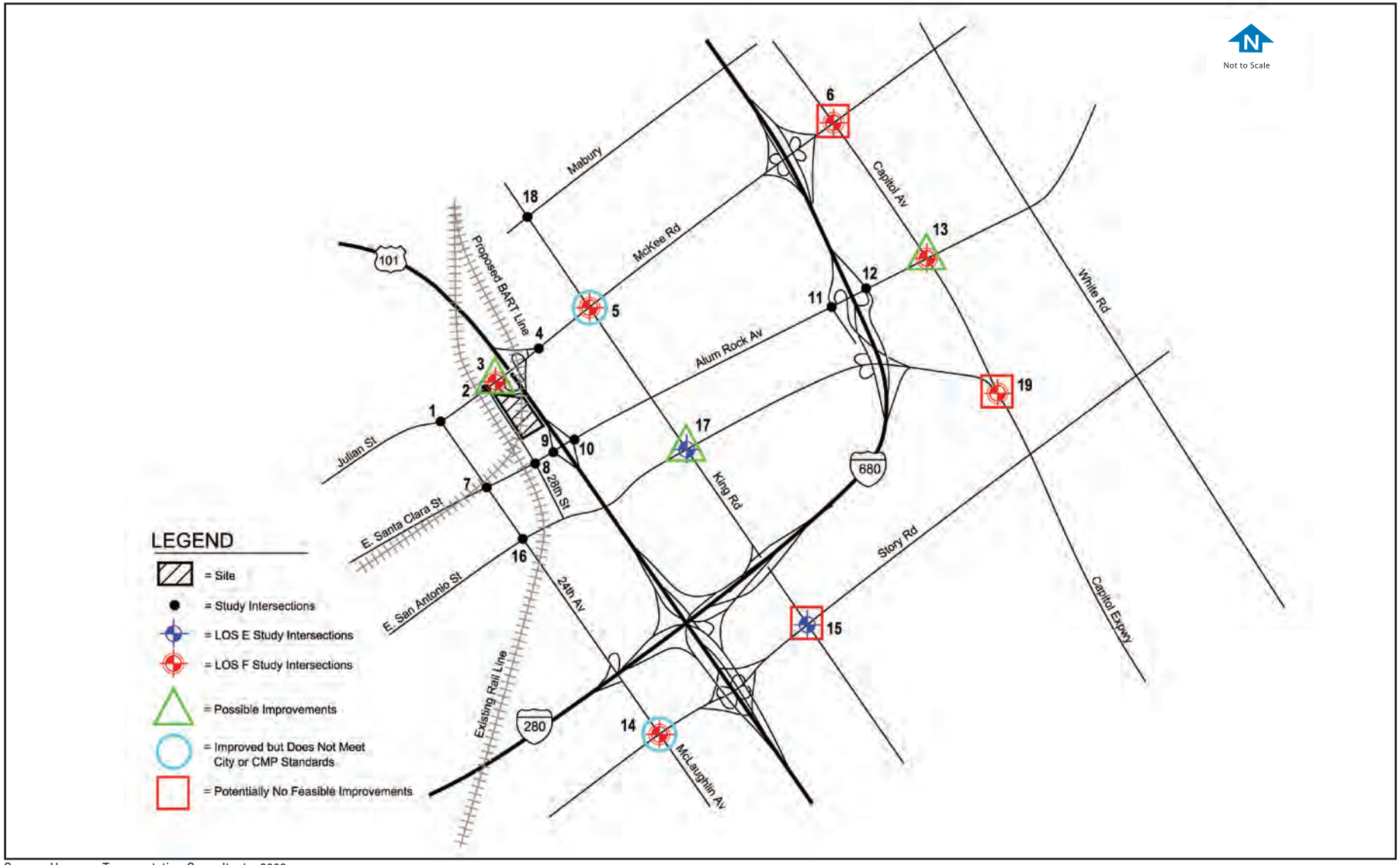


Source: Hexagon Transportation Consultants, 2008.

Figure 3-15: Milpitas Station 2030 No Build with Improvements Level of Service Conditions

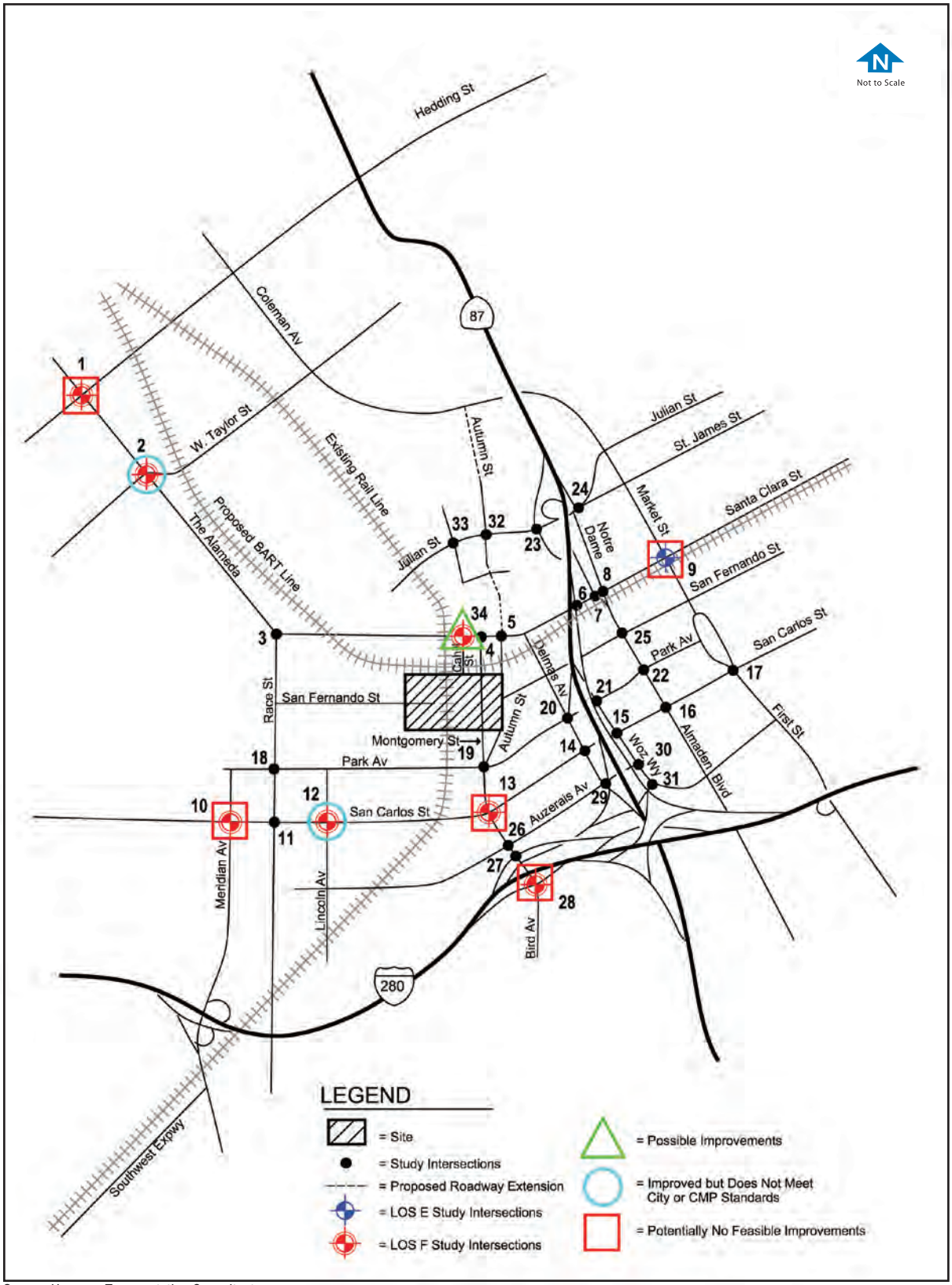
Source: Hexagon Transportation Consultants, 2008.

Figure 3-16: Berryessa Station 2030 No Build with Improvements Level of Service Conditions



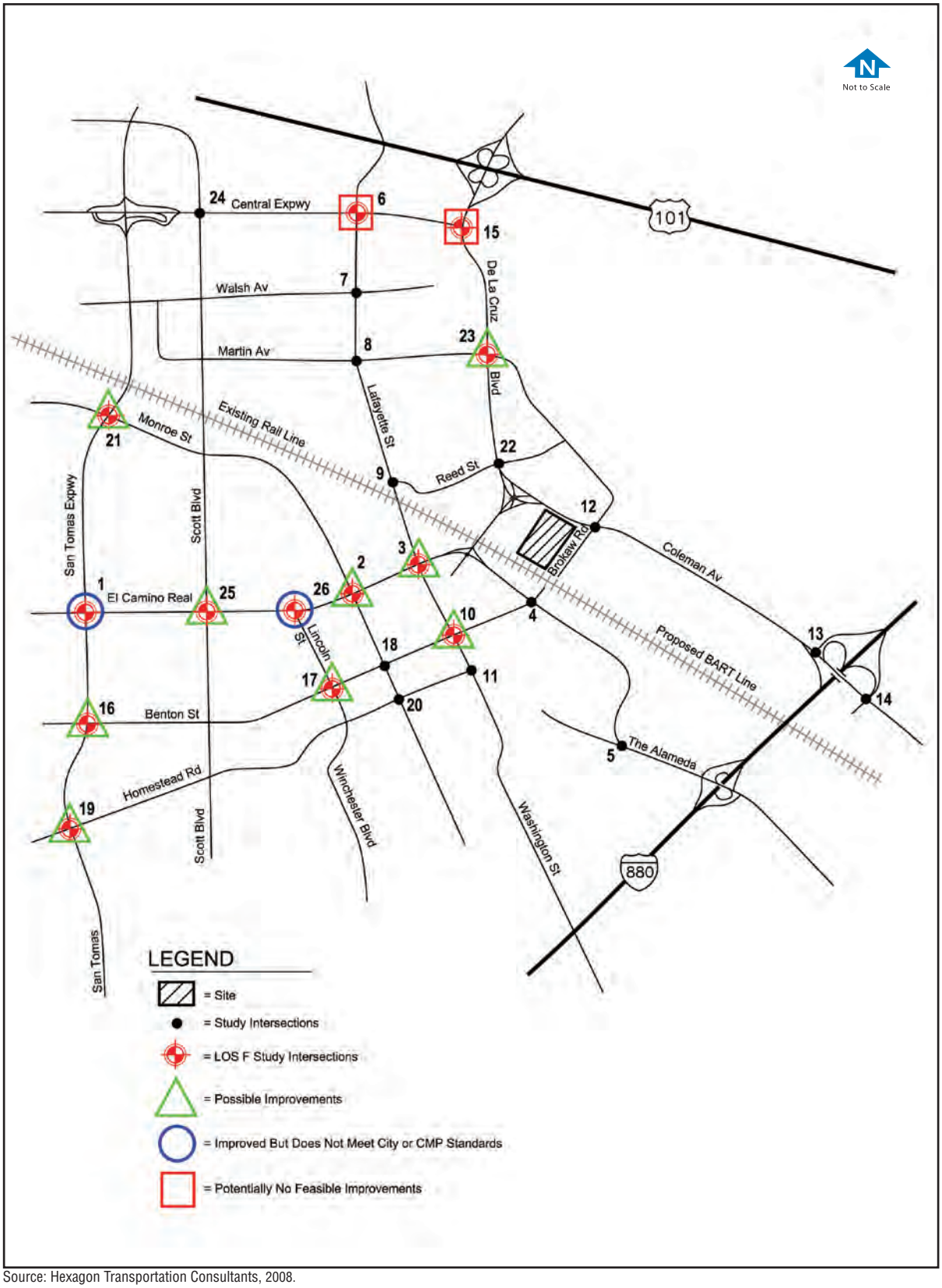
Source: Hexagon Transportation Consultants, 2008.

Figure 3-17: Alum Rock Station 2030 No Build with Improvements Level of Service Conditions



Source: Hexagon Transportation Consultants, 2008.

Figure 3-18: Diridon Station 2030 No Build with Improvements Level of Service Conditions



Source: Hexagon Transportation Consultants, 2008.

Figure 3-19: Santa Clara Station 2030 No Build with Improvements Level of Service Conditions

Table 3-33: 2030 No Build Alternative with Improvements Intersection LOS Results Summary

Station	Number of Study Intersections	2030 No Build Unacceptable LOS Intersections	Intersections With Possible Improvements	Improved but Unacceptable LOS	No Cost Effective Feasible Improvements
Milpitas	36	19	8	11	0
Berryessa	12	3	2	1	0
Alum Rock	19	8	3	2	3
Diridon/Arena	34	8	1	2	5
Santa Clara	26	14	9	2	3
Total	127	52	23	18	11

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station

*(1) Great Mall Parkway and Montague Expressway**

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. There are plans to widen Montague Expressway to four lanes in each direction. Montague Expressway is currently four lanes in each direction at this intersection. However, as part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Another possible improvement includes the addition of an exclusive southbound right-turn lane. Though intersection operations would improve with the above improvements, the level of service would remain at an unacceptable LOS F. There are no feasible at-grade improvements to improve operation levels at this intersection. The necessary improvement to improve intersection operations to acceptable levels would require grade separation of the intersection. It should be noted that the grade separation of this intersection is included in the Valley Transportation Plan 2030 (VTP 2030) project list. However, this improvement was not included as part of the year 2030 roadway network since it was not included in the VTA 2030 (SVRTC) traffic model used for this analysis. Thus, as a conservative approach and in order to analyze the worst case scenario, this improvement was not considered to be implemented by the year 2030.

(5) Abel Street and Great Mall Parkway

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. Possible improvements include the addition of second northbound and southbound left-turn lanes and a separate eastbound right-turn lane. Though intersection operations would improve to an acceptable LOS D during the PM peak hour with these improvements, the level of service would remain at an unacceptable LOS F during the AM peak hour. The necessary improvement to improve intersection operations to acceptable levels consists

of the conversion of the southbound right-turn lane to a free-right-turn lane. However, this improvement would require the widening of Great Mall Parkway, which is not feasible due to ROW constraints.

(6) I-880 NB ramps and Great Mall Parkway

Necessary Improvements*:* The intersection is projected to operate at LOS E and F during the AM and the PM peak hours, respectively, under 2030 No Build Alternative conditions. Possible improvements include the addition of a shared right-and-through lane on the northbound approach and a second westbound left-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS E during both peak hours. The necessary improvement to improve intersection operations to acceptable levels consists of the widening of Great Mall Parkway to six lanes, three through lanes on each direction. However, this improvement is not feasible due to ROW constraints along Great Mall Parkway and the bridge structure over I-880.

(12) Milpitas Boulevard and Yosemite Drive

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a second southbound left-turn lane, exclusive northbound right-turn lane, and modification of the westbound approach to provide two left-turn lanes, a through lane, and a right-turn lane. These improvements may not be feasible due to ROW constraints, but they are included as possible improvements. Intersection operation levels would improve to an acceptable LOS D with the implementation of these improvements. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

*(13) Milpitas Boulevard and Montague Expressway**

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. There are plans to widen Montague Expressway to four lanes in each direction. As part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Other possible improvements at this intersection include the addition of a left-turn, a through, and a right-turn lane on the south approach, a southbound through lane, and an eastbound right-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS F. Due to the relatively high conflicting turn movement volumes at this intersection, there are no feasible at-grade improvements to improve operation levels at this intersection.

(14) Dempsey Road and Landess Avenue

Necessary Improvements*:* The intersection is projected to operate at LOS F during the AM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an exclusive northbound left-turn lane and a third westbound through lane. These improvements may not be feasible due to ROW constraints at this intersection, but they are included as possible improvements. Intersection operation levels would improve to an acceptable LOS C with the implementation of these improvements.

(15) Park Victoria Drive and Landess Avenue

Necessary Improvements*:* The intersection is projected to operate at LOS E during both the AM and PM peak hours under 2030 No Build Alternative conditions. Possible improvements include the addition of second northbound and southbound left-turn lanes, and the addition of an exclusive northbound right-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS E during the PM peak hour. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a third southbound through lane on Park Victoria Drive or converting the eastbound right-turn lane on Landess Avenue to a free right-turn lane. However, the widening of Park Victoria Drive is not feasible due to ROW constraints.

(16) Park Victoria Drive and Yosemite Drive

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. Possible improvements include the addition of exclusive northbound and southbound right-turn lanes, and the addition of an exclusive eastbound left-turn lane. These improvements may not be feasible due to ROW constraints at this intersection, but they are included as possible improvements. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS F and E during the AM and PM peak hours, respectively. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second northbound left-turn lane and a third southbound through lane on Park Victoria Drive. However, these improvements would require the widening of Park Victoria Drive, which is not feasible due to ROW constraints. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

*(17) Old Oakland/Main Street and Montague Expressway**

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. There are plans to widen Montague Expressway to four lanes in each direction. As part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Though intersection operations would improve with the

proposed widening of Montague Expressway, the level of service would remain at an unacceptable LOS F. Due to the relatively high conflicting turn movement volumes at this intersection, there are no feasible at-grade improvements to improve operation levels at this intersection.

*(18) Trade Zone Boulevard and Montague Expressway**

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. There are plans to widen Montague Expressway to four lanes in each direction. As part of the improvement, the HOV lanes would be eliminated, providing four mix-flow lanes in each direction on Montague. Other possible improvements include the addition of second northbound and southbound through lanes and the addition of a second westbound left-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS F. Due to the relatively high conflicting turn movement volumes at this intersection, there are no feasible at-grade improvements to improve operation levels at this intersection.

(19) Capitol Avenue and Cropley Avenue

Necessary Improvements*:* The intersection is projected to operate at LOS E and F during the AM and PM peak hours, respectively, under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second southbound, eastbound, and westbound left-turn lanes and exclusive northbound and southbound (on Capitol Avenue) right-turn lanes. Intersection operation levels would improve to an acceptable LOS D with the implementation of these improvements.

(20) Abbott Avenue and Calavera Boulevard

Necessary Improvements*:* The intersection is projected to operate at LOS E during the AM peak hour under 2030 No Build Alternative conditions. Possible improvements include the addition of an exclusive westbound right-turn lane on Calaveras Boulevard. Though intersection operations would improve with this improvement, the level of service would remain at an unacceptable LOS E. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a fourth westbound through lane. However, this improvement would require the widening of Calaveras Boulevard, which is not feasible due to ROW constraints.

*(22) Abel Street and Calaveras Boulevard**

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second eastbound and westbound left-turn lanes and an exclusive eastbound right-turn lane. Intersection operation levels would improve to an acceptable LOS E during the PM peak hour with implementation of these improvements. It should

be noted that the Valley Transportation Plan 2030 (VTP 2030) project list includes a project that would widen Calaveras Boulevard to six lanes from Abel Street to Milpitas Boulevard. However, since this improvement was not included as part of the year 2030 roadway network used in the VTA 2030 (SVRTC) traffic model used for this analysis, Hexagon chose to conservatively assume the improvement would not be in place by 2030.

*(23) Milpitas Boulevard and Calaveras Boulevard**

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. Possible improvements include the addition of a second westbound left-turn lane. Though intersection operations would improve with this improvement, the level of service would remain at an unacceptable LOS F during the PM peak hour. The necessary improvements to improve intersection operations to acceptable levels consist of the widening of both Milpitas Boulevard and Calaveras Boulevard to six lanes (three through lanes in each direction) and the addition of third northbound and eastbound left-turn lanes. It should be noted that the Valley Transportation Plan 2030 (VTP 2030) project list includes a project that would widen Calaveras Boulevard to six lanes from Abel Street to Milpitas Boulevard. However, since this improvement was not included as part of the year 2030 roadway network used in the VTA 2030 (SVRTC) traffic model used for this analysis, Hexagon chose to conservatively assume the improvement would not be in place by 2030. In addition, the widening of Milpitas Boulevard to this extend is not feasible due to ROW constraints.

(24) Hillview Drive and Calaveras Boulevard

Necessary Improvements*:* The intersection is projected to operate at LOS E during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an exclusive eastbound right-turn lane. Intersection operation levels would improve to an acceptable LOS D with implementation of this improvement.

(25) Park Victoria Drive and Calaveras Boulevard

Necessary Improvements*:* The intersection is projected to operate at LOS F and E during the AM and PM peak hours, respectively, under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second southbound left-turn lane and an exclusive westbound right-turn lane. Intersection operation levels would improve to an acceptable LOS D with implementation of these improvements.

(26) Milpitas Boulevard and Jacklin Road

Necessary Improvements*:* The intersection is projected to operate at LOS F and E during the AM and PM peak hours, respectively, under 2030 No Build Alternative conditions. Possible improvements include the addition of second northbound and

southbound left-turn lanes and an exclusive northbound right-turn lane. Though intersection operations would improve to an acceptable LOS D during the PM peak hour with these improvements, the level of service would remain at an unacceptable LOS F during the AM peak hour. The necessary improvements to improve intersection operations to acceptable levels consist of the conversion of the southbound and the westbound right-turn lanes to free-right-turn lanes. However, these improvements would require the widening of both Milpitas Boulevard and Jacklin Road, which is not feasible due to ROW constraints.

(27) Milpitas Boulevard and Escuela Drive

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of exclusive northbound and southbound right-turn lanes and the conversion of the westbound through lane to a shared left-and-through lane. Intersection operation levels would improve to an acceptable LOS D with implementation of these improvements. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

(30) I-680 NB Ramps and Jacklin Road

Necessary Improvements*:* The intersection is projected to operate at LOS F during the AM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a second eastbound left-turn lane and an exclusive westbound right-turn lane on Jacklin Road. Intersection operation levels would improve to an acceptable LOS D with implementation of these improvements.

Berryessa Station

(2) Flickinger Avenue and Berryessa Road

Necessary Improvements*:* The intersection is projected to operate at LOS E and F during the AM and PM peak hours, respectively, under 2030 No Build Alternative conditions. Possible improvements include the addition of second southbound, eastbound, and westbound left-turn lanes. Though intersection operations would improve to an acceptable LOS D during the AM peak hour with these improvements, the level of service would remain at an unacceptable LOS F during the PM peak hour. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a third eastbound through lane and a third westbound left-turn lane on Berryessa Road. However, these improvements would require the widening of both Flickinger Avenue and Berryessa Road, which is not feasible due to ROW constraints.

*(3) Lundy Avenue and Berryessa Road**

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second eastbound and westbound left-turn lanes. Intersection operation levels would improve to an acceptable LOS E with the implementation of these improvements.

(9) Oakland Road and Commercial Street

Necessary Improvements*:* The intersection is projected to operate at LOS E during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a second westbound left-turn lane. Intersection operation levels would improve to an acceptable LOS D with the implementation of this improvement.

Alum Rock Station

(3) US 101 and Julian Street

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second northbound left-turn lane. Intersection operation levels would improve to an acceptable LOS D with implementation of this improvement.

(5) King Road and McKee Road

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. Possible improvements include the addition of second left-turn lanes on the northbound, eastbound, and westbound approaches, and exclusive southbound and eastbound right-turn lanes. These improvements may not be feasible due to ROW constraints along both King Road and McKee Road, but they are included as possible improvements. Though intersection operations would improve to an acceptable LOS D during the AM peak hour with these improvements, the level of service would remain at an unacceptable LOS E during the PM peak hour. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a third westbound through lane. However, this improvement would require the widening of McKee Road, which is not feasible due to ROW constraints.

(6) Capitol Avenue and McKee Road (No Feasible Improvements)

Necessary Improvements: The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels at this intersection consist of the addition of a third southbound through lane and a second eastbound right-

turn lane. However, the widening of Capitol Avenue and McKee Road is not feasible due to ROW constraints. This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the adverse traffic effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

*(13) Capitol Avenue and Alum Rock Avenue**

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second westbound left-turn lane. Intersection operation levels would improve to an acceptable LOS E with implementation of this improvement.

(14) McLaughlin Avenue and Story Road

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. Possible improvements include the addition of a second southbound left-turn lane and an exclusive eastbound right-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS E during the PM peak hour. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a third southbound left-turn lane on McLaughlin Avenue, which is not feasible due to ROW constraints.

(15) King Road and Story Road (No Feasible Improvements)

Necessary Improvements*:* The intersection is projected to operate at LOS E during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a third northbound through lane on King Road. The widening of King Road is not feasible due to ROW constraints.

(17) King Road and San Antonio Street

Necessary Improvements*:* The intersection is projected to operate at LOS E during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an exclusive eastbound left-turn lane. Intersection operation levels would improve to an acceptable LOS D with implementation of this improvement.

(19) Capitol Expressway and Capitol Avenue (No Feasible Improvements)*

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a third southbound left-turn lane and a fourth northbound (mixed-flow) through lane on Capitol Expressway. The widening of Capitol Expressway is not feasible due to ROW constraints.

Diridon/Arena Station

(1) The Alameda and Hedding Street (No Feasible Improvements)*

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a third northbound through lane and a second southbound left-turn lane. However, the widening of The Alameda to this extent is not feasible due to ROW constraints. This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the adverse traffic effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

*(2) The Alameda and Taylor Street/Naglee Avenue**

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. Possible

improvements include the addition of exclusive right-turn lanes on the eastbound and westbound approaches. These improvements may not be feasible due to ROW constraints at this intersection, but they are included as possible improvements. Though intersection operations would improve to an acceptable LOS E during the PM peak hour with these improvements, the level of service would remain at an unacceptable LOS F during the AM peak hour. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second southbound left-turn lane on The Alameda. However, the widening of The Alameda is not feasible due to ROW constraints.

(9) Market Street and Santa Clara Street (No Feasible Improvements)

Necessary Improvements*:* The intersection is projected to operate at LOS E during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an exclusive southbound right-turn lane. However, this improvement is not feasible due to ROW constraints.

(10) Meridian Avenue and San Carlos Street (No Feasible Improvements)

Necessary Improvements*:* The intersection is projected to operate at LOS E and F during the AM and PM peak hours, respectively, under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a third eastbound through lane, an exclusive westbound right-turn lane, and widening of Meridian Avenue to provide three left-turn lanes, two through lanes, and a right-turn lane on the northbound approach and one left-turn lane, three through lanes, and one right-turn lane on the southbound approach. In addition, protected left-turn phasing would have to be provided in the northbound/southbound direction. However, these improvements would require the widening of both Meridian Avenue and San Carlos Street, which is not feasible due to ROW constraints. This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the adverse traffic effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

(12) Lincoln Avenue and San Carlos Street

Necessary Improvements*:* The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. Possible improvements include the addition of exclusive left-turn and right-turn lanes on the southbound approach, provision of protected left-turn phasing on the northbound/southbound direction, and addition of a second westbound left-turn lane. Though intersection operations would improve with these improvements, the level of service would remain at an unacceptable LOS F. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a second northbound left-turn lane, a second southbound through lane, and a third eastbound through lane. The widening of Lincoln Avenue and San Carlos Street to this extent is not feasible due to ROW constraints.

(13) Bird Avenue and San Carlos Street (No Feasible Improvements)*

Necessary Improvements: The intersection is projected to operate at LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second eastbound left-turn lane. However, this improvement is not feasible due to ROW constraints. This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the adverse traffic effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

(28) Bird Avenue and I-280 (S) (No Feasible Improvements)*

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second southbound left-turn lane along Bird Avenue. However, this improvement is not feasible due to ROW constraints along the bridge structure (Bird Avenue) over I-280.

(34) Cahill Street and Santa Clara Street

Necessary Improvements*:* The intersection is projected to operate at LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an eastbound left-turn lane to serve the projected future volumes. Intersection operation levels would improve to an acceptable LOS C with implementation of this improvement.

Santa Clara Station

*(1) San Tomas Expressway and El Camino Real**

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. Possible improvements include the addition of second left-turn lanes on all approaches. Though intersection operations would improve with the improvements, the level of service would remain at an unacceptable LOS F. There are no feasible at-grade improvements to improve operation levels at this intersection. The necessary improvement to improve intersection operations to acceptable levels would require grade separation of the intersection.

*(2) Monroe Street and El Camino Real**

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second southbound left-turn lane. Intersection operation levels would improve to an acceptable LOS E with the implementation of this improvement.

*(3) Lafayette Street and El Camino Real**

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second eastbound left-turn lane. The addition of a second eastbound left-turn lane is currently identified in the City's Capitol Improvements Project (CIP) list. Intersection operation levels would improve to an acceptable LOS E with the implementation of this improvement.

(6) Lafayette Street and Central Expressway (No Feasible Improvements)*

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of third northbound and eastbound left-turn lanes, and providing three eastbound mixed-flow through lanes (there are currently three eastbound through lanes on Central Expressway, however, one is an HOV lane). However, these improvements are not feasible due to ROW constraints.

(10) Lafayette Street and Benton Street

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F and E during the AM and PM peak hours, respectively, under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of an exclusive left-turn lane on the northbound approach and second through lanes on the northbound and southbound approaches. These improvements may not be feasible due to ROW constraints and the current reversible lane on Lafayette Street, but they are included as possible improvements. Intersection operation levels would improve to an acceptable LOS C during both peak hours with the implementation of these improvements.

(15) De La Cruz Boulevard and Central Expressway (No Feasible Improvements)*

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. There are no feasible at-grade improvements to improve operation levels at this intersection. The necessary improvement to improve intersection operations to acceptable levels would require grade separation of the intersection.

(16) San Tomas Expressway and Benton Street

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the widening of San Tomas Expressway from six-lanes to eight-lanes and the addition of a second eastbound left-turn lane. A study prepared by the County recommends the widening of San Tomas Expressway to four lanes in each direction between El Camino Real and Williams Road. This improvement also is included in the *VTP 2030* proposed projects list (Project X22). Intersection operation levels would improve to an acceptable LOS D during both peak hours with the implementation of these improvements.

(17) Lincoln Street and Benton Street

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of providing exclusive northbound and southbound left-turn lanes and a second northbound through lane. These improvements may not be feasible due to ROW constraints, but are included as possible improvements. Intersection operation levels would improve to an acceptable LOS B with the implementation of these improvements.

*(19) San Tomas Expressway and Homestead Road**

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist

of the widening of San Tomas Expressway from six-lanes to eight-lanes. A study prepared by the County recommends the widening of San Tomas Expressway to four lanes in each direction between El Camino Real and Williams Road. This improvement also is included in the *VTP 2030* proposed projects list (Project X22). Intersection operation levels would improve to an acceptable LOS E with the implementation of these improvements.

*(21) San Tomas Expressway and Monroe Street **

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second westbound right-turn lane. This improvement is included in the *VTP 2030* proposed projects list (Project X21). Intersection operation levels would improve to an acceptable LOS E with the implementation of this improvement.

(23) De La Cruz Boulevard and Martin Avenue

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative conditions. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of an exclusive westbound right-turn lane. Intersection operation levels would improve to an acceptable LOS C with the implementation of this improvement.

(24) Scott Boulevard and Central Expressway (No Feasible Improvements)*

Necessary Improvements*:* The intersection is projected to operate at anunacceptable LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of a third southbound left-turn lane and providing three eastbound mixed-flow through lanes (there are currently three eastbound through lanes on Central Expressway, however, one is an HOV lane). However, these improvements are not feasible due to ROW constraints.

*(25) Scott Boulevard and El Camino Real**

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative conditions. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second left-turn lanes on the northbound and southbound approaches. Intersection operation levels would improve to an acceptable LOS E with the implementation of these improvements.

*(26) Lincoln Street and El Camino Real**

Necessary Improvements*:* The intersection is projected to operate at an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative conditions. Possible improvements include the addition of exclusive right-turn lanes on the eastbound and

westbound approaches. Though intersection operations would improve with the improvements, the level of service would remain at an unacceptable LOS F. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second northbound left-turn lane. However, the addition of a second northbound left-turn lane is not feasible due to ROW constraints.

3.7.6 BEP ALTERNATIVE

The BEP Alternative evaluates year 2030 traffic conditions with the addition of planned improvements identified in the Bay Area's RTP and the two-station Build Alternative. The BEP Alternative, however, proposes to include two BART Stations only. The BART Stations included under the BEP Alternative are:

1. Milpitas Station
2. Berryessa Station

Traffic volumes under the BEP Alternative represent Year 2030 No Build Alternative traffic volumes with the addition of traffic projected to be generated by the Milpitas and Berryessa stations, which include park-and-ride (PNR), kiss-and-ride (KNR), and bus trips to both stations, under the BEP Alternative. The effects of the BEP Alternative and the Milpitas and Berryessa stations on the roadway network were evaluated and compared to the Year 2030 No Build Alternative Conditions with Improvements in order to identify negative adverse affects on the roadways network (both freeways and intersections) directly associated with this alternative.

Station Access and Circulation

Milpitas Station

The proposed Milpitas Station site is located in the southeast quadrant of the Montague Expressway and Capitol Avenue intersection. As part of the proposed Milpitas Station, South Milpitas Boulevard would be extended from its intersection with Montague Expressway, continuing through the station area, to Capitol Avenue, just south of Montague Expressway. Primary access to the Milpitas Station site would be provided by the intersections of Milpitas Boulevard with Montague Expressway and Capitol Avenue. The new intersection of Capitol Avenue and Milpitas Boulevard would be a full-access signalized intersection. Station facilities under the BEP Alternative would include a parking structure providing approximately 2,260 parking spaces for Park-and-Ride (PNR) commuters, Kiss-and-Ride (KNR) drop-off points, and bus services. A pedestrian connection would be provided to connect BART facilities to the Capitol LRT Station.

The VTA 2030 (SVRTC) traffic model was used to obtain station-generated traffic to and from the main gateways to the station area. The Milpitas Station is estimated to generate a total of 1,033 AM and PM peak hour trips (including PNR, KNR, and bus trips) under the BEP Alternative.

As shown in Figures 2-6A and 2-6B (Chapter 2, Alternatives), two station layout options for the Milpitas Station are being analyzed. Both station layouts propose all station facilities between Montague Expressway and Milpitas Boulevard. The only difference between the two options is the location of the station facilities: Option A (the West Bus Transit Center option) proposes the parking structure and KNR facilities on the east side of the station and the bus transit center on the west of the station. Option B (the East Bus Transit Center option) proposes all station facilities (parking structure, bus transit center, and KNR drop-off points) on the east side of the station. The two different layouts would have the same effects on the transportation system outside the immediate station area. The difference in the two layout options would only affect internal circulation.

Montague Expressway and Capitol Avenue will provide primary access to the Milpitas Station site from the local roadway system via their intersections with Milpitas Boulevard. Both roadways provide regional access from I-880 and I-680. From I-880, the station area is accessible via both the Montague Expressway and Tasman/Great Mall interchanges. Access to and from I-680 is provided via interchanges at Montague Expressway and Capitol Avenue.

The Milpitas Station would be primarily served by two intersections: the Milpitas Boulevard/Montague Expressway and Capitol Avenue/Milpitas Boulevard intersections. Both of these intersections would be signalized and would provide full access to the station. In addition, a frontage road on the north side of the station, parallel to Montague Expressway, would provide right-in and out access to/from the station to both passenger vehicles and buses.

Station facilities would be accessed via the Milpitas Boulevard extension, which would run parallel to Montague Expressway along the station area, connecting Montague Expressway and Capitol Avenue. The new segment of Milpitas Boulevard is shown on the site plans to be a four-lane divided roadway. The Milpitas Station site plan also shows new signalized intersections within the station area at the intersections of Milpitas Boulevard extension with Gladding Court and with the new access road providing access to the proposed parking structure.

All roadways within the station will be constructed to accommodate the projected year 2030 traffic volumes and operate at acceptable levels of service.

Berryessa Station

The proposed Berryessa Station site is located along the eastern edge of the existing Flea Market site, just south of Berryessa Road. Station facilities would be located along a proposed new roadway (Berryessa Station Way) that would connect with Berryessa Road to the north and Mabury Road to the south. There are two Berryessa Station Options: North and South. Both of these options are within the previously identified station area footprint. Therefore, the new options are reconfigurations of the previous station area plan.

For the *Berryessa Station North Option*, station facilities were shifted approximately 400 feet south along the rail alignment and the station campus was redesigned. Berryessa Station Way and the parking garage were realigned to the east of the rail alignment.

The *Berryessa Station South Option* includes an approximate 1,300 foot shift south of station facilities, and relocation of the transit center south to Mabury Road.

As part of the BEP Alternative and for both North and South options, station facilities would include a parking structure providing approximately 4,835 spaces for park-and-ride (PNR) commuters, kiss-and-ride (KNR) drop-off points, and bus transfer bays.

The VTA 2030 (SVRTC) traffic model was used to obtain station-generated traffic to and from the main gateways to the station area. The Berryessa Station is estimated to generate a total of 2,236 AM and PM peak hour trips (including PNR, KNR, and bus trips) under the BEP Alternative.

As shown in Figures 2-8a and 2-8b (Chapter 2, Alternatives), two station layout options for the Berryessa Station are being analyzed. Mabury Road and Berryessa Road would provide primary access to the station site from the local roadway system for both options. Mabury Road and Berryessa Road provide regional access from I-680 and US 101. From I-680, the station site is most accessible via the Berryessa Road interchange. Access to and from US 101 is provided via an interchange at Oakland Road. It is also assumed that a new interchange at US 101/Mabury Road will be constructed. The construction of the interchange is not proposed as part of the station, but rather as part of potential background improvements.

The Berryessa Station would be accessible from both Mabury Road and Berryessa Road via two new signalized intersections. The intersections would be formed with a two-way, four-lane divided internal roadway (Berryessa Station Way) that would run from the Mabury entrance to the Berryessa entrance.

For the *Berryessa Station North Option*, the Berryessa Road and Mabury Road entrances would be located on the east side of the existing rail line. All station facilities would be accessible from both the entrances via Berryessa Station Way. Based on the site plan, the bus transit area would be served by Berryessa Station Way just south of the Berryessa Road entrance and next to the station platform. The KNR drop-off area would be located south of the bus transit center and next to the station plaza, along a one-way station access road.

For the *Berryessa Station South Option*, the Berryessa Road entrance would be located on the east side of the existing rail line, while two Mabury entrances would be provided, one on the west side of the rail alignment, and the other on the east side of the rail alignment in the vicinity of Lenfest Road; Berryessa Station Way would cross under the rail line north of the station platform. All station facilities would be accessible from both of the Berryessa Station Way entrances, and a second Mabury Road entrance at Lenfest Road. Based on the site plan, the bus transit area would be served by Berryessa Station Way just north of the Mabury Road/Lenfest Road entrance and next

to the station platform. The KNR drop-off area would be located on the west side of station, adjacent to the parking structure.

All roadways within the station, under either option, will be constructed to accommodate the projected year 2030 traffic volumes and operate at acceptable levels of service.

The analysis provided in the rest of this chapter applies to both the Berryessa Station North and South options.

Freeway Volumes and Levels of Service

BEP Alternative conditions traffic volumes on freeway segments were established by adding to 2030 No Build Alternative freeway volumes the estimated station trips on freeway segments. Since the Berryessa Station would be the end-of-the-line station under the BEP Alternative, additional freeway segments other than those identified for the Berryessa Station under 2030 No Build Alternative were analyzed. The additional segments will cover the wider area projected to be served by the Berryessa Station under the BEP Alternative.

The results of the freeway segment analysis under the BEP Alternative for the proposed Milpitas and Berryessa Stations is summarized in Table 3-34. The results show that 34 of the 52 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one of the peak hours under the BEP Alternative. The BEP Alternative would have an adverse affect on 4 of the 52 study freeway segments.

Table 3-34: BEP Alternative Freeway Level of Service Results Summary

Station	Number of Study Freeway Segments	BEP Alternative Unacceptable LOS Segments	BEP Alternative Impacted Freeway Segments
Milpitas	20	10	0
Berryessa	32	24	4
Total:	52	34	4

Source: Hexagon Transportation Consultants, Inc., 2008.

Overall, the freeway level of service is projected to remain unchanged from 2030 No Build Alternative conditions (there is no change in freeway segments' level of service with the addition of the station trips). The results are described by proposed station area below.

Milpitas Station

In the vicinity of the Milpitas Station, the freeway segment analysis shows that 10 of the 20 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under the BEP Alternative. The segments include:

I-680, Calaveras Boulevard to Jacklin Road, NB/PM peak hour

I-680, Jacklin Road to Scott Creek Road, NB/PM peak hour

I-880, SR 237 to Dixon Landing Road, NB/PM peak hour

I-880, Dixon Landing Road to SR 237, SB/AM peak hour

I-880, Great Mall Parkway to Montague Expressway, SB/PM peak hour

I-880, Montague Expressway to Brokaw Road, SB/PM peak hour

I-680, Calaveras Boulevard to Yosemite Drive, SB/PM peak hour

I-680, Yosemite Drive to Montague Expressway, SB/PM peak hour

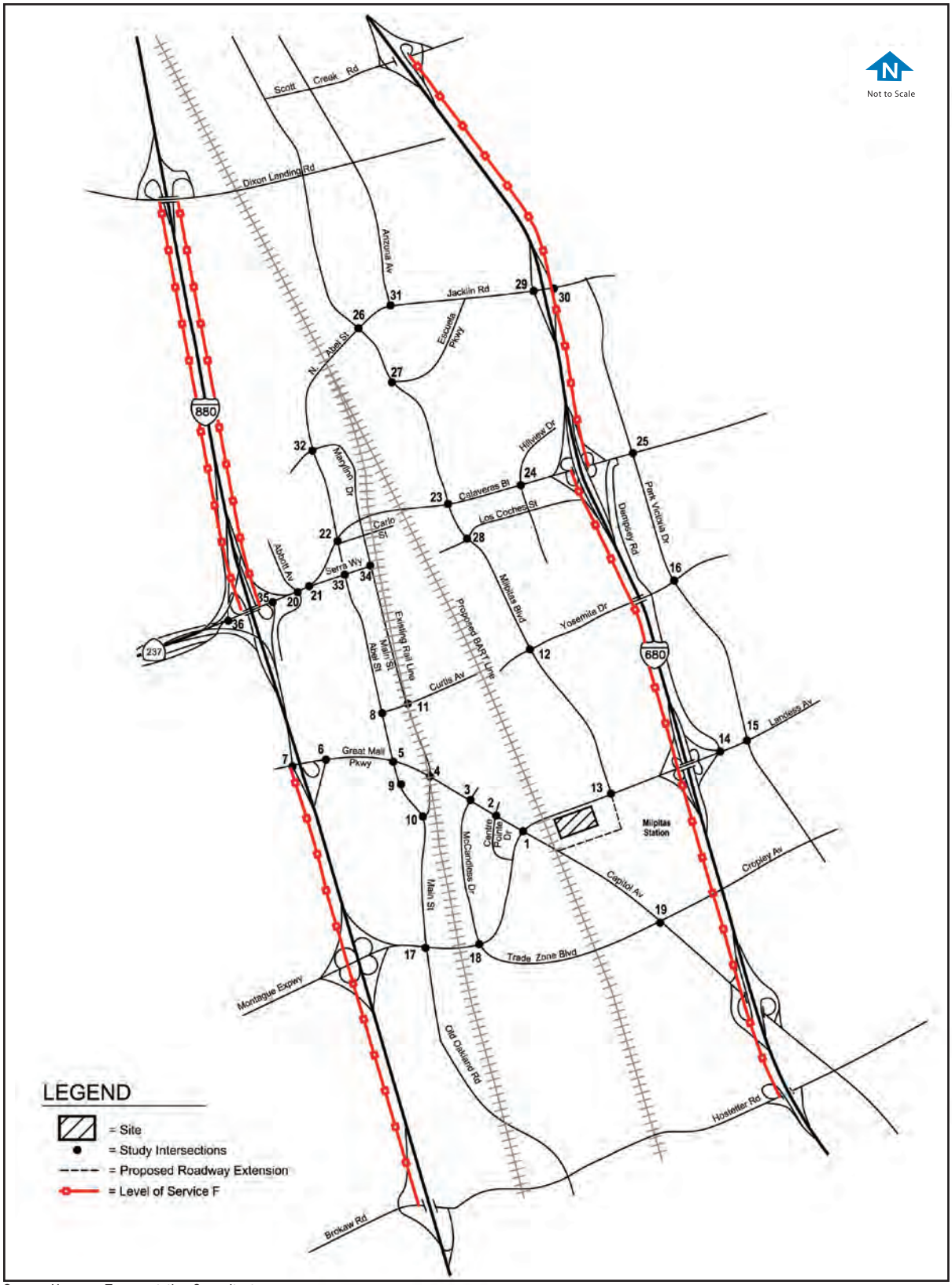
I-680, Montague Expressway to Capitol Avenue, SB/PM peak hour

I-680, Capitol Avenue to Hostetter Road, SB/PM peak hour

Since the BEP Alternative would not add traffic representing one percent or more of the segment's capacity to any of the study freeway segments projected to operate at LOS F, none of the freeway segments analyzed in the vicinity of the Milpitas Station would be adversely affected by the BEP Alternative, according to county CMP LOS standards for freeways. The study freeway segments projected to operate at an unacceptable LOS F under the BEP Alternative are shown graphically on Figure 3-20.

Berryessa Station

In the vicinity of the Berryessa Station, the freeway segment analysis shows that 24 of the 32 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under the BEP Alternative. The BEP Alternative is projected to have an adverse affect on four of the 24 directional freeway segments identified to operate at LOS F, according to the CMP definition of freeway adverse affects. The segments include:



Source: Hexagon Transportation Consultants, 2008.

Figure 3-20: Milpitas Station Freeway Level of Service BEP Alternative

US 101, McKee Road to Mabury Road, NB/AM peak hour

US 101, Mabury Road to McKee Road, SB/PM peak hour (adverse effect)

US 101, Mabury Road to Oakland Road, NB/AM peak hour

US 101, Oakland Road to Mabury Road, SB/PM peak hour

US 101, Oakland Road to I-880, NB/AM peak hour

US 101, I-880 to Oakland Road, SB/PM peak hour

I-680, Alum Rock Avenue to McKee Road, NB/AM peak hour

I-680, Hostetter Road to Berryessa Road, SB/PM peak hour

I-680, Berryessa Road to McKee Road, SB/PM peak hour

US 101, Tully Road to Story Road, NB/AM peak hour

US 101, Story Road to Tully Road, SB/PM peak hour

US 101, I-280 to Santa Clara Street, NB/AM peak hour (adverse effect)

US 101, Santa Clara Street to I-280, SB/PM peak hour (adverse effect)

US 101, Santa Clara Street to McKee Road, NB/AM peak hour

US 101, McKee Road to Santa Clara Street, SB/PM peak hour (adverse effect)

I-680, Capitol Expressway to Alum Rock Avenue, NB/AM peak hour

I-680, Alum Rock Avenue to Capitol Expressway, SB/AM peak hour

I-680, Alum Rock Avenue to McKee Road, NB/AM peak hour

I-680, McKee Road to Alum Rock Avenue, SB/PM peak hour

I-680, Capitol Expressway to King Road, SB/AM peak hour

I-680, King Road to US 101, SB/AM peak hour

I-280, US 101 to McLaughlin Avenue, NB/AM peak hour

I-280, McLaughlin Avenue to 10th Street, NB/AM peak hour

US 101, I-280 to Story Road, SB/PM peak hour

The study freeway segments projected to operate at an unacceptable LOS F under the BEP Alternative are shown graphically on Figures 3-21a and 3-21b.

The mitigation necessary to reduce adverse affects to these freeway segments is the widening of the freeway. Due to the substantial cost, this measure is not considered feasible, resulting in a substantial adverse effect to freeways.

Intersection Traffic Volumes and Levels of Service

Traffic volumes for the BEP Alternative represent 2030 No Build Alternative traffic conditions plus the addition of the estimated PNR, KNR, and bus station trips to the proposed stations. Under the BEP Alternative, additional intersections than those

identified for the Berryessa Station were analyzed. It should be noted that the additional study intersections analyzed for the Berryessa Station under the BEP Alternative consist of the study intersections in the vicinity of the Alum Rock Station. These intersections were included since under the BEP Alternative the Berryessa Station would be the end-of-the-line station, thus serving a greater area, including the Alum Rock Station service area. The additional intersections cover the wider area projected to be affected by the Berryessa Station under the BEP Alternative.

The results of the intersection level of service analysis under the BEP Alternative for the proposed BART Stations is summarized in Table 3-35. The results show that 21 of the 66 study intersections analyzed under the BEP Alternative would operate at an unacceptable level of service (LOS E or F for local intersections and LOS F for CMP intersections) during at least one of the peak hours. Fourteen of the 66 study intersections are projected to be adversely affected by the BEP Alternative. CMP intersections are denoted with an asterisk (*). The results are described by proposed station area.

Table 3-35: BEP Alternative Intersection Level of Service Results Summary

Station	Number of Study Intersections	BEP Alternative Unacceptable LOS Intersections	Impacted Intersections
Milpitas	36	11	5
Berryessa	30	9	9
Total:	66	20	14

Source: Hexagon Transportation Consultants, Inc., 2008.

The intersection level of service results show that a total of 5 of the 36 study intersections would be adversely affected by the BEP Alternative during at least one of the peak hours, according to City of Milpitas and CMP LOS standards. The intersections are:

(1) Great Mall Parkway and Montague Expressway* (AM only)

(13) Milpitas Boulevard and Montague Expressway* (PM only)

(16) Park Victoria Drive and Yosemite Drive (Adverse effect: AM only)

(17) Old Oakland/Main Street and Montague Expressway* (AM only)

(18) Trade Zone Boulevard and Montague Expressway* (PM only)

All other CMP and local City of Milpitas signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Source: Hexagon Transportation Consultants, 2008.

Figure 3-21a: Berryessa Station Freeway Level of Service BEP Alternative

Source: Hexagon Transportation Consultants, 2008.

Figure 3-21b: Berryessa Station Freeway Level of Service BEP Alternative (continued)

Berryessa Station

The intersection level of service results show that a total of 9 of the 30 study intersections would be adversely affected by the BEP Alternative during at least one of the peak hours, according to City of San Jose and CMP LOS standards. The intersections are:

(2) Flickinger Avenue and Berryessa Road (AM & PM)

(3) Lundy Avenue and Berryessa Road* (AM only)

(5) King Road and Mabury Road (PM only)

(15) US 101 and Julian Street (PM only)

(17) King Road and McKee Road (PM only)

(18) Capitol Avenue and McKee Road (PM only)

(26) McLaughlin Avenue and Story Road (PM only)

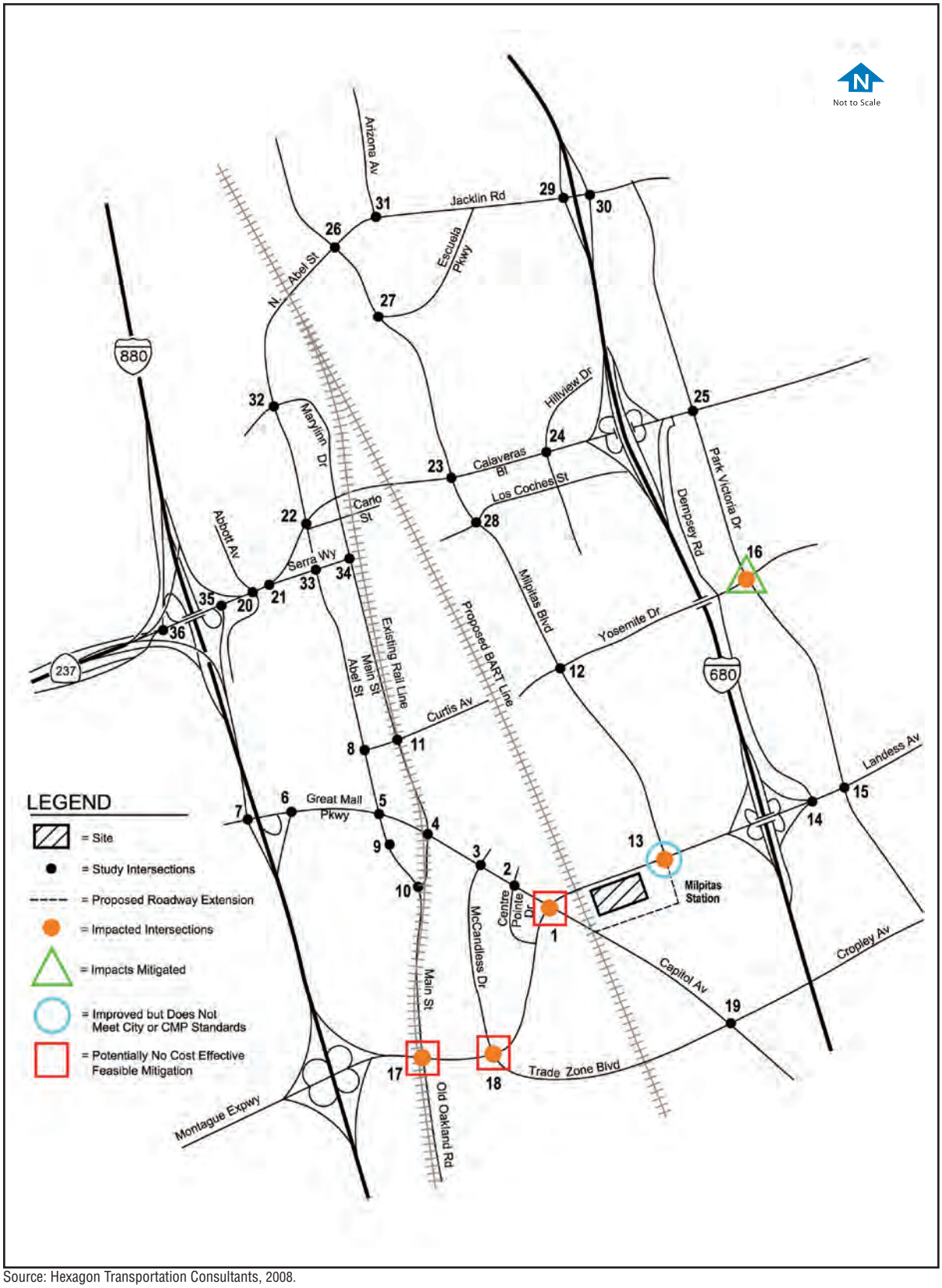
(27) King Road and Story Road (AM only)

(30) Capitol Expressway and Capitol Avenue* (PM only)

All other CMP and local City of San Jose signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.)

Mitigation Measures

The following describes the intersection adverse affects and recommended mitigation measures. The identified improvements are based on level of service calculations and their implementation would need to be coordinated with the cities of Milpitas and San Jose. It should be noted that the projected intersection levels of service and identified improvements are based on traffic projections 22 years into the future. The need for the improvements will necessitate further investigation at the time of their implementation. Intersections for which cost effective feasible mitigation measures are not possible and intersections where cost effective feasible mitigation measures do not improve the intersection to acceptable levels are also discussed and identified on Figures 3-22 and 3-23 for the Milpitas Station and the Berryessa Station, respectively. The statement 'Not feasible due to ROW constraints' refers to conditions where structures or parking would be displaced to provide sufficient area for the improvements. Table 3-36 summarizes the resulting levels of service under the BEP Alternative conditions with the recommended mitigation measures.



Source: Hexagon Transportation Consultants, 2008.

Figure 3-22: Milpitas Station BEP with Improvements Level of Service Conditions

Source: Hexagon Transportation Consultants, 2008.

Figure 3-23: Berryessa Station BEP with Improvements Level of Service Conditions

Table 3-36: BEP Alternative with Mitigations Intersection Level of Service Results Summary

Station	Number of Study Intersections	Impacted Intersections	Mitigated Intersections	Mitigated but Unacceptable LOS	Improved but Unacceptable LOS	No Cost Effective Feasible Mitigation
Milpitas	36	5	1	0	1	3
Berryessa	30	9	1	1	0	7
Total:	66	14	2	1	1	10

Source: Hexagon Transportation Consultants, Inc., 2008.

Out of the 14 study intersections projected to be adversely affected under the BEP Alternative, adverse affects would be mitigated at 3 intersections, 2 intersections would be mitigated to better than 2030 No Build Alternative conditions, but would continue to operate at unacceptable levels, 1 intersection would be improved, but would continue to operate at unacceptable levels, and 8 intersections would potentially have no cost effective feasible mitigation. The results are described by proposed station area.

Milpitas Station

(1) Great Mall Parkway and Montague Expressway (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the demand-to-capacity ratio (V/C) of 0.01 or more during the AM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-1: There are no other cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Build Alternative conditions. The necessary improvement to mitigate the BEP Alternative's adverse effect at this intersection would require grade separation of the intersection. It should be noted that the grade separation of this intersection is included in the Valley Transportation Plan 2030 (VTP 2030) project list. However, this improvement was not included as part of the year 2030 roadway network since it was not included in the VTA 2030 (SVRTC) traffic model used for this analysis. Thus, as a conservative approach and in order to analyze the worst case scenario, this improvement was not considered to be implemented by the year 2030. Although the BEP Alternative would adversely affect this intersection, grade separation of this intersection was identified as the needed improvement under 2030 No Build Alternative conditions. Therefore, since the BEP Alternative would contribute to the need for grade separation of the Great Mall/Montague intersection, it will contribute a "fair share" amount toward the implementation of this improvement.

*(13) Milpitas Boulevard and Montague Expressway**

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the PM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-2: Possible improvements include a second westbound left-turn lane. Though intersection operations would slightly improve with this improvement, the BEP Alternative's adverse effect to this intersection would not be mitigated. Due to the relatively high projected volumes, there are no feasible at-grade improvements to mitigate adverse effects at this intersection. Because the BEP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(16) Park Victoria Drive and Yosemite Drive

The level of service would be an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of Milpitas standards.

> Mitigation Measure TR-3: The necessary improvement to mitigate the BEP Alternative's adverse effect at this intersection consists of the addition of a second northbound left-turn lane. The implementation of this improvement would improve intersection level of service to an acceptable LOS D during the AM peak hour. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

(17) Old Oakland/Main Street and Montague Expressway (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in the V/C ratio of 0.01 or more during the AM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-4: There are no further feasible improvements beyond the planned Montague widening assumed under No Action conditions that can be implemented to improve intersection levels of service to acceptable levels. The North San Jose Development Plan (NSJDP) identified the impacts to the

intersection associated with its development as significant and unavoidable due to the lack of feasible mitigation measures. A traffic impact fee has been implemented as part of the NSJDP, but is only applicable to development within the NSJDP area. Development that impacts intersections within the NSJDP area is required to make a fair-share contribution towards identified improvements.

Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Action conditions. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(18) Trade Zone Boulevard and Montague Expressway (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in the V/C ratio of 0.01 or more during the PM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

Mitigation Measure TR-5: There are no further feasible improvements beyond the planned Montague widening assumed under No Action conditions that can be implemented to improve intersection levels of service to acceptable levels. The NSJDP identified the impacts to the intersection associated with its development as significant and unavoidable due to the lack of feasible mitigation measures. A traffic impact fee has been implemented as part of the NSJDP, but is only applicable to development within the NSJDP area. Development that impacts intersections within the NSJDP area is required to make a fair-share contribution towards identified improvements.

Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Action conditions. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

Summary

Listed below is a summary of the intersections adversely affected by the BEP Alternative and whether feasible mitigations are possible to mitigate the projected adverse affects:

(1) Great Mall Parkway and Montague Expressway* (AM only) – Potentially no cost effective feasible mitigation

(13) Milpitas Boulevard and Montague Expressway* (PM only) – Improved but does not meet CMP standards

(16) Park Victoria Drive and Yosemite Drive (AM only) – Substantial adverse effect mitigated

(17) Old Oakland/Main Street and Montague Expressway* (AM only) – Potentially no cost effective feasible mitigation

(18) Trade Zone Boulevard and Montague Expressway* (PM only) – Potentially no cost effective feasible mitigation

Berryessa Station

(2) Flickinger Avenue and Berryessa Road (No Cost Effective Feasible Mitigation)

The level of service would be LOS D and F during the AM and PM peak hours, respectively, under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during the AM peak hour and it would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the PM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

Mitigation Measure TR-6: There are no other feasible improvements that can be made at this intersection beyond those described for 2030 No Action conditions to mitigate project impacts. Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Action conditions. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(3) Lundy Avenue and Berryessa Road* (No Cost Effective Feasible Mitigation)

The level of service would be an acceptable LOS E under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS F during the AM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

Mitigation Measure TR-7: There are no cost effective feasible improvements that can be made beyond those described for 2030 No Build Alternative conditions to mitigate BEP Alternative's adverse effects. The necessary improvement to mitigate the BEP Alternative's adverse effect at this intersection to an acceptable level consists of the addition of a fourth westbound through lane on Berryessa Road. This improvement is not feasible due to ROW constraints. Because the BEP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(5) King Road and Mabury Road

The level of service would be an acceptable LOS D under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during the PM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-8: The necessary improvement to mitigate the BEP Alternative's adverse effect at this intersection to an acceptable level consists of the addition of a second westbound left-turn lane. The implementation of this improvement would improve intersection level of service to an acceptable LOS D.

(15) US 101 and Julian Street (No Cost Effective Feasible Mitigation)

The level of service would be an acceptable LOS D during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-9: There are no other feasible improvements that can be made at this intersection beyond those planned as part of the station development. VTA proposes that the intersection be added to the city's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a development project has significant traffic impacts at a designated Protected Intersection, the project may be approved if offsetting Transportation System Improvements are provided that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. As part of the development of the station, surrounding pedestrian, bicycle and transit facilities will be enhanced to serve the station and surrounding community.

(17) King Road and McKee Road (No Cost Effective Feasible Mitigation)

The level of service would be LOS E during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-10: There are no cost effective feasible improvements that can be made beyond those described for 2030 No Build Alternative conditions to mitigate adverse effects from the BEP Alternative. The necessary improvement to mitigate the BEP Alternative's adverse effect at this intersection

to an acceptable level consists of the addition of a third westbound through lane. However, this improvement would require the widening of McKee Road, which is not feasible due to ROW constraints. Because the BEP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(18) Capitol Avenue and McKee Road (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the adverse traffic effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

Mitigation Measure TR-11: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate adverse effects from the BEP Alternative. With the newly constructed Capitol LRT line, Capitol Avenue has been upgraded to its extent to allow for the operation of the LRT in its median. Further improvement of the intersection would not be compatible with LRT operations. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(26) McLaughlin Avenue and Story Road

The level of service would be an unacceptable LOS E during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would

experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ration of 0.01 or more under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-12: Possible improvements include the addition of a second northbound left-turn lane. Though adverse effects would be mitigated and intersection level of service would improve with this improvement, the level of service would remain an unacceptable LOS E during the PM peak hour. The necessary improvement to improve intersection level of service to an acceptable level consists of the addition of a third southbound left-turn lane and widening of Story Road from six to eight through lanes. This improvement would require the widening of both McLaughlin Avenue and Story Road, which is infeasible due to ROW constraints.

(27) King Road and Story Road (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS E under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the AM peak hour under the BEP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-13: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate adverse effects from the BEP Alternative. The necessary improvement to mitigate the BEP Alternative's effect at this intersection to an acceptable level consists of the widening of King Road from four to six through lanes. The widening of King Road is not feasible due to ROW constraints. Because the BEP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(30) Capitol Expressway and Capitol Avenue (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the BEP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-14: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate adverse effects from the BEP Alternative. With the newly constructed Capitol LRT line, Capitol Avenue has been upgraded to its extent to allow for the operation of the LRT in its median. Further

improvement of the intersection would not be compatible with LRT operations. VTA proposes that the intersection be added to the city's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a project has significant traffic impacts at a designated Protected Intersection, the project should provide offsetting Transportation System Improvements that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

Summary

Listed below is a summary of the adversely affected intersections and whether feasible mitigations are possible to mitigate the projected adverse affects:

(2) Flickinger Avenue and Berryessa Road (AM & PM) – Potentially no cost effective feasible mitigation

(3) Lundy Avenue and Berryessa Road* (AM only) – Potentially no cost effective feasible mitigation

(5) King Road and Mabury Road (PM only) – Substantial adverse effect mitigated

(15) US 101 and Julian Street (PM only) – Potentially no cost effective feasible mitigation

(17) King Road and McKee Road (PM only) – Potentially no cost effective feasible mitigation

(18) Capitol Avenue and McKee Road (PM only) – Potentially no cost effective feasible mitigation

(26) McLaughlin Avenue and Story Road (PM only) – Mitigated (better than 2030 No Build Alternative with Improvements) but does not meet City standards

(27) King Road and Story Road (AM only) – Potentially no cost effective feasible mitigation

(30) Capitol Expressway and Capitol Avenue* (PM only) – Potentially no cost effective feasible mitigation

3.7.7 SVRTP ALTERNATIVE

The SVRTP Alternative evaluates year 2030 traffic conditions with the addition of the six-station Build Alternative. The BART Stations included under the SVRTP Alternative are:

1. Milpitas Station
2. Berryessa Station
3. Alum Rock Station
4. Downtown San Jose Station
5. Diridon/Arena Station
6. Santa Clara Station

Traffic volumes under the SVRTP Alternative represent Year 2030 No Build Alternative traffic volumes with the addition of traffic projected to be generated by the proposed Stations, which include PNR, KNR, and bus trips to both stations, under the SVRTP Alternative. The effects of the SVRTP Alternative and the proposed Stations on the roadway network were evaluated and compared to the Year 2030 No Build Alternative conditions with Improvements in order to identify negative adverse affects on the roadways network (both freeways and intersections) directly associated with this alternative. It should be noted that an analysis of the Downtown Station is not necessary since there is no vehicular access planned to this station.

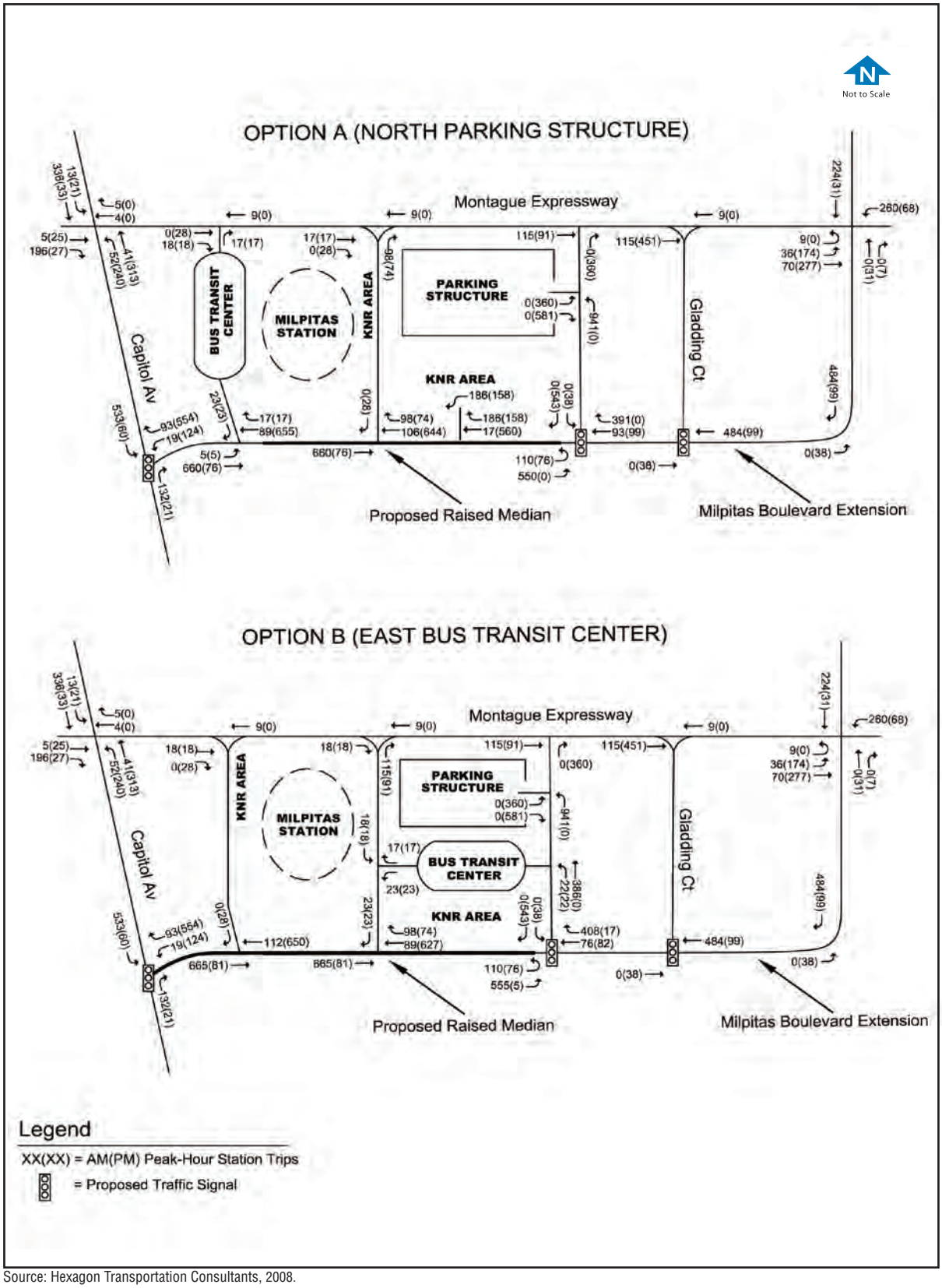
Station Access and Circulation

Milpitas Station

Site access and on-site circulation at the Milpitas Station under the SVRTP Alternative would be the same as described under the BEP Alternative. The SVRTP Alternative is estimated to generate a total of 1,393 AM and PM peak hour trips. The Milpitas Station would provide a parking structure with approximately 3,140 parking spaces under the SVRTP Alternative. The total trips to and from the Milpitas Station under the SVRTP Alternative are shown on Figure 3-24. This figure shows the project trip assignment at the access intersections and internal intersections of the site.

Levels of service and operations were evaluated for the following three intersections, which would serve as primary entrances to the station facilities or key points of circulation around the site. Results of the analysis indicate that all three intersections would require improvements or modifications to serve station traffic.

Milpitas Boulevard and Montague Expressway – The planned widening of Montague Expressway will not be adequate to serve 2030 projected traffic volumes. Other improvements identified to serve the projected 2030 traffic volumes (with or without the SVRTP Alternative) include the addition of a south leg providing one left-turn lane, one through lane, and one right-turn lane, a southbound through lane, and an eastbound right-turn lane. There are no other cost effective feasible improvements beyond those described under the 2030 No Build Alternative with Improvements that can be made to



Source: Hexagon Transportation Consultants, 2008.

Figure 3-24: Milpitas Station Site Access and Circulation

the intersection to improve operating levels to acceptable conditions. Improvements would be made to the intersection as part of the SVRTP Alternative to serve station traffic, but these improvements would not substantially improve intersection operations. The planned SVRTP Alternative improvements consist of the addition of a second westbound left-turn lane. The necessary improvements to improve operating levels to acceptable conditions would require grade separation of the intersection.

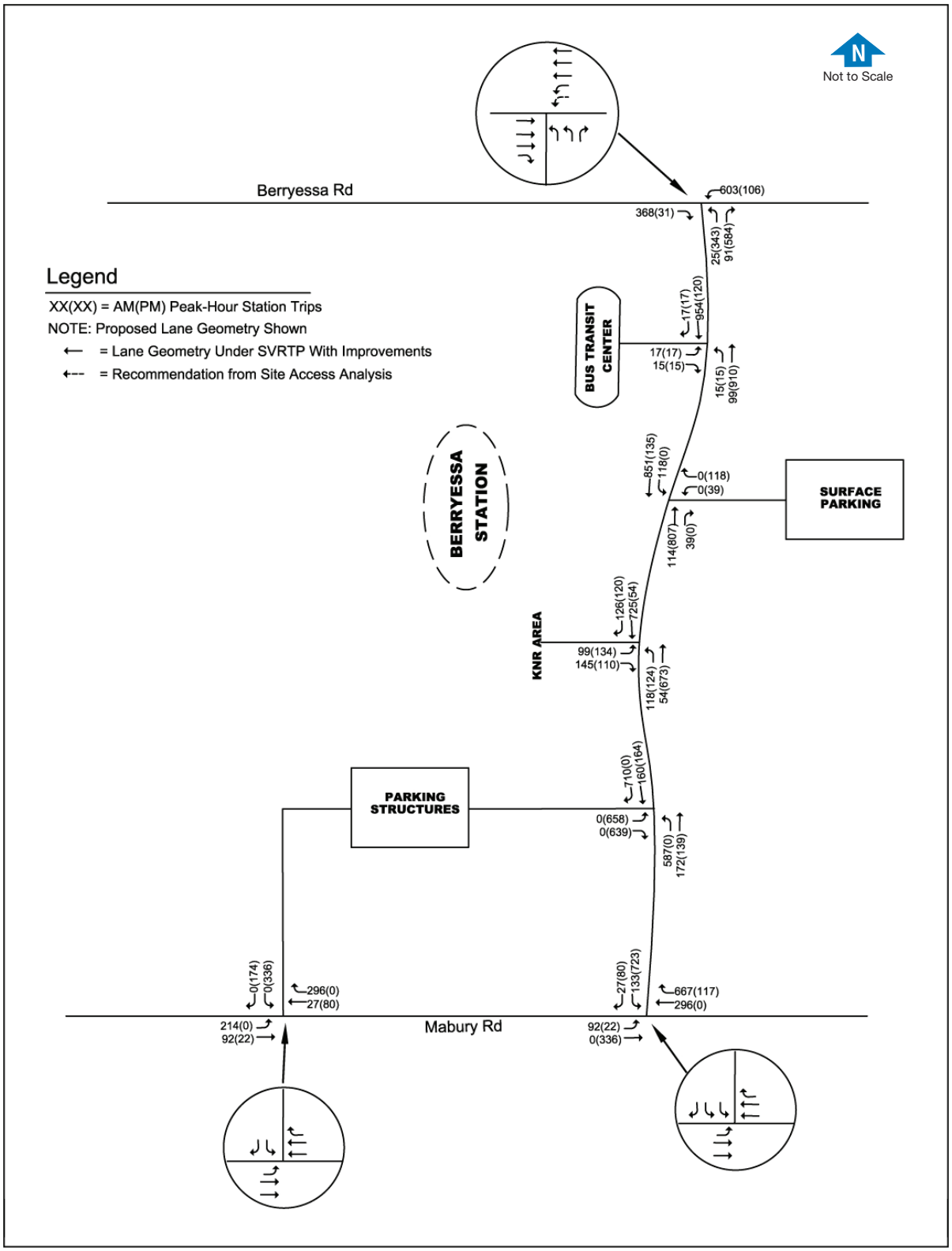
Great Mall/Capitol Avenue and Montague Expressway – The planned widening of Montague Expressway will not be adequate to serve 2030 projected traffic volumes. There are no other cost effective feasible improvements beyond those described under the 2030 No Build Alternative with Improvements that can be made to the intersection to improve operating levels to acceptable conditions. The necessary improvements to improve operating levels to acceptable conditions would require grade separation of the intersection.

Capitol Avenue and Milpitas Boulevard – As part of the SVRTP, a new signalized intersection on Capitol Avenue with the Milpitas Boulevard extension, just south of Montague Expressway, would be constructed to serve as a station entrance. It was assumed in this analysis that the intersection would be constructed to include three through lanes and two left-turn lanes on the north approach, one shared through and left-turn lane and one right-turn lane on the east approach, and one left-turn lane, two through lanes and one right-turn lane on the south approach. Although the west leg of this intersection also would be developed, the lane configuration on this leg would be dictated by the future demand on this approach. Nevertheless, level of service calculations at the intersection of Capitol/Milpitas Boulevard show that under the SVRTP Alternative conditions, this intersection would operate at acceptable levels (LOS C) with the proposed lane configuration. The southbound and the westbound left-turn queue lengths are expected to be approximately 300 feet per lane (600 feet total) and 175 feet long, respectively (assuming the length of a vehicle to be 25 feet). The eastbound right-turn queue length was calculated to be approximately 500 feet long. Based on the projected volumes at this intersection, these are the minimum queue storage capacities that should be provided for the corresponding movements in order to adequately serve future traffic volumes.

Berryessa Station

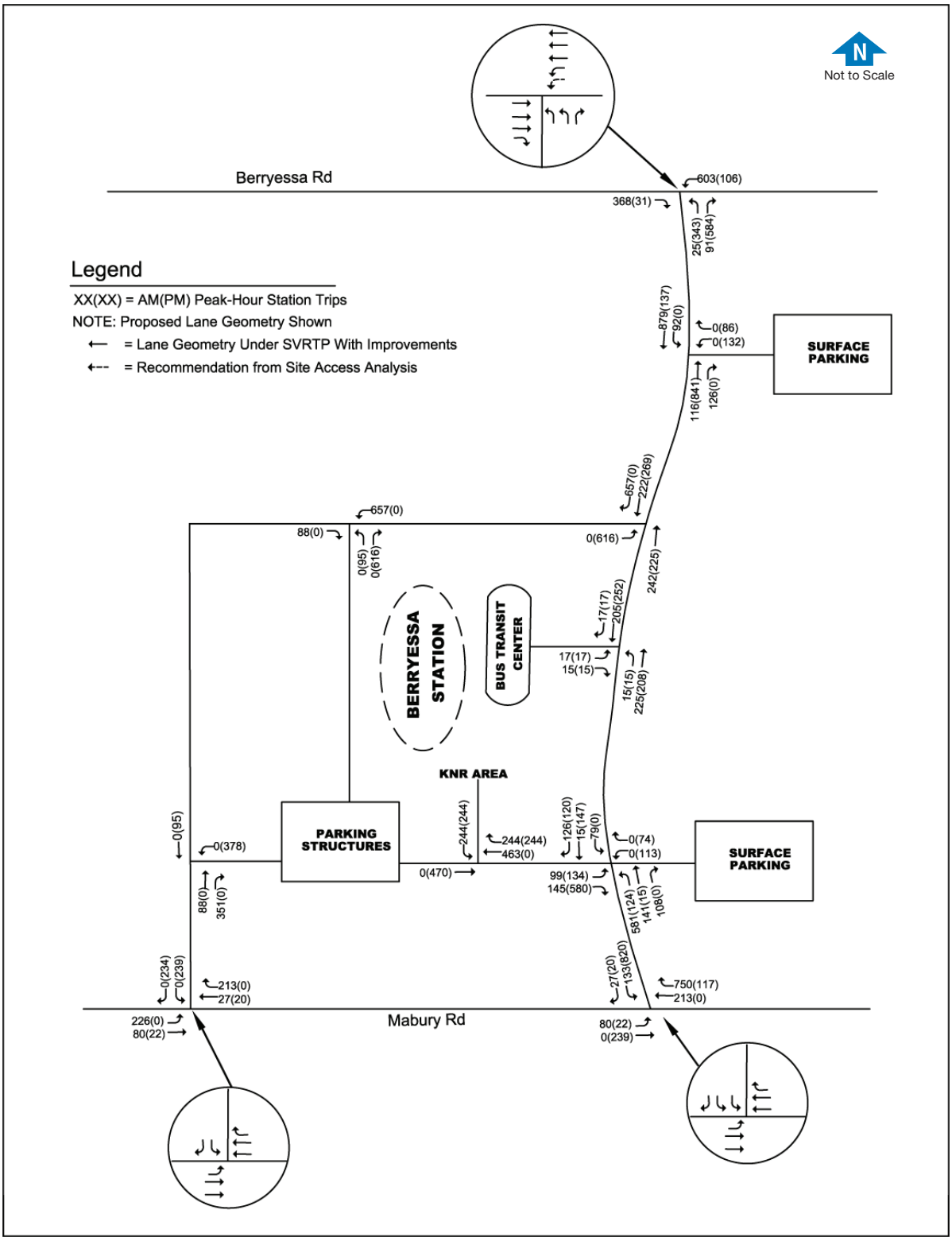
Site access and on-site circulation at the Berryessa Station under the SVRTP Alternative would be the same as described under the BEP Alternative. The SVRTP Alternative is estimated to generate a total of 2,516 AM and PM peak hour trips (including PNR, KNR, and bus trips). The Berryessa Station would provide a parking structure with approximately 6,590 parking spaces under the SVRTP Alternative. The total SVRTP Alternative trips to and from the Berryessa Station are shown for both the North and South options on Figure 3-25a and 3-25b. These figures show the project trip assignment at the access intersections and internal intersections of the site.

Levels of service and operations were evaluated for the proposed signalized intersections of Berryessa Road/Berryessa Station Way and Mabury Road/Berryessa



Source: Hexagon Transportation Consultants, Inc., 2009.

Figure 3-25a: Berryessa North Station Site Access and Circulation



Source: Hexagon Transportation Consultants, Inc., 2009.

Figure 3-25b: Berryessa South Station Site Access and Circulation

Station Way which would serve as entrances to the station facilities. It should be noted that since the intersections of Berryessa Station Way with Berryessa and Mabury Roads do not currently exist, non-station traffic volumes on these roadways were obtained from model projections. The proposed lane configurations at each of the access intersections and vehicle queues are described below.

Berryessa Road and Berryessa Station Way – As part of the SVRTP Alternative, a new signalized intersection on Berryessa Road, just east of the existing rail line, would be constructed to serve as a station entrance. The intersection would be constructed to include two left-turn lanes and one right-turn lane on the south approach, one left-turn lane and three through lanes on the east approach, and three through lanes and one right-turn lane on the west approach.

The level of service analysis at the intersection of Berryessa Road and Berryessa Station Way indicates that this intersection would operate at LOS B and C during the AM and PM peak hours, respectively, under the SVRTP Alternative conditions.

The intersection operations analysis indicates that the westbound left-turn lane must provide at least 600 feet of queue storage capacity (assuming the length of a vehicle to be 25 feet). Though the intersection is projected to operate at acceptable levels, it is recommended that a second westbound left-turn lane be provided. This would help serve station traffic more efficiently and avoid lengthy vehicle queues for this movement. The northbound left-turn lanes must be at least 225 feet each in order to adequately serve future traffic volumes associated with the SVRTP Alternative.

Mabury Road and Berryessa Station Way – As part of the SVRTP Alternative, a new signalized intersection on Mabury Road, just east of the existing rail line for the North Option and just west of the existing rail line for the South Option, would be constructed to serve as a station entrance. The intersection would be constructed to include two left-turn lanes and one right-turn lane on the north approach, one left-turn lane and two through lanes on the on the west approach, and two through lanes and one right-turn lane on the east approach.

The intersection operations analysis indicates that the eastbound left-turn lane must provide at least 350 feet of queue storage capacity (assuming the length of a vehicle to be 25 feet). The southbound left-turn lanes must be at least 525 feet each in order to adequately serve the future traffic volumes associated with this alternative.

Alum Rock Station

The proposed Alum Rock station site is located on the east side of 28th Street, just south of Julian Street. The station location would provide for convenient access to US 101 via the Julian Street and Santa Clara Street interchanges. A parking structure providing approximately 2,500 parking spaces would be located at the station site. KNR drop-off points would be provided along 28th Street and a bus transit center would be located along a new station access roadway that would provide access to both the proposed parking structure and future transit facilities on site.

Julian Street and Santa Clara Street would provide primary access to the station site from the local roadway system via 28th Street. Both roadways provide regional access from US 101.

Twenty-Eighth Street would provide direct access to all station facilities. This roadway forms the western boundary of the station site and provides access from both Julian Street and Santa Clara Street. The Alum Rock Station site plan shows 28th Street to be widened to two lanes in each direction with a center median from Santa Clara Street to Julian Street.

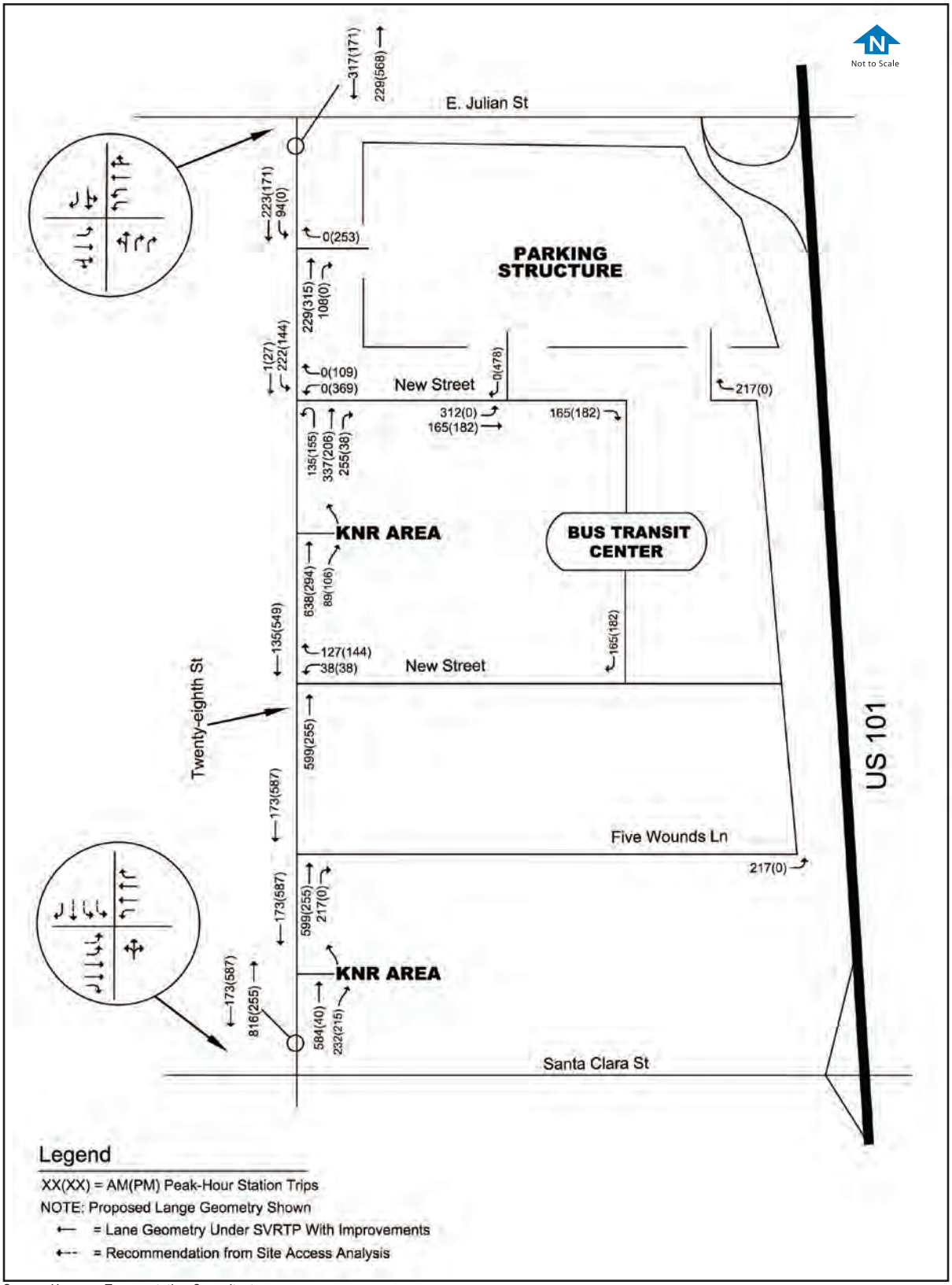
Three new intersections are being proposed along 28th Street between Santa Clara Street and Julian Street. The northernmost intersection would be at the parking structure entrance. The other two intersections would be at a new proposed loop roadway, located approximately mid-way between Julian Street and Santa Clara Street and providing access to the parking garage and the bus transit center. A fourth intersection, the existing intersection with Five Wounds Lane, would remain and would provide access to the parking structure to traffic traveling northbound on 28th Street via 30th Street, an existing roadway.

The VTA 2030 (SVRTC) traffic model was used to obtain station-generated traffic to and from the main gateways to the station area. The Alum Rock Station is estimated to generate a total of 1,525 AM and PM peak hour trips (including PNR, KNR, and bus trips) under the SVRTP Alternative. The total number of trips to and from the Alum Rock Station under the SVRTP Alternative is shown on Figure 3-26. This figure shows the project trip assignment at the access intersections and internal intersections of the site.

In addition, levels of service and operations were evaluated for the intersections of 28th Street/Julian Street and 28th Street/Santa Clara Street, which would serve as primary entrances to the station facilities. Level of service analysis indicates that both of these intersections would operate at acceptable levels under the SVRTP Alternative conditions. The proposed lane configurations at each of the intersections to serve projected station traffic and vehicle queues are described below.

28th Street and Julian Street – As part of the SVRTP Alternative, the south leg of this intersection would be modified to provide one shared left-turn and through lane, and two right-turn lanes. Also, the second westbound left-turn lane proposed as a mitigation improvement was included in this analysis.

The intersection operations analysis indicates that each of the two westbound left-turn lanes must provide at least 550 feet of queue storage capacity (assuming the length of a vehicle to be 25 feet). However, it should be noted that due to the eastern intersection of US 101/Julian, the length of the westbound left-turn pocket is limited to approximately 125 feet Therefore, westbound station traffic would have to store along Julian Street. For the northbound approach, a queue length of approximately 325 is projected for the left/through movement. Queue storage for the left/through movement is provided by the



Source: Hexagon Transportation Consultants, 2008.

Figure 3-26: Alum Rock Station Site Access and Circulation

entire length of the street from the parking structure entrance to Julian Street. The northbound right-turn lanes must provide at least 450 feet of queue storage capacity each.

28th Street and Santa Clara Street – this intersection would operate at an acceptable LOS B and C during the AM and PM peak hours, respectively, under the SVRTP Alternative conditions.

Although the intersection is projected to operate at acceptable levels, the eastbound left-turn pocket must provide at least 375 feet of queue storage capacity. Due to the adjacent western intersection of 27th/Santa Clara, the length of the eastbound left-turn pocket is limited to approximately 125 feet. Therefore, it is recommended that a second eastbound left-turn lane be provided to better serve the projected future volumes and avoid extensive left-turn queue spill outs. The analysis also showed that the southbound left-turn lane must provide at least at least 550 feet of queue storage capacity for the southbound left-turn and through movements. It is recommended that two exclusive southbound left-turn lanes be provided at this intersection to in order to serve the projected future traffic volumes.

Diridon/Arena Station

The proposed station site is located near the existing Diridon Caltrain Station. The station location would provide for convenient access to SR-87 via the Santa Clara Street/Julian Street interchanges and I-280 via Bird Avenue. Station facilities would be located on the south side of Santa Clara Street, with a 1,300-space parking garage located between Autumn and Montgomery Streets, a bus transit center west of Cahill Street, and the Diridon/Arena Station in a subway parallel to Santa Clara Street and between Autumn and White Streets, all in the vicinity of the Diridon Caltrain Station.

Several roadways, including Santa Clara Street, Julian Street, and Bird Avenue, will provide primary access to the station site from the local roadway system. Both Santa Clara Street and Julian Street provide access from SR-87 via interchanges. From I-280, the station site is accessible via SR-87 and an interchange at Bird Avenue.

Diridon/Arena Station facilities would be located throughout the area surrounding the existing Diridon Station. The station platform would be located south of Santa Clara Street from Autumn Street to White Street. According to the Diridon/Arena Station site plan, the parking garage would be located between Montgomery and Autumn Streets. Since both of these roadways are planned to be two way roadways (they are currently one-way couplets), it was assumed in the analysis that direct access to the parking garage would be provided directly by both Montgomery and Autumns Streets. The bus transit center is shown to be located on the west side of Cahill Street near the exiting Diridon Caltrain Station, with direct access via Cahill Street. Since the site plan does not show KNR drop-off points, it was assumed that the KNR drop-off points serving the station would be located at the same location as the bus transit center. Based on

locations of the proposed station facilities, the existing signalized intersections of Cahill Street, Montgomery Street, and Autumn Street with Santa Clara Street and the intersection of Montgomery/Park would serve as primary access points to the station.

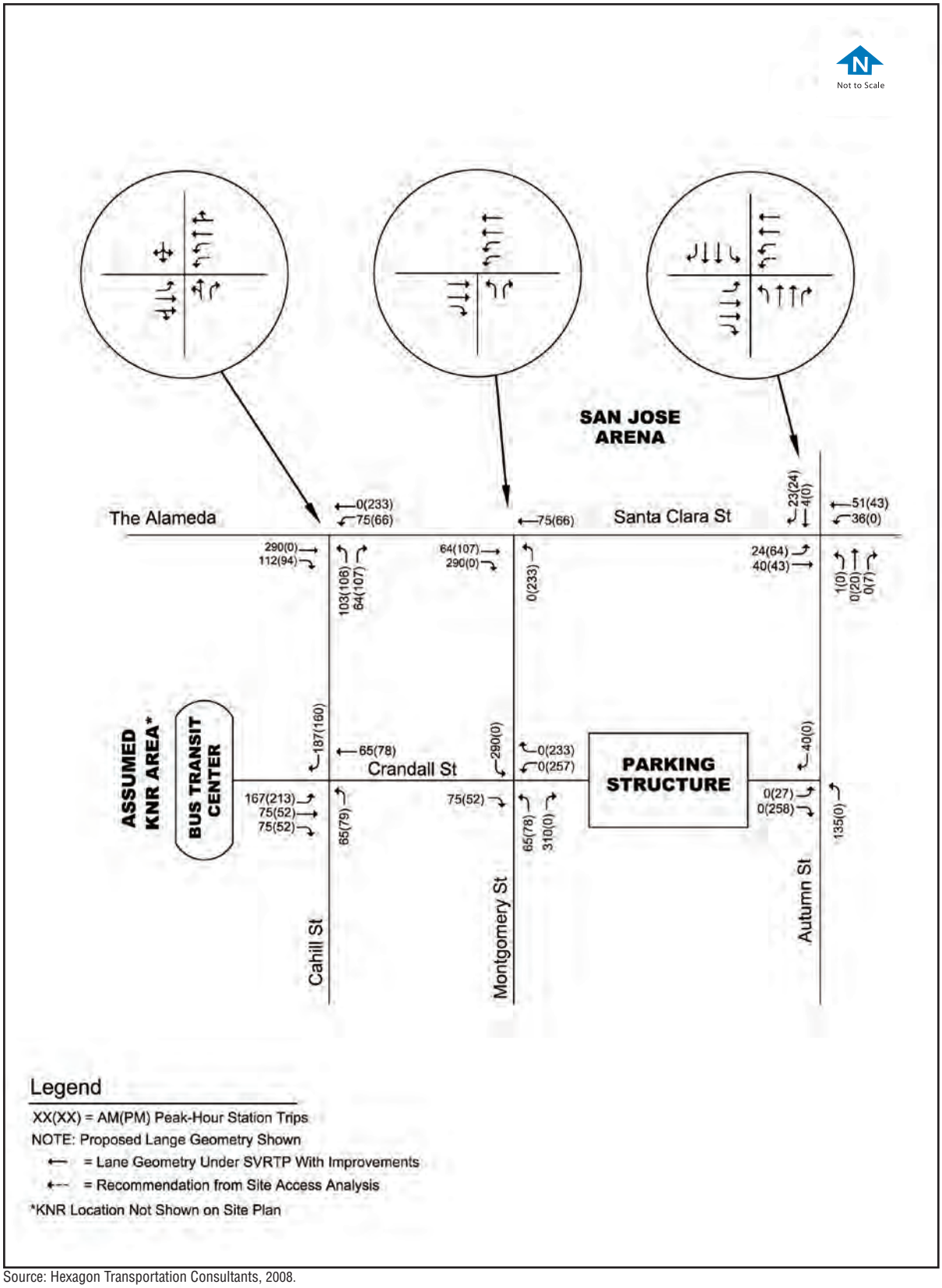
The VTA 2030 (SVRTC) traffic model was used to obtain station-generated traffic to and from the main gateways to the station area. The Diridon/Arena Station is estimated to generate a total of 1,409 AM and PM peak hour trips (including PNR, KNR, and bus trips) under the SVRTP Alternative. The total number of trips to and from the Diridon/Arena Station under the SVRTP Alternative is shown on Figure 3-27. This figure shows the project trip assignment at the access intersections and internal intersections of the site.

In addition, levels of service and operations were evaluated for the intersections of Cahill Street/Santa Clara Street, Montgomery Street/Santa Clara Street, Autumn Street/Santa Clara Street, and Montgomery Street/Park Avenue. These intersections would serve as primary access points to the station facilities. The level of service analysis shows that all four intersections are projected to operate at acceptable levels with the addition of the station traffic. However, the intersection operations analysis projected left-turn queue storage capacity for certain movements to be inadequate under future conditions with station traffic. The results of the operations analysis are described below.

Cahill Street and Santa Clara Street – The level of service analysis indicates that this intersection would operate at an acceptable LOS C and D during the AM and PM peak hours, respectively, under the proposed SVRTP Alternative and the addition of the Diridon/Arena Station trips. The operations analysis showed that the westbound left-turn pocket on Santa Clara Street to southbound Cahill Street must provide at least 200 feet of queue storage capacity (assuming the length of a vehicle to be 25 feet). Due to the adjacent eastern intersection of Montgomery/Santa Clara, the length of this pocket is limited to 180 feet. Therefore, the projected westbound left-turn queue at this location could potentially spill out of the existing left-turn pocket by one vehicle length once or twice during the peak hour.

The northbound left-turn pocket on Cahill Street to westbound Santa Clara Street must provide at least 300 feet of queue storage capacity. Currently, northbound left-turning traffic at this location can store along the entire length of the street since the northbound through and left-turning traffic share a lane.

Montgomery Street and Santa Clara Street – The level of service analysis indicates that this intersection would operate at an acceptable LOS C during both the AM and PM peak hours under the proposed SVRTP Alternative and the addition of the Diridon/Arena Station trips. The operations analysis showed that each of the westbound left-turn pockets on Santa Clara Street to southbound Montgomery Street must provide at least 275 feet of queue storage capacity (a total of 550 feet of storage capacity). Due to the adjacent eastern intersection of Autumn/Santa Clara and the back-to-back left-turn pockets, the length of the westbound left-turn pockets at



Source: Hexagon Transportation Consultants, 2008.

Figure 3-27: Diridon Station Site Access and Circulation

Montgomery/Santa Clara is limited to 100 feet each. Therefore, the projected westbound left-turn queue length at this location could potentially spill out of the existing left-turn pocket during the peak hour. Extending these pockets is not possible and the addition of a third westbound left-turn lane will require the infeasible widening of Montgomery Street.

Since Montgomery Street is currently a one-way southbound roadway, there is no northbound left-turn access at Santa Clara Street. However, Montgomery is planned to be converted to a two-way roadway, with a full-access intersection at Santa Clara Street. The operations analysis showed that at least 650 feet of queue storage capacity must be provided from northbound Montgomery Street to westbound Santa Clara Street to serve the projected traffic volumes. The northbound left-turn movement would be served most efficiently with two left-turn lanes.

Autumn Street and Santa Clara Street – The level of service analysis indicates that this intersection would operate at an acceptable LOS D during both the AM and PM peak hours under the proposed SVRTP Alternative and the addition of the Diridon/Arena Station trips. Since Autumn Street is currently a one-way northbound street, there is no westbound left-turn access at this location. However, Autumn Street is planned to be converted to a two-way roadway, with a full-access intersection at Santa Clara Street. The operations analysis showed that at least 500 feet of queue storage capacity must be provided from westbound Santa Clara Street to southbound Autumn Street to serve the projected traffic volumes. Due to the eastern intersection of Delmas Avenue/Santa Clara Street, the length of this pocket would be limited to 240 feet. Therefore, two westbound left-turn pockets at Autumn/Santa Clara should be provided to try to meet the projected queue storage length of 500 feet.

At least 550 feet of queue storage capacity should be provided for the northbound left-turn movement. Currently, the northbound left-turning traffic at this intersection can store along the entire length of the street since Autumn Street is currently a one-way northbound roadway. In addition, the projected queue length for the eastbound left-turn movement was calculated to be approximately 450 feet long. Due to the adjacent western intersection of Montgomery/Santa Clara and the back-to-back left-turn pockets, the existing eastbound left-turn pocket is limited to approximately 60 feet long. A second left-turn pocket should be provided in order to provide additional left-turn queue storage capacity. Addition of more than two eastbound left-turn lanes at this location would require the infeasible widening of Autumn Street, north of Santa Clara Street.

Montgomery Street and Park Avenue – The level of service analysis indicates that this intersection would operate at an acceptable LOS C during both the AM and PM peak hours under the proposed SVRTP Alternative and the addition of the Diridon/Arena Station trips. The operations analysis showed that the eastbound left-turn pocket on Park Avenue to northbound Montgomery/Autumn Street must provide at least 375 feet of queue storage capacity. The existing left-turn pocket for this movement is approximately 325 feet long. The existing westbound left-turn pocket should be extended to provide at least 375 feet of queue storage capacity to serve to projected future traffic volumes.

The southbound left-turn pocket on Montgomery Street to eastbound Park Avenue must provide at least 125 feet of queue storage capacity. The existing left-turn pocket for this movement is currently approximately 315 feet long. Therefore, adequate queue storage capacity would be provided for the southbound left-turn movement at this location.

Santa Clara Station

The proposed Santa Clara Station site is located west of the Coleman Avenue and Brokaw Road intersection. The station facility layout uses the intersection of Coleman Avenue and Brokaw Road as its primary access. A second access point providing inbound access to buses is shown on the site plan north of the intersection of Coleman/Brokaw. However, as a conservative approach, it was assumed in this analysis that all station traffic would utilize the main station access point at Coleman/Brokaw.

A pedestrian connection between the Santa Clara Station and existing Caltrain Station is being proposed. With the proposed pedestrian connection it can be expected that the majority of KNR BART commuters would utilize the Caltrain Station as a drop-off point. This would result in an increase of vehicular traffic at the Caltrain Station, and therefore, is also discussed in this section.

El Camino Real and Coleman Avenue provide primary access to the Santa Clara Station site from the local roadway system. Both roadways provide regional access from I-880 and US 101. From I-880, the station area is accessible via both the Coleman Avenue and The Alameda interchanges. Access to and from US 101 is provided via an interchange at De La Cruz Boulevard.

Benton Street would serve as a vital access route to both the Caltrain and Santa Clara Stations from residential areas surrounding the station as well as regional traffic from arterials. Benton Street provides access to the El Camino-De la Cruz over-crossing that connects Coleman Avenue/De La Cruz Boulevard to the area west of El Camino/The Alameda. Benton Street runs in an east west manner through downtown and residential areas before terminating at the Caltrain Station site. Although traffic volumes along Benton Street are projected to increase with the addition of the Santa Clara Station, no level of service adverse affects to intersections along Benton Street are projected.

The station facilities would be located north of Brokaw Road, with access provided directly from Brokaw Road. The site plan shows the bus transit center to be located west of the parking structure, north of Brokaw Road. South of the parking structure, along Brokaw Road, the KNR area is located. Although Brokaw Road would provide access to both vehicular and bus traffic, a second inbound access point for buses would be provided north of the Coleman/Brokaw intersection. It can be expected that inbound bus traffic coming from southbound Coleman Avenue would utilize the north driveway. However, as a conservative approach and in order to analyze the worst case scenario, it was assumed in the analysis that all station traffic would utilize the intersection of Coleman/Brokaw to access the station facilities. Both the bus transit center and the

KNR area would be accessible directly from Brokaw Road, while the parking garage would have access via a perimeter garage roadway connecting to Brokaw Road east of the parking structure.

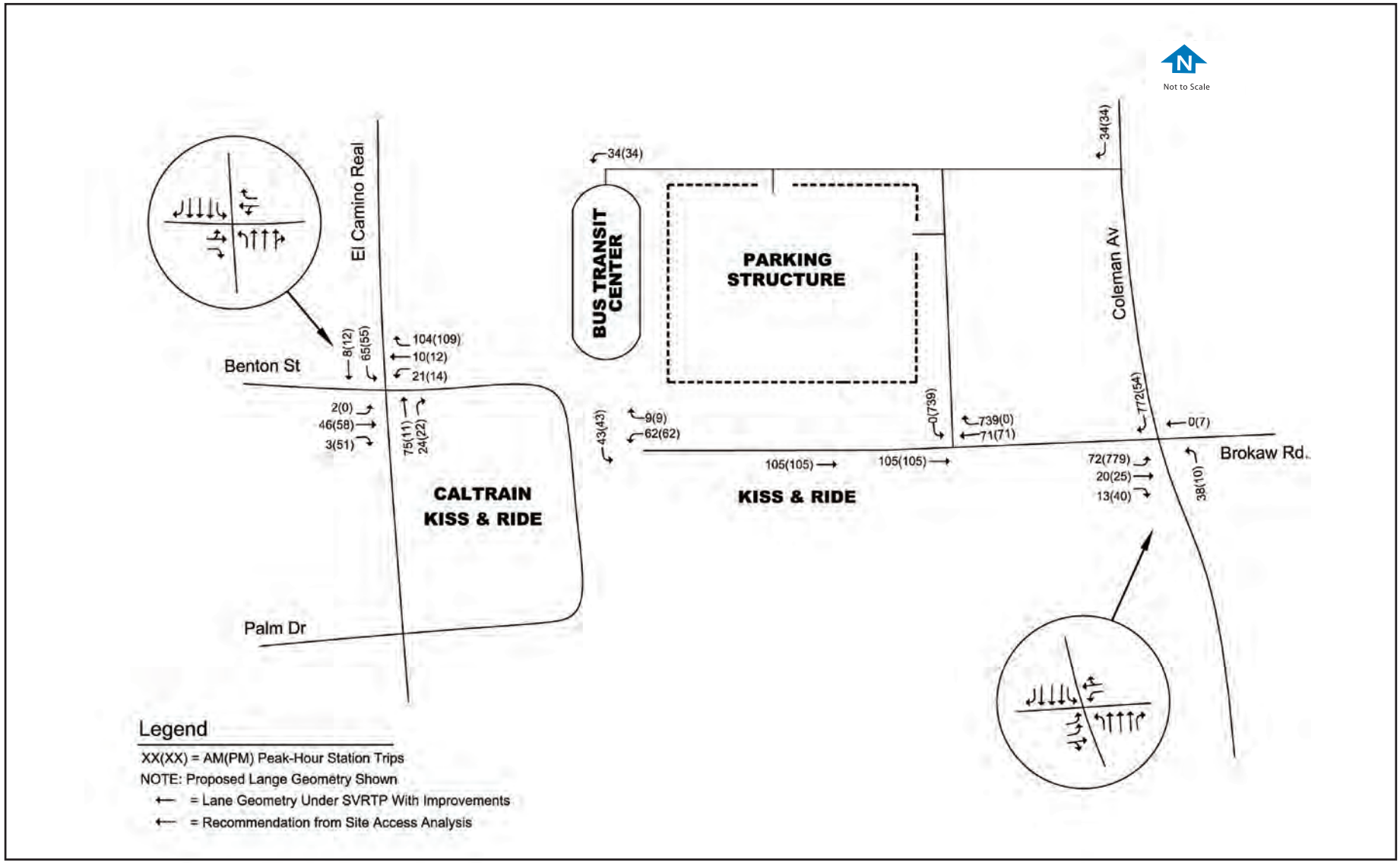
Level of service analysis at the new intersection of Brokaw Road and the garage access roadway were conducted in order to project operating levels at this internal intersection. It was assumed that this intersection would provide two eastbound lanes, two westbound lanes, and two southbound lanes (one left-turn and one shared right-and-left-turn lane). In addition, the analysis included only the projected Santa Clara Station traffic (traffic from any other potential future development along Brokaw Road was not included), with all PNR traffic accessing the parking garage in the morning by making a westbound right-turn and all the PNR traffic leaving the parking garage in the evening by making a southbound left-turn at this intersection. Both the KNR and bus traffic would show up as through movements along Brokaw Road. With all these assumptions, the level of service analysis indicates that, when controlled by a four-way stop, this intersection would operate at acceptable levels (LOS C) during both peak hours. However, if only one southbound left-turn lane is provided, the PM peak hour level of service would operate at an unacceptable LOS E. Therefore, in conjunction with a four-way stop control, two southbound left-turn lanes must be provided at the intersection in order to operate at acceptable levels. A traffic signal would be required for the intersection to operate at acceptable levels if only one southbound left-turn lane is provided. It should also be noted that with the addition of more conflicting movement volumes (station traffic making eastbound left-turn movements for example); the intersection's levels of operation also would deteriorate. In this case, a traffic signal would improve operating levels.

The VTA 2030 (SVRTC) traffic model was used to obtain station-generated traffic to and from the main gateways to the station area. The Santa Clara Station is estimated to generate a total of 1,219 AM and PM peak hour trips (including PNR, KNR, and bus trips) under the SVRTP Alternative. The total number of trips to and from the Santa Clara Station under the SVRTP Alternative are shown on Figure 3-28. This figure shows the project trip assignment at the access intersections and internal intersections of the site.

Levels of service and operations were evaluated for the intersections of Coleman Avenue/Brokaw Road and El Camino Real/Benton Street that would serve as primary entrances to the station facilities.

Results of the analysis indicate that both intersections would require improvements or modifications to serve station traffic. The proposed improvements to each of the intersections to serve projected traffic volumes and vehicle queues are described below.

Coleman Avenue and Brokaw Road - As discussed earlier, the addition of a second eastbound left-turn lane would be required to serve station traffic. Though the identified improvement will mitigate adverse affects from the SVRTP Alternative based on level of service criteria, in addition, these left-turn pockets must provide adequate left-turn queue storage capacity for this movement. Each of these pockets must be at least 525



Source: Hexagon Transportation Consultants, 2008.

Figure 3-28: Santa Clara Station Site Access and Circulation

feet in length, for a total of 1,050 feet of queue storage length (assuming the length of a vehicle to be 25 feet). Likewise, the northbound left-turn lane must provide at least 325 feet of queue storage capacity. This will help serve station traffic more efficiently and avoid lengthy vehicle queues for these movements.

El Camino Real and Benton Street – Though level of service calculations indicate the intersection would operate at acceptable levels under the SVRTP Alternative conditions, it is recommended that exclusive eastbound and westbound right-turn lanes be added to the intersection to avoid lengthy vehicle queues. In addition, the southbound left-turn lane should provide at least 175 feet of left-turn queue storage capacity to serve projected future traffic volumes.

Freeway Volumes and Levels of Service

SVRTP Alternative conditions traffic volumes on freeway segments were established by adding to 2030 No Build Alternative freeway volumes the estimated station trips on freeway segments.

The results of the freeway segment analysis under the SVRTP Alternative for the proposed BART Stations are summarized in Table 3-37. The results show that 72 of the 96 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one of the peak hours under the SVRTP Alternative.

The SVRTP Alternative would have an adverse effect on 9 of the 96 study freeway segments.

Overall, the freeway levels of service is projected to remain unchanged from 2030 No Build Alternative conditions (there is no change in segments' levels of service with the addition of the station trips). The results are described by proposed Station area below.

Table 3-37: SVRTP Alternative Freeway Levels of Service Results Summary

Station	Number of Study Freeway Segments	SVRTP Alternative Unacceptable LOS Segments	SVRTP Alternative Impacted Freeway Segments
Milpitas	20	10	0
Berryessa	12	9	2
Alum Rock	20	15	7
Diridon/Arena	18	16	0
Santa Clara	26	22	0
Total:	96	72	9

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station

In the vicinity of the Milpitas Station, the freeway segment analysis shows that 10 of the 20 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under the SVRTP Alternative. These are the same segments projected to operate at unacceptable levels under the BEP Alternative (see previous section).

Since the SVRTP Alternative would not add traffic representing one percent or more of the segment's capacity to any of the study freeway segments projected to operate at LOS F, none of the freeway segments analyzed in the vicinity of the Milpitas Station would be adversely affected by the SVRTP Alternative, according to county CMP level of service standards for freeways. The study freeway segments projected to operate at unacceptable LOS F under the SVRTP Alternative are shown graphically on Figure 3-29.

Berryessa Station

In the vicinity of the Berryessa Station, the freeway segment analysis shows that 9 of the 12 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under the SVRTP Alternative. The SVRTP Alternative is projected to have an adverse effect on two of the 9 directional freeway segments identified to operate at LOS F, according to the CMP definition of freeway adverse affects. The segments include:

US 101, McKee Road to Mabury Road, NB/AM peak hour (adverse effect)

US 101, Mabury Road to McKee Road, SB/PM peak hour (adverse effect)

US 101, Mabury Road to Oakland Road, NB/AM peak hour

US 101, Oakland Road to Mabury Road, SB/PM peak hour

US 101, Oakland Road to I-880, NB/AM peak hour

US 101, I-880 to Oakland Road, SB/PM peak hour

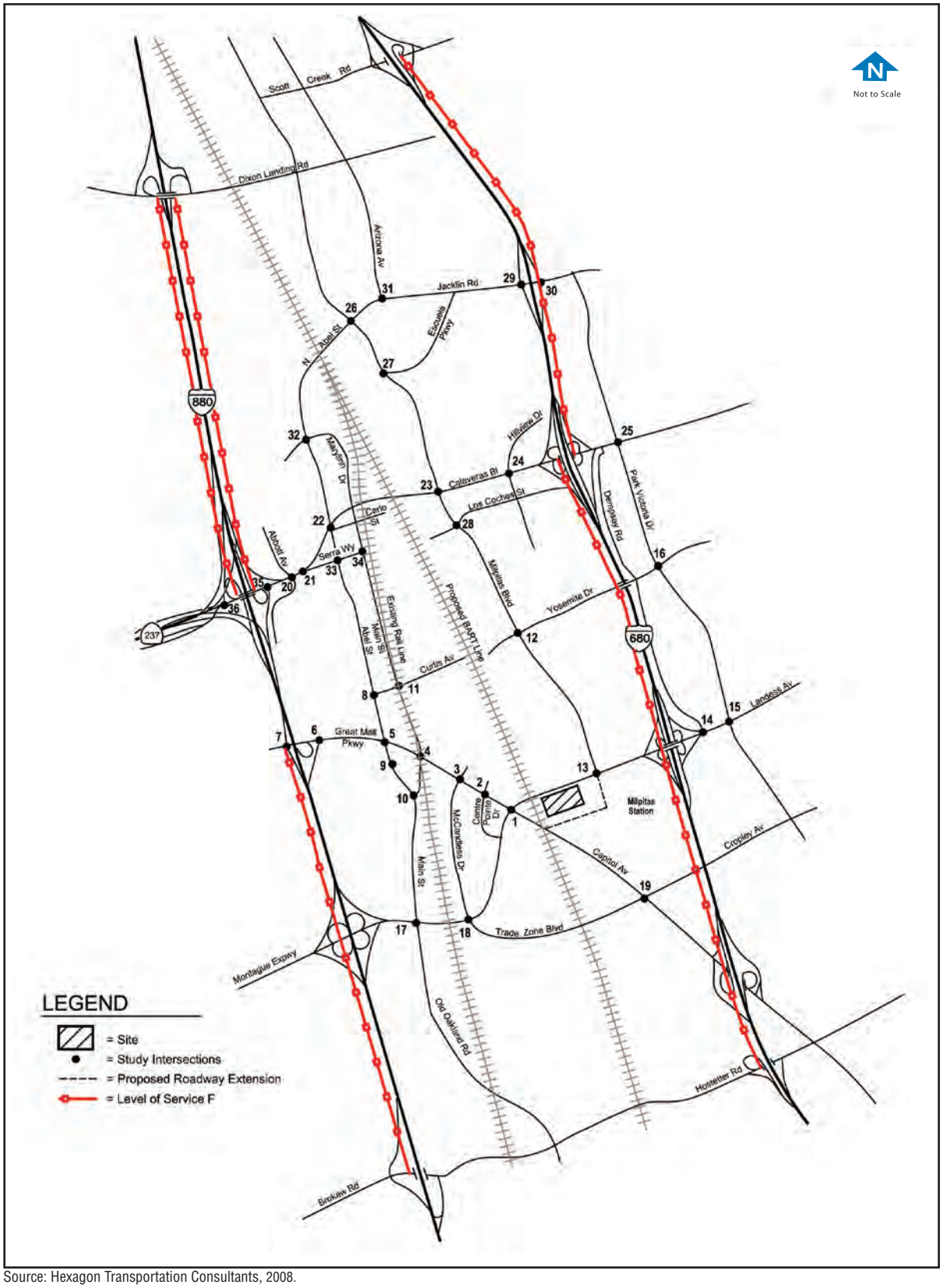
I-680, Alum Rock Avenue to McKee Road, NB/AM peak hour

I-680, Hostetter Road to Berryessa Road, SB/PM peak hour

I-680, Berryessa Road to McKee Road, SB/PM peak hour

The study freeway segments projected to operate at unacceptable LOS F under the SVRTP Alternative are shown graphically on Figure 3-30.

The mitigation necessary to reduce adverse affects to these freeway segments is the widening of the freeway. Due to the substantial cost, this measure is not considered feasible, resulting in a substantial adverse effect to freeways.



Source: Hexagon Transportation Consultants, 2008.

Figure 3-29: Milpitas Station Freeway Level of Service SVRTP Alternative

Source: Hexagon Transportation Consultants, 2008.

Figure 3-30: Berryessa Station Freeway Level of Service SVRTP Alternative

Alum Rock Station

In the vicinity of the Alum Rock Station, the freeway segment analysis shows that 15 of the 20 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under the SVRTP Alternative. The SVRTP Alternative is projected to have a substantial adverse effect on 7 of the 15 directional freeway segments identified to operate at LOS F, according to the CMP definition of freeway adverse affects. The segments include:

US 101, Tully Road to Story Road, NB/AM peak hour (adverse effect)

US 101, Story Road to Tully Road, SB/PM peak hour (adverse effect)

US 101, I-280 to Santa Clara Street, NB/AM peak hour (adverse effect)

US 101, Santa Clara Street to I-280, SB/PM peak hour (adverse effect)

US 101, Santa Clara Street to McKee Road, NB/AM peak hour (adverse effect)

US 101, McKee Road to Santa Clara Street, SB/PM peak hour (adverse effect)

I-680, Capitol Expressway to Alum Rock Avenue, NB/AM peak hour

I-680, Alum Rock Avenue to Capitol Expressway, SB/AM peak hour

I-680, Alum Rock Avenue to McKee Road, NB/AM peak hour

I-680, McKee Road to Alum Rock Avenue, SB/PM peak hour

I-680, Capitol Expressway to King Road, SB/AM peak hour

I-680, King Road to US 101, SB/AM peak hour

I-280, US 101 to McLaughlin Avenue, NB/AM peak hour

I-280, McLaughlin Avenue to 10th Street, NB/AM peak hour

US 101, I-280 to Story Road, SB/PM peak hour (adverse effect)

The study freeway segments projected to operate at unacceptable LOS F under the SVRTP Alternative are shown graphically on Figure 3-31.

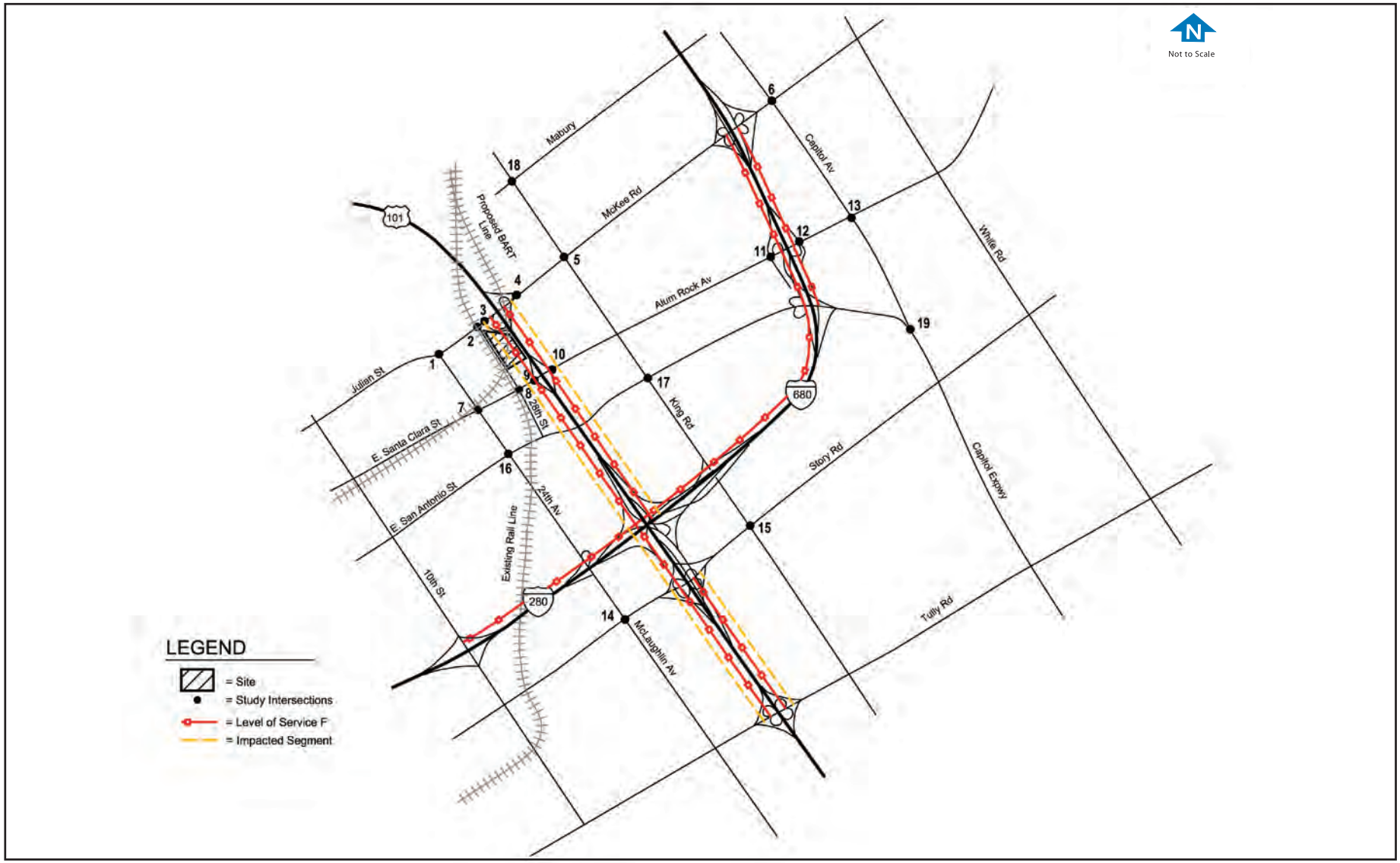
The mitigation necessary to reduce adverse affects to these freeway segments is the widening of the freeway. Due to the substantial cost, this measure is not considered feasible, resulting in a substantial adverse effect to freeways.

Diridon/Arena Station

In the vicinity of the Diridon/Arena Station, the freeway segment analysis shows that 16 of the 18 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under the SVRTP Alternative. The segments include:

SR 87, Curtner Avenue to Almaden Expressway, NB/AM peak hour

SR 87, Almaden Expressway to Alma Avenue, NB/AM peak hour



Source: Hexagon Transportation Consultants, 2008.

Figure 3-31: Alum Rock Station Freeway Level of Service SVRTP Alternative

SR 87, Alma Avenue to Almaden Expressway, SB/PM peak hour

SR 87, Alma Avenue to I-280, NB/AM peak hour

SR 87, I-280 to Alma Avenue, SB/PM peak hour

SR 87, I-280 to Julian Street, NB/AM peak hour

SR 87, Julian Street to I-280, SB/PM peak hour

SR 87, Coleman Avenue to Julian Street, SB/PM peak hour

I-280, Meridian Avenue to I-880, NB/AM peak hour

I-280, I-880 to Meridian Avenue, SB/PM peak hour

I-280, Bird Avenue to Meridian Avenue, NB/AM peak hour

I-280, Meridian Avenue Bird Avenue, SB/PM peak hour

I-280, SR 87 to Bird Avenue, NB/AM peak hour

I-280, Bird Avenue to SR 87, SB/PM peak hour

I-280, 10th Street to SR 87, NB/AM peak hour

I-280, SR 87 to 10th Street, SB/PM peak hour

Since the SVRTP Alternative would not add traffic representing one percent or more of the segment's capacity to any of the study freeway segments projected to operate at LOS F, none of the freeway segments analyzed in the vicinity of the Diridon/Arena Station would be adversely affected by the SVRTP Alternative, according to county CMP level of service standards for freeways. The study freeway segments projected to operate at unacceptable LOS F under the SVRTP Alternative are shown graphically on Figure 3-32.

Santa Clara Station

In the vicinity of the Santa Clara Station, the freeway segment analysis shows that 22 of the 26 directional freeway segments analyzed would operate at an unacceptable LOS F during at least one peak hour under the SVRTP Alternative. The segments include:

US 101, I-880 to Old Bayshore Road, NB/AM peak hour

US 101, Old Bayshore Road to I-880, SB/PM peak hour

US 101, Old Bayshore Road to First Street, NB/AM peak hour

US 101, First Street to Old Bayshore Road, SB/PM peak hour

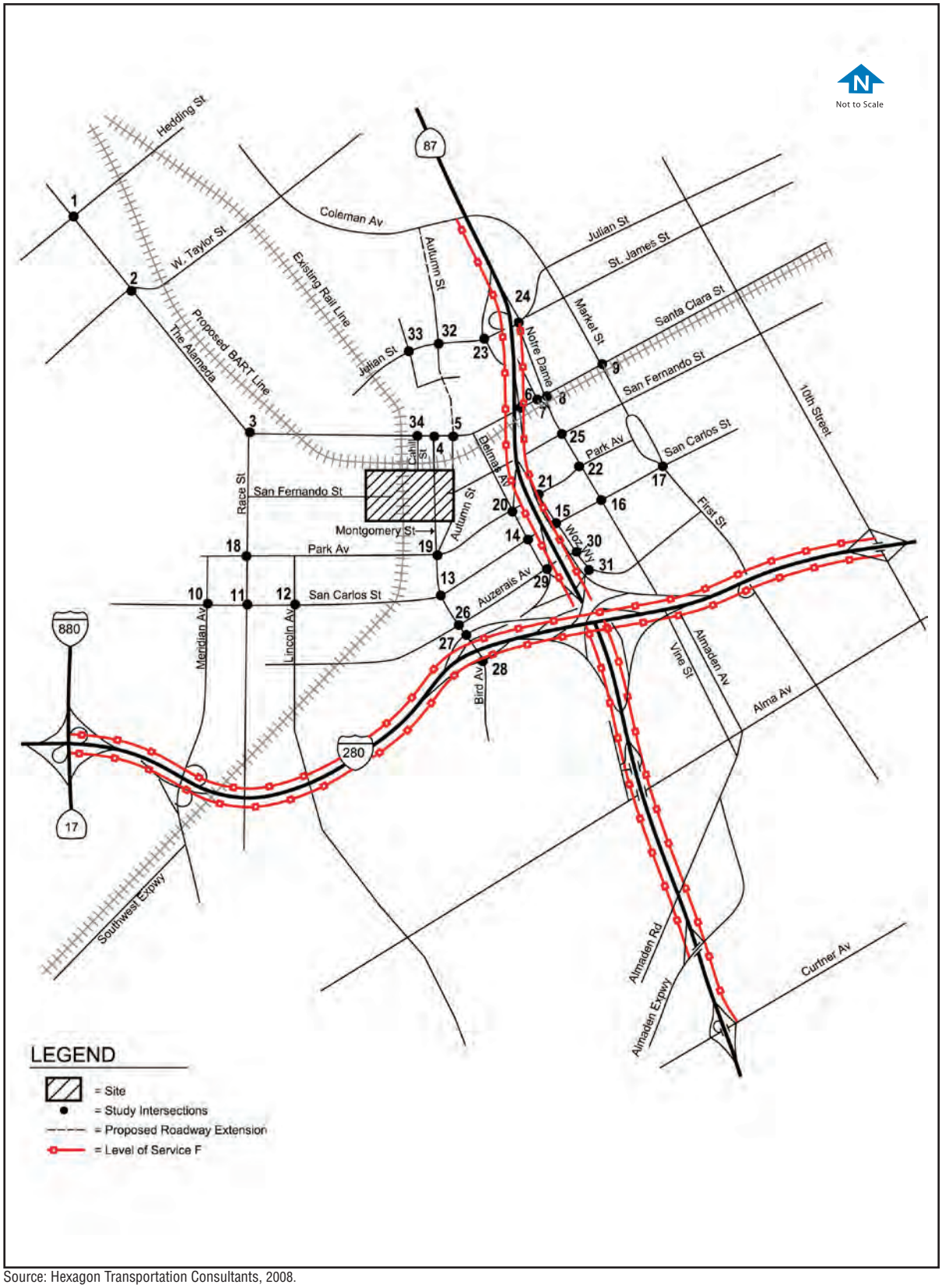
US 101, SR 87 to First Street, SB/PM peak hour

US 101, SR 87 to De La Cruz Boulevard, NB/AM peak hour

US 101, De La Cruz Boulevard to SR 87, SB/PM peak hour

US 101, De La Cruz Boulevard to Montague Expressway, NB/AM peak hour

US 101, Montague Expressway to De La Cruz Boulevard, SB/PM peak hour



Source: Hexagon Transportation Consultants, 2008.

Figure 3-32: Diridon Station Freeway Level of Service SVRTP Alternative

US 101, Great America Parkway to Montague Expressway, SB/PM peak hour

I-880, I-280 to Stevens Creek Boulevard, NB/AM peak hour

I-880, Stevens Creek Boulevard to Bascom Avenue, NB/AM peak hour

I-880, Bascom Avenue to Stevens Creek Boulevard, SB/PM peak hour

I-880, Bascom Avenue to The Alameda, NB/AM peak hour

I-880, The Alameda to Bascom Avenue, SB/PM peak hour

I-880, The Alameda to Coleman Avenue, NB/AM peak hour

I-880, Coleman Avenue to The Alameda, SB/PM peak hour

I-880, Coleman Avenue to SR 87, NB/AM peak hour

I-880, SR 87 to First Street, NB/AM peak hour

I-880, First Street to SR 87, SB/PM peak hour

I-880, First Street to US 101, NB/AM peak hour

I-880, US 101 to First Street, SB/PM peak hour

Since the SVRTP Alternative would not add traffic representing one percent or more of the segment's capacity to any of the study freeway segments projected to operate at LOS F, none of the freeway segments analyzed in the vicinity of the Santa Clara Station would be adversely affected by this alternative, according to county CMP level of service standards for freeways. The study freeway segments projected to operate at unacceptable LOS F under the SVRTP Alternative are shown graphically on Figure 3-33.

Intersection Traffic Volumes and Levels of Service

Traffic volumes for the SVRTP Alternative represent 2030 No Build Alternative traffic conditions plus the addition of the estimated PKR, KNR, and bus station trips to the proposed stations.

The results of the intersection level of service analysis under the SVRTP Alternative for the proposed BART Stations is summarized in Table 3-38. The results show that 38 of the 127 study intersections analyzed under the SVRTP Alternative would operate at an unacceptable level of service (LOS E or F for local intersections and LOS F for CMP intersections) during at least one of the peak hours. Thirty-one of the 127 study intersections is projected to be adversely affected by the SVRTP Alternative. CMP intersections are denoted with an asterisk (*). The results are described by proposed Station area.

Source: Hexagon Transportation Consultants, 2008.

Figure 3-33: Santa Clara Station Freeway Level of Service SVRTP Alternative

Table 3-38: SVRTP Alternative Intersection Level of Service Results Summary

Station	Number of Study Intersections	SVRTP Alternative Unacceptable LOS Intersections	Impacted Intersections
Milpitas	36	11	7
Berryessa	12	3	3
Alum Rock	19	10	10
Diridon/Arena	34	8	8
Santa Clara	26	6	4
Total:	127	38	32

Source: Hexagon Transportation Consultants, Inc. 2008

Milpitas Station

The intersection level of service results for the SVRTP Alternative show that a total of 7 of the 36 study intersections would be substantially adversely affected by this alternative during at least one of the peak hours, according to City of Milpitas and CMP LOS standards. The intersections are:

(1) Great Mall Parkway and Montague Expressway* (AM & PM)

(6) I-880 NB ramps and Great Mall Parkway (PM only)

(13) Milpitas Boulevard and Montague Expressway* (PM only)

(15) Park Victoria Drive and Landess Avenue (PM only)

(16) Park Victoria Drive and Yosemite Drive (AM only)

(17) Old Oakland/Main Street and Montague Expressway* (AM & PM)

(18) Trade Zone Boulevard and Montague Expressway* (PM only)

All other CMP and local City of Milpitas signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Berryessa Station

The intersection level of service results for the SVRTP Alternative show that a total of 3 of the 12 study intersections would be adversely affected by this alternative during at least one of the peak hours, according to City of San Jose and CMP LOS standards. The intersections are:

(2) Flickinger Avenue and Berryessa Road (AM & PM)

(3) Lundy Avenue and Berryessa Road* (AM only)

(5) King Road and Mabury Road (AM & PM)

All other CMP and local City of San Jose signalized study intersections in the vicinity of the Berryessa Station are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Alum Rock Station

The intersection level of service results for the SVRTP Alternative show that a total of 10 of the 19 study intersections would be substantially adversely affected by this alternative during at least one of the peak hours, according to City of San Jose and CMP LOS standards. The intersections are:

(2) 28th Street and Julian Street (PM only)

(3) US 101 and Julian Street (PM only)

(5) King Road and McKee Road (AM & PM)

(6) Capitol Avenue and McKee Road (PM only)

(7) 24th Street and Santa Clara Street (PM only)

(13) Capitol Avenue and Alum Rock Avenue* (PM only)

(14) McLaughlin Avenue and Story Road (PM only)

(15) King Road and Story Road (AM & PM)

(18) King Road and Mabury Road (AM & PM)

(19) Capitol Expressway and Capitol Avenue* (PM only)

All other CMP and local City of San Jose signalized study intersections in the vicinity of the Alum Rock Station are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections.)

Diridon/Arena Station

The intersection level of service results for the SVRTP Alternative show that a total of 8 of the 34 study intersections would be substantially adversely affected by this alternative during at least one of the peak hours, according to City of San Jose and CMP LOS standards. The intersections are:

(1) The Alameda and Hedding Street* (AM & PM)

(2) The Alameda and Taylor Street/Naglee Avenue* (AM & PM)

(8) Notre Dame Street and Santa Clara Street (PM only)

(9) Market Street and Santa Clara Street (PM only)

(10) Meridian Avenue and San Carlos Avenue (AM & PM)

(12) Lincoln Avenue and San Carlos Street (AM & PM)

(13) Bird Avenue and San Carlos Street* (AM & PM)

(28) Bird Avenue and I-280 (S)* (PM only)

All other CMP and local City of San Jose signalized study intersections in the vicinity of the Diridon/Arena Station are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Santa Clara Station

The intersection level of service results for the SVRTP Alternative show that a total of 4 of the 26 study intersections would be substantially adversely affected by the SVRTP Alternative during at least one of the peak hours, according to City of Santa Clara and CMP LOS standards. The intersections are:

(1) San Tomas Expressway and El Camino Real* (AM & PM)

(12) Coleman Avenue and Brokaw Road (PM only)

(15) De La Cruz Boulevard and Central Expressway* (AM & PM)

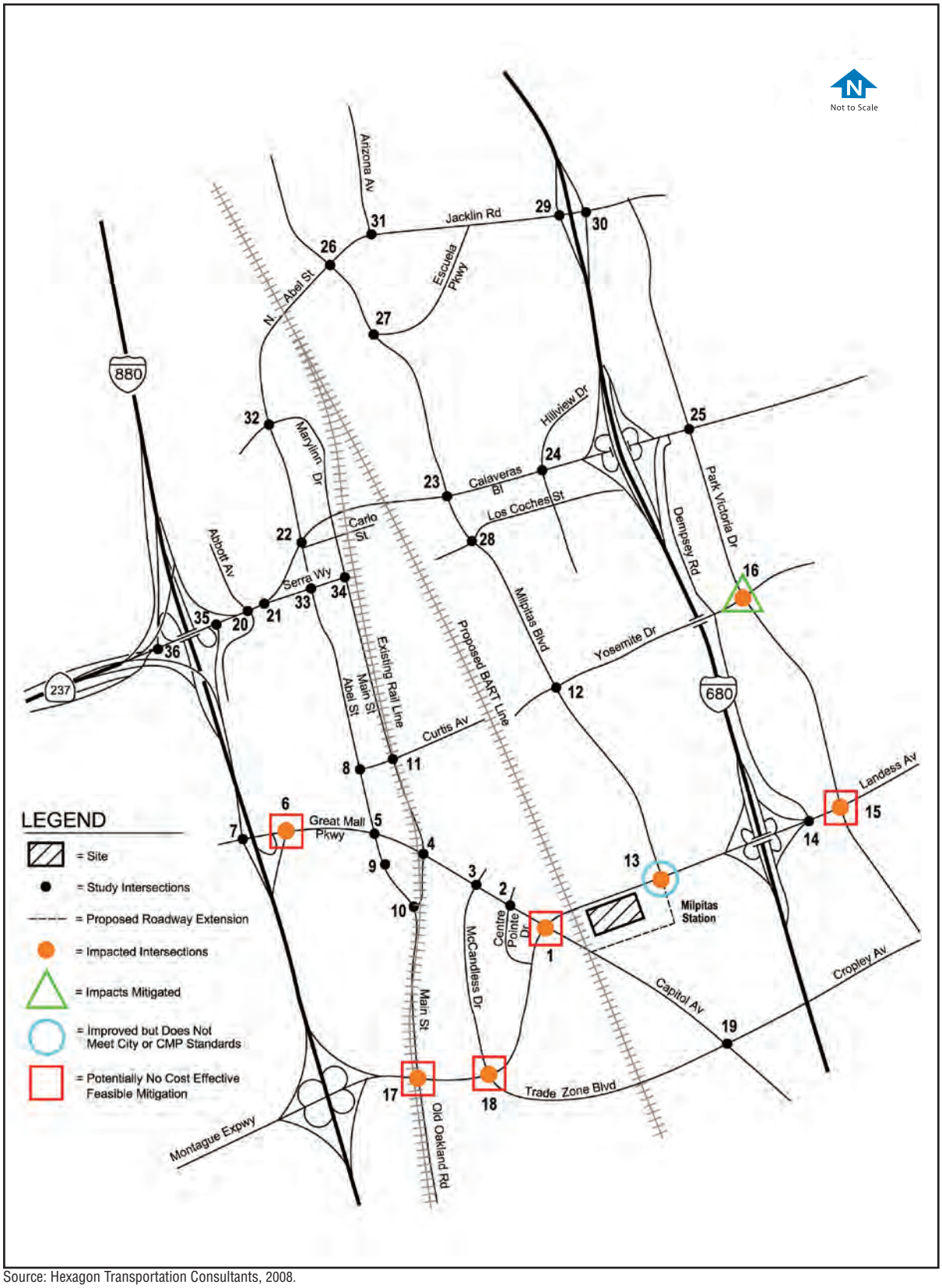
(26) Lincoln Street and El Camino Real* (AM only)

All other CMP and local City of Santa Clara signalized study intersections are projected to operate at an acceptable level of service (LOS D or better for local intersections, and LOS E or better for CMP intersections).

Mitigation Measures

The following describes the intersection adverse affects and recommended mitigation measures. The identified improvements are based on level of service calculations and their implementation would need to be coordinated with the cities of Milpitas, San Jose, and Santa Clara. It should be noted that the projected intersection levels of service and identified improvements are based on traffic projections 22 years into the future. The need for the improvements will necessitate further investigation at the time of their implementation. Intersections for which cost effective feasible mitigation measures are not possible and intersections where cost effective feasible mitigation measures do not improve the intersection to acceptable levels are also discussed and identified on Figures 3-34 through 3-38. The statement 'Not feasible due to ROW constraints' refers to conditions where structures or parking would be displaced to provide sufficient area for the improvements. Table 3-39 summarizes the resulting levels of service under the SVRTP Alternative conditions with the recommended mitigation measures.

Out of the 32 study intersections projected to be adversely affected under the SVRTP Alternative, adverse affects would be mitigated at 6 intersections, 3 intersections would be improved but would continue to operate at unacceptable levels, and 23 intersections would potentially have no cost effective feasible mitigation. The results are described by proposed station area.

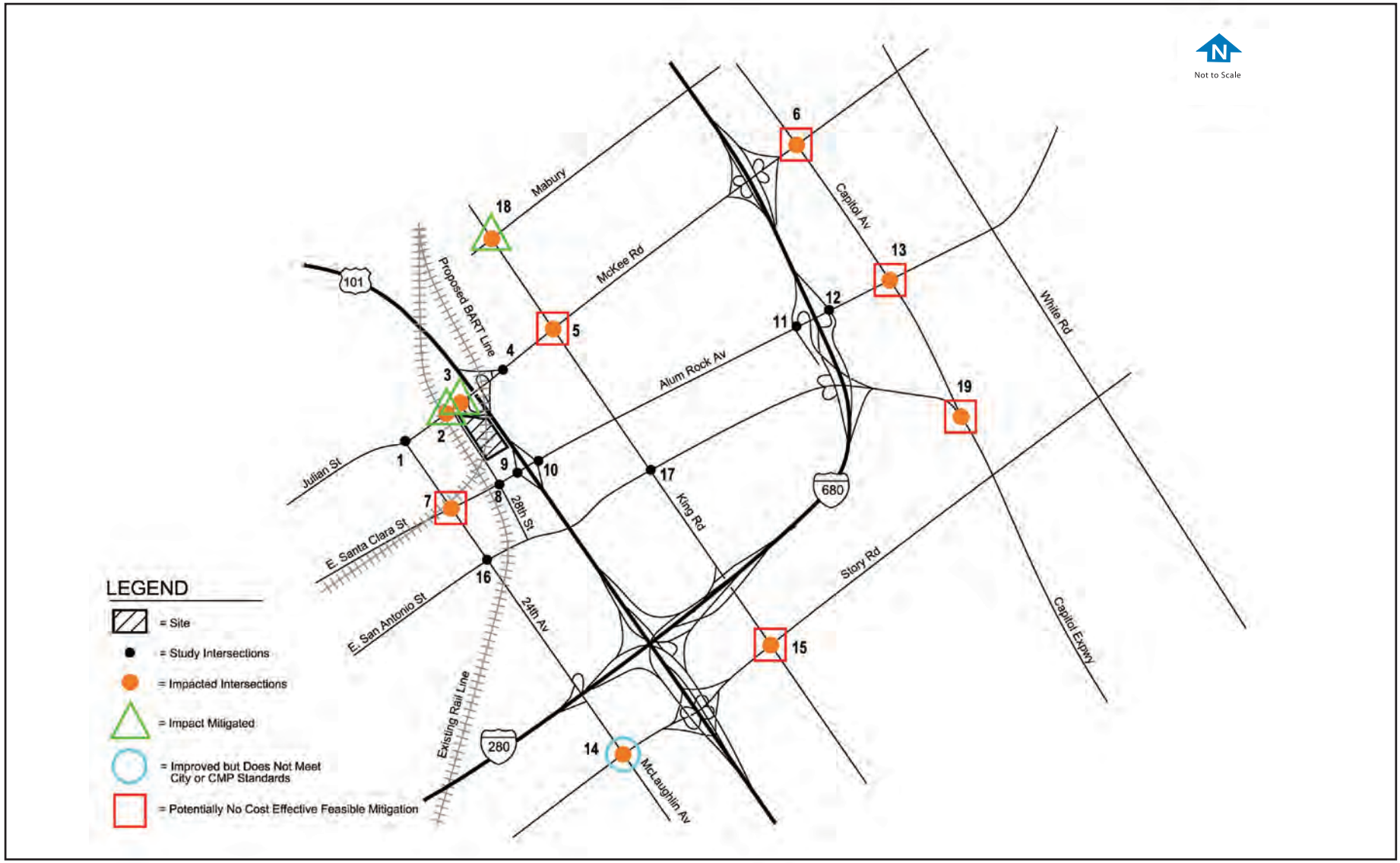


Source: Hexagon Transportation Consultants, 2008.

Figure 3-34: Milpitas Station SVRTP Alternative with Improvements Level of Service Conditions

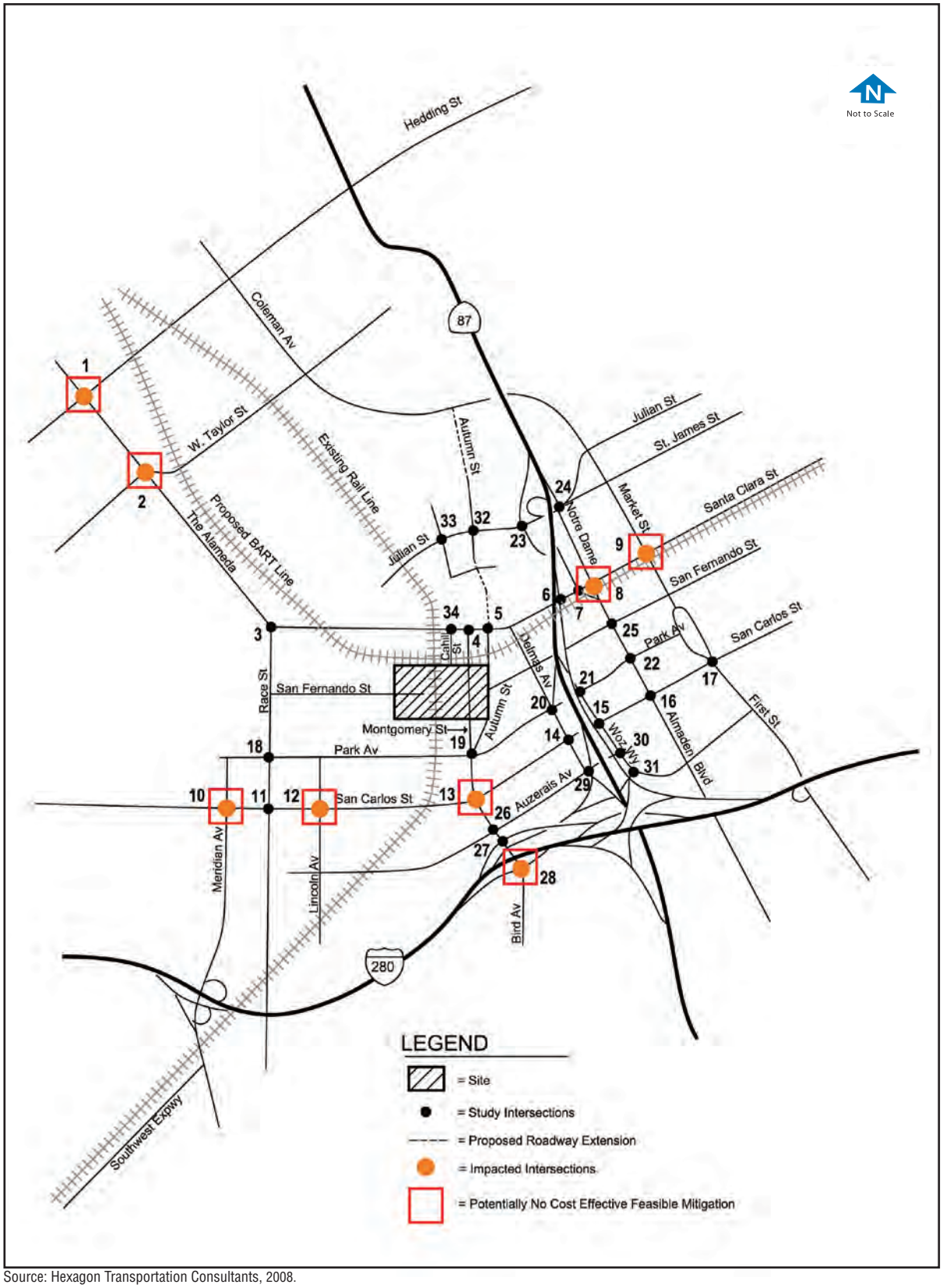
Source: Hexagon Transportation Consultants, 2008.

Figure 3-35: Berryessa Station SVRTP Alternative with Improvements Level of Service Conditions



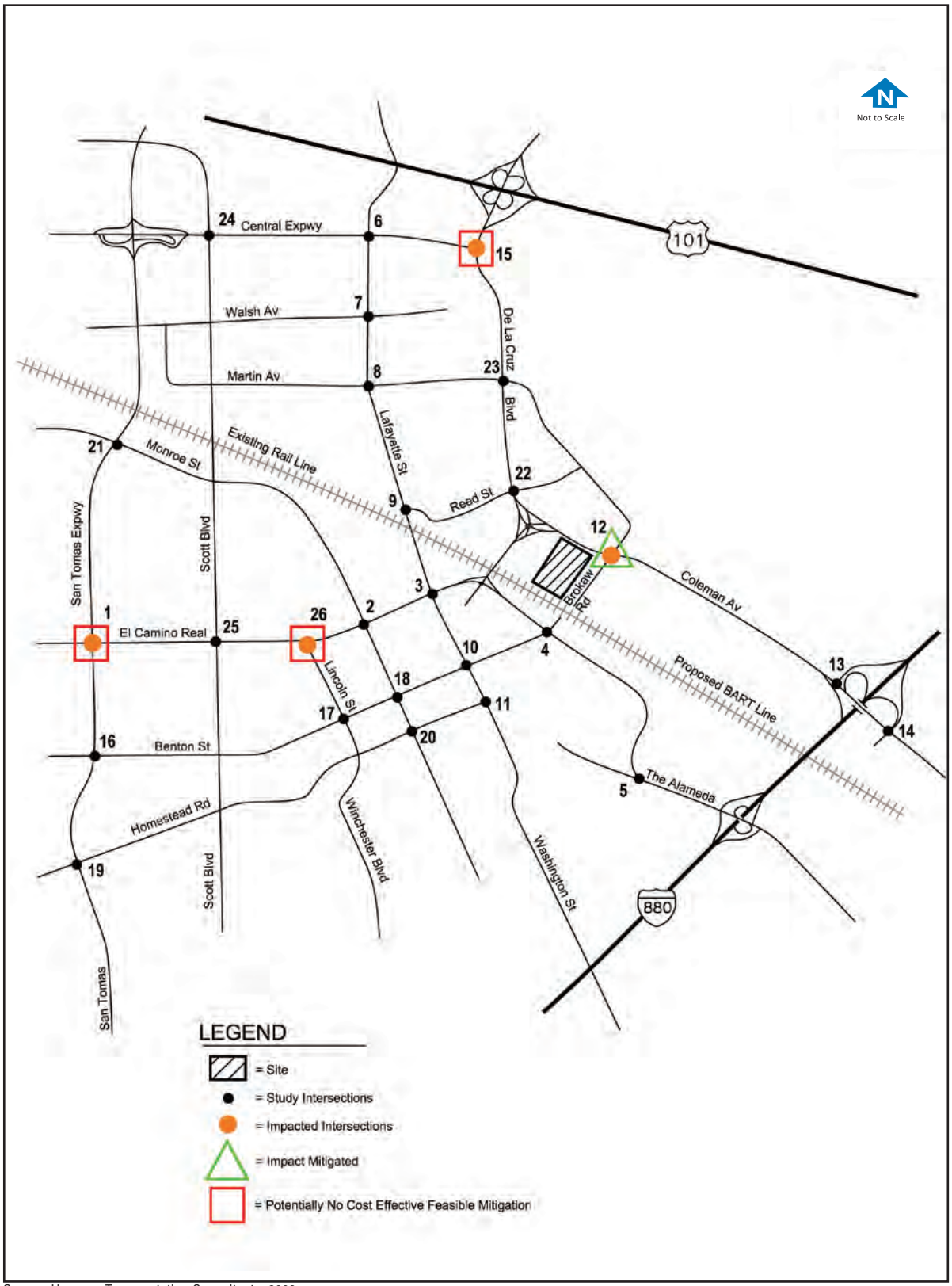
Source: Hexagon Transportation Consultants, 2008.

Figure 3-36: Alum Rock Station SVRTP Alternative with Improvements Level of Service Conditions



Source: Hexagon Transportation Consultants, 2008.

Figure 3-37: Diridon Station SVRTP Alternative with Improvements Level of Service Conditions



Source: Hexagon Transportation Consultants, 2008.

Figure 3-38: Santa Clara Station SVRTP Alternative with Improvements Level of Service Conditions

Table 3-39: SVRTP Alternative with Mitigations Intersection Level of Service Results Summary

Station	Number of Study Intersections	Impacted Intersections	Mitigated Intersections	Improved but Unacceptable LOS	No Cost Effective Feasible Mitigation	Exempt from LOS Policy
Milpitas	36	7	1	1	5	0
Berryessa	12	3	1	1	1	0
Alum Rock	19	10	2	1	7	0
Diridon/Arena	34	8	0	0	6	2
Santa Clara	26	4	1	0	3	0
Total:	127	32	5	3	22	2

Source: Hexagon Transportation Consultants, Inc., 2008.

Milpitas Station

(1) Great Mall Parkway and Montague Expressway (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and/or an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

Mitigation Measure TR-2: There are no other cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Build Alternative conditions. The necessary improvement to mitigate the adverse effect from the SVRTP Alternative at this intersection would require grade separation of the intersection. It should be noted that the grade separation of this intersection is included in the Valley Transportation Plan 2030 (VTP 2030) project list. However, this improvement was not included as part of the year 2030 roadway network since it was not included in the VTA 2030 (SVRTC) traffic model used for this analysis. Thus, as a conservative approach and in order to analyze the worst case scenario, this improvement was not considered to be implemented by the year 2030. Although the SVRTP Alternative would adversely affect this intersection, grade separation of this intersection was identified as the needed improvement under 2030 No Build Alternative conditions. Therefore, since the SVRTP Alternative would contribute to the need for grade separation of the Great Mall/Montague intersection, it should contribute a “fair share” amount toward the implementation of this improvement.

(6) I-880 NB ramps and Great Mall Parkway (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS E under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of Milpitas standards.

> Mitigation Measure TR-3: There are no other cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Build Alternative conditions. The necessary improvement to mitigate the adverse effect from the SVRTP Alternative at this intersection consists of the addition of a third eastbound through lane. However, this improvement would require the widening of the Great Mall Parkway overpass of I-880, which is not feasible. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

*(13) Milpitas Boulevard and Montague Expressway**

The level of service would be an unacceptable LOS F under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-4: Possible improvements include a second westbound left-turn lane. Though intersection operations would slightly improve with this improvement, the adverse affects to this intersection would not be mitigated. Due to the relatively high projected volumes, there are no feasible at-grade improvements to mitigate adverse effects at this intersection. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(15) Park Victoria Drive and Landess Avenue (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS E during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an

increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of Milpitas standards.

> Mitigation Measure TR-5: There are no other cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Build Alternative conditions. The necessary improvement to mitigate the substantial adverse effect at this intersection consists of the addition of a third southbound through lane on Park Victoria Drive or converting the eastbound right-turn lane on Landess Avenue to a free right-turn lane. However, the widening of Park Victoria Drive is not feasible due to ROW constraints. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(16) Park Victoria Drive and Yosemite Drive

The level of service would be an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of Milpitas standards.

> Mitigation Measure TR-6: The necessary improvement to mitigate the substantial adverse effect at this intersection consists of the addition of a second northbound left-turn lane. The implementation of this improvement would improve intersection level of service to an acceptable LOS D during the AM peak hour. It should be noted that changes to the signal timing at this location to accommodate future traffic volumes may improve intersection levels of operation without physical improvements.

(17) Old Oakland/Main Street and Montague Expressway (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and/or an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-7: There are no further feasible improvements beyond the planned Montague widening assumed under No Action conditions that can be implemented to improve intersection levels of service to acceptable levels.

The NSJDP identified the impacts to the intersection associated with its development as significant and unavoidable due to the lack of feasible mitigation measures. A traffic impact fee has been implemented as part of the NSJDP, but is only applicable to development within the NSJDP area. Development that impacts intersections within the NSJDP area is required to make a fair-share contribution towards identified improvements.

Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Action conditions. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(18) Trade Zone Boulevard and Montague Expressway (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in the V/C ratio of 0.01 or more during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

Mitigation Measure TR-8: There are no further feasible improvements beyond the planned Montague widening assumed under No Action conditions that can be implemented to improve intersection levels of service to acceptable levels. The NSJDP identified the impacts to the intersection associated with its development as significant and unavoidable due to the lack of feasible mitigation measures. A traffic impact fee has been implemented as part of the NSJDP, but is only applicable to development within the NSJDP area. Development that impacts intersections within the NSJDP area is required to make a fair-share contribution towards identified improvements.

Because the project would contribute to traffic congestion at this intersection, the project will contribute a 'fair share' amount toward the implementation of the identified traffic improvement under 2030 No Action conditions. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

Summary

Listed below is a summary of the adversely affected intersections and whether feasible mitigations are possible to mitigate the projected adverse affects:

(1) Great Mall Parkway and Montague Expressway* (AM & PM) – Potentially no cost effective feasible mitigation

(6) I-880 NB ramps and Great Mall Parkway (PM only) – Potentially no cost effective feasible mitigation

(13) Milpitas Boulevard and Montague Expressway* (PM only) – Improved but does not meet CMP standards

(15) Park Victoria Drive and Landess Avenue (PM only) – Potentially no cost effective feasible mitigation

(16) Park Victoria Drive and Yosemite Drive (AM only) – Substantial adverse effect mitigated

(17) Old Oakland/Main Street and Montague Expressway* (AM and PM) – Potentially no cost effective feasible mitigation

(18) Trade Zone Boulevard and Montague Expressway* (PM only) – Potentially no cost effective feasible mitigation

Berryessa Station

(2) Flickinger Avenue and Berryessa Road (No Cost Effective Feasible Mitigation)

The level of service would be LOS D and F during the AM and PM peak hours, respectively, under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during the AM peak hour and would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

Mitigation Measure TR-9: There are no other feasible improvements that can be made at this intersection beyond those described for 2030 No Action conditions to mitigate project impacts. Because the project would contribute to traffic congestion at this intersection, the project will contribute a ‘fair share’ amount toward the implementation of the identified traffic improvement under 2030 No Action conditions. Should a feasible improvement be determined, a ‘fair share’ contribution will be evaluated at that time.

(3) Lundy Avenue and Berryessa Road (No Cost Effective Feasible Mitigation)*

The level of service would be an acceptable LOS E under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS F during the AM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-10: There are no cost effective feasible improvements that can be made beyond those described for 2030 No Build Alternative conditions to mitigate adverse effects from the SVRTP Alternative. The necessary improvement to mitigate the substantial adverse effect at this intersection to an acceptable level consists of the addition of a fourth westbound through lane on Berryessa Road. This improvement is not feasible due to ROW constraints. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(5) King Road and Mabury Road

The level of service would be an acceptable LOS D under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during both the AM and PM peak hours under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-11: The necessary improvement to mitigate the substantial adverse effect from the SVRTP Alternative at this intersection to an acceptable level consists of the addition of second eastbound and westbound left-turn lanes. The implementation of this improvement would improve intersection level of service to an acceptable LOS D.

Summary

Listed below is a summary of the adversely affected intersections and whether feasible mitigations are possible to mitigate the substantial adverse affects:

(2) Flickinger Avenue and Berryessa Road (AM & PM) – Potentially no cost effective feasible mitigation

(3) Lundy Avenue and Berryessa Road* (AM only) – Potentially no cost effective feasible mitigation

(5) King Road and Mabury Road (AM & PM) – Substantial adverse effect mitigated

Alum Rock Station

(2) 28th Street and Julian Street

The level of service would be LOS D during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-12: As part of the station development, the intersection will be re-constructed to include the addition of a second northbound right-turn lane, a second westbound left-turn lane, converting the shared eastbound left-and-through lane to an exclusive left-turn lane, converting the eastbound right-turn lane to a shared right-and-through lane, and providing protected left-turn phasing on the east/west direction. The implementation of these improvements would improve the intersection level of service to an acceptable LOS C.

(3) US 101 and Julian Street (No Cost Effective Feasible Mitigation)

The level of service would be an acceptable LOS D during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS F under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-13: There are no other feasible improvements that can be made at this intersection beyond those planned as part of the station development. VTA proposes that the intersection be added to the City's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a development project has significant traffic impacts at a designated Protected Intersection, the project may be approved if offsetting Transportation System Improvements are provided that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. As part of the development of the station, surrounding pedestrian, bicycle and transit facilities will be enhanced to serve the station and surrounding community.

(5) King Road and McKee Road (No Cost Effective Feasible Mitigation)

The level of service would be LOS D and E during the AM and PM peak hours, respectively, under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during the AM peak hour and would experience an increase in critical-movement delay of four or more seconds and

an increase in the V/C ratio of 0.01 or more during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-14: There are no cost effective feasible improvements that can be made beyond those described for 2030 No Build Alternative conditions to mitigate the substantial adverse effect. The necessary improvement to mitigate the adverse effect at this intersection to an acceptable level consists of the widening of McKee Road from four to six through lanes. However, this improvement is not feasible due to ROW constraints. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(6) Capitol Avenue and McKee Road (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the traffic adverse effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

Mitigation Measure TR-15: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate adverse effects from the BEP Alternative. With the newly constructed Capitol LRT line, Capitol Avenue has been upgraded to its extent to allow for the operation of the LRT in its median. Further improvement of the intersection would not be compatible with LRT operations. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(7) 24th Street and Santa Clara Street (No Cost Effective Feasible Mitigation)

The level of service would be an acceptable LOS D under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the traffic adverse effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

Mitigation Measure TR-16: There are no cost effective feasible improvements that can be made at this intersection to mitigate the substantial adverse effects at this intersection due to the SVRTP Alternative. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(13) Capitol Avenue and Alum Rock Avenue (No Cost Effective Feasible Mitigation)*

The level of service would be an acceptable LOS E during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would

degrade to an unacceptable LOS F under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-17: There are no cost effective feasible improvements that can be made beyond those described for 2030 No Build Alternative conditions to mitigate the substantial adverse effect at this intersection for the SVRTP Alternative. With the newly constructed Capitol LRT line, Capitol Avenue has been upgraded to its extent to allow for the operation of the LRT in its median. Further improvement of the intersection would not be compatible with LRT operations. VTA proposes that the intersection be added to the City of San Jose's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If the project has significant traffic impacts at a designated Protected Intersection, the project should provide offsetting Transportation System Improvements that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(14) McLaughlin Avenue and Story Road

The level of service would be an unacceptable LOS E during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-18: Possible improvements include the addition of a second northbound left-turn lane. Though intersection operations would improve with this improvement, the adverse effect would not be mitigated, and the level of service would remain an unacceptable LOS E during the PM peak hour. The necessary improvement to mitigate the substantial adverse effect at this intersection to an acceptable level consists of the addition of a third southbound left-turn lane and widening of Story Road from six to eight through lanes. The magnitude of this improvement would require the widening of both McLaughlin Avenue and Story Road, which is infeasible due to ROW constraints.

Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(15) King Road and Story Road (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS E under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during both the AM and PM peak hours under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

Mitigation Measure TR-19: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate the substantial adverse effect. The necessary improvement to mitigate the adverse effect from the SVRTP Alternative at this intersection to an acceptable level consists of the addition of a third southbound through lane on King Road. The widening of King Road is not feasible due to ROW constraints. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(18) King Road and Mabury Road

The level of service would be an acceptable LOS D under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during both the AM and PM peak hours under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

Mitigation Measure TR-20: The necessary improvement to mitigate the substantial adverse effect from the SVRTP Alternative at this intersection to an acceptable level consists of the addition of second eastbound and westbound left-turn lanes. The implementation of this improvement would improve intersection level of service to an acceptable LOS D.

(19) Capitol Expressway and Capitol Avenue (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would

experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-21: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate substantial adverse effects for the SVRTP Alternative. With the newly constructed Capitol LRT line, Capitol Avenue has been upgraded to its extent to allow for the operation of the LRT in its median. Further improvement of the intersection would not be compatible with LRT operations. VTA proposes that the intersection be added to the city's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a project has significant traffic impacts at a designated Protected Intersection, the project should provide offsetting Transportation System Improvements that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

Summary

Listed below is a summary of the adversely affected intersections and whether feasible mitigations are possible to mitigate the projected adverse affects resulting from the SVRTP Alternative.

(2) 28th Street and Julian Street (PM only) – Substantial adverse effect mitigated

(3) US 101 and Julian Street (PM only) – Potentially no cost effective feasible mitigation

(5) King Road and McKee Road (AM & PM) – Potentially no cost effective feasible mitigation

(6) Capitol Avenue and McKee Road (PM only) – Potentially no cost effective feasible mitigation

(7) 24th Street and Santa Clara Street (PM only) – Potentially no cost effective feasible mitigation

(13) Capitol Avenue and Alum Rock Avenue* (PM only) – Potentially no cost effective feasible mitigation

(14) McLaughlin Avenue and Story Road (PM only) – Improved, but not mitigated, and does not meet City standards

(15) King Road and Story Road (AM & PM) – Potentially no cost effective feasible mitigation

(18) King Road and Mabury Road (AM & PM) – Substantial adverse effect mitigated

(19) Capitol Expressway and Capitol Avenue* (PM only) – Potentially no cost effective feasible mitigation

Diridon/Arena Station

(1) The Alameda and Hedding Street* (No Cost Effective Feasible Mitigation)

The level of service would be LOS F under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during both the AM and PM peak hours under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the traffic adverse effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

> Mitigation Measure TR-22: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate the substantial adverse effect for the SVRTP Alternative. VTA will comply with the Protected Intersections Program as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(2) The Alameda and Taylor Street/Naglee Avenue* (No Cost Effective Feasible Mitigation)

The level of service would be LOS F and E during the AM and PM peak hours, respectively, under 2030 No Build Alternative with Improvements conditions and the

intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during the AM peak hour and it would degrade to an unacceptable LOS F during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-23: There are no cost effective feasible improvements that can be made beyond those described for 2030 No Build Alternative conditions to mitigate the substantial adverse effect. VTA proposes that the intersection be added to the city's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a development project has significant traffic impacts at a designated Protected Intersection, the project should provide offsetting Transportation System Improvements that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(8) Notre Dame Street and Santa Clara Street

The level of service would be LOS D under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS E during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-24: The study intersection is located within the Greater Downtown Core, which is exempt from the City of San Jose level of service policy. The policy states that the Downtown Core Area is exempted from traffic mitigation requirements. Intersections within and on the boundary of this area are also exempted from the Level of Service "D" Performance Criteria. Since this is a local intersection subject to the local agency's thresholds, the project would not impact this intersection based upon the Downtown Core LOS Policy.

(9) Market Street and Santa Clara Street (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS E during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

> Mitigation Measure TR-25: The study intersection is located within the Greater Downtown Core, which is exempt from the City of San Jose level of service

policy. The policy states that the Downtown Core Area is exempted from traffic mitigation requirements. Intersections within and on the boundary of this area are also exempted from the Level of Service "D" Performance Criteria. Since this is a local intersection subject to the local agency's thresholds, the project would not impact this intersection based upon the Downtown Core LOS Policy.

(10) Meridian Avenue and San Carlos Street (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS E and F during the AM and PM peak hours, respectively, under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse affects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the adverse traffic effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

Mitigation Measure TR-26: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate the substantial adverse effect. VTA will

comply with the Protected Intersections Program as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(12) Lincoln Avenue and San Carlos Street (No Cost Effective Feasible Mitigation)

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of San Jose standards.

Mitigation Measure TR-27: There are no cost effective feasible improvements that can be made beyond those described for 2030 No Build Alternative conditions to mitigate the substantial adverse effect at this intersection for the SVRTP Alternative. VTA proposes that the intersection be added to the city's list of Protected Intersections and adhere to the Protected Intersection Policy. The LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). If a development project has significant traffic impacts at a designated Protected Intersection, the project should provide offsetting Transportation System Improvements that enhance pedestrian, bicycle and transit facilities to the community near the Protected Intersection. VTA will comply with the Protected Intersection Policy as required including providing fair-share funding (amount to be negotiated) towards the construction of identified offsetting improvements.

(13) Bird Avenue and San Carlos Street (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during both the AM and PM peak hours under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

This intersection has been identified by the City of San Jose as a Protected Intersection. The City of San Jose LOS policy specifies that Protected Intersections consist of locations that have been built to their planned maximum capacity and where expansion of the intersection would have an adverse effect upon other transportation facilities (such as pedestrian, bicycle, and transit systems). The policy acknowledges that exceptions to the city's LOS policy of maintaining a LOS D at local intersections will be made for certain Protected Intersections that have been built to their planned maximum capacity. In this situation, if a development project has substantial traffic adverse effects at a designated Protected Intersection, the project will be required to provide offsetting Transportation System Improvements. The offsetting improvements will

include enhancements to pedestrian, bicycle, and transit facilities to the community near the Protected Intersection, as well as neighborhood traffic calming measures. The offsetting improvements are intended to provide other transportation benefits for the community adjacent to the traffic adverse effect. The LOS policy has established a traffic fee to fund alternative transportation improvements. The values of the improvements will be equal to the established fees.

> Mitigation Measure TR-28: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate the substantial adverse effect. The necessary improvements to improve intersection operations to acceptable levels consist of the addition of second left-turn lanes in the northbound, eastbound, and westbound approaches. However, these improvements are not feasible due to ROW constraints. VTA will comply with the Protected Intersections Program as required including constructing provisions of bicycle and pedestrian improvements in and around the station area. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(28) Bird Avenue and I-280 (S) (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during the PM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-29: As described in the 2030 No Build Alternative conditions chapter, there are no cost effective feasible improvements that can be made at this intersection to mitigate the substantial adverse effect. The necessary improvement to improve intersection operations to acceptable levels consists of the addition of a second southbound left-turn lane along Bird Avenue. However, this improvement is not feasible due to ROW constraints along the bridge structure (Bird Avenue) over I-280. Because the SVRTC Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

Summary

Listed below is a summary of the adversely affected intersections and whether feasible mitigations are possible to mitigate the projected adverse affects resulting from the SVRTP Alternative:

(1) The Alameda and Hedding Street* (AM & PM) – Potentially no cost effective feasible mitigation

(2) The Alameda and Taylor Street/Naglee Avenue* (AM & PM) – Potentially no cost effective feasible mitigation

(8) Notre Dame Street and Santa Clara Street (PM only) – Exempt from LOS policy

(9) Market Street and Santa Clara Street (PM only) – Exempt from LOS policy

(10) Meridian Avenue and San Carlos Avenue (AM & PM) – Potentially no cost effective feasible mitigation

(12) Lincoln Avenue and San Carlos Street (AM & PM) – Potentially no cost effective feasible mitigation

(13) Bird Avenue and San Carlos Street* (AM & PM) – Potentially no cost effective feasible mitigation

(28) Bird Avenue and I-280 (S)* (PM only) – Potentially no cost effective feasible mitigation

Santa Clara Station

(1) San Tomas Expressway and El Camino Real (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more during both peak hours under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

> Mitigation Measure TR-30: There are no other cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Build Alternative conditions. The necessary improvement to mitigate the substantial adverse effect at this intersection would require grade separation of the intersection. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(12) Coleman Avenue and Brokaw Road

The level of service would be an acceptable LOS C under 2030 No Build Alternative with Improvements conditions and the intersection would degrade to an unacceptable LOS F during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by City of Santa Clara standards.

Mitigation Measure TR-31: The necessary improvement to mitigate the substantial adverse effect at this intersection consists of the addition of a second eastbound left-turn lane. The implementation of this improvement would improve intersection level of service to an acceptable LOS D during the PM peak hour.

(15) De La Cruz Boulevard and Central Expressway (No Cost Effective Feasible Mitigation)*

The level of service would be LOS F under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in the V/C ratio of 0.01 or more during the AM peak hour and an increase in critical-movement delay of four or more seconds and V/C of 0.01 or more during the PM peak hour under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

Mitigation Measure TR-32: There are no cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Build Alternative conditions. The necessary improvement to mitigate the substantial adverse effect at this intersection would require grade separation of the intersection. Because the SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

(26) Lincoln Street and El Camino Real (No Cost Effective Feasible Mitigation)*

The level of service would be an unacceptable LOS F during the AM peak hour under 2030 No Build Alternative with Improvements conditions and the intersection would experience an increase in critical-movement delay of four or more seconds and an increase in the V/C ratio of 0.01 or more under the SVRTP Alternative conditions. This constitutes a substantial adverse effect by CMP standards.

Mitigation Measure TR-33: There are no other cost effective feasible improvements that can be made at this intersection beyond those identified under the 2030 No Build Alternative conditions. The necessary improvement to mitigate the substantial adverse effect at this intersection consists of the addition of a second northbound left-turn lane. However, the addition of a second northbound left-turn lane is not feasible due to ROW constraints. Because SVRTP Alternative would contribute to traffic congestion at this intersection, it will contribute a 'fair share' amount toward the implementation of this traffic improvement. Should a feasible improvement be determined, a 'fair share' contribution will be evaluated at that time.

Summary

Listed below is a summary of the adversely affected intersections and whether feasible mitigations are possible to mitigate the projected adverse affects resulting from the SVRTP Alternative:

(1) San Tomas Expressway and El Camino Real* (AM & PM) – Potentially no cost effective feasible mitigation

(12) Coleman Avenue and Brokaw Road (PM only) – Substantial adverse effect mitigated

(15) De La Cruz Boulevard and Central Expressway* (AM & PM) – Potentially no cost effective feasible mitigation

(26) Lincoln Street and El Camino Real* (AM only) – Potentially no cost effective feasible mitigation

3.7.8 MAINTENANCE YARD ANALYSIS

An evaluation of the effects of additional traffic projected to be generated by the proposed BART maintenance yard facilities near two of the planned BART Stations was performed. Two maintenance yards are proposed and were included in this analysis: the Newhall Yard and the Las Plumas Yard. The Newhall Yard would be included as part of the SVRTP Alternative. The Newhall Yard would be located in the vicinity of the Santa Clara BART Station, along the east side of Coleman Avenue with access via Newhall Drive. The Las Plumas Yard would be included as part of the BEP Alternative. The Las Plumas Yard would be located in the vicinity of the Berryessa BART Station, west of King Road and south of Las Plumas Avenue, with access via Las Plumas Avenue.

The analysis consists of level of service analyses for intersections and freeway segments in the vicinity of the proposed maintenance yards under each of the corresponding project alternatives. Traffic generated by the proposed yards was estimated based on employee projections and assigned to the roadway network under the SVRTP Alternative for the Newhall Yard and under the BEP Alternative for the Las Plumas Yard.

Maintenance Yards Peak Hour projections

Peak hour traffic projections for the maintenance yards were estimated based on number of anticipated employees and start and end times of the employee shifts (shown in Table 3-40). As a conservative approach, it was assumed that all employees would drive alone to work and that they all would arrive at the yard within half an hour before their start time and leave within half an hour after their end time. Based on the employee projections and the above assumptions, it was estimated that the Newhall Yard would generate 261 and 287 AM and PM peak hour trips, respectively, while the

Las Plumas Yard would generate 160 and 174 AM and PM peak hour trips, respectively. Based on the shift start and ends times, the Newhall Yard would have 187 inbound and 74 outbound trips during the AM peak hour and 100 inbound and 187 outbound during the PM peak hour. The Las Plumas Yard would experience 110 inbound and 50 outbound trips during the AM peak hour and 64 inbound and 110 outbound trips during the PM peak hour. The trip generation estimates are summarized in Table 3-41.

Table 3-40: Maintenance Yard Employee Work Shifts

Yard	Day Shift (8am - 4pm)	Swing Shift (4pm - 12am)	Night Shift (12am - 8am)
Newhall Yard	187	100	74
Las Plumas Yard	110	64	50

Source: VTA, October, 2007.

Table 3-41: Maintenance Yards Peak Hour Trip Generation Estimates

Yard	Am Peak Hour In	Am Peak Hour Out	Am Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Newhall Yard	187	74	261	100	187	287
Las Plumas Yard	110	50	160	64	110	174

Notes: Number of peak hour trips are estimated based on the projected number of employees per work shift and the start and end times of each work shift.

Source: VTA, October, 2007.

Peak hour traffic projections for the yards were assigned to the roadway network based on existing travel patterns and complementary land uses in the area. These manually assigned trips were added to the model generated volume projections for the SVRTP and BEP alternatives used in the 2006 BART Stations TIAs.

Level of Service Results

Level of service analyses with the addition of the estimated maintenance yard traffic were conducted for both intersections and freeway segments in the vicinity of the proposed yards. Traffic associated with the Newhall Yard was added to the projected traffic volumes under the SVRTP Alternative and traffic associated with the Las Plumas yard was added to the projected traffic volumes under the BEP Alternative. The level of service results with the additional yard traffic were compared to the level of service

results without the yard traffic reported in the 2006 BART Stations TIAs in order to identify any additional adverse affects to the roadway network directly associated with the yard. The results are described below.

Newhall Yard

Intersection Levels of Service

Level of service conditions were checked at the study intersections in the vicinity of the Newhall Yard under SVRTP Alternative conditions. The level of service results were then compared to the same alternative as presented in the Santa Clara BART Station TIA report. The results of the level of service analysis indicate that the levels of service would be the same (with slightly different average delays at intersections where additional yard traffic would be added) at all of the study intersections. Therefore, the additional Newhall Yard traffic would not create additional adverse affects beyond those already identified in the Santa Clara BART TIA report.

Freeway Levels of Service

Just as with the intersections, additional yard traffic projected to freeway facilities was added to the study freeway segments in the vicinity of the Newhall Yard under the SVRTP Alternative conditions. The results of the analysis indicate that the Newhall Yard would not add sufficient traffic to the study freeway segments to change the results of the freeway segment analysis described in the Santa Clara BART Station TIA report.

Las Plumas Yard

Intersection Levels of Service

Level of service conditions were checked at the study intersections in the vicinity of the Las Plumas Yard under the BEP Alternative conditions. The level of service results were then compared to the same alternative as presented in the San Jose BART Stations TIA report. The results of the level of service analysis indicate that the levels of service would be the same (with slightly different average delays at intersections were additional yard traffic would be added) at all of the study intersections. Therefore, the additional Las Plumas Yard traffic would not create additional adverse affects beyond those already identified in the San Jose BART TIA report.

Freeway Levels of Service

Just as with the intersections, additional yard traffic projected to freeway facilities was added to the study freeway segments in the vicinity of the Las Plumas Yard under the BEP Alternative conditions. The results of the analysis indicate that the Las Plumas Yard would not add sufficient traffic to the study freeway segments to change the results of the freeway segment analysis described in the San Jose BART Stations TIA report.

3.7.9 CONCLUSION

The potential adverse affects of the BART Extension and stations were evaluated in accordance with the standards set forth by the cities of Milpitas, San Jose, and Santa Clara, and the Congestion Management Program (CMP) of Santa Clara County. The analysis included evaluation of AM and PM peak-hour traffic conditions for a total of 127 signalized intersections and 96 directional freeway segments.

BEP Alternative

The BEP Alternative includes only two of the proposed BART Stations: the Milpitas Station and the Berryessa Station. A total of four directional freeway segments in the vicinity of the Berryessa Station would be adversely affected under the BEP Alternative.

Results of the intersection level of service analysis indicate that a total of 14 of the 66 study intersections would be adversely affected by the BEP Alternative. Out of the 14 study intersections projected to be adversely affected under the BEP Alternative, adverse affects would be mitigated at 3 intersections, 2 intersections would be mitigated to better than 2030 No Build Alternative conditions but would continue to operate at unacceptable levels, 1 intersection would be improved but would continue to operate at unacceptable levels, and 8 intersections would potentially have no cost effective feasible mitigation.

The BEP Alternative would not cause a substantial increase in regional VMT or VHT, cause a substantial diversion of traffic onto residential streets, or substantially disrupt traffic operations and/or substantially affect emergency vehicle response.

SVRTP Alternative

A total of six BART Stations would be included as part of the SVRTP Alternative. A total of 9 directional freeway segments (2 in the vicinity of the Berryessa Station and 7 in the vicinity of the Alum Rock Station) would be adversely affected under the SVRTP Alternative.

Results of the intersection level of service analysis indicate that a total of 32 of the 127 study intersections would be adversely affected by the SVRTP Alternative. Out of the 32 study intersections projected to be adversely affected under the SVRTP Alternative, adverse affects would be mitigated at 6 intersections, 3 intersections would be improved but would continue to operate at unacceptable levels, and 23 intersections would potentially have no cost effective feasible mitigation.

The SVRTP Alternative would not cause a substantial increase in regional VMT or VHT, cause a substantial diversion of traffic onto residential streets, or substantially disrupt traffic operations and/or substantially affect emergency vehicle response.

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