CHAPTER 3.0: ALTERNATIVES

3.1 INTRODUCTION

Three alternatives are evaluated in this Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Silicon Valley Rapid Transit Corridor (SVRTC): (1) the No-Action Alternative; (2) the "New Starts" Baseline Alternative; and (3) the BART Extension Alternative. Two Minimum Operating Segment (MOS) scenarios area also identified as sub-options under the BART Alternative. This chapter describes the physical and operating characteristics of these alternatives. The chapter also includes a discussion of alternatives that were considered and withdrawn from further evaluation.

3.2 NO-ACTION ALTERNATIVE

The No-Action Alternative consists of the existing transit and roadway networks and planned and programmed improvements in the SVRTC that are identified in the San Francisco Bay Area Regional Transportation Plan (RTP) through the long-range planning horizon year 2025.

3.2.1 CORRIDOR TRANSIT SYSTEM

3.2.1.1 Existing System

The Santa Clara Valley Transportation Authority (VTA) currently operates 56 local bus routes, six limited stop bus routes, 11 express bus routes, and 3 light rail transit (LRT) routes, as well as 2 inter-county bus lines in its approximate 326-square-mile service area (Figure 3.2-1 and Table 3.2-1). Total fleet size to operate these fixed-route transit services is 506 buses and 50 light rail vehicles including spare vehicles.

VTA also provides LRT shuttle service for major Silicon Valley employment destinations and paratransit service for seniors and the disabled community. 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 ACE rail service between San Joaquin, Alameda, and Santa Clara counties; and the Capitol Corridor Joint Powers Board, which operates service from Placer County to Santa Clara County.

Figure 3.2-1: VTA Light Rail Vehicle

Table 3.2-1: VTA Bus and LRT Services

Service	Total Routes	Monday - Friday	Saturday	Sunday
Local Bus Routes	56	55	48	41
Limited Stop Bus Routes	6	6	0	0
Express Bus Routes	11	10	2	2
Light Rail Transit	3	3	3	3
Inter-County Bus Service	2	2	0	0

Source: VTA, effective July 2002.

3.2.1.2 Regional Transportation Plan Improvements through 2025

New transit services and capital projects are programmed for the SVRTC in the RTP. Table 3.2-2 lists these improvements and their service characteristics.

Table 3.2-2: No-Action Alternative Transit Projects (Assumed by 2025)

Transit Projects	Notes
Santa Clara County (in the project corridor)	
1. Vasona LRT, Vasona Junction to downtown San Jose	10-minute intervals
2. Tasman East/Capitol Expressway LRT, Hostetter to Eastridge Mall	10-minute intervals
3. Downtown/East Valley Corridor	10-minute intervals, terminate at Alum Rock Station
4. Bus Rapid Transit (BRT) – Line 22/Line 300	Limited stop (Line 300) at 10 minute intervals, 15 percent travel time reduction on El Camino Real from downtown San Jose to Palo Alto (Line 22)
5. BRT – Monterey Highway – Line 66/Line 68	Downtown San Jose to Santa Teresa LRT, 10-minute headway for limited stops, 10 percent travel time reduction on Lines 66 and 68 on Monterey Highway to San Carlos
6. BRT – Stevens Creek Boulevard – Line 23	Downtown San Jose to Cupertino, 10-minute headway for limited stops, 10 percent travel time reduction
7. Expansion of VTA bus fleet to 600 vehicles	600-bus plan does not include rail shuttles
8. Caltrain commuter rail	Increase service to 100 trains/day San Jose to San Francisco, add express trains (60-minute travel time and intervals all day), new Coyote Valley station, 20 trains/day serving Gilroy (6 round trips in peak direction, 2-4 round trips in reverse peak direction)
9. Caltrain commuter rail service upgrades	Increase service over 2015 to 120 trains/day San Jose to San Francisco, 30-minute peak/60-minute off peak serving Gilroy, electrify system, downtown San Francisco extension to new Transbay Terminal, extension to Monterey County
10. ACE commuter rail service upgrade	16 peak direction trains weekday (8 in a.m., 8 in p.m.) service, new Auto Mall Parkway station
11. Capitols commuter and intercity rail	11 round trips/day, Sacramento to San Jose trains, new Coliseum and Union City intermodal stations
12. Mineta San Jose International Airport APM to BART, Caltrain, and LRT	5-minute intervals all day, connection to LRT in 2015, BART and Caltrain by 2025
Alameda County (in the Project Corridor)	
13. BART Extension from Fremont to Warm Springs (5.4 miles)	12-minute peak/mid-day intervals each train (6-minute combined frequency), BART Irvington and Warm Springs stations
14. AC Transit southern Alameda County bus service increases	Increase to 15-minute peak/30-minute off-peak intervals from 30-minute peak/30-minute off-peak intervals
15. West Dublin BART Station	
16. Union City BART Intermodal Terminal	
17. Oakland Airport BART Connector APM	

Sources: AC Transit, 2000 Alameda County Measure B, BART, California State Rail Plan "2001-02 to 2010-11", 1996 Santa Clara County Measure B, VTA Measure A.

The BART Extension from Fremont to Warm Springs (BART Extension to Warm Springs) Project is one of the projects in the RTP. The project was approved by the BART Board of Directors in 1992 after several years of recognition as a project by state and regional agencies. Modifications and updates to the project were approved by the BART Board in 2003. The approval of the project was based on the purpose and need of alleviating traffic congestion, improving air quality, and reducing energy consumption related to travel demand within BART's service area. The project has logical termini. The terminus at Fremont connects the project to the existing BART system, and the terminus at Warm Springs was directed by state legislation (S.B. 1715) and established by the 1992 project approval. The Bart Extension to Warm Springs Project is not related to, or dependent on, the approval or construction of the SVRTC.

3.2.1.3 2025 Fleet Requirements

VTA is committed to expanding its bus fleet from the existing 506 to 600 vehicles by 2025, including 40 express buses to major Silicon Valley employment destinations (Table 3.2-3). By 2025, the total number of light rail vehicles is also assumed to increase from the existing 50 to 91, reflecting the addition of the Vasona, Tasman East, and possible Downtown/East Valley LRT lines. In addition, increased BART service will require BART fleet expansions to between 878 and 898 revenue vehicles by 2025.

Table 3.2-3: 2025 Fleet Requirements for No-Action Alternative

Operator	No-Action Alternative
"SVRTC" Express Bus	40
VTA Standard Bus	560
Total VTA Buses:	600
VTA Light Rail	91
BART Heavy Rail Cars [1]	878 to 898
"Valley" Express Bus [2]	22

Notes:

[1] Number of BART vehicles will be determined based on Fleet Management Plan currently under development.

[2] Operated and funded by transit agencies (SMART, LAVTA, MAX, and County Connection) serving the Central Valley, Tri-Valley, and central Contra Costa County and the planned BART Warm Springs Station, as described in Section 3.3.1.2.

Source: Manuel Padron Associates.

3.2.1.4 2025 Facility Requirements

The additional buses and light rail vehicles identified for the No-Action Alternative would be stored and maintained at existing VTA facilities, which would be expanded to accommodate the additional transit vehicles.

3.2.2 CORRIDOR ROADWAY SYSTEM

3.2.2.1 Existing Roadway

The SVRTC contains two major north-south regional freeways, I-880 and I-680, which parallel one another from southern Alameda County into northern Santa Clara County. The freeways are part of a more elaborate regional roadway system that converges in Santa Clara County around the San Jose Central Business District. Other freeways and expressways that traverse the corridor include State Route (SR) 237, Montague Expressway, Guadalupe Parkway (SR 87), US 101, and Capitol Expressway.

Major arterials, such as Calaveras Boulevard, Hostetter Road/Murphy Avenue/Brokaw Road, Berryessa Road/Hedding Street, Mabury Road/Taylor Street, McKee Road/Julian Street, and Alum Rock

Avenue/Santa Clara Street/The Alameda, traverse the corridor from east to west. Major north-south streets within the corridor include Warm Springs/Milpitas Boulevard, Capitol Avenue/Capitol Expressway, the 10th/11th Street couplet, 13th Street/Old Oakland Road, Coleman Avenue, and De La Cruz Boulevard.

3.2.2.2 Regional Transportation Plan Improvements through 2025

Improvements to the local and regional roadway system in the SVRTC have been programmed for implementation over the 2025-planning horizon. No new freeways or other major roadways are planned, only widenings and new interchanges on existing routes. Table 3.2-4 identifies the projects by county.

Table 3.2-4: No-Action Highway Network (Assumed by 2025)

Santa Clara County (in the SVRTC)
1. SR 85/US 101 northbound direct HOV connections in Mountain View; completed by 2005
2. Montague Expressway/San Tomas Expressway/US 101/Mission College Boulevard Interchange
3. SR 87/US 101 ramp connection to Trimble interchange
4. US 101 widening to accommodate SR 85 direct HOV connectors in San Jose
5. SR 85/US 101 direct HOV connectors in San Jose
6. US 101 widening from Metcalf Road to Cochrane Road; six mixed-flow plus two HOV
7. Montague Expressway/I-880 interchange reconfiguration improvements
8. Coleman Avenue/I-880 interchange improvements
9. I-680 southbound HOV lanes: Alameda/Santa Clara County line to Montague Expressway
10. SR 87 improvements at Skyport Drive interchange; under construction
11. SR 87 widening (HOV lanes) between Julian Street and SR 85; completed by 2005
12. Montague Expressway widening from six to eight lanes; I-680 to US 101
13. Montague Expressway grade-separation at Capitol Avenue
14. I-880/SR 237 freeway interchange (Stages A, B, and C); Stage C under construction
15. I-880 widening from Montague Expressway to US 101; six lanes (all mixed-flow lanes)
16. Upgrade Guadalupe Freeway to six-lane (four mixed-flow plus two HOV) freeway from US 101 to Julian Street; under construction
17. US 101/Hellyer Avenue interchange modifications; City of San Jose Project
18. US 101/Blossom Hill Avenue interchange modifications; City of San Jose Project
19. US 101 auxiliary lane widening; SR 87 to Great America Parkway
20. 4th Street/Zanker Road/US 101 overcrossing and ramp modifications
21. Tully Road/US 101 interchange modifications
22. Tennant Avenue/US 101 interchange improvements in Morgan Hill
23. 10th Street (SR 152) extension and US 101 interchange improvements in Gilroy
24. SR 25/Santa Teresa Boulevard/US 101 interchange construction
25. Buena Vista/US 101 interchange construction
26. SR 237 widening for HOV lanes between SR 85 and US 101
27. SR 237 westbound auxiliary lanes between Coyote Creek Bridge and North 1st Street
28. I-880 widening from SR 237 to Alameda County line; 10 lanes (eight mixed-flow plus two HOV)
29. I-680 northbound HOV lane (Montague to Alameda/Santa Clara County line)
30. Improvements to I-880/Stevens Creek Boulevard interchanges
31. I-280/I-680 connector to southbound US 101- braided ramp with Tully Road exit ramp

Table 3.2-4: No-Action Highway Network (Assumed by 2025)
32. Widen SR 85 from I-280 to Fremont Avenue
33. SR 85 northbound to I-280 northbound and I-280 exit to Foothill Boulevard – braided ramp
34. SR 25 upgrade to expressway standards
35. SR 152 safety improvements between US 101 and SR 156 (westbound SR 152 to westbound SR 156)
36. Trimble Road/De La Cruz Boulevard/US 101 Interchange improvements
37. SR 85/87 interchange completion
38. SR 17/85 improvements
39. Montague Expressway/Trimble Road flyover ramp
40. Central Expressway widening for HOV lanes from SR 237 to De La Cruz Boulevard
Alameda County (in the SVRTC)
1. Fremont Boulevard extension; four-lane extension to Dixon Landing Road
2. Kato Road widening; add continuous left turn lane between Auburn Street to north of Milmont
3. I-880 widening from Mission Boulevard to Santa Clara County line; 10 lanes (eight mixed-flow plus two HOV)
4. I-680 southbound HOV lane (SR 84 to Alameda/Santa Clara County line)
5. I-680 northbound HOV lane (SR 84 to Alameda/Santa Clara County line)
6. SR 84 new roadway (expressway) from SR 238 (Mission Boulevard) to I-880; four-lane new expressway
7. I-880/Dixon Landing Road interchange improvement
8. I-880/Mission Boulevard interchange improvement
Sources: Alameda County Measure B, Fremont, Metropolitan Transportation Commission Regional Transportation Plan, Santa Clara County Measure B, Valley Transportation Plan 2020.

3.3 "NEW STARTS" BASELINE ALTERNATIVE

The Federal Transit Administration (FTA) requires project proponents to formulate and evaluate a Baseline Alternative in comparison with the rail project that is seeking federal funding under the "New Starts" program. The "New Starts" Baseline Alternative (Baseline Alternative) identifies transit improvements above and beyond the No-Action Alternative and represents the "best that can be done" to increase transit services without major capital investment in new infrastructure, providing a basis for comparison to the proposed project. The Baseline Alternative for the SVRTC project builds upon existing, planned, and programmed transportation improvements in the corridor with additional express bus service and other associated improvements. Bus service for the Baseline Alternative could be implemented, in conjunction with the completion of the BART Extension to Warm Springs, in 2008. The Baseline Alternative is not required for environmental review, but is presented for information purposes.

3.3.1 EXPRESS BUS EXPANSION IN THE CORRIDOR

The SVRTC Baseline Alternative would expand express bus service between (1) the Central Valley, Tri-Valley, and central Contra Costa County and the planned BART Warm Springs Station in southern Fremont, Alameda County; and (2) the planned BART Warm Springs Station and various Silicon Valley destinations in Santa Clara County. The service into Santa Clara County would augment existing express bus service and improvements planned in Santa Clara County's *Valley Transportation Plan 2020* (VTP 2020). In addition, the Baseline Alternative includes VTA light rail extensions, VTA base bus fleet expansion to 697 vehicles (over the 2025 planning horizon), commuter rail service upgrades, high occupancy vehicle (HOV) lane and other highway improvements, and the BART Extension to Warm Springs, as described under the No-Action Alternative. Figure 3.3-1 shows the expanded express bus

Figure 3.3-1: Baseline Alternative - Expanded Express Bus Service

service on I-880 and I-680 HOV lanes. The Baseline Alternative would add expanded express bus service above the existing and programmed level identified in VTP 2020, which currently programs approximately 40 buses for operating express bus service from the planned BART Warm Springs Station to Silicon Valley destinations over the 2025 planning horizon.

Express buses would travel up to 60 miles from Stockton, Modesto, Tracy, Livermore, and Pleasanton to the planned BART Warm Springs Station via I-5, I-205, I-580, and I-680; and 12 miles from the BART Warm Springs to the San Jose Diridon Caltrain Station via I-880 and I-680 using HOV lanes either already existing or programmed to be constructed (Figure 3.3-2). VTA also would continue to work with employers to expand shuttle bus and van services connecting Santa Clara County bus/rail stations with Silicon Valley employment destinations.

Figure 3.3-2: Express Bus on Freeway HOV Lane

3.3.1.1 New BART Warm Springs Station - Silicon Valley Service

From the planned BART Warm Springs Station and express bus terminal, 10 VTA "SVRTC" express bus routes would take riders to the following large Silicon Valley employment centers:

- Lockheed/Martin and the Moffett Industrial Park in Sunnyvale
- Sunnyvale/Mountain View industrial parks and Mountain View Caltrain Station
- Tasman Drive to the Baypointe Light Rail Station in San Jose
- Montague Expressway to the Mission College area, and then along Scott Boulevard in Santa Clara and Arques Avenue in Sunnyvale (Oakmead Industrial Parks)
- Brokaw Road and Airport Drive to the Norman Y. Mineta San Jose International Airport (SJIA) and the surrounding office parks
- Milpitas industrial parks along Milpitas Boulevard to the Great Mall area
- Dixon Landing Road and McCarthy Boulevard
- San Jose Civic Center and Downtown San Jose.

These 10 VTA "SVRTC" express bus routes would operate mainly on the planned I-880 HOV lanes between Fremont Boulevard in Fremont and North 1st Street in San Jose. A few express routes would operate on the planned I-680 HOV lanes between Mission Boulevard (south exit) and Montague Expressway.

From the planned BART Warm Springs Station bus transit center, a bus-only, aerial roadway (busway) would be constructed along the south side of South Grimmer Boulevard, continuing along the east side of Fremont Boulevard between the bus transit center and I-880. Upon reaching I-880, the busway would continue on an aerial structure that would connect directly to and from the planned I-880 median HOV lanes (Section 3.3.3). Traveling south in the planned I-880 median HOV lanes, express buses would have direct connector HOV flyover ramps to take them directly to HOV lanes at SR 237 and at Montague Expressway. Express buses would also be able to leave the planned I-880 HOV lanes at Tasman Drive,

Brokaw Road, and North 1st Street. The express bus routes using the planned I-680 HOV lanes would access these HOV lanes at Mission Boulevard. Traveling south on the planned I-680 HOV lanes, express bus routes would exit at SR 237/Calaveras Boulevard and at Montague Expressway.

3.3.1.2 New Central Valley, Tri-Valley, and Central Contra Costa County Service to the Planned BART Warm Springs Station

Existing and planned express bus service between the Central Valley, Tri-Valley, and central Contra Costa County to Silicon Valley destinations is provided by Stockton Metropolitan Area Rapid Transit (SMART), Modesto Area Express (MAX), Livermore-Amador Valley Transit Authority (LAVTA), and the (Contra Costa) County Connection. With the initiation of BART service to Warm Springs, it is expected that these four "Valley" express bus services would be rerouted to terminate at the planned BART Warm Springs Station and operate as follows:

- The express bus service would operate on portions of I-5, I-205, SR 132, I-580, SR 84, and I-680.
- All of the express bus routes would use the I-680 HOV lanes now under construction over the Sunol Grade between SR 84 and South Grimmer Boulevard in Fremont.
- At South Grimmer Boulevard, a new two-way, elevated busway would be constructed to allow these express buses to gain direct access to the planned BART Warm Springs Station located at South Grimmer and Warm Springs boulevards.
- The "Valley" buses would then return to their point of origin via the two-way, elevated busway to make additional peak-hour trips.

The level of service and origin points for the "Valley" express bus service would be determined by the respective transit agencies operating the express bus service and not by VTA. Similarly, funding to operate "Valley" express bus service would be the responsibility of the local transit agencies, not VTA.

3.3.1.3 Operating Plan Assumptions

VTA "SVRTC" express bus routes would operate at 4- to 30-minute service frequencies in the peak direction from 4:30 a.m. to 8:30 a.m. in the morning peak, and from 3:00 p.m. to 7:00 p.m. in the evening peak. Seven of these express bus routes would also operate in the reverse peak direction, providing bi-directional service. Four express routes (Oakmead, SJIA, Tasman LRT, and Downtown San Jose) would operate all day long at 15- to 30-minute intervals in both directions. At the discretion and funding responsibility of SMART, MAX, LAVTA, and County Connection, "Valley" express bus routes would operate at 20- to 60-minute, peak direction and reverse direction intervals from 4:00 a.m. to 8:00 a.m. in the morning peak and from 3:30 p.m. to 7:30 p.m. in the evening peak. In addition, to ensure that employees using peak-period express bus service would have a way to return home in case of emergency, a limited, off-peak bus service between the major Silicon Valley employment centers, the planned BART Warm Springs Station, and key "Valley" origin points would be available on 60-minute service frequencies.

3.3.2 2025 FLEET EXPANSION REQUIREMENTS

The Baseline Alternative operating plan would require an expansion of the No-Action Alternative fleet size for VTA and other regional transit agencies as indicated in Table 3.3-1. Table 3.3-2 lists VTA's projected 2025 bus, light rail, and BART vehicle miles and hours of service.

3.3.3 2025 FACILITY EXPANSION REQUIREMENTS

3.3.3.1 New Busway Connectors

Three new busway connectors are proposed in the Baseline Alternative to facilitate bus circulation from I-680 and I-880 into and out of the planned BART Warm Springs Station and connecting I-880 to the Montague Expressway, as delineated in Appendix D.

Table 3.3-1: 2025 Fleet Requirements for No-Action and Baseline Alternatives

Operator	No-Action Alternative	Baseline Alternative
"SVRTC" Express Bus	40	111
VTA Standard Bus	560	586
Total VTA Buses:	600	697
VTA Light Rail	91	91
BART Heavy Rail Cars [1]	878 to 898	878 to 898
"Valley" Express Bus [2]	22	45

Notes:
[1] Number of BART vehicles will be determined based on Fleet Management Plan currently under development.
[2] Operated and funded by SMART, MAX, LAVTA, and County Connection.
Sources: Manuel Padron Associates and VTA, 2003.

Table 3.3-2: 2025 Annual Revenue Operating Statistics for Baseline Alternative

Mode	Vehicle/Train Hours	Vehicle/Car Miles
VTA Bus	1,749,000	31,765,000
VTA Light Rail	208,000	5,305,000
BART	398,000	97,429,000
"Valley" Express Bus [1]	63,000	1,900,000

Note:
[1] Operated and funded by SMART, MAX, LAVTA, and County Connection.
Sources: Manuel Padron & Associates and VTA, 2003.

I-680-to-Planned BART Warm Springs Station Aerial Busway Connector

This connector would begin in a widened median of I-680 approximately 1,500 feet north of South Grimmer Boulevard in Fremont. Up to 40 feet of additional right-of-way (ROW) would be required to widen the west side of the freeway. The aerial busway connector would ascend at a 7 percent grade on embankment, retained fill, and aerial structure to a height of approximately 20 feet. Some 300 feet north of South Grimmer Boulevard, the aerial busway connector would cross over the southbound lanes of I-680, making a sweeping 90-degree turn to the west (700-foot radius, 45 miles per hour [mph]). It would then descend at a 7 percent grade on aerial structure, retained fill, and embankment to ground level on

the south side of South Grimmer Boulevard. From there, it would proceed west to Warm Springs Boulevard and the planned BART Warm Springs Station, running parallel and adjacent to the south side of South Grimmer Boulevard. The aerial busway connector would be approximately 50 feet wide and 3,500 feet (0.66 miles) long (Figure 3.3-3). A large bus transit center that would facilitate transfers between "Valley" buses coming from eastern Alameda County, Contra Costa County, and the Central Valley to "SVRTC" express buses is proposed as part of the planned BART Warm Springs Station.

BART Warm Springs Station-to-I-880 Aerial Busway Connector

This connector would begin in the southwest quadrant of the Warm Springs Boulevard intersection with South Grimmer Boulevard and proceed westward parallel with and adjacent to the south ROW line of South Grimmer Boulevard. From the intersection with Warm Springs Boulevard, the busway would ascend at a 7 percent grade on retained fill to a height of 30 feet, and then cross over both BART and the Union Pacific Railroad (UPRR) tracks on aerial structure; cross over Old Warm Springs Road on aerial structure; cross over a driveway to the New United Motors Manufacturing Incorporated (NUMMI) Auto Plant; and turn south parallel and adjacent to the east side of Fremont Boulevard.

The busway connector would proceed south on 20-foot high retained fill along the east side of Fremont Boulevard and cross over two more NUMMI Auto Plant driveways. It would continue on a 20-foot high aerial structure, cross over the southeast quadrant of the I-880/Fremont Boulevard interchange and northbound lanes of I-880 (700-foot radius, 45 mph), and enter a widened median of I-880 about 300 feet south of the Fremont Boulevard overcrossing. I-880 would be widened by about 40 feet on the west side of I-880 adjacent to two motels/residence inns. The aerial busway connector would be approximately 50 feet wide and 8,000 feet (1.52 miles) long (Figure 3.3-3.).

The I-880-to-Montague Expressway Aerial Busway Connector

This connector would begin in a widened median of I-880 several hundred feet north of Montague Expressway and ascend at a 4 percent grade on a retained fill and aerial structure 20 feet high. It would then fly over the southbound lanes of I-880 just north of the Montague Expressway (2,100-foot radius, 60 mph), crossing over the northwest and southwest quadrants of the I-880/Montague Expressway interchange and landing in the median of I-880. Right-of-way would be required from the northwest quadrant. The aerial busway connector would be approximately 50 feet wide and 2,750 feet (0.52 miles) long (Figure 3.3-4).

3.3.3.2 VTA Bus Maintenance and Storage Facilities

No new VTA bus maintenance and storage facilities would be needed to accommodate the additional buses in this alternative. It is assumed that the existing bus maintenance and storage facilities have sufficient land area to expand these facilities to accommodate approximately 97 additional buses.

3.3.4 DESIGN REQUIREMENTS AND BEST MANAGEMENT PRACTICES

The Baseline Alternative would be built to meet required codes and design standards and to comply with federal and state environmental laws and permitting requirements, as described for each subject area in Chapter 4, *Environmental Analysis*. Best management practices would be also applied during construction.

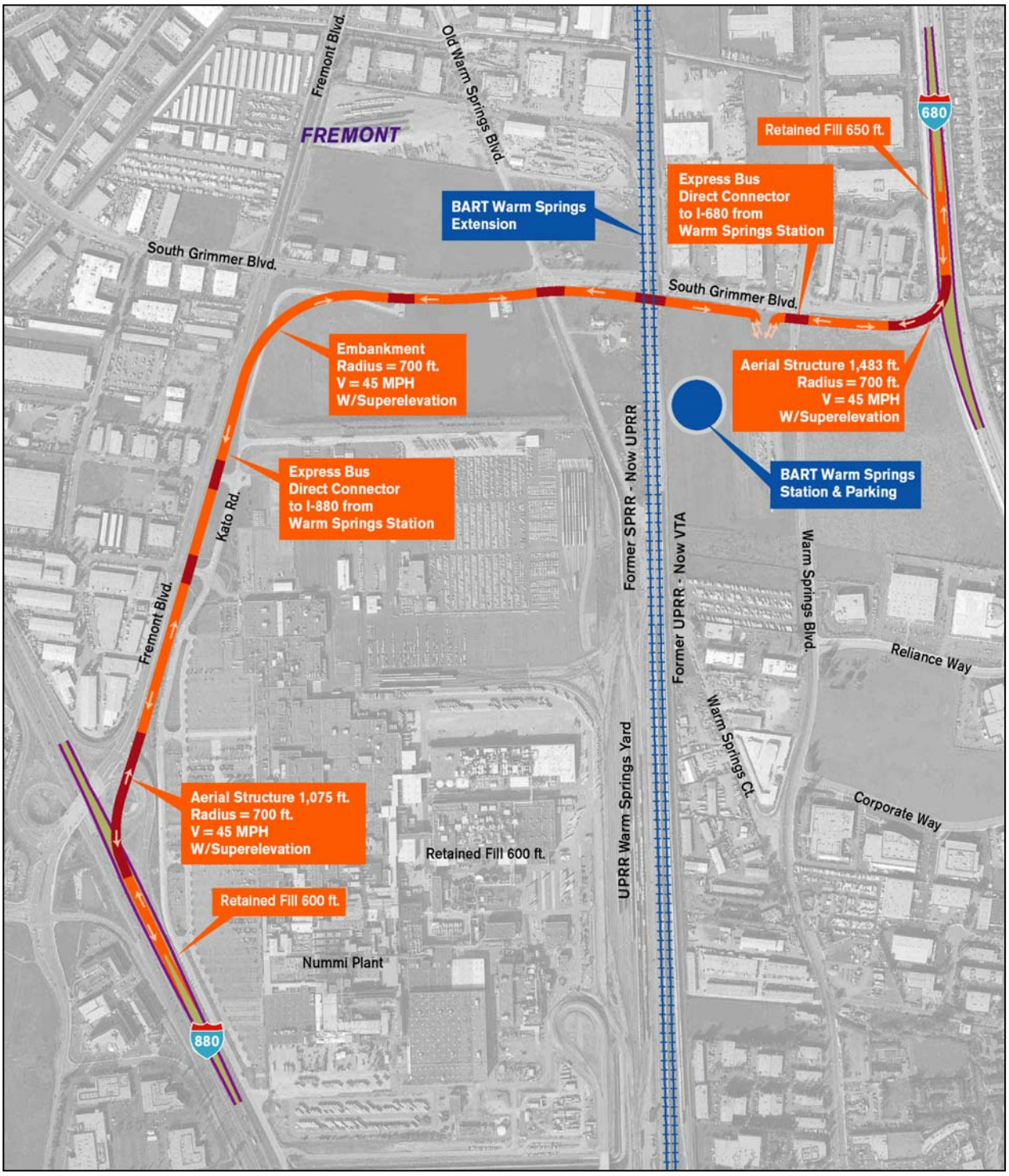

Figure 3.3-3: Baseline Alternative Busway Connectors: (1) I-680 to Planned BART Warm Springs Station and (2) Proposed BART Station to I-880

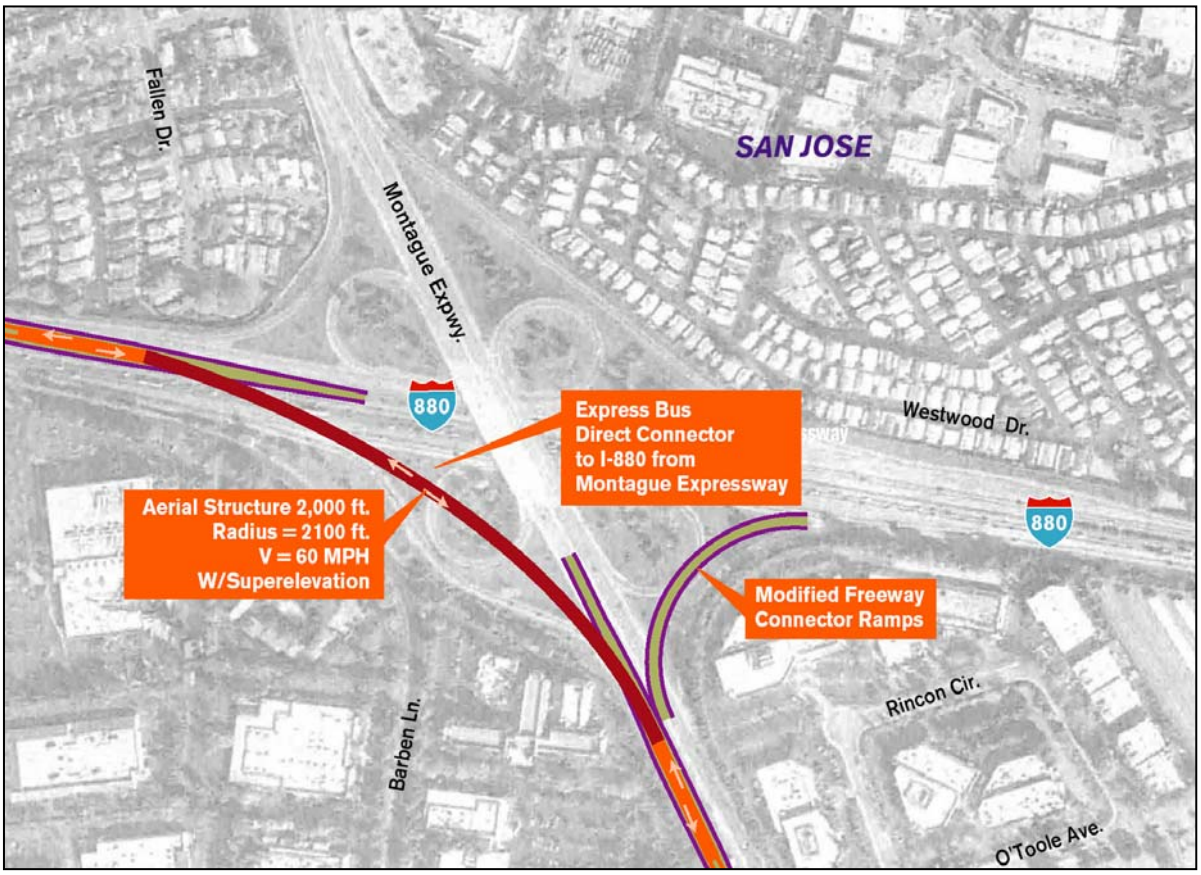

Figure 3.3-4: Baseline Alternative Busway Connector I-880 to Montague Expressway

3.4 BART EXTENSION ALTERNATIVE

The BART Extension Alternative (BART Alternative) consists of a BART heavy rail transit line partially constructed on the former UPRR ROW now owned by VTA. The BART Alternative would begin at the planned BART Warm Springs Station (to be implemented by 2008) in the City of Fremont and proceed through Milpitas to near 28th and East Santa Clara streets in San Jose on the railroad ROW. The extension would then turn into downtown San Jose in a subway (Figure 3.4-1) and terminate at grade in the City of Santa Clara near the Caltrain Station. Service for the BART Alternative could start in 2013, if funding were available.

Figure 3.4-1: BART Subway Station

Proposed Stations. The 16.3-mile BART Alternative would have seven stations, plus one future station:

- South Calaveras (Future) – at Calaveras Boulevard (SR 237) and the rail ROW
- Montague/Capitol – at the rail ROW between Montague Expressway and Capitol Avenue
- Berryessa – at Berryessa Road and the rail ROW
- Alum Rock – at 28th Street between East Julian and East Santa Clara streets
- Civic Plaza/San Jose State University (SJSU) – at East Santa Clara Street between 4th and 7th streets
- Market Street – at West Santa Clara Street between 1st Street and Almaden Avenue
- Diridon/Arena – south of and parallel to West Santa Clara Street between Autumn and White streets
- Santa Clara – at Benton Street/Brokaw Road between El Camino Real and Coleman Avenue.

Segments. Since the alignment passes through a diverse array of communities, each containing unique alignment characteristics, the following description of the BART Alternative is divided into five segments, making it easier to locate a specific portion of the alignment that might be of interest. The five segments, as shown on Figure 3.4-2, include:

- Segment 1 – Planned BART Warm Springs Station to Trade Zone Boulevard
- Segment 2 – Trade Zone Boulevard to Mabury Road
- Segment 3 – Mabury Road to 19th Street
- Segment 4 – 19th Street to I-880
- Segment 5 – I-880 to Lafayette Street

Each segment discussion includes a description of alignments (including design options), physical characteristics, and station locations (including design options). Maps and other graphics are included in the appendices. Other related facilities (i.e., electrical and train control equipment, BART Maintenance Facility, freight railroad "wye" (three tracks forming a triangle used to turn trains around), and a relocated truck transfer facility) are described in Section 3.4.6. Construction techniques and staging areas are described in Section 4.19, *Construction*.

Appendix A includes Figures A-1 through A-48, which illustrate the conceptual plan/profile drawings of the proposed alignment and design options discussed in each segment section. Figure A-1 provides a graphic key to the drawings, Figure A-2 provides an index of the drawings, and Figures A-3 through A-48 are the actual drawings. The upper portion of each drawing shows the location of the proposed facilities on the ground as seen from the air. The lower portion shows the vertical alignment (e.g., aboveground, below ground, at grade), called the alignment profile. Appendix B includes Figures B-1 through B-43, which illustrate the conceptual drawings of the station design options. The first drawing for each station shows the overall station footprint. Subsequent drawings show one or more station design options (as applicable), including both plan views and elevations. Potential station entrance/exit locations are shown on the conceptual underground station plan drawings.

3.4.1 SEGMENT 1 – PLANNED BART WARM SPRINGS TO TRADE ZONE BOULEVARD

Segment 1 of the BART Alternative is shown in Figures 3.4-3 and 3.4-4. Drawings showing the proposed BART alignment and profile in this segment are provided in Appendix A, Figures A-5 through A-22.

Figure 3.4-2: BART Extension Alternative Alignment and Segments

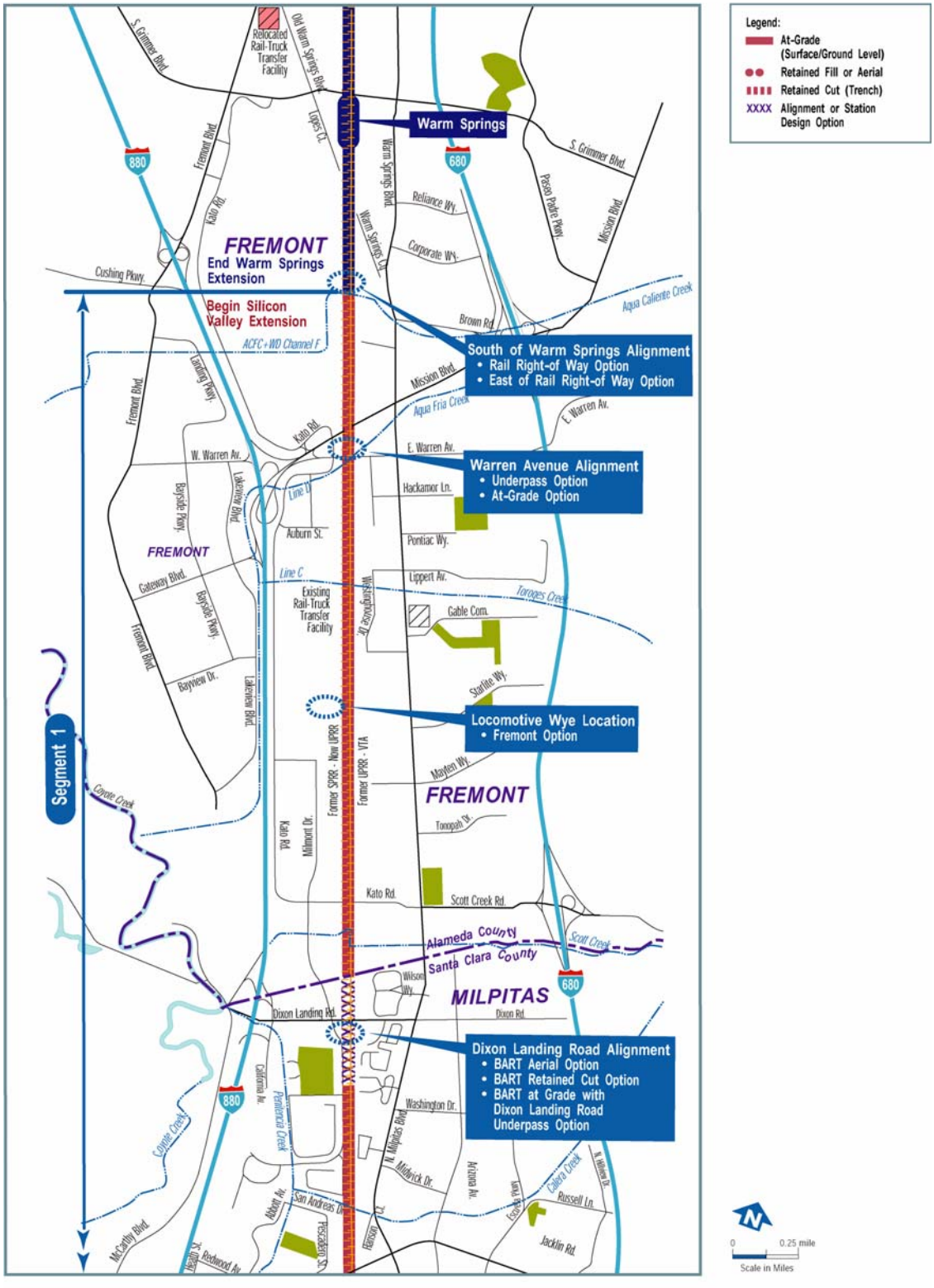

Figure 3.4-3: Segment 1 – BART Warm Springs Station to Trade Zone Boulevard (northern portion of segment)

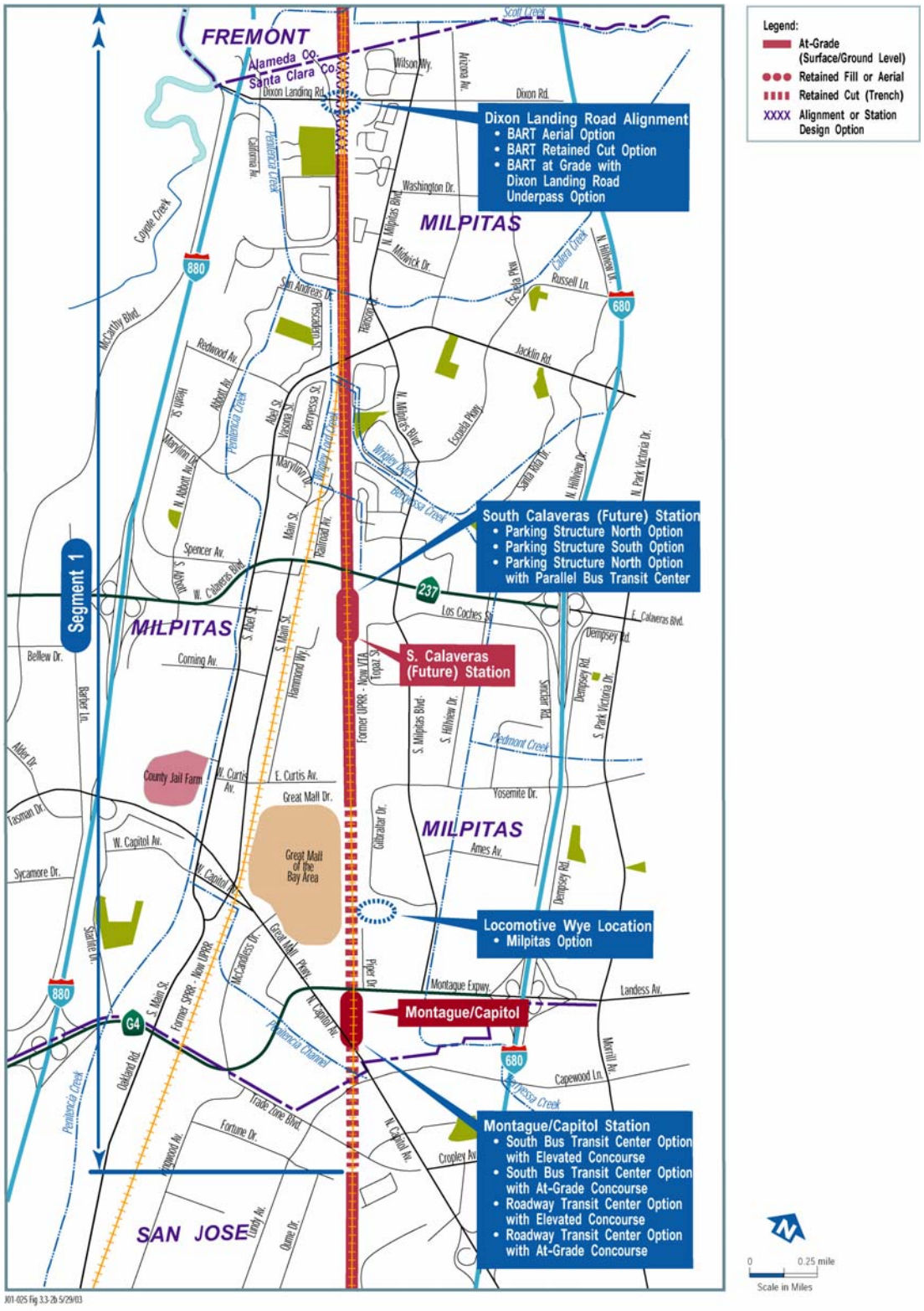

Figure 3.4-4: Segment 1 – BART Warm Springs Station to Trade Zone Boulevard (southern portion of the segment)

3.4.1.1 Alignment

As shown on Figures A-5 through A-8, the new, two-track BART rail line would proceed at grade south from the southern boundary of the planned BART Warm Springs Extension Project located about 2,200 feet north of Mission Boulevard in Fremont at the Alameda County Flood Control and Water Conservation District Channel. Two design options exist for this alignment:

- **Rail Right-of-Way Option** (Figure A-5). This alignment option would travel in the 120- to 200-foot-wide ROW that combines two separate railroad corridors – each a minimum of 60 feet wide – through south Fremont and north Milpitas. Three railroad track sidings and a petroleum pipeline in the existing Warm Springs railroad yard would be shifted west to make room for the BART alignment.[1] UPRR track and associated freight activities will vacate the VTA-owned ROW before construction begins on the BART Alternative.
- **East of Rail Right-of-Way Option** (Figure A-6). For this option, the BART alignment would be east of the rail ROW and south of the planned BART Warm Springs Station (STA 45+00) and would transition back into the rail ROW east of UPRR's Warm Springs Yard (STA 60+00). This alignment would reduce the amount of track relocation and eliminate the need to relocate the pipeline[1], but would require the acquisition and relocation of three large industrial buildings.

BART would travel at grade over the Mission Boulevard underpass, which will be widened by other agencies (Section 3.7.1). South of Mission Boulevard, the BART alignment and East Warren Avenue would cross in one of two ways:

- **East Warren Avenue Underpass (BART At-Grade) Option** (Figure A-7). This option would keep BART at grade and other agencies would reconstruct East Warren Avenue as a roadway underpass (Section 3.7.1). A new bridge would be constructed for BART, and others would construct a new two-track bridge for the UPRR.[1]
- **East Warren Avenue At-Grade (BART Aerial) Option** (Figure A-8). This option would ascend BART on a 20-foot-high elevated structure over East Warren Avenue, which would remain at grade, and a culvert containing Agua Fria Creek.

For either option, the BART alignment would eliminate truck access from East Warren Avenue to a rail-truck tank car transfer facility located in the middle of the railroad ROW south of East Warren Avenue, remove the easternmost transfer facility track, and encroach on a related truck holding facility immediately to the east of the ROW.

South of East Warren Avenue, the BART alignment would continue at grade on the eastern portion of the railroad ROW, passing by industrial buildings along Westinghouse Drive and crossing over an underground culvert that contains Toroges Creek. An abandoned freight spur would be removed at this location.

An undeveloped parcel on the west side of the ROW is one of two optional locations (Locomotive Wye Fremont Option) for VTA to construct a locomotive wye turnaround track to replace the existing UPRR locomotive wye turnaround located north of Montague Expressway, which would be severed by the BART line. The two optional locations for the replacement wye are discussed in Section 3.4.6.3.

[1] It is assumed that these improvements would be funded by either the Alameda County Transportation Improvement Agency (ACTIA) or the City of Fremont as part of their grade separation projects at Mission Boulevard and Warren Avenue.

The BART alignment would continue at grade, crossing over Kato Road, which would be reconstructed as an underpass (Figure A-11). Two new bridges would be constructed over Kato Road: one for BART and one for the UPRR (Figure A-12). Access points for office parking lots immediately north of Kato Road and east and west of the BART alignment may require closure or relocation because of the underpass slopes. Sufficient width would be left along the west side of the remaining railroad ROW for a second UPRR track, which would extend south to the UPRR's Milpitas Yard.

Proceeding south from Kato Road, the BART line would continue at grade, crossing Scott Creek, which is underground in a culvert, and the Alameda/Santa Clara County line. The BART line would continue south, passing apartment complexes and homes bordering on the east, and would cross Dixon Landing Road. The Dixon Landing Alignment would have one of three configurations:

- **Aerial Option** (Figure A-13). BART would be on an aerial structure approximately 25 feet high and 480 feet long. The alignment would return to grade on retained fill about 1,100 feet south of Dixon Landing Road. The UPRR tracks would remain at grade at this location, with an at-grade crossing of Dixon Landing Road.
- **Retained Cut Option** (Figure A-14). For this option, BART would pass underneath Dixon Landing Road in a 2,200-foot-long, approximately 22-foot-deep retained cut centered at the roadway. Dixon Landing Road would be supported above BART on a new roadway structure that would remain at grade.
- **At-Grade Option** (Figures A-15 and A-16). If the BART alignment remained at grade, Dixon Landing Road would be reconstructed as an underpass, passing beneath both BART and the UPRR tracks, both of which would be on new bridges. For this option, the design speed on Dixon Landing Road would have to be lowered from 40 miles per hour to 25 miles per hour. Access points to several nearby parking lots, including a driveway for residential development east of the BART alignment and north of Dixon Landing Road, would be closed and/or consolidated with alternative access points. The intersection of Dixon Landing Road and Milmont Drive would have to be lowered by four to six feet. Retaining walls would be constructed for the underpass to accommodate the widening of Dixon Landing Road from four to six lanes (which is planned by the City of Milpitas), affecting residential apartments and a mobile home park on Dixon Landing Road east of the BART line and businesses along Milmont Drive.

Approaching Abel Street, the BART alignment would continue at grade on the east side of the railroad ROW, crossing an underground culvert containing Calera Creek before passing under the existing Abel Street overcrossing (Figure A-17). The BART line would pass over Berryessa Creek on a new 100-foot-long bridge. New two-track bridges would be constructed over Calera Creek and Berryessa Creek for the UPRR. South of Berryessa Creek, the two freight railroad corridors diverge and their rights-of-way narrow considerably to approximately 60 feet each.

South of Abel Street, BART would use 60 feet for its two-track alignment until Curtis Avenue and then partially share the 60-foot ROW with the UPRR from Curtis Avenue to about 1,000 feet north of Montague Expressway. Construction of the BART line in the constrained ROW would require relocation of two existing UPRR Milpitas Yard lead tracks to the west side of the ROW and construction of a new two-track bridge over Wrigley Creek. The new lead track would be used by the railroad to gain access to the Milpitas Yard from the north. New replacement tracks would also be constructed in the yard and would connect with a single freight lead track serving industries south of the Milpitas Yard. After crossing and then bordering Wrigley Creek on the west (Figure A-18), the BART line would pass at grade below the existing Calaveras Boulevard (SR 237) overpass and parallel the UPRR's Milpitas Yard at grade on the east. Toward the southern end of the yard, the BART line would cross the Hetch-Hetchy aqueduct on a structure and abut the Milpitas Yard employee parking area (Figure A-19).

South of Curtis Avenue (Figures A-19 and A-20), the BART alignment would descend into a retained cut 16 to 20 feet deep to allow a UPRR freight lead track to cross over the BART line on a 440-foot-long bridge and gain access to several major industries south of the UPRR Milpitas Yard and east of the ROW. To accommodate this UPRR lead track, approximately 20 feet of additional ROW would need to be acquired from the easternmost portion of the Great Mall Shopping Center and the Parc Metropolitan condominium complex, including a park area to be dedicated to the City of Milpitas (Section 3.7.3). The UPRR lead track would need to be relocated up to 22 feet to the west to accommodate the BART alignment. The 20-foot-wide strip of land acquired to accommodate the lead track and construction of the retained cut would continue for approximately 1,800 feet along Great Mall Drive until the lead track crossed over the BART alignment near the southeast corner of the existing parking structure. At that point, a 20-foot-wide strip extending south for 800 feet would be acquired on the eastern side of the ROW.

The second option for the relocated locomotive wye turnaround track (Locomotive Wye Milpitas Option; Figure A-20, STA 355+00) would be located north of Montague Expressway east of the rail ROW (Section 3.4.6.3). South of Montague Expressway, freight service would be discontinued by the UPRR and the rail freight line would be removed in its entirety to make room for the two-track BART line. Thus, the BART alignment would no longer be sharing the rail ROW with freight tracks or service from this point south. UPRR has filed or will file a petition with the federal Surface Transportation Board to abandon freight rail service in this railroad corridor south of Montague Expressway in Milpitas.

BART would continue in a retained cut past the Great Mall and would pass beneath Montague Expressway, Capitol Avenue, and Trade Zone Boulevard, each of which would be supported above BART on new roadway structures (Figures A-20 and A-22). A specially designed underground culvert (siphon) would be constructed to facilitate the continued flow of storm drainage into the East Penitencia Channel below the BART retained cut.

The railroad ROW contains an oil pipeline owned by Chevron generally located along the east side of the ROW extending from Grimmer Boulevard to Mabury Road. MCI/World Com owns a fiber optics cable that is generally located along the west side of the ROW in the segments between Warm Springs and 28th/Santa Clara streets. Other utility lines also share the railroad ROW for short segments.

To ensure a safe environment for UPRR freight trains and BART operating in close proximity in a "common corridor," safety measures in accordance with California Public Utilities Commission and Federal Railroad Administration guidelines would be implemented. VTA and BART would jointly assess "common corridor" safety to determine the most appropriate and cost-effective design treatment(s) where BART would operate in close proximity to a freight or passenger railroad. These may include electronic intrusion detection and alarm systems, crash barrier walls, and raised BART trackways.

3.4.1.2 Station Locations

Segment 1 would have two stations as described below. All figures referred to in this section are found in Appendix B.

- **South Calaveras Future Station** (Figure B-1). A future station for mid-town Milpitas will be constructed south of Calaveras Boulevard on the east side of the railroad ROW. The at-grade station would contain a 700-foot-long, 28- to 32-foot-wide center platform with a mezzanine one level above. Access to the station platform would be from the mezzanine level. Pedestrian connections would extend from the mezzanine level to a 10-bay intermodal bus transit center and kiss-and-ride area. Up to 1,200 parking spaces are proposed to be created in a multi-level parking structure. Three design options are under consideration for the station area:

- **Parking Structure North Option** (Figures B-2 and B-3). This option would provide a multi-level parking structure on the north side of the bus transit center and would accommodate future transit facilities south of the bus transit center. The bus transit center would be located perpendicular to the station.
- **Parking Structure South Option** (Figures B-4 and B-5). This option would provide surface parking north of the bus transit center and a multi-level parking structure south of the bus transit center. The bus transit center would be located perpendicular to the station.
- **Parking Structure North Option with Parallel Bus Transit Center** (Figures B-6 and B-7). With this option, the bus transit center would be parallel to the station. East of the bus transit center, this option would provide a multi-level parking structure at the north end and surface parking on the south end.

The South Calaveras Future Station area would encompass up to 22 acres of land and require several business relocations. Wrigley Creek may be relocated several feet to the west, but would remain in an open, natural channel. Road widenings are assumed along Milpitas Boulevard and Los Coches Street to facilitate traffic flow into and out of the station area. The main access to the parking areas would be provided from Los Coches Street.

VTA has met with Community Working Groups (CWGs) (including representatives of affected agencies, jurisdictions, businesses, and communities) for this as well as all other stations to develop the preliminary station concept plans found in Appendix B. The input received on the station concepts was summarized in the *Station and Urban Design Comment Summary Report* that covers the period from April 15, 2002 through October 31, 2002. This comment report also describes the pubic outreach process involved in sponsoring multiple station and urban design workshops for the community. VTA intends to continue these community coordination efforts to evaluate design options for stations proposed for the BART Alternative.

- **Montague/Capitol Station** (Figure B-8). This station, which would extend between Montague Expressway and Capitol Avenue along the BART alignment, would contain two 700-foot-long, minimum 16-foot-wide side platforms in a retained cut. Access to the station platforms would be from a mezzanine situated above the track level. Elevated pedestrian connections would extend from the BART station mezzanine to the adjacent Tasman East aerial LRT station situated in the median of Capitol Avenue. Pedestrian connections to a 14-bay intermodal bus transit center, kiss-and-ride area, and a multi-level parking structure containing 1,200 to 1,600 spaces would be located east of the station. Four design options are under review for this station:

  - **South Bus Transit Center Option with Elevated Concourse** (Figures B-9 and B-10). Under this option, a multi-level parking structure would be located to the north, with surface parking to the south of the bus transit center. Within the station building, the concourse would be elevated two floors above the passenger boarding platforms. The bus transit center would be located perpendicular to the station.
  - **South Bus Transit Center Option with At-Grade Concourse** (Figures B-11 and B-12). Under this option, a multi-level parking structure would be located to the north, with limited surface parking to the south of the bus transit center. Within the station building, the concourse would be at-grade. The bus transit center would be located perpendicular to the station.
  - **Roadway Transit Center Option with Elevated Concourse** (Figures B-13 and B-14). Under this option, a multi-level parking structure would be located north, with surface parking south of the bus transit center. Within the station building, the concourse would be elevated two floors above the passenger boarding platforms. The bus transit center would be located perpendicular to the station.

- **Roadway Transit Center Option with At-Grade Concourse** (Figures B-15 and B-16). Under this option, a four- to five-level parking structure would be located north, with surface parking south of the bus transit center. Within the station building, the concourse would be at-grade. The bus transit center would be located perpendicular to the station.

Vehicular access would occur from Milpitas Boulevard on the northeast, Montague Expressway and Gladding Court on the north, and Capitol Avenue on the west. The station area, including a plaza situated on a triangular parcel between the mezzanine and Capitol Avenue, would encompass up to 21 acres. Existing uses, including research and development industries to the east and a storage area for a trucking company on the west, would be removed.

Traffic and pedestrian movement into and out of the station area would be facilitated by roadway improvements on Montague Expressway and an extension of South Milpitas Boulevard beginning on the south side of Montague Expressway, continuing through the station area, and terminating at Capitol Avenue. In addition, a new traffic signal would be installed at the new intersection of South Milpitas Boulevard and Capitol Avenue.

3.4.2 SEGMENT 2 – TRADE ZONE BOULEVARD TO MABURY ROAD

Segment 2 of the BART Alternative is shown in Figure 3.4-5. Drawings showing the proposed BART alignment and profile in this segment are provided in Appendix A, Figures A-22 through A-25.

3.4.2.1 Alignment

South of Trade Zone Boulevard, the BART line would transition from retained cut to an at-grade configuration. Adjoining land uses are commercial/industrial on the west and residential on the east. The BART line would abut the residences along Tradan Drive, Flickinger Way, Flickinger Place, Flickinger Court, Flickinger Avenue, and Silvertree Drive. Approaching Hostetter Road, BART would descend into a retained cut and remain 16 to 20 feet below grade until immediately north of Berryessa Road. Roadway structures above the BART trench would be constructed at Hostetter Road and Lundy Avenue/Sierra Road.

North of Berryessa Road, BART would transition from below grade to an elevated configuration, first on retained fill extending 550 feet and then on an aerial structure 22 feet above grade just north of the Berryessa Station. The aerial alignment would cross Berryessa Road, Upper Penitencia Creek, and Mabury Road, which would remain in their present configurations. The aerial alignment would pass over and not affect the Santa Clara Valley Water District (SCVWD) planned subsurface drainage bypass structure crossing under the ROW south of Berryessa Road or the existing 66-inch-diameter central pipeline storm drain that parallels the BART alignment south of Berryessa Road and crosses to the west under the existing railroad north of Mabury Road.

A BART combination crossover and pocket track would be installed on the elevated guideway from approximately 500 feet south of Berryessa Station to approximately 1,100 feet south of Mabury Road. Railroad access to the industries located near the rail alignment at Mabury Road and immediately north of US 101 would be severed and not replaced.

The alignment in Segment 2 is contained within the existing railroad ROW. No additional ROW is needed for the BART alignment in this segment.

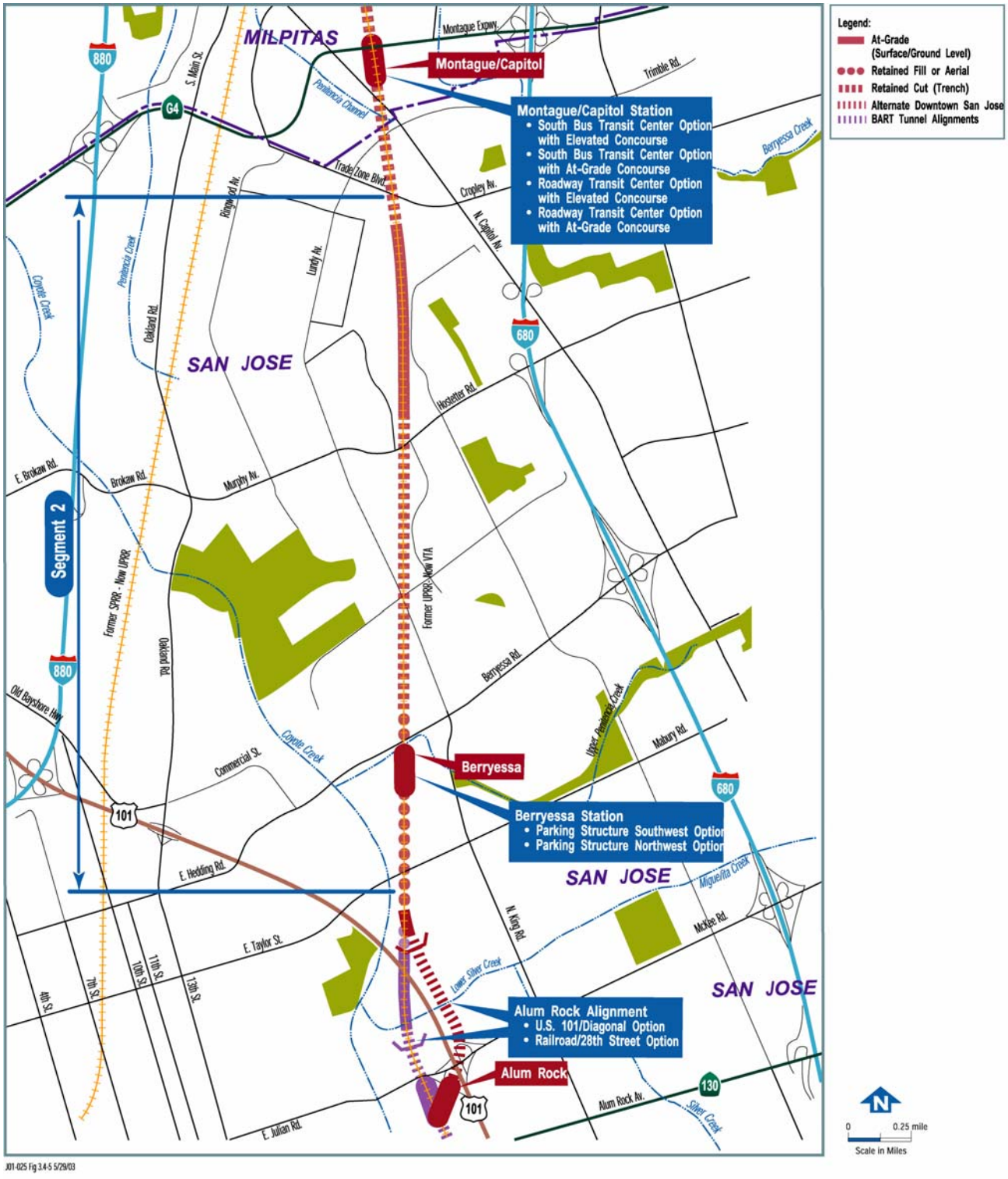

Figure 3.4-5: Segment 2 – Trade Zone Boulevard to Mabury Road

3.4.2.2 Station Locations

The Berryessa Station is the only proposed station for Segment 2. All figures referred to in this section are found in Appendix B.

- **Berryessa Station** (Figure B-17). This station would be an elevated, 700-foot-long, 28- to 32-foot-wide center platform station centered between Berryessa Road and the planned subsurface SCVWD drainage bypass structure to the south. The mezzanine level, situated at grade beneath the elevated BART platform, would provide direct access to the station platform. Two design options are under consideration for the Berryessa Station area.

    - **Parking Structure Northeast Option** (Figures B-18 and B-19). This option would locate station facilities on approximately 43 acres to the east and west of the station. An eight-bay bus transit center, plaza, and kiss-and-ride area would be located on the west. Access would be provided from Berryessa Road on the north and by a newly constructed street originating at Mabury Road and paralleling the BART ROW on the west. Surface and multi-level parking facilities accommodating 1,500 to 2,500 vehicles would be located east of the station, with a small surface lot north of the bus transit center. Vehicular access to the parking facilities would be from Berryessa Road and from a new street originating at King Road and continuing parallel to or on top of the planned SCVWD drainage bypass structure. For this option, several businesses east of the ROW would be relocated. In addition, up to 400 vendor stalls would be displaced at the San Jose Flea Market – approximately 20 percent of the total.
    - **Parking Structure Southwest Option** (Figures B-20 and B-21). This option would involve up to 43 acres, on the west side of the ROW. The bus transit facility, plaza, and kiss-and-ride area would remain immediately west of the station as in the Parking Structure Northeast Option. Surface and multi-level parking facilities accommodating 1,500 to 2,500 vehicles would be located in the San Jose Flea Market overflow parking lot between the SCVWD drainage bypass structure and Mabury Road, with a small surface lot north of the bus transit center. Vehicular access would be from Berryessa Road and from Mabury Road via a new street along the west side of the BART ROW. As described above under the Parking Structure Northeast Option, up to 400 vendor stalls would be displaced at the San Jose Flea Market.

Under either station option, the parking garage could include up to 3,500 spaces if 1,000 spaces were shifted from the Alum Rock Station (see Section 4.2, *Transportation and Transit*, Table 4.2-14).

3.4.3 SEGMENT 3 – MABURY ROAD TO 19TH STREET

Segment 3 of the BART Alternative is shown in Figure 3.4-6. Drawings showing the proposed BART alignment and profile in this segment are provided in Appendix A, Figures A-26 through A-32.

3.4.3.1 Alignment

South of Mabury Road, the BART line would continue elevated on retained fill for 940 feet before descending into a short (840-foot) retained cut north of US 101. The line would continue to descend into a cut-and-cover tunnel (extending 640 feet) as it diverted from the railroad ROW under Marburg Way, which parallels the east side of US 101 in this area. The depth of the tunnels as measured from the ground or street level to the top, or crown, of the tunnels varies from 20 feet to 60 feet. The tunnels would generally be 40 feet deep when they pass beneath residences and businesses. To construct these tunnels, property easements would be required.

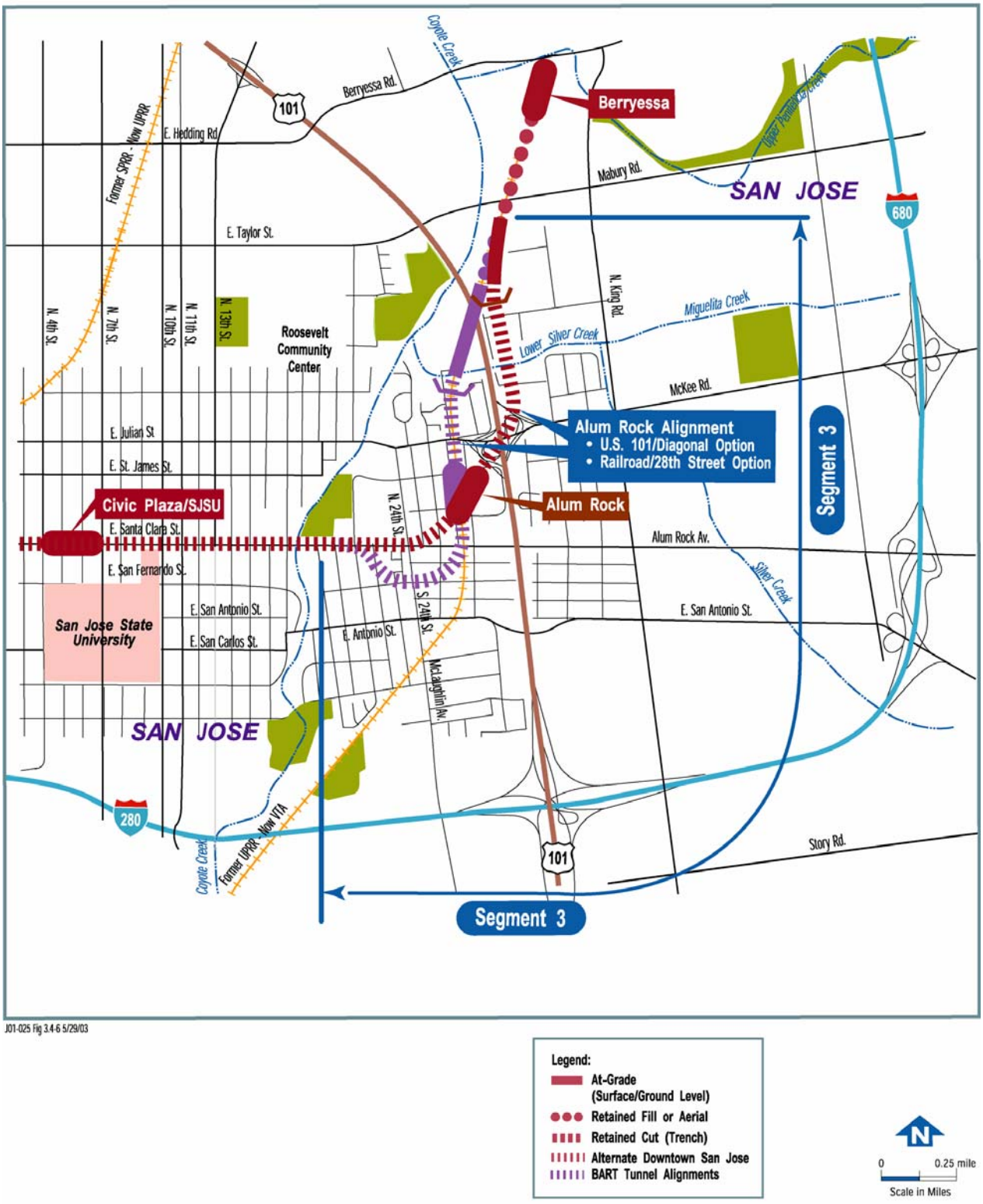

Figure 3.4-6: Segment 3 – Mabury Road to 19th Street

Two BART alignment options are under consideration for this portion of the segment:

- **US 101/Diagonal Option** (Figures A-26 through A-28). For this option, a tunnel boring machine (TBM) would be employed past Las Plumas Avenue (where industrial buildings and storage areas line Marburg Way) to construct the tunnel portion of this segment (Section 4.19, *Construction*). The bored tunnel would curve under US 101 at McKee Road/East Julian Street and traverse the block between US 101 and 28th Street (south of East Julian Street), where a former steel company building and other industrial facilities are located. The bored tunnel would then curve under 28th Street, the railroad ROW, and 27th and 26th streets before passing under East Santa Clara Street. The tunnel would continue underneath a 100-foot-wide East Santa Clara Street ROW.
- **Railroad/28th Street Option** (Figures A-29 through A-32). This alignment option would follow the railroad ROW between US 101 and 28th Street, remaining above grade and crossing over US 101 and Lower Silver Creek. At the US 101 crossing, the existing steel plate girder single track railroad bridge could be used (if it meets, or can be modified to meet, BART criteria) for the southbound BART track and a new bridge would be built on the east side to accommodate the second northbound BART track. The existing single-track railroad bridge over US 101 was constructed in the early 1990's. However, if for some reason it cannot be used for the BART Alternative, then it would be removed and replaced with a new two-span, cast-in-place concrete double track bridge approximately 32 feet wide by 340 feet long with direct fixation rail fastening and outside emergency walkways. At Lower Silver Creek, an entirely new bridge would be constructed. BART would then descend into a short (590-foot) retained cut before continuing into a cut-and-cover subway box north of Julian Street. The BART line would be constructed underneath the railroad ROW to 28th/East Santa Clara streets. From 28th/Santa Clara streets, the alignment would continue underground in a twin-bore tunnel, diverting from the railroad ROW in a sweeping curve to the south and west. The subway would curve under commercial and residential blocks south of Santa Clara Street between 27th and 24th streets, enter a reverse curve under 24th and San Fernando streets, and continue under residential blocks to reach Santa Clara Street near 19th Street. West of 19th Street, the tunnel would be located underneath the 100-foot-wide East Santa Clara Street ROW.

3.4.3.2 Station Locations

The Alum Rock Station is the only proposed station for Segment 3. All figures referred to in this section are found in Appendix B.

- **Alum Rock Station** (Figure B-22). Vehicular traffic would be directed into the station area primarily through East Julian and 28th streets. East Julian Street may be widened between 28th Street and the northbound US 101 off-ramp. In addition, a possible slip ramp may provide direct access from the parking garage to southbound US 101. New or modified traffic signals would be installed at the intersections of 28th/East Julian and 28th/East Santa Clara streets, as well as at McKee Road and the existing US 101 northbound off-ramp. The 28th/East Santa Clara intersection would also be designed as a pedestrian/transit gateway to the station area and would provide pedestrian links with buses and possible light rail operating on East Santa Clara Street and Alum Rock Avenue. A multi-level parking structure accommodating 1,500 to 2,500 cars would be constructed. There are two options for the Alum Rock Station, the location of the station would depend on the BART alignment option that is selected, as described below:
  - **US 101/Diagonal Option** (Figures B-23 through B-24). For this option, the subway station would be located north of East Santa Clara Street between US 101 and 28th Street on approximately 15 acres of land now occupied by industrial uses. The station would be constructed on a diagonal using cut-and-cover techniques. The depth of the station, measured from the ground or street level to the top of the station box (the roof of the mezzanine or concourse), would be from 10 to 15 feet. The station box would be approximately 950 to 1000 feet in length and 65 feet in width. Direct access to the 700-foot-long, 28- to 32-foot-wide

center platform would be provided through a subsurface mezzanine one level above the platform. Elevators and escalators would connect the mezzanine level with a "town square" entry plaza on the surface east of 28th Street. Station entrances potentially may be integrated into new or existing adjacent buildings. The multi-level parking structure would be constructed on the north side of the station area between 28th Street and US 101.

- **Railroad/28th Street Option** (Figures B-25 and B-26). For this option, BART would follow the railroad ROW past US 101 to Alum Rock Avenue, and the Alum Rock Station site would be located below grade in the railroad ROW between East Julian and East Saint John streets. The depth of the station, measured from the ground or street level to the top of the station box, is less than five feet below 28th Street. The station area would consist of 15 acres of land now occupied by industrial uses and would contain the same facilities as described for the US 101/Diagonal Option, requiring the same 15 acres of land. Auto access to the parking structures and the station drop-off area would be via East Julian and 28th streets.

3.4.4 SEGMENT 4 – 19TH STREET TO I-880

Segment 4 of the BART Alternative is shown on Figure 3.4-7. Drawings showing the proposed BART alignment and profile in this segment are provided in Appendix A, Figures A-32 through A-42.

3.4.4.1 Alignment

BART would continue in a subway under East Santa Clara Street, passing below Coyote Creek, Los Gatos Creek, and the Guadalupe River to the vicinity of the HP Pavilion (aka San Jose Arena) and San Jose Diridon Caltrain Station, a distance of 2.4 miles. The subway would be constructed using a TBM. The depth of the tunnels, measured from the ground or street level, to the top, or crown, of the tunnel generally varies from 20 feet to 60 feet (Section 4.19, *Construction*). The tunnels are at their deepest when they pass under Coyote Creek between 19th and 17th streets, and are at their shallowest when they pass under Stockton Avenue between Lenzen Avenue and McKendrie Street. The tunnels would generally be 40 feet deep when they pass beneath residences and businesses. Construction would occur within the 100-foot-wide public ROW of East/West Santa Clara Street, which includes the 68-foot-wide street and 16-foot-wide sidewalks on each side. To construct these tunnels, property easements would be required. The BART subway would encounter multiple subsurface utility lines in the downtown area at the three downtown subway stations (Section 3.4.4.2). These subway stations would be constructed using cut-and-cover methods; thus, the utilities would have to be supported in place/reinforced or relocated.

Two options are under consideration for a BART double crossover track to be located in a cut-and-cover subway box structure:

- **West of Civic Plaza/SJSU Station Crossover Option** (Figure A-34). This crossover option is located between 4th and 2nd streets.
- **West of Market Street Station Crossover Option** (Figure A-35). This crossover option is located between Almaden Avenue and SR 87.

West of SR 87, the BART subway would divert from West Santa Clara Street and continue under the Guadalupe River and Los Gatos Creek to the Diridon/Arena Station area. Two BART tunnel alignments are under consideration for this portion.

- **North Option** (Figures A-36 through A-37). This option would continue immediately south of and parallel to West Santa Clara Street, passing under the Guadalupe River, a historic office building and parking area development site owned by the San Jose Water Company, Los Gatos Creek, and Autumn Street.

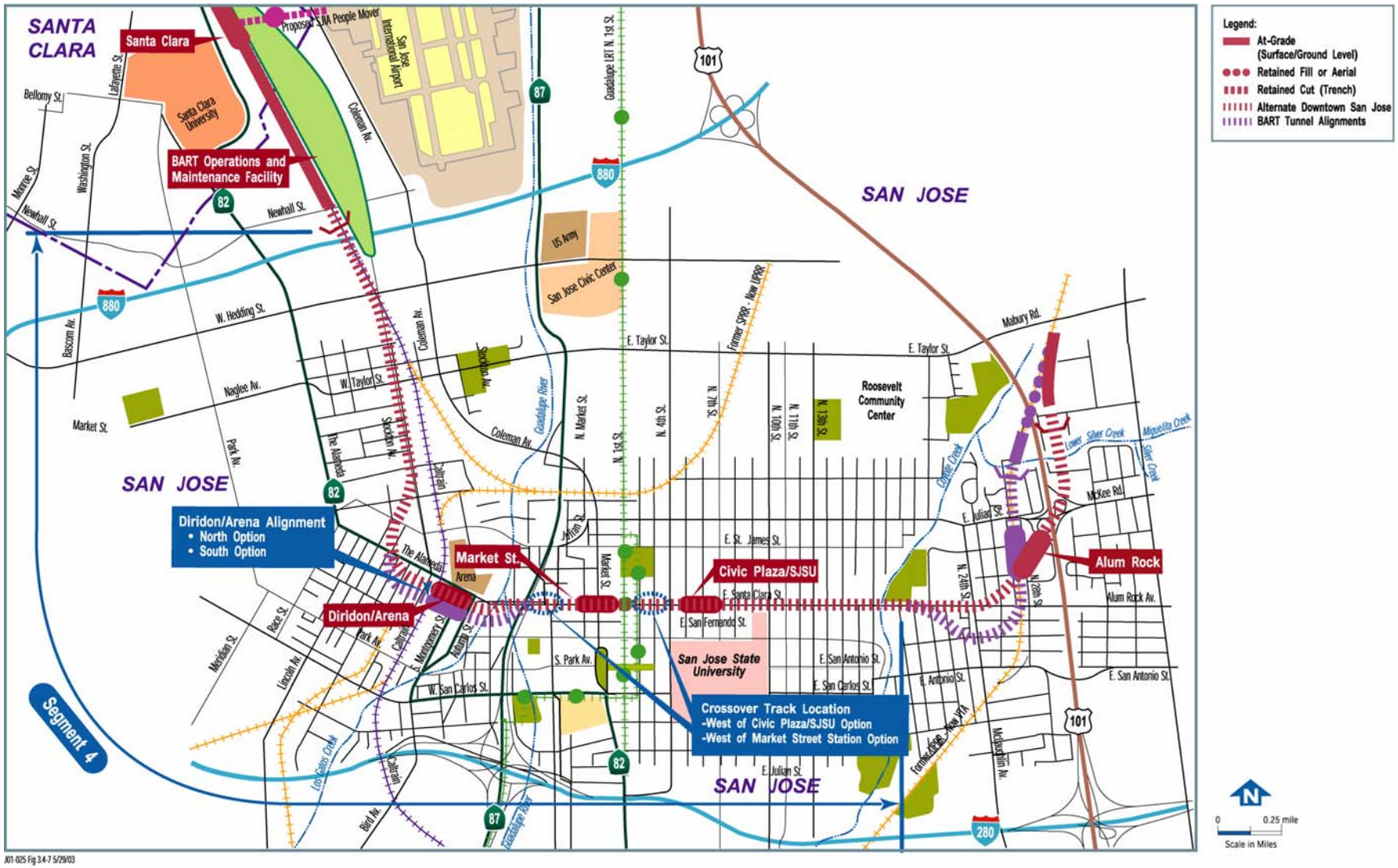

Figure 3.4-7: Segment 4 – 19th Street to I-880

- **South Option** (Figures A-38 through A-40). This option would divert from West Santa Clara Street east of SR 87, passing under the planned/approved nine-story Marriott Hotel site, the Guadalupe River, a parking area development site owned by the San Jose Water Company, Los Gatos Creek, an office building along Autumn Street, and the former Crandall Street ROW.

For either option, the alignment would travel beneath parking lots between Autumn and Cahill streets that are owned by VTA, the City of San Jose, and Caltrain. The BART subway would continue under the Caltrain and UPRR tracks, White Street, and Bush Street, where the historic Del Monte Cannery residential reuse project and the new Avalon residential project are located.

West of Bush Street, the subway would begin a sweeping curve beneath commercial and residential structures fronting The Alameda and Rhodes Street. It would continue under blocks containing residential and industrial uses on West Julian and Cinnabar streets before entering the public ROW under Stockton Avenue at Lenzen Avenue. At this point, the tunnel would be located entirely underneath the 80-foot-wide Stockton Avenue ROW.

If the alignment followed the former Crandall Street ROW (South Option), the subway would continue under the Caltrain tracks, the Del Monte Cannery residential reuse project, and the new Avalon residential project before curving under Sunol Street, The Alameda, West Julian Street, Cinnabar Street, and Lenzen Avenue to Stockton Avenue.

Where Stockton Avenue crosses the Caltrain ROW south of Hedding Street, the alignment would divert from Stockton Avenue and pass under the railroad tracks, which are located at grade. The BART subway would continue on the east side of the Caltrain ROW, tunneling under the Hedding Street overpass, several industrial buildings, and storage areas that border the ROW. Approaching the I-880 overpass (over the railroad), the BART alignment would begin to ascend in a cut-and-cover subway box below the I-880 railroad overpass and would displace two large industrial buildings and storage areas that front Stockton Avenue, north of McKendrie Street. Cut-and-cover construction would extend over 1,300 feet, passing beneath the I-880 overpass to a subway portal just south of Newhall Street. ROW would be acquired between McKendrie and Newhall streets.

3.4.4.2 Station Locations

Segment 4 would have three subway stations as described below. These stations would be constructed using cut-and-cover techniques. The depth, measured from the ground or street level to the top of the station box (the roof of the mezzanine or concourse), would vary from 10 to 15 feet. All figures referred to in this section are found in Appendix B.

- **Civic Plaza/SJSU Station** (Figures B-27 through B-29). This subway station would be located under East Santa Clara Street in an approximately 950- to 1000-foot-long by 65-foot-wide subway box located between 4th and 7th streets. The 700-foot-long, 28- to 32-foot-wide center platform would be constructed with passenger access provided from the mezzanine one level above. Street level escalator and elevator entrances would enable passenger access to the mezzanine level from several different possible locations between 4th and 8th streets, with potential underground walkways that may lengthen the mezzanine level at either end of the station. The seven potential station entrances may be integrated into existing or new adjacent buildings. However, the final decision on which entrances to be constructed and where will be made during preliminary engineering and will be based on a number of factors including cost, constructibility, availability of land, pedestrian connectivity, and safety and security. After that decision, supplemental environmental documentation may be required. The station would have bus connections at various designated locations. However, no parking would be incorporated into the station plan.

- **Market Street Station** (Figures B-30 through B-32). This subway station would be under West Santa Clara Street in an approximately 950- to 1000-foot-long by 65-foot-wide subway box located between 1st Street and Almaden Avenue. The 700-foot by 28- to 32-foot center platform would be constructed in a station box similar to that described for the Civic Plaza/SJSU Station. The platform would have access from the mezzanine one level above. Street level escalator and elevator entrances would provide access to the mezzanine level from several different possible locations between 2nd Street and Almaden Avenue, with potential underground walkways that may extend from the mezzanine level at either end of the station and along 1st, Market, and San Pedro streets. The eleven potential station entrances may be integrated into existing or new adjacent buildings. However, the final decision on which entrances to be constructed and where will be made during preliminary engineering and will be based on a number of factors including cost, constructibility, availability of land, pedestrian connectivity, and safety and security. After that decision, supplemental environmental documentation may be required. The station would have bus connections at various designated locations and would include a connection to VTA's existing Guadalupe LRT. No parking would be incorporated into the station plan.
- **Diridon/Arena Station.** There are two options for this station; the location would depend on the BART alignment design option selected. Under either option, the 700-foot-long, 28- to 32-foot-wide station platform would be constructed in an approximately 950- to 1000-foot-long by 65-foot-wide subway box. The station platform would be connected to the mezzanine one level above. Street level escalator and elevator entrances would provide access to the mezzanine level at several different possible locations between Autumn Street and Stockton Avenue. Pedestrian connections from the Diridon/Arena Station to the San Jose Diridon Caltrain Station, the nearby Vasona LRT station, and HP Pavilion would be provided. Station entrances intended to serve the HP Pavilion would be placed to minimize pedestrian/rider impacts from surges during high-use periods.

    - **North Option** (Figures B-33 through B-35). This subway station would be located immediately south of West Santa Clara Street.
    - **South Option** (Figures B-36 through B-38). This station would be under the former Crandall Street ROW between Autumn Street and the Caltrain station tracks leading to the San Jose Diridon Caltrain Station.

  There are five potential station entrances with the north option and six entrances with the south option. However, the final decision on which entrances to be constructed and where will be made during preliminary engineering and will be based on a number of factors including cost, constructibility, availability of land, pedestrian connectivity, and safety and security. After that decision, supplemental environmental documentation may be required.

To replace lost parking for the San Jose Diridon Caltrain Station and the HP Pavilion, and to add 1,500 to 2,200 new park-and-ride spaces for the BART station at this location, two large multi-level parking structures would be built. One would be located on a parking area adjacent to and immediately west of the HP Pavilion and north of West Santa Clara Street, and another east of the San Jose Diridon Caltrain Station and south of West San Fernando Street (Figures B-34, B-35, B-37, and B-38). The parking structure and surface lot south of West San Fernando Street may also contain a bus transit center that would replace the VTA bus transit facility located south of West Santa Clara Street and immediately east of the San Jose Diridon Caltrain Station.

3.4.5 SEGMENT 5 – I-880 TO LAFAYETTE STREET

Segment 5 of the BART Alternative is shown in Figure 3.4-8. Drawings showing the proposed BART alignment and profile in this segment are provided in Appendix A, Figures A-42 through A-45.

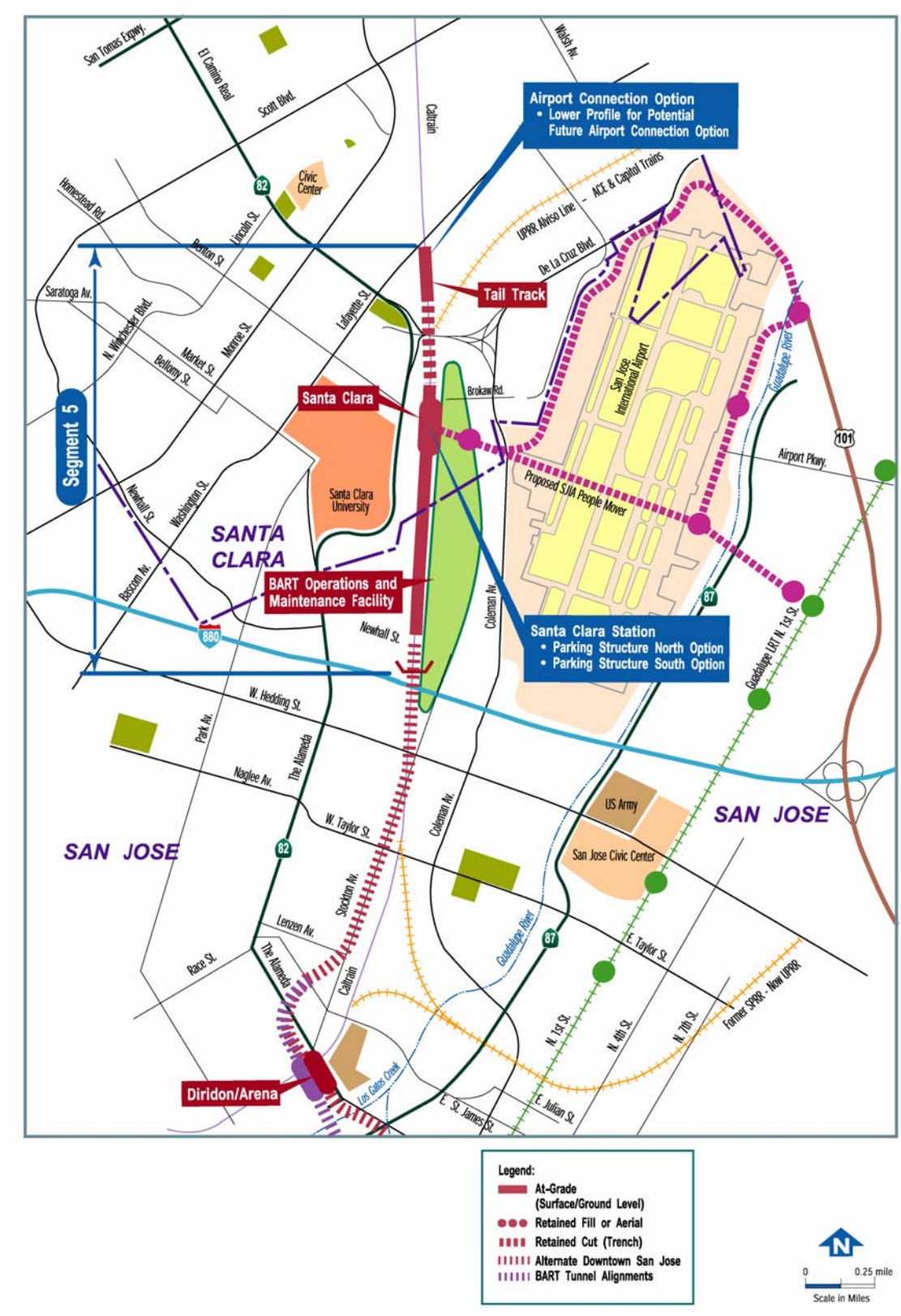

Figure 3.4-8: Segment 5 – I-880 to Lafayette Street

3.4.5.1 Alignment

From the Newhall Street subway portal to the end of the line, BART would travel in a retained cut for approximately 400 feet before continuing at grade to the Santa Clara Caltrain Station. The alignment would use the eastern (vacant land) side of the UPRR Newhall Yard opposite the Santa Clara Caltrain Station (which also serves ACE, Capitol Corridor, and Amtrak trains).

Immediately east of the alignment, a BART Maintenance Facility would be constructed (Section 3.4.6.1). Two tail tracks would extend approximately 2,250 feet beyond the Santa Clara Station toward Lafayette Street and pass in a retained cut-and-cover subway under the UPRR Coast Route alignment and under De La Cruz Boulevard.

The truck-rail facility and 4 light industrial properties would be relocated to accommodate the alignment and BART Maintenance Facility. The tail track between De la Cruz Boulevard and Lafayette Street would also require the relocation of 10 light industrial properties and 75 storage units.

3.4.5.2 Station Locations

There is one proposed station for Segment 5. All figures referred to in this section are found in Appendix B.

- **Santa Clara Station.** This station would be located on the northeast side of the UPRR ROW, approximately centered on Brokaw Road, and on the western portion of the Federal Express facility site (Figure B-39 shows the station area footprint). The 700-foot-long, 28- to 32-foot-wide center platform would be located at grade centered on Benton Street, Brokaw Road and just northeast of the Santa Clara Caltrain Station platforms. An approximate 400-foot-long elevated or underground pedestrian connection would link the BART station platforms with the Caltrain platforms, bus plaza, and kiss-and-ride area on the west side of the Caltrain ROW. In addition to a potential pedestrian undercrossing, two options are being evaluated for an overcrossing. One pedestrian overcrossing option extends north of the historic Santa Clara Tower on the west side of the Caltrain ROW, and the other stretches just south of the historic Tower. In addition, two design options are under consideration for the parking facilities.

    - **Parking Structure North Option** (Figures B-40 and B-41). With this option, a multi-level parking structure would be located on the north side of Brokaw Road on the site of the Federal Express facility. The bus transit center would include five bus bays, a bus shelter, and kiss-and-ride. The Federal Express property would be acquired for the station structure, the pedestrian connection, and an 800- to 1,200-car multi-level parking structure.
    - **Parking Structure South Option** (Figures B-42 and B-43). With this option, a multi-level parking structure would be located on the south side of Brokaw Road on the site of the United Defense office buildings. A bus transit center would provide six bus bays, a bus shelter, and a kiss-and-ride. The United Defense property would be acquired for the station structure, the pedestrian connection, and an 800- to 1,200-car multi-level parking structure.

A proposed APM would link the BART and Caltrain/ACE/Capitol Station with the SJIA terminals (Section 3.7.1). To accommodate any future extension of BART beyond the Santa Clara Station and into the SJIA, two options have been identified. The **At-grade Profile Beyond De La Cruz Boulevard Option** would maintain the tail tracks at grade. The **Lowered Profile for a Potential Future Airport Connection Option** would lower the BART profile (Figure A-45).

3.4.6 OTHER RELATED FACILITIES

3.4.6.1 BART Alternative Ancillary Facilities

Electrical Equipment

BART trains run from an electrified third rail adjacent to each track and would require electrical power supply substations and bulk power substation/switching stations that would interface with PG&E and possibly Silicon Valley Power.

- **Traction Power Substations.** Substations include both outdoor and indoor types of equipment housed in a pre-fabricated building. The equipment consists of 34.5 kilovolt (kV) alternating current (AC) metal clad walk-in type switchgear, transformer-rectifier assemblies, 1,000 volt (V) direct current (DC) switchgear circuit breakers, control equipment, electrical auxiliary equipment, protection relays, meters and telemetering devices, supervisory control and data acquisition system (SCADA), and connecting AC and DC power and control cables. These facilities are used to transform 34.5kV AC to 1000V DC electric power for distribution to the traction electrification system through the contact rail system, which provides power to the vehicles, the passenger stations, and the maintenance and shop facilities. Approximate dimensional requirements of traction power substations are 60 by 200 feet (outdoor installation) and 110 by 125 feet or 50 by 220 feet (indoor installation).
- **1,000V DC Gap Breaker Stations.** These stations consist of indoor type 1,000V DC switchgear circuit breakers housed in a pre-fabricated building. They are complete with protection relays and meters, SCADA, and connecting DC power cables to the 1,000V contact rail to provide a continuous DC loop over the entire system during normal operating conditions. During maintenance, repairs, or emergency conditions, the gap breaker stations are used to isolate appropriate contact rail sections. Approximate dimensional requirements of gap breaker stations are 30 by 40 feet.
- **Bulk Power Substations.** These substations include outdoor type equipment consisting of power utility interface equipment such as a disconnect switch, a metering potential and current transformers and revenue metering facility, an 115kV outdoor-type power circuit breaker, a power transformer, a 34.5kV indoor-type power circuit breaker, and electrical auxiliary equipment for control and utilization equipment, protection relays, meters, telemetering devices and SCADA. This facility is used to transform 115kV AC utility power to 34.5kV AC power for distribution to the dual 34.5kV sub-transmission cable system. Approximate site dimensional requirements of bulk power substations are 70 by 160 feet, and 75 by 190 feet for a combined bulk power substation and switching station.
- **34.5kV Switching Stations.** These stations consist of 34.5kV metal-clad, walk-in-type switchgear circuit breakers, protection relays and meters, and SCADA which is used for switching, distribution, and protection to the entire dual redundant 34.5kV sub-transmission cable system. Approximate dimensional requirements of switching stations are 30 by 40 feet.
- **34.5kV Sectionalizing/Gap Breaker Stations.** These facilities consist of (normally open position) metal-clad, walk-in-type 34.5kV switchgear circuit breakers, protection relays and meters, and SCADA, which is used to tie-in existing BART 34.5kV cable distribution circuits or new 34.5kV cable distribution circuits to obtain a flexible and reliable power supply system during contingency operations. Approximate dimensional requirements of sectionalizing/gap breaker stations are 30 by 20 feet. This equipment would be combined with the traction power substation 34.5kV AC switchgear assembly.

Ten traction power substations are proposed at the following locations:

- Traction Power Substation #1 (TPSS #1), south of East Warren Avenue on east side of rail ROW – (Figures A-5 and A-6, STA 79+00)
- TPSS #2, south of Kato Road on west side of rail ROW (Figure A-13, STA 174+00)
- TPSS #3, between Railroad Court and the rail ROW south of the Abel Street rail overcrossing (Figure A-18, STA 260+00)
- TPSS #4, north of Montague Expressway on east side of rail ROW (Figure A-20, STA 366+00 and Figure A-21)
- TPSS #5, south of Trade Zone Boulevard next to commercial parking area on the west side of the rail ROW (Figure A-22, STA 415+00)
- TPSS #6, north of Berryessa Road on west side of rail ROW. There are two options that are currently being considered:
    - Immediately south of Aschauer Court (Figure A-24, STA 509+00)
    - Immediately north of Berryessa Road (Figure A-25, STA 518+00)
- TPSS #7 would be located at the underground Alum Rock Station. The specific location would be dependent on the alignment and station location option selected:
    - Southwest end for the US 101/Diagonal Option (Figure A-27, STA 606+00), beneath the new landscaped 28th Street.
    - North end for the Railroad/28th Street Option (Figure A-30, STA 598+00), beneath the new landscaped 28th Street.
- TPSS #8, west end of the underground Civic Plaza/SJSU Station (Figure A-34, STA 686+00)
- TPSS #9 would be located at the underground Diridon/Arena Station. Its specific location would be dependent on the alignment and station option selected:
    - West end of station for the North Option (Figure A-36, STA 740+00)
    - East end of station for the South Option (Figure A-39, STA 735+00)
- TPSS #10, south of the Santa Clara Station and east of the UPRR Newhall Yard (Figure A-42, STA 852+00).

Three bulk substation/switching stations are proposed at the following locations:

- Station #1, between Railroad Court and the rail ROW south of the Abel Street rail overcrossing (Figure A-18, STA 258+00, and Figure A-46)
- Station #2, at Mabury Road and the rail ROW on east side of ROW (Figure A-25, STA 547+00, and Figure A-47)
- Station #3, north of the I-880 overpass over the active freight and passenger rail line at Newhall Street (Figure A-42, STA 824+00, and Figure A-48).

All three of the proposed bulk substation/switching stations at Railroad Court, Mabury Road, and Newhall Street would require installation of high-voltage (115kV) power feed lines from nearby power supply sources (e.g., existing PG&E towers/lines). Approximately 400 feet of new high-voltage line would run

from Bulk Power Station #1 northwest across Wrigley Creek and connect to the existing high-voltage line southeast of the intersection with Berryessa and Calero streets (Figure A-46). Approximately 1,400 feet of new high-voltage line would run from Bulk Power Station #2 east along the north side of Mabury Road and connect to the existing high-voltage line near the intersection of Mabury and King roads (Figure A-47). Approximately 300 feet of new high-voltage line would run from Bulk Power Station #3 to the PG&E Substation located near Newhall Street and Stockton Avenue (Figure A-48). These high-voltage power lines would require approximately 60-foot high tapered tubular steel towers spaced every 400 to 500 feet.

A separate traction power substation may be required for operating the shop tracks and maintenance storage tracks. The BART Maintenance Facility would also have a substation to supply power to the maintenance buildings. A gap breaker station would be placed at the mainline yard transfer zone. The Maintenance Facility would contain an emergency generator as a back-up power supply.

Facilities Power Supply

The BART Alternative stations, ventilation fan plants, and new Maintenance Facility will be supplied with electric power by nearby overhead and underground medium voltage 480V, 12.47kV and 21kV PG&E transmission lines. The Santa Clara Station will be supplied with electric power from nearby Silicon Valley Power (SVP) medium voltage lines. The specific physical improvements required to make these electric power supply connections cannot be determined until preliminary engineering has been performed. There will be a need to construct short (typically less than 1,000 feet) sections of overhead and underground electric lines from existing power transmission facilities to the new BART Alternative facilities. Each BART Alternative station and each ventilation fan plant will be powered from two independent sources for reliability: 1) local PG&E or SVP transmission facility; and 2) the BART 34.5kV sub-transmission cable system. In addition, each station and the BART Maintenance Facility will have a standby diesel-electric generator located aboveground.

Train Control Equipment

Train control equipment would be installed for the extension to integrate operations with the existing BART system. This would include such things as Advanced Automatic Train Control (AATC) equipment and train control houses.

- **Advanced Automatic Train Control.** This equipment is a radio-based train positioning and controlling system. AATC would use radios and antennae mounted along the ROW on small masts or on brackets in tunnel ceilings.
- **Train Control Houses.** AATC would also require train control houses or bungalows. These facilities would be co-located with traction power sites or stations and consist of small pre-fabricated metal buildings.

Communications

Expansion of BART's existing 800 MHz trunked radio system is assumed. In addition, radio towers would be installed along the extension to support communications.

- **Radio Towers.** Three radio towers would be needed for the BART Alternative. Each radio tower would be approximately 60 feet high as measured from the ground level. The tower would be tapered tubular steel two to three feet in diameter at its base, with a large concrete foundation and with multiple antennas at the top. The three radio tower locations would be as follows:

- **Montague/Capitol Station.** The radio tower would be northeast of the station at the northwest corner of the multi-story parking structure fronting on Montague Expressway, either alongside or on top of the parking structure (Figure A-20, STA 371+00).
- **Berryessa Station.** Two options are being considered for the location of this radio tower, depending on the station option (Figure A-25, STA 536+00):
  - **Parking Structure Southwest Option.** The tower would be located southwest of the station at the northeast corner of the multi-story parking structure, either alongside or on top of the parking structure midway between Berryessa Road and Mabury Road.
  - **Parking Structure Northeast Option.** This tower would be located northeast of the station at the southwest corner of the multi-story parking structure, either alongside or on top of the parking structure approximately 300 feet south of Berryessa Road.
- **Maintenance Facility.** This tower would be located between the main revenue vehicle shop building and the transportation building/yard control tower, midway between Brokaw Road and Newhall Street (Figure A-42, STA 849+00).

Subway Support Facilities

Various facilities are needed to support the subway section in San Jose. This includes such features as cross-passageways, emergency exits, and tunnel ventilation structures.

- **Ventilation Structures.** Tunnel vent shafts would be located at various points along the underground alignment. Ventilation structures would typically be approximately 20 x 35 feet in size and 10 to 15 feet in height. However, each ventilation structure's final configuration and size would be a function of the specific design issues at each site. In Segment 3, three or four vent structures are proposed depending on the option. In Segment 4, ten vent structures are proposed. The locations are described below.

Segment 3

- For the US 101/Diagonal Option, four vent structures are proposed: one adjacent to the east side of US 101 between Las Plumas Avenue and Lower Silver Creek (Figure A-26, STA 575+00); one at each end of Alum Rock Station (Figures A-26, STA 598+00 and A-28, STA 606+00); and one on the southeast corner of East Santa Clara and 20th streets (Figure A-28, STA 633+00).
- For the Railroad/28th Street Option, three vent structures are proposed: one at each end of the Alum Rock Station (Figures A-30, STA 596+50 and Figure A-31, STA 605+50) and one at the southeast corner of East Santa Clara and 20th streets (Figure A-32, STA 639+50).

Segment 4

Three vent structures would be located between 19th and 4th streets: one at the northwest corner of East Santa Clara and 13th streets (Figure A-33, STA 656+20), and one at each end of the Civic Center/SJSU Station (Figure A-33, STA 677+20 and STA 687+00).

At the Market Street Station, two vent structures – one at each end – are proposed: at the northeast corner of East Santa Clara and 1st streets (Figure A-34, STA 696+00) and one at the southeast corner of West Santa Clara Street and Almaden Avenue (Figure A-35, STA 708+50).

At the Diridon/Arena Station, two vent structures are proposed. The location depends on the option:

- For the North Option, one would be located at the southeast corner of West Santa Clara and Montgomery Street (Figure A-36, STA 732+20) and another would be located at the southeast corner of West Santa Clara and White streets (Figure A-36, STA 740+00).
- For the South Option, one would be located at the southeast corner of Crandall and Montgomery streets (Figure A-39, STA 733+50) and the other at the northeast corner of Crandall and White streets (Figure A-39, STA 741+40).

A vent structure would be located at the vacant lot west of Stockton Avenue and north of Cinnabar Street (Figures A-36 and A-40, STA 767+20 for both the North and South options); one would be located east of Stockton Avenue and north of West Taylor Street (Figures A-37 and A-41, STA 790+00); and one on the east side of the Caltrain tracks and south of I-880 (Figure A-42, STA 818+20).

New BART Maintenance Facility

A new BART maintenance and storage facility would be located on approximately 59 acres in the eastern portion of the UPRR Newhall Yard and the western portion of the Food Machinery Corporation (FMC) manufacturing facility in San Jose and Santa Clara and south of I-880 (refer to Figures A-42 and 4-43). This new facility is needed at the terminus of the BART Alternative due to the sheer length of the extension. Without it, trains would have to travel significant distances to existing BART facilities, generating greater wear-and-tear on the vehicles and increasing operating and maintenance costs. In addition, existing BART maintenance and storage facilities have capacity constraints. The new facility would accommodate a fleet of up to approximately 240 BART cars to store new vehicles acquired for the extension, as well as some of BART's existing vehicles needed for morning start-up service, "ready-reserve," maintenance, and future growth. The 240 cars include 120 cars (12 10-car trains) available for the Santa Clara/San Francisco line and 42 cars (6 7-car trains) for the Santa Clara/Richmond line (42 cars) morning start-up service. It also includes 10 cars (1 10-car train) available for ready reserve, approximately 30 cars as maintenance spares, and approximately 40 cars as 20% growth contingency. The new BART maintenance and storage facility would include the following:

- **Main Revenue Repair Facility.** The main car repair shops building would consist of a shop floor of approximately 50,000 square feet; component repair (electronic repair shop and electro-mechanical repair shop) of approximately 18,000 square feet; back shop (heavy repair) of approximately 12,500 square feet; 10,000 square feet for administrative offices; and a store room of approximately 20,000 square feet.
- **Turntable.** The turntable would be located in the main yard and controlled by the yard tower operator. The turntable would be able to reverse the direction of any control car.
- **Train Washer.** The train washer would be a programmable logic controlled 10-car train washer with 20-minute intervals and would reclaim 80 percent of the water used in accordance with state and federal guidelines.
- **Yard Control Tower.** The yard control tower would be centrally located to have visual oversight to nearly all train movement. The tower would be able to control all train movements automatically and track all car locations.
- **Building Maintenance Facility.** A building maintenance facility would be constructed to provide a work location for personnel who maintain the 16.3-mile BART service, including the station facilities.
- **Transfer Tracks.** Transfer tracks lead to and from the yard from the mainline tracks. Either BART's central control or the tower supervisor would automatically control these tracks to bring trains into and out of the yard. The transfer tracks would accommodate 10-car trains.

- **Station/Structure Maintenance and Training Facility.** The station/structure maintenance and training building would be two stories for a total of 30,000 square feet. Station/structure maintenance will require 25,000 square feet and include parts storage, upholstery repair, glass repair, automatic fare vending machine and fare gate repair, carpentry, HVAC, electric/plumbing, paint shop, and radio/electronics repair. The training facility would require 5,000 square feet on the second floor and include modern visual and training aides. The training amenities would include a training simulator for train operators, training test equipment for transit vehicle mechanics and technicians, training aides for elevator and escalator technicians, training aides for wayside train control technicians, and other mechanical and technical training needs, as required.
- **Systems, Wayside Equipment and Non-Revenue Vehicle Maintenance Facility and Shops.** The non-revenue vehicle shop would be located in an approximate 20,000-square-foot building containing an overhead crane, rail pits, vehicle hoists, and fueling facility. The facility will include BART rail connections to the yard and mainline tracks, enough area for rail storage, and a railroad spur to the storage yard.
- **Car Cleaner Facility.** The car cleaner facility would be a stand-alone building approximately 3,500 square feet in size and centrally located along the BART vehicle storage tracks. The building would have storage capacity to hold seats, equipment, and supplies necessary to clean up to 240 rail vehicles.
- **Cash Handling Building.** The cash handling building would be a stand-alone, special construction building requiring approximately 15,000 square feet of space. The site would require a minimum of 30,000 square feet for tractor/trailer turnaround operations and parking facilities for cash handling vehicles.
- **Police Facility.** A BART police facility would be located on the maintenance yard site.
- **Employee and Visitor Parking.** Employee and visitor parking would be established in two locations totaling approximately 200 spaces in the maintenance and storage area. One parking area for operators would be located at the train dispatch facility. Another would be located near the main revenue repair facility.

3.4.6.2 BART Core System Parking Analysis

To achieve the anticipated ridership for the BART Alternative, additional parking for those passengers driving to BART core system stations north of the extension would need to be accommodated. That is, potential new riders generated by the BART Alternative may not be able to board at one of the BART core system stations if parking is not available. It is projected that parking for riders who would get on at BART stations north of the extension would require approximately 3,200 spaces in 2025. This core system parking expansion would be funded by VTA pursuant to the VTA/BART Comprehensive Agreement. Chapter 5, *BART Core System Parking Analysis*, contains a more detailed discussion, with a programmatic-level evaluation of parking expansion at existing BART stations attributed to the BART Alternative.

3.4.6.3 Associated Railroad Improvements

Freight Railroad Wye

An existing set of tracks known as a wye is used to turn freight locomotives around. The existing wye is in a location that is incompatible with the BART Alternative. A new freight railroad wye would be constructed in one of two alternative locations:

- **Locomotive Wye Fremont Option** would be located on private property on the west side of the corridor, about 0.8 miles south of East Warren Avenue (Figure A-9, STA 117+00 for location and Figure A-10 for details).
- **Locomotive Wye Milpitas Option** would be located on the east side of the corridor, between Curtis Avenue and Montague Expressway (Figure A-21).

Warm Springs Rail-Truck Tank Car Transfer Facility Relocation

The alignment for the BART Alternative would eliminate the current truck access from East Warren Avenue to a rail-truck tank car transfer facility located in the middle of the railroad ROW south of East Warren Avenue, requiring removal of the eastern-most transfer facility track, and encroachment on a related truck holding facility immediately to the east of the ROW. To remedy this lost access, VTA will work with other agencies to possibly relocate the rail-truck tank car transfer facility adjacent to the existing "Sno-boy" rail-truck tank car transfer facility located north of South Grimmer Boulevard and west of Warm Springs Boulevard, as specified in VTA's ROW purchase agreement with UPRR (Figure A-4).

The Sno-boy facility would be a transfer facility between railcars and tank trucks located off Industrial Drive in Fremont, adjacent to the railroad corridor ROW. Its primary activity is the transloading of dry and liquid products, both hazardous and non-hazardous, between railcars and tank trucks. The rail yard normally operates between 6:00 a.m. and 6:00 p.m., although specific customer requests can lead to loading anytime. An average of 16 trucks per day access the site, with peak days reaching 25 trucks. On a regular basis, additional loads occur that would add three to four trucks per day. The trucks are usually dispersed throughout the business day, although 6:00 a.m. to 10:00 p.m. could be considered the peak period.

UPRR Newhall Yard Rail-Truck Transfer Facility

An existing rail-truck transfer facility is located in the northeast portion of the UPRR Newhall Yard that has a capacity of approximately 60 railroad cars. This facility provides for the transfer of sand, gravel, and other rock products from railroad hopper cars to trucks, and the transfer of petroleum products and other chemicals from railroad tank cars to trucks. This facility would be relocated to make room for the BART Maintenance Facility. A specific new location has not yet been identified for this truck-rail transfer facility; however, likely new locations would be along UPRR's Coast main line in either south San Jose between Curtner and Capitol avenues, or in Morgan Hill, San Martin, or Gilroy.

3.4.7 BART ALTERNATIVE OPERATING PLAN

BART train service would operate every day from 4:00 a.m. to 1:00 a.m. From 6:00 a.m. to 7:30 p.m., service headways would average six minutes (12 minutes on the Richmond-Fremont-San Jose line, and 12 minutes on the San Francisco-Fremont-San Jose line) between the Warm Springs BART Station and Downtown San Jose/Santa Clara. This represents a reduction of three minutes from current BART 15-minute service headways. After 7:30 p.m. and on weekends, the average headways would be 10 minutes (20-minute service headways on each BART line). The San Francisco-Fremont-San Jose line would terminate at the 24th/Mission Station in San Francisco instead of continuing into San Mateo County.

Eight VTA "SVRTC" express bus routes (Lockheed/Martin, NASA/Shoreline Industrial Parks, Sunnyvale/Mountain View Industrial Parks, Oakmead (two routes), SJIA, northeast San Jose, and Dixon Landing) would be retained from the Baseline Alternative, but seven routes would be truncated at their northern ends at the Montague/Capitol BART Station. Two of the seven express routes (SJIA and northeast San Jose Industrial Parks) would be converted to feeder service. Some of VTA's local bus routes within the SVRTC also would be rerouted to serve BART stations. Express bus service from the Central Valley, Tri-Valley, and central Contra Costa County, which would be operated at the sole

discretion of the respective local transit agencies, would terminate at the Warm Springs BART Station, as in the Baseline Alternative. Caltrain, ACE, Capitols, and VTA's LRT would retain the same levels of service identified under the No-Action Alternative.

VTA "SVRTC" express bus routes would operate at 10- to 60-minute headways in the peak direction from 4:30 a.m. to 8:30 a.m. in the morning peak and from 3:00 p.m. to 7:00 p.m. in the evening peak. Three of the express bus routes would also operate in the reverse-peak commute direction. The two converted feeder routes would operate all-day long at 30-minute headways in both directions. VTA's local bus routes also would serve BART stations throughout the day.

3.4.8 BART AND VTA FLEET REQUIREMENTS

Compared with the Baseline Alternative, the BART Alternative would require a substantial increase in the BART fleet, which would replace the need for extensive "SVRTC" express bus service from the proposed BART Warm Springs Station. The differences in fleet size between the Baseline and BART alternatives in the year 2025 are indicated in Table 3.4-1.

Table 3.4-1: 2025 Fleet Requirements for Baseline and BART Alternatives

Operator/Mode	Baseline Alternative	BART Alternative
"SVRTC" Express Bus	111	56
VTA Standard Bus	586	586
Total VTA Buses:	697	642
VTA Light Rail	91	91
BART [1]	878 to 898	1,004
"Valley" Express Bus [2]	45	47

Notes:
[1] Number of BART vehicles will be determined based on Fleet Management Plan currently under development.
[2] Operated and funded by SMART, MAX, LAVTA, and County Connection.
Sources: Manuel Padron & Associates, VTA, 2003.

These fleet sizes lead to an estimate of 106 to 126 additional BART vehicles for the BART Alternative to meet required Year 2025 service levels in comparison to the Baseline Alternative. Table 3.4-2 lists VTA's projected 2025 bus, light rail, and BART vehicle revenue miles and hours of service based on these fleet and service requirements.

Table 3.4-2: 2025 Annual Revenue Operating Statistics for BART Alternative

Mode	Vehicle/Train Hours	Vehicle/Car Miles
VTA Bus	1,607,000	28,871,000
VTA Light Rail	208,000	5,305,000
BART	444,000	112,128,000
"Valley" Express Bus [1]	66,000	1,963,000

Note:
[1] Operated and funded by SMART, MAX, LAVTA, and County Connection.
Sources: Manuel Padron & Associates, VTA, 2003.

3.4.9 MINIMUM OPERATING SEGMENT SCENARIOS

In July 2003, the FTA recommended that VTA identify a BART Alternative Minimum Operating Segment (MOS) to include in the EIS/EIR and New Starts process. An MOS translates to constructing the BART Alternative in two phases, which would include an initial operating phase and a final phase to complete the full project. The FTA feels the MOS approach would make the project more competitive in the New Starts program by reducing the initial project cost and federal funding share. Based on FTA's direction, VTA has defined two MOS scenarios for analysis in this EIS/EIR: MOS-1E and MOS-1F.

Under both MOS scenarios, the entire trackway alignment would be built in phase 1 (MOS-1E or 1F) but other project elements, such as certain stations, vehicles, parking spaces, maintenance facility components, and BART core impact modifications, would be deferred to phase 2 (MOS-2E or 2F). It is assumed that the deferred MOS-2E and 2F elements would be completed within three years of initial MOS-1E and 1F phase start-up and may require additional federal funding.

The ancillary facilities for MOS-1E and MOS-1F, including electrical equipment, train control, communications, and subway support facilities would be retained in the same location as described in the full-build BART Alternative. The associated railroad relocations would also remain the same. In addition, the operating plan for both MOS scenarios would be unchanged from the full-build BART Alternative. Property would still be purchased during the first phase (MOS-1E or 1F) for all seven station sites, maintenance facility, ancillary facilities, and construction staging areas.

Following is a description of the two MOS scenarios under consideration:

- **MOS-1E**: This MOS builds the full length of the line to the City of Santa Clara including five stations (Montague/Capitol, Alum Rock, Market Street, Diridon/Arena, and Santa Clara). It defers two stations, as well as some vehicles, parking spaces, maintenance facility capacity, and BART core system facilities (required to support the BART Alternative) to MOS-2E to reduce the cost of the first phase of the project. More specifically, MOS-1E assumes the following based on a year 2025 planning horizon:
  - Defer the Berryessa and Civic Plaza/SJSU stations to MOS-2E.
  - Build shell and platform for the deferred Civic Plaza/SJSU subway station, including the traction power substation, train control equipment and ventilation fan plants.
  - Reduce the initial vehicle purchase by 0 to 20 vehicles; number of BART vehicles will be determined based on Fleet Management Plan currently under development.
  - Build a maintenance facility for approximately 200 vehicles; deferring approximately 4,000 feet of storage track, as well as some building areas and shop equipment to MOS-2E.
  - Defer 1 percent BART core system facilities and 145-core system parking spaces to MOS-2E.
  - Reroute buses to make the Alum Rock Station more accessible.

  However, if MOS-1E were to be built to the year 2015-ridership levels, additional components could be deferred since 2015 ridership is projected to be less than 2025 ridership. Under this scenario, the following additional changes would result:
  - Defer 117 parking spaces at the Santa Clara Station to MOS-2E.
  - Reduce the initial vehicle purchase by up to 10 additional vehicles to MOS-2E.
  - Defer approximately 1,900 additional feet of storage track, as well as some building areas and shop equipment that would accommodate 20 fewer vehicles (180 total vehicles) to MOS-2E.

- Defer 3 percent more BART core system facilities and 225 more core system parking spaces to MOS-2E.

- **MOS-1F**: This MOS builds the full length of the line to the City of Santa Clara, including all seven stations (Montague/Capitol, Berryessa, Alum Rock, Civic Plaza/SJSU, Market Street, Diridon/Arena, and Santa Clara); but defers some station parking spaces, vehicles, maintenance facility capacity, and BART core system facilities (required to support the BART Alternative) to MOS-2F. It is based on year 2015 conditions to identify initial start-up and 2025 requirements:
  - Defer 1,300 parking spaces at extension stations to MOS-2F.
  - Reduce the initial vehicle purchase by 16 to 30 vehicles to MOS-2F; number of BART vehicles will be determined based on Fleet Management Plan currently under development.
  - Build a maintenance facility for approximately 180 vehicles; deferring approximately 5,900 feet of storage track, as well as some building areas and shop equipment to MOS-2F.
  - Defer 4 percent BART core system facilities and 345-core system parking spaces to MOS-2F.

3.4.10 DESIGN REQUIREMENTS AND BEST MANAGEMENT PRACTICES

The BART Alternative and MOS scenarios would be built to meet required codes and design standards and to comply with federal and state environmental laws and permitting requirements, as described for each subject area in Chapter 4, *Environmental Analysis*. Best management practices would also be applied during construction.

3.5 PROJECT COSTS

This section summarizes the capital and operating costs associated with the Baseline and BART alternatives as well as the MOS scenarios. Detailed cost information is found in Chapter 8: Financial Considerations of this document.

3.5.1 NO-ACTION ALTERNATIVE

The No-Action Alternative consists of existing roadway and transit networks, as well as programmed improvements. These planned improvements will be funded by other agencies, as identified in the RTP. Therefore, it is assumed that the No-Action Alternative has a zero-base cost to compare to the Baseline and BART alternatives. In 2025, the annual operating and maintenance costs would be $716.9 million (in 2001 dollars) for bus, light rail, and BART services under the No-Action Alternative.

3.5.2 BASELINE ALTERNATIVE

Total capital costs are estimated to be $379 million in 2003 dollars for the Baseline Alternative to purchase buses and construct roadway improvements. In 2025, annual operating and maintenance costs are projected to increase by $28.2 million (2003 dollars) for all modes under the Baseline Alternative in comparison to the No-Action Alternative.

3.5.3 BART ALTERNATIVE

Total capital costs in 2003 dollars are estimated at $4,112 million[2] for the BART Alternative, assuming the least costly design options. Initial start-up costs could be reduced by $217 to $350 million based on the

[2] Capital costs for the BART Alternative were estimated at $3,838 million in year 2001 dollars, which was the base year for the Major Investment Study/Alternatives Analysis.

MOS scenarios. This would reduce the BART Alternative costs to between $3,762 and $3,895 million for the two MOS scenarios.

In 2025, annual operating and maintenance costs for all modes under the BART Alternative are projected to grow by $73.3 million (2003 dollars) in comparison to the No-Action Alternative and $45.1 million relative to the Baseline Alternative. The costs to operate and maintain the BART Alternative in 2025 are estimated at $65.1 million compared to the No-Action Alternative and $64.4 million in comparison to the Baseline Alternative. Annual operating and maintenance costs for the MOS scenarios would be $60.3 million for MOS-1E in 2025 and $56.1 million in 2015. MOS-1F would cost $59.7 million in 2015 to operate and maintain.

3.6 ALTERNATIVES CONSIDERED AND WITHDRAWN

3.6.1 ALTERNATIVES EVALUATED DURING MAJOR INVESTMENT STUDY/ALTERNATIVES ANALYSIS

The VTA Board of Directors selected the BART Alternative as the Preferred Investment Strategy/Locally Preferred Alternative for the SVRTC on November 9, 2001. This was at the conclusion of an 8-month Major Investment Study/Alternatives Analysis (MIS/AA) of transportation improvement alternatives for the SVRTC, which involved 12 public meetings and over 15 CWG meetings. The Board instructed that the BART Alternative and Baseline Alternative be further evaluated in the environmental compliance phase in accordance with FTA guidelines for project development under the federal New Starts program.

At the beginning of the MIS/AA planning process, a broad range of transportation alternatives was considered for the corridor. Eleven preliminary alternatives were identified in comparison to a No Project Alternative:

- **Alternative 1:** The **Baseline Alternative** combined existing and programmed (expected improvements through 2025) highway, bus, rail transit, and commuter rail services in the corridor with greatly expanded regional (inter-county) express bus services using I-880, I-680, and SR 237 freeway and Montague Expressway HOV lanes to Silicon Valley employment centers connecting at the planned BART Warm Springs Station.
- **Alternative 2:** The **Busway Alternative** used an exclusive grade-separated busway along the **former UPRR alignment** for expanded express bus services traveling between the planned BART Warm Springs and Silicon Valley employment centers.
- **Alternative 3:** The **Commuter Rail Alternative on the Alviso Alignment** included increased commuter rail service on the ACE and Capitol Corridor intercity train alignments from Stockton, Tracy, and Livermore, and from Union City BART.
- **Alternative 4:** The **Commuter Rail Alternative on the former Southern Pacific Railroad (SPRR) Alignment** included commuter rail service between the planned BART Warm Springs and San Jose Diridon Caltrain Station via the former SPRR ROW.
- **Alternative 5:** The **Commuter Rail Alternative on the former UPRR Alignment** included commuter rail service between the planned BART Warm Springs Station and 28th and Santa Clara streets in San Jose via the former UPRR ROW.
- **Alternative 6:** The **Diesel Light Rail Alternative on the former SPRR Alignment** included diesel light rail service on two routes, one between the planned BART Warm Springs and the Mountain View Caltrain Station and the other between the planned BART Warm Springs and San Jose Diridon Caltrain Station via the former SPRR ROW and Tasman East and West LRT lines.
- **Alternative 7:** The **Diesel Light Rail Alternative on the former UPRR Alignment** included diesel light rail service on two routes – one between the planned BART Warm Springs and the

Mountain View Caltrain Station and the other between the planned BART Warm Springs and San Jose Diridon Caltrain Station via the former UPRR ROW and Tasman East and West LRT lines.

- **Alternative 8:** The **Light Rail (electric-powered) Alternative on the former SPRR Alignment** included light rail service on two routes – one between the planned BART Warm Springs and the Mountain View Caltrain Station and the other between the planned BART Warm Springs and San Jose Diridon Caltrain Station via the former SPRR ROW and Tasman East and West LRT lines.
- **Alternative 9:** The **Light Rail (electric-powered) Alternative on the former UPRR Alignment** included light rail service on two routes – one between the planned BART Warm Springs and the Mountain View Caltrain Station and the other between the planned BART Warm Springs and San Jose Diridon Caltrain Station via the UPRR ROW, Tasman East and West LRT lines, and existing street ROW.
- **Alternative 10:** The **BART Extension Alternative on the SPRR Alignment** included an extension of BART services from the planned BART Warm Springs Station to the Santa Clara Caltrain Station via the former SPRR ROW downtown streets (subway alignment) and Caltrain ROW.
- **Alternative 11:** The **BART Extension Alternative on the former UPRR Alignment** included an extension of BART services from the planned BART Warm Springs to the Santa Clara Caltrain Station via the former UPRR ROW, downtown streets (subway alignment), and Caltrain ROW.

Based on an initial screening using key criteria from the adopted goals (as shown in Table 3.6-1), the SVRTC Technical Advisory Committee (TAC) and Policy Advisory Board (PAB) agreed to carry forward Alternatives 1, 2, 3, 5, 9, and 11 for further definition, analysis, and evaluation. These six alternatives (including the Baseline Alternative) were refined and additional technical analysis and evaluation was conducted. The additional technical information allowed the alternatives to be evaluated in large part quantitatively against the adopted evaluation criteria (shown in Table 3.6-1).

The technical analysis was supplemented with input received through numerous public and agency meetings, including community/agency reaction to the concepts proposed and the design details considered.

From the technical analysis, the pros and cons of each of the six alternatives were identified and a composite rating of overall goals achievement was determined. The composite ratings were as follows:

- **Alternative 11: BART on the former UPRR Alignment** had seven “high” and “medium high” ratings, the highest goals achievement ranking of the six alternatives;
- **Alternative 2: Busway on the former UPRR Alignment** placed second with four “high” and “medium high” ratings;
- **Alternative 1: Baseline Alternative** had two “high” and two “medium high” ratings.
- **Alternative 9: LRT on the former UPRR Alignment** had three “medium high” ratings;
- **Alternative 3: Commuter Rail Alternative on the Alviso Alignment** had one “medium high” rating; and
- **Alternative 5: Commuter Rail Alternative on the former UPRR Alignment** had no “high” or “medium high” ratings, the lowest goals achievement ranking of the alternatives.

3.6.2 ALTERNATIVES CARRIED FORWARD INTO THE DRAFT EIS/EIR

On November 9, 2001, the VTA Board unanimously selected BART on the former UPRR Alignment (Alternative 11) as the Preferred Investment Strategy/Locally Preferred Alternative for the SVRTC, citing its overall ranking of “High” in comparison to the other alternatives. It was the environmentally superior

Table 3.6-1: Silicon Valley Rapid Transit Corridor Goals, Objectives, and Evaluation Criteria

Goal 1. Congestion Relief

Objectives

- Reduce Traffic in Highly Congested Corridors
- Provide Alternative Transportation for Highly Congested Corridors

Evaluation Criteria

- Number of Peak Trips Removed from Roadway System
- Equivalent Capacity of Freeway Lanes Provided
- Number of Highly Congested Corridors Served

Goal 2. Mobility Improvements and Regional Connectivity

Objectives

- Build Transit Usage
- Reduce Travel Time
- Promote Multimodal Connectivity
- Enhance Accessibility for Low-Income, Minority and Transit Dependent Population
- Promote Transit Services that Accommodate Work and Non-Work Trips
- Increase the Use of Commute Alternatives by Providing More Transit Service, Ridesharing and Bicycle/Pedestrian Facilities
- Provide an Important Extension or Connection to the Transit System that Increases Accessibility to Transit Service

Evaluation Criteria

- Travel Time Savings for All Users of Transportation Systems
- Number of Low-Income Households Within One-half Mile of Boarding Points
- New Transit Riders
- Number of Average Weekday Riders
- Number of Work Trips on Transit
- Number of Non-Work Trips on Transit
- Reduced Vehicle Miles Traveled
- Number of Intermodal Connections
- Number of Transfers Required
- Average Travel Speeds
- Park-and-Ride Availability
- Jobs Within One-half Mile of Boarding Points
- Degree of Access from Low-income Neighborhoods
- Number of Off-Peak Transit Routes Available

Goal 3. Environmental Benefits and Impacts

Objectives

- Minimize Noise and Vibration Impacts
- Conserve Historic and Cultural Resources
- Conserve Non-renewable Resources
- Support Regional Air Quality Plans
- Minimize Impacts on Natural Resources
- Minimize Residential and Business Displacements
- Minimize Impacts on Low-Income and Minority Population
- Consider Cumulative Environmental Impacts Resulting from Other Private and Public Works Development Projects

Table 3.6-1: Silicon Valley Rapid Transit Corridor Goals, Objectives, and Evaluation Criteria
Evaluation Criteria
Number of Historic Properties and Archaeological Sites Affected
Level of Noise and Vibration Impact of Federal Threshold
Net Change in Air Pollutant Emissions
Net Change in Greenhouse Gas Emissions
Net Change in Energy Consumption
Change in Wetlands and Threatened and Endangered Species Habitat
Goal 4. Transit Supportive Land Use
Objectives
Support Local Land Use and Development Policies
Promote Transit-oriented Development at Transit Stations through Formal Partnerships with Local Jurisdictions
Design Pedestrian-oriented Facilities
Provide Incentives that are Designed to Encourage Local Governments to Make Land Use Decisions Which Enhance Use of Public Transportation
Minimize Displacement of Low-Income and Minority Population
Evaluation Criteria
Transit-supportive Land Use Policies and Zoning Regulations in the Corridor and at Station Areas
Growth Management Policies in the Corridor
Tools to Implement Transit Supportive Land Use
Pedestrian Facilities
Acres of Land Available for Development/Redevelopment within One-half Mile of Stations and Transfer Points
Goal 5. Operating Efficiencies and Customer Benefits
Objectives
Seek Cost-effective Solutions to Transportation Needs
Increase Transit System's Operating Efficiency and Cost Recovery Ratio by Adding New Riders and Promoting Operating Cost Efficiencies
Enhance Service for Transit Riders by Addressing Important Needs in Terms of the Quantity and Quality of Service Provided, including Reliability, Convenience, Safety and Comfort
Evaluation Criteria
Operating Cost per Passenger Mile
Farebox Recovery Ratio
Passenger Mile per Vehicle Mile
Passengers per Vehicle Mile
Compatibility with Existing Transit and Freight Services
Capacity Enhancements/Constraints
Goal 6. Cost Effectiveness
Objectives
Provide Transportation Improvements to Make Efficient Use of Constrained Financial Resources
Provide Positive Fiscal Impacts on Local Governments
Evaluation Criteria
Travel Time Savings per Incremental Cost of Project
Cost per Rider
Cost per New Rider
Capital Cost per Amount of Peak Hour Transit Capacity

Table 3.6-1: Silicon Valley Rapid Transit Corridor Goals, Objectives, and Evaluation Criteria
Goal 7. Local Financial Commitment
Objectives
Maintain Adequate Funding to Sustain the Existing System while Securing New Funding Sources for System Expansion
Evaluation Criteria
Capital Financing Plan has Stable and Reliable Sources for Local Matching Funds
20-year Operating Plan has Stable and Reliable Base
Conforms with Voter-approved Conditions on Funding
Goal 8. Community and Stakeholder Acceptance
Objectives
Provide Opportunity for the General Public, Organized Community Groups, and Stakeholder Agencies to Provide Comments on the Alternatives Considered
Evaluation Criteria
Degree of Community Support
Degree of Public Agency Support
Goal 9. Environmental Justice / Socioeconomic and Geographic Equity
Objectives
Ensure Equitable Distribution of Transportation Investments and Benefits to all Communities in the Corridor Regardless of Socioeconomic Status
Ensure that the Burdens of Project Construction and Operation do not Fall Primarily on Low-Income and Minority Communities, as well as Other Transit Dependents
Provide Balance Geographically in Terms of Investment in Transit Infrastructure
Evaluation Criteria
Enhanced Transit Service and Access to Low-Income and Minority Areas, as well as Other Transit Dependents
Benefits and Cost Impacts on Low-Income and Minority Communities, as well as Other Transit Dependents
Goal 10. Safety and Security
Objectives
Ensure Safe and Secure Operation of Transportation Improvements for the Adjacent Communities
Evaluation Criteria
Miles of Exclusive Guideway
Number of At-grade Crossings
Number of At-grade Crossings with Significant Traffic Volumes
Number of Pedestrian Crossings
Number of Adjacent Schools Near At-grade Crossings
Goal 11. Construction Impacts
Objectives
Minimize Construction Impacts for Transportation Improvements on the Surrounding Communities, including Low-Income and Minority Population
Evaluation Criteria
Severity and Duration of Construction Impacts
Potential Available Mitigation Measures

alternative and best achieved the goals and objectives for the corridor as shown in Table 3.6-1. When compared to the other alternatives, the BART Alternative offered the fastest travel times to passenger destinations, the greatest congestion relief, improved air quality, regional connectivity, traffic and safety benefits with a fully grade separated guideway, and consistency with local land use plans and policies. The Board instructed that, in addition to the BART Alternative, the Baseline Alternative (Expanded Express Bus service on freeway HOV lanes, Alternative 1) was to be carried forward into the environmental compliance phase for informational purposes only to fulfill FTA project development guidelines.

The other alternatives — Busway on the former UPRR Alignment (Alternative 2), LRT on the former UPRR Alignment (Alternative 9), Commuter Rail Alternative on the Alviso Alignment (Alternative 3), and Commuter Rail Alternative on the former UPRR Alignment (Alternative 5) — were withdrawn from further consideration. They did not achieve the level of benefits as the BART Alternative. In addition, some has significantly greater impacts.

The Busway on the former UPRR Alignment was not selected for further consideration because it would have increased the number of buses on already congested streets and arterials. Furthermore, the public did not support bus service and voter-approval would have been required to use VTA's Measure A funding for the project.

LRT on the former UPRR Alignment would have capacity limitations, with only 2- and 3-car trains, and would have the slowest guideway speeds at a maximum of 55 mph. In addition, the LRT alternative would have at-grade crossings at two major streets in San Jose, which would have generated traffic and safety concerns. Voter-approval also would have been necessary to use VTA's Measure A funding.

Both commuter rail alternatives ranked low relative to the goals and objectives of the corridor, with the worst ridership, fewest transit dependents served and least improvements to air quality. They also would have required voter-approval for VTA's Measure A funding. Commuter Rail on the UPRR Alignment was strongly opposed by residents along the corridor and would have at-grade crossings at two major streets in San Jose.

Commuter Rail on the Alviso Alignment had the most significant environmental implications since it would have crossed the San Francisco Bay National Wildlife Refuge. Additionally, this alternative would have operated on the same tracks as ACE, Capitols, Amtrak, and freight trains, causing conflicts and capacity constraints with these services. A significant number of at-grade crossings (41) would have created traffic and safety issues for pedestrians and cars.

VTA conducted an extensive public involvement process as part of the MIS/AA. Three rounds of public outreach meetings were held in May, July, and October 2001, providing invaluable input to the MIS/AA. Each round of meetings consisted of the following events: five CWG meetings (Fremont, Milpitas, Hostetter/Berryessa, Downtown San Jose, and Santa Clara), four public open house meetings (Fremont, Milpitas, San Jose, and Santa Clara), and additional stakeholder meetings with various interest groups.

This outreach effort resulted in more than 1,000 public comments. Overall, the public showed support for the BART Alternative and was generally not supportive of adding a new mode or technology in the corridor. VTA considered the public's input when recommending the BART Alternative as the Preferred Investment Strategy/Locally Preferred Alternative.

For a detailed review of the MIS/AA alternatives, review process, findings, and reasons for withdrawal of MIS/AA alternatives, please see *Silicon Valley Rapid Transit Corridor Major Investment Study*, October 2001, and the *Policy Advisory Board Status Report #5, Preferred Investment Strategy Final Recommendation*, October 2001, both incorporated herein by reference.

The VTA Board also approved a comprehensive cooperative agreement with BART that identifies the terms and conditions for implementing and operating the Preferred Investment Strategy/Locally Preferred Alternative in partnership with BART. On November 12, 2001, the BART Board also adopted the terms and conditions for the cooperative agreement.

3.6.3 DESIGN OPTIONS EVALUATED DURING ENVIRONMENTAL PROCESS

3.6.3.1 Alignment and Station Options

The environmental process initially involved early consideration of BART alignment and station options that emerged during the MIS/AA and environmental scoping period. From March to May 2002, information on these options for the BART Alternative was presented to the PAB for review and input. The TAC for the project, including BART, cities, and other agencies, also assisted in the development of the design options. In addition, an extensive public involvement program also provided VTA with important feedback and participation from the community. At the May 29, 2002 meeting, the PAB selected the project description that would be evaluated in the EIS/EIR, including some remaining alignment and station options. The VTA and BART Boards of Directors subsequently concurred with the recommendations on June 28, 2002.

VTA evaluated multiple alignment and station options for the project description. The analysis was based on a set of criteria such as accessibility opportunities and constraints, transit-oriented development (TOD) potential, construction impacts, environmental issues, and cost implications. The purpose of this assessment and conceptual design phase was to establish a more defined project that could be carried forward into the EIS/EIR for further review. As a result, the project description for evaluation in the EIS/EIR included the selection of the following design options:

- South Calaveras Future Station
- BART in Trench at Montague/Capitol
- South of Berryessa Station Location
- Alum Rock Parking Facility with US 101 Access Ramp
- Santa Clara Street Alignment
- Three Downtown San Jose Stations

In addition to these options, the VTA and BART Boards recommended that an APM link the Santa Clara BART Station to the SJIA instead of a direct BART connection. The APM, which was withdrawn from further consideration, would be undertaken as a separate project.

For a detailed review of the design options, review process, findings, and reasons for withdrawal of design options, please see *Policy Advisory Board Status Report #2: Alignment and Station Options*, April 2002, and *Policy Advisory Board Status Report #3: Recommended Project Description,* May 2002, both incorporated herein by reference.

3.6.3.2 Potential Tunneling and Station Construction Methods

VTA conducted an analysis to determine the feasibility of using mined construction methods on the BART Alternative underground stations and crossover structure in downtown San Jose. Based on this evaluation, consultants and a panel of worldwide tunneling experts recommended that VTA pursue cut-and-cover instead of mined construction techniques. On March 26, 2003, the PAB selected the cut-and-cover method for further analysis in the environmental document since it was deemed the safest, most economical option, and could be constructed much faster than the mining alternatives. Mined

construction options, such as using a sequential excavation technique referred to by some as the New Austrian Tunneling Method or constructing a pipe arch by microtunneling, were withdrawn from further consideration.

In addition to the PAB, VTA presented this information to the San Jose Project Development Team (PDT) on March 20, 2003 and to the Downtown San Jose CWG on May 15, 2003. For a detailed review of mined construction methods and reasons for withdrawal, please see *Evaluation of the Feasibility of Mined Underground Stations, March 2003.*

3.6.3.3 Minimum Operating Segment Scenarios

Based on FTA's direction, VTA initially developed four MOS scenarios for consideration by the PAB in September 2003:

- **MOS-1A**: Builds MOS-1A to Downtown San Jose including three stations (Montague/Capitol, Alum Rock, and Market Street) and truncates the alignment just north of I-880; defers four stations and the remaining alignment to MOS-2A. The MOS-1A scenario defers $676 million in capital cost and $15.4 million in annual operating and maintenance cost (2001 dollars) and loses 27,000 weekday riders.
- **MOS-1B**: Builds MOS-1B to Downtown San Jose, including four stations (Montague/Capitol, Alum Rock, Market Street, and Diridon/Arena) and truncates the alignment just north of I-880; defers three stations and the remaining alignment to MOS-2B. The MOS-1B scenario defers $571 million in capital cost and $11.8 million in annual operating and maintenance cost (2001 dollars) and loses 20,100 weekday riders.
- **MOS-1C**: Builds MOS-1C the full length of the line to the City of Santa Clara, including four stations (Montague/Capitol, Alum Rock, Market Street, and Santa Clara); defers three stations to MOS-2C. The MOS-1C scenario defers $461 million in capital cost and $8.1 million in annual operating and maintenance cost (2001 dollars) and loses 19,600 weekday riders.
- **MOS-1D**: Builds MOS-1D the full length of the line to the City of Santa Clara, including four stations (Montague/Capitol, Market Street, Diridon/Arena, and Santa Clara); defers three stations to MOS-2D. The MOS-1D scenario defers $470 million in capital cost and $7.5 million in annual operating and maintenance cost (2001 dollars) and loses 12,000 weekday riders.

On September 5, 2003, the PAB requested that additional public input be obtained before selecting an MOS for further analysis in the environmental document. In September 2003, VTA conducted a series of five public workshops and four Community Working Group meetings to present the MOS scenarios and to receive public input. VTA was also invited to attend a public hearing in Milpitas, a Strong Neighborhoods Initiative meeting in Five-Wounds/Brookwood Terrace, and an East Santa Clara Street Business Association meeting.

Approximately 250 comments were received at these meetings as well as by phone, fax, mail, and e-mail. The comments focused on the need to include a station in East San Jose that would provide access for transit users to the East and alleviate traffic and parking demand in Milpitas. The public also voiced the desire to retain the full-build BART Alternative and look for other funding sources. In addition, the possibility of combining the Civic Plaza/SJSU and Market Street stations was expressed. Community members also asked VTA to confirm ridership, employment projections, and funding constraints in determining a preferred MOS scenario.

On October 6, 2003, VTA brought two new MOS scenarios to the PAB for consideration: MOS-1E and MOS-1F. After reviewing the trade-offs for the six MOS scenarios and in response to public input, the

PAB decided to include MOS-1E and MOS-1F as sub-options to the BART Alternative in this EIS/EIR document and the New Starts process.

3.6.4 PARC METROPOLITAN PARKLAND AVOIDANCE DESIGN OPTION

The BART Alternative would require acquisition of a parcel of land 20 feet wide by 100 feet long (0.05 acres) from an area to be developed as parkland as part of the Parc Metropolitan development (Figure A-19 and Section 3.7.3) and dedicated to the City of Milpitas as city parkland. VTA has evaluated an alignment design option for the location of the replacement UPRR industrial spur between Curtis Avenue and Montague Expressway that would avoid acquisition of this parkland.

The total width required for the BART and UPRR tracks in this area is 80 feet, consisting of 50 feet for the BART line and 30 feet for the UPRR industrial spur. The existing railroad ROW width is only 60 feet, requiring a 20-foot ROW take. While a realignment of the BART Alternative to the east side of the rail ROW appears to be feasible, the alignment of the BART system and spur track on the west side appears to be substantially more prudent for the following reasons:

- The existing industrial spur serves only businesses on the east side of BART, requiring a grade-separated crossing for the replacement industrial spur. To accomplish this grade separation, the BART Alternative is proposed to be in a retained cut section, and the railroad is proposed to cross over this trench at grade. To locate this crossing north of Curtis Avenue would require extending the BART trench section north approximately 1,800 feet at an additional cost estimated to be close to $19 million in 2001 dollars (including add-ons).
- Positioning the spur entirely on the east side would require purchase of a 20-foot wide strip approximately 2,000 feet long, directly affecting three industrial buildings by eliminating approximately 200 parking spaces. Thus, there would be an added approximate $1 million to $3 million (2001 dollars) for higher ROW acquisition costs in comparison to land on the west side.
- Thus, the total cost difference to locate the UPRR industrial spur on the east side of BART from Curtis Avenue south is in the $20 million to $22 million range (2001 dollars).
- In addition, three industrial buildings on the east side of the ROW have loading docks facing west, and tractor-trailer trucks serving these buildings would have restricted turning radii for maneuvering into these loading docks if an east side option were pursued.
- An east side alignment would also be positioned on top of or very near the existing 42-inch diameter Milpitas water pipeline, potentially requiring relocation with an east side alignment.

VTA has therefore concluded that the east side design option is not prudent and has withdrawn this option from consideration. VTA also has initiated discussions with the City of Milpitas regarding options to mitigate the impacts on the parkland to be dedicated to the City (Appendix C).

3.6.5 MILPITAS BART MAINTENANCE FACILITY

VTA considered maintenance facility location options to the Newhall site in San Jose/Santa Clara. The only reasonable option appeared to be use of the current UPRR freight storage yard site in Milpitas. VTA met with UPRR representatives to discuss this option. During these discussions, a representative of the UPRR stated the company's intent and desire for continued use of the Milpitas freight storage facility for its corporate purposes. This option was therefore withdrawn from further consideration, and the current BART Alternative plans were developed to provide for continued access to the Milpitas site by UPRR freight trains.

3.7 RELATED PROJECTS

The related projects discussed in this section are planned or proposed for the SVRTC (Figure 3.7-1). VTA has coordinated and will continue to coordinate its planning and conceptual design for the proposed transit alternatives with the possible development of these related projects.

With the exception of the planned BART Warm Springs Extension, neither the Baseline nor BART Alternative is dependent on any of these related projects to be implemented, and each related project has its own independent utility, i.e., could be built with or without implementation of either transit alternative. The extension of BART to Warm Springs is a prerequisite for the Baseline and BART alternatives because both of these alternatives connect to the BART Warm Springs Station. In several cases, however, design of the related projects will need to be coordinated with the design of the proposed BART Alternative. Such coordination is currently underway between VTA and the various planning and implementing agencies identified below. This section includes transportation/transit projects, waterway projects, and development projects with an environmental document completed or currently underway.

3.7.1 TRANSPORTATION/TRANSIT RELATED PROJECTS

- **BART Extension to Warm Springs** (Figure 3.7-1, #1 and Figure A-3). An extension of BART to Warm Springs is a prerequisite to the Baseline and BART alternative described in this chapter. The busway connectors in the Baseline Alternative feed into the BART Warm Springs Station, which serves as a transfer point for bus and BART passengers. The BART Alternative would be a continuation of BART facilities and service south from the planned BART Warm Springs Station. An EIR was prepared and approved by BART in 1991 for the Warm Springs Extension Project; however, a Supplemental EIR was prepared to address recent changes proposed to the project, including the BART Irvington Station. On June 26, 2003, the BART Board of Directors certified the Supplemental EIR and adopted modifications to and updates of the Warm Springs Extension Project.
- **Downtown/East Valley Light Rail/Bus Rapid Transit Project** (Figure 3.7-1, #2). The Downtown/East Valley Transit Improvement Plan includes the Santa Clara/Alum Rock Corridor LRT, Streetcar, or Enhanced Bus Service Project along East/West Santa Clara Street east of Almaden Boulevard to the Capitol Line on Capitol Avenue. The line would operate on the surface and, as a result, would not conflict with BART subway operation. Options for connecting to Diridon Caltrain Station include connecting with the Vasona LRT line, which is currently under construction west of the downtown area, or operating independent of the Vasona Line.

  If the Downtown/East Valley and BART lines were to be located on the same street in the downtown area and LRT/Street Car/Enhanced Bus construction preceded BART construction, the LRT/Street Car/Enhanced Bus would be disrupted by cut-and-cover construction for both the Civic Plaza/SJSU and the Market Street stations. Avoiding this possibility may delay construction of the LRT/Street Car/Enhanced Bus in BART station areas until after BART construction along Santa Clara Street is completed.

- **Vasona Light Rail Project** (Figure 3.7-1, #3). VTA is currently completing construction of the Vasona Light Rail Project, which includes an LRT station in the San Jose Diridon Caltrain Station area. The LRT project would enable a transfer between the Vasona LRT Station and the BART Diridon/Arena Station described in this chapter.
- **Tasman East/Capitol Light Rail Project** (Figure 3.7-1, #4 and Figure A-20). VTA is completing construction of the second phase of the Tasman East/Capitol Light Rail. This second phase will provide 2.9 miles of light rail in the median of Capitol Avenue with stations at Great Mall/Main, Montague, Cropley, and Hostetter. The Montague Station on the Tasman East LRT line would connect to the BART Alternative at the Montague/Capitol Station.

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Figure 3.7-1: Related Projects

- **Caltrain Track Improvements and Caltrain Equipment Maintenance and Operations Facility (CEMOF) (North of San Jose Diridon Caltrain Station)** (Figure 3.7-1, #5 and Figures A-40 and A-41). The Peninsula Corridor Joint Powers Board is negotiating with UPRR to expand the number of Caltrain tracks north of the San Jose Diridon Caltrain Station. The CEMOF consists of the design and construction of a new centralized maintenance facility for Caltrain's locomotives and passenger cars. The new facility will accommodate many critical activities including daily inspections, scheduled maintenance, running repairs, train washing and storage. CEMOF will consolidate Caltrain's existing maintenance facilities and provide the capacity to complete additional types of maintenance and improve the efficiency and quality of Caltrain maintenance operations. The BART Alternative plans and profiles assume that both the track improvements and the CEMOF project will be completed.
- **Caltrain Electrification Program** (Figure 3.7-1, along the existing Caltrain corridor). The Peninsula Corridor Joint Powers Board Caltrain Electrification Program would provide for the conversion from diesel-hauled to electric-hauled trains along the approximately 80 mile long Caltrain corridor from San Francisco to the north through San Mateo County terminating in the City of Gilroy in southern Santa Clara County. The BART Alternative would provide transfers to Caltrain at the Diridon/Arena and the Santa Clara stations.
- **Mission Boulevard Improvement Project** (Figure 3.7-1, #6 and Figures A-5 to A-8). The California Department of Transportation (Caltrans) and the Alameda County Transportation Improvement Agency (ACTIA) have programmed the widening of Mission Boulevard to six lanes, three in each direction. Included are retaining and sound walls, street lighting, raised medians, and the replacement of the UPRR railroad bridge. This project would increase the length and design of the bridge structure proposed to be constructed over the widened Mission Boulevard underpass for the BART Alternative.
- **East Warren Avenue Underpass** (Figure 3.7-1, #7 and Figures A-5 to A-8). The City of Fremont has programmed construction of an East Warren Avenue underpass of the railroad ROW. Funding and construction of this project would enable selection of the East Warren Avenue Underpass (BART At-Grade) Option for the BART Alternative as described in Segment 1 earlier in this chapter.
- **US 101/Taylor-Mabury Interchange** (Figure 3.7-1, #8). VTA and the City of San Jose intend to work with Caltrans to widen Taylor Street from US 101 to Mabury Road and to construct a new US 101/Taylor Street/ Mabury Road interchange. A Project Study Report (PSR) was completed in 1990, although the project has yet to undergo environmental review. Implementation of this project would provide improved vehicular access to the Berryessa Station.
- **Calaveras Widening Project** (Figure 3.7-1, #9 and Figure A-18). VTA is currently evaluating this project as one option in an I-680/I-880 cross connector study.
- **Norman Y. Mineta San Jose International Airport Connector** (Figure 3.7-1, #10 and Figures B-40 and B-42). An airport APM connector is included in VTA's Measure A Program, which was approved by Santa Clara County voters in November 2000. The connector would be constructed east from the Santa Clara Caltrain Station on an elevated alignment and then either descend to grade or be placed in a retained trench to avoid interference with airport runway flight patterns. If at grade, the APM would travel along the northern periphery of the airport, curving south along Airport Drive and ascending on a 52-foot-high elevated structure on the east side of the airport. An elevated station would be located immediately adjacent to the planned Main Terminal building. Alternatively, the APM could be tunneled directly under the runways to the Main Terminal building. The BART Alternative conceptual station designs allow for a link between the proposed APM and the BART Santa Clara Station described in this chapter.

3.7.2 WATER RESOURCES RELATED PROJECTS

- **Joint SCVWD/U.S. Army Corp of Engineers Berryessa Creek Project.** The SCVWD is studying various alternatives to increase the conveyance capacity of Berryessa Creek from Calaveras Boulevard to Old Piedmont Road in San Jose to provide flood protection to the surrounding area from a 100-year flood event. Project features include setback levees and flood walls. The Montague/Capitol Station for the BART Alternative is in the vicinity of the flood control protection project.
- **Lower Berryessa Creek Flood Protection Project (Berryessa Creek Levees Project)**. The SCVWD is studying various alternatives to increase the conveyance capacity of Berryessa Creek to provide flood protection to residents, businesses, and public facilities in Milpitas and San Jose from a 100-year flood event. The alternatives under consideration include increasing levee heights, replacing one levee with a flood wall, widening Berryessa Creek, straightening the double 90-degree curve at the railroad crossing, and constructing a bypass channel. The project also includes channel improvements on Calera Creek to mitigate against the increased water surface elevation created by the improvements on Berryessa Creek.

  The BART Alternative would pass over Berryessa Creek on a new bridge. New at-grade bridges would also be constructed over Calera Creek and Berryessa Creek for the UPRR.

- **Upper Penitencia Creek Flood Protection Project** (Figure 3.7-1, #11 and Figure A-25). The SCVWD and ACOE are studying various alternatives to reduce the flooding potential along Upper Penitencia Creek. Among the alternatives being studied are widening of the existing channel and an underground bypass channel box structure on Upper Penitencia Creek to convey high creek flows directly to Coyote Creek. This proposed improvement would reduce the likelihood of flooding issues associated with the BART Alternative in the Berryessa Station area.
- **Mid-Coyote Creek Flood Protection Project**. The Mid-Coyote Creek Flood Protection Project is located in the central portion of the Coyote Watershed. Its limits extend approximately 6.1 miles between Montague Expressway and I-280, all in the City of San Jose. The purpose of the Mid-Coyote Creek Flood Protection Project is to increase the conveyance capacity of Coyote Creek to provide flood protection to homes, schools, businesses, and highways from a 100-year flood event.

  The Mid-Coyote Creek Flood Protection Project would reduce the likelihood of flooding issues associated with the BART Alternative in the Berryessa Station area. Where Coyote Creek crosses East Santa Clara Street between 17th and 19th streets, the BART Alternative is in a twin-bore tunnel, approximately 30 feet below the bed of the creek. Therefore, the BART Alternative would not affect the SCVWD Mid-Coyote Creek Flood Protection Project or Coyote Creek.

- **Lower Silver Creek Improvement Project** (Figure 3.7-1, #12 and Figure A-30). SCVWD is making improvements to Lower Silver Creek to reduce flooding, beautify the creek banks, and promote recreational opportunities. The Railroad/28th Street Option would pass over this creek on an aerial structure (Figure A-30, STA 582+00). The US 101/Diagonal Option would not affect Lower Silver Creek.
- **Milpitas City Water Well and Pump Station** (Figure 3.7-1, #13 and Figure A-19). The City of Milpitas has plans for emergency water well and pumps to be located in the future public park at the end of Curtis Avenue (Section 3.6.4). The BART Alternative would affect the ultimate location of this water well and pump facility.

3.7.3 DEVELOPMENT RELATED PROJECTS

- **San Jose Civic Plaza/City Hall** (Figure 3.7-1, #14 and Figure A-33)**.** The City of San Jose is constructing a new Civic Center located between 4th and 6th streets on East Santa Clara Street in

downtown San Jose. The building layout includes an 18-story tower on the east side of the site, a 3-story Council Chambers on the west side of the site, a centrally located domed rotunda that will reach the height equivalent to 10 stories, a large plaza opting onto Santa Clara Street, and one level of 400 underground parking spaces. The project will include 530,000 square feet of office and public space. The BART Civic Plaza/SJSU Station would serve the new civic plaza area.

- **Parc Metropolitan City Park Development** (Figure 3.7-1, #15 and Figure A-19)**.** The Parc Metropolitan Development, as part of its development agreement, is developing a portion of its site as parkland to be dedicated to the City of Milpitas. The proposed BART Alternative would take a 20-foot portion of this parkland identified as "East Park" on the master site plan for this development (see Section 3.6.4 and Chapter 7, *Final Section 4(f) Evaluation*).
- **Warm Springs Planned District** (Figure 3.7-1, #16 and Figure A-13). Santa Clara Development, a private developer, intends to build a residential development immediately north of the Alameda/Santa Clara County line in the City of Fremont. The Warm Springs Planned District includes 194 for-sale townhouses on 15.61 acres.

Refer to Section 4.12, *Land Use*, for discussion of other local plans.

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