Chapter 2
Alternatives

2.1 Introduction

VTA's BART Silicon Valley Program consists of the extension of the Bay Area Rapid Transit (BART) system from its planned terminus at Warm Springs Station in southern Fremont in Alameda County, which is currently under construction and scheduled to open in 2017, into Santa Clara County through the Cities of Milpitas, San Jose, and Santa Clara. The BART Silicon Valley Program is being implemented in two phases: the Phase I Berryessa Extension Project (Phase I) and the Phase II Extension Project (Phase II) as shown on Figures 2-1 and 2-2. The Phase I Project is currently under construction and scheduled to be operational in late 2017. The remaining approximately 6 miles of the BART Silicon Valley Program are the subject of this combined Supplemental Environmental Impact Statement and Subsequent Environmental Impact Report (SEIS/SEIR), which includes both a National Environmental Policy Act (NEPA) and a California Environmental Quality Act (CEQA) analysis. The alternatives analyzed in accordance with NEPA and CEQA are described below. For environmental analysis purposes, the study years include 2015 Existing, 2025 Opening Year, and 2035 Forecast Year.

There are two alternatives evaluated in this document in accordance with NEPA: the No Build Alternative and the BART Extension Alternative.

1. The NEPA No Build Alternative consists of planned and programmed transit and roadway improvements, but does not include the 6-mile BART Extension to Santa Clara.
2. The NEPA BART Extension Alternative consists of a 6-mile extension of the BART system from the Berryessa BART Station, currently under construction, through downtown San Jose to the Santa Clara Caltrain Station.

There are three alternatives evaluated in this document in accordance with CEQA: the No Build Alternative, the BART Extension Alternative, and the BART Extension with TOJD Alternative.

1. The CEQA No Build Alternative is the same as the NEPA No Build Alternative.
2. The CEQA BART Extension Alternative is the same as the NEPA BART Extension Alternative described above.
3. The CEQA BART Extension with TOJD Alternative consists of the 6-mile BART Extension as described above (see NEPA BART Extension Alternative) along with transit-oriented joint development (TOJD) at the four proposed BART stations and at the two mid-tunnel ventilation structure sites. The proposed TOJD is not included in the NEPA Build Alternative because the TOJD is a potential future independent action by VTA and the TOJD project serves a separate purpose and need than the BART Extension

Alternative as described below. The proposed TOJD has independent utility and is included to support local and regional land use planning. The TOJD may be constructed at the same time as the BART Extension Alternative or later in time, dependent on the availability of funding and subject to market forces. However, the design of the stations and structures would not preclude TOJD. No specific TOJD development plan or private developer has been identified, and any proposed TOJD project would be separately funded and would not include federal funding.

The 6-mile BART Extension under the NEPA and CEQA BART Extension Alternatives and the CEQA BART Extension with TOJD Alternative would begin at the terminus of the Phase I Project east of U.S. Highway 101 (U.S. 101) and south of Mabury Road in the City of San Jose.

The BART Extension would descend into an approximately 5-mile-long subway tunnel, continue through downtown San Jose, and terminate at grade in the City of Santa Clara near the Caltrain Station. Four stations are proposed: Alum Rock/28th Street, Downtown San Jose, Diridon, and Santa Clara. The BART Extension, as described below, begins from the connection to the Phase I Project in the east, then westward through downtown San Jose, to the new BART terminus in Santa Clara. Passenger service for the BART Extension would start in 2026, assuming funding is available.

The TOJD under the CEQA BART Extension with TOJD Alternative would consist of retail, office, and residential uses. The Alum Rock/28th Street and Santa Clara Stations would include retail, office, and residential uses. The Downtown San Jose and Diridon Stations would incorporate retail and office uses. The two ventilation structures would have retail uses on the street frontage. The proposed TOJD is consistent with the Public Utilities Code 100130.5 (b) (1) definition of TOJD, which includes commercial, residential or mixed-use development. TOJD is further described in Section 2.3.3.

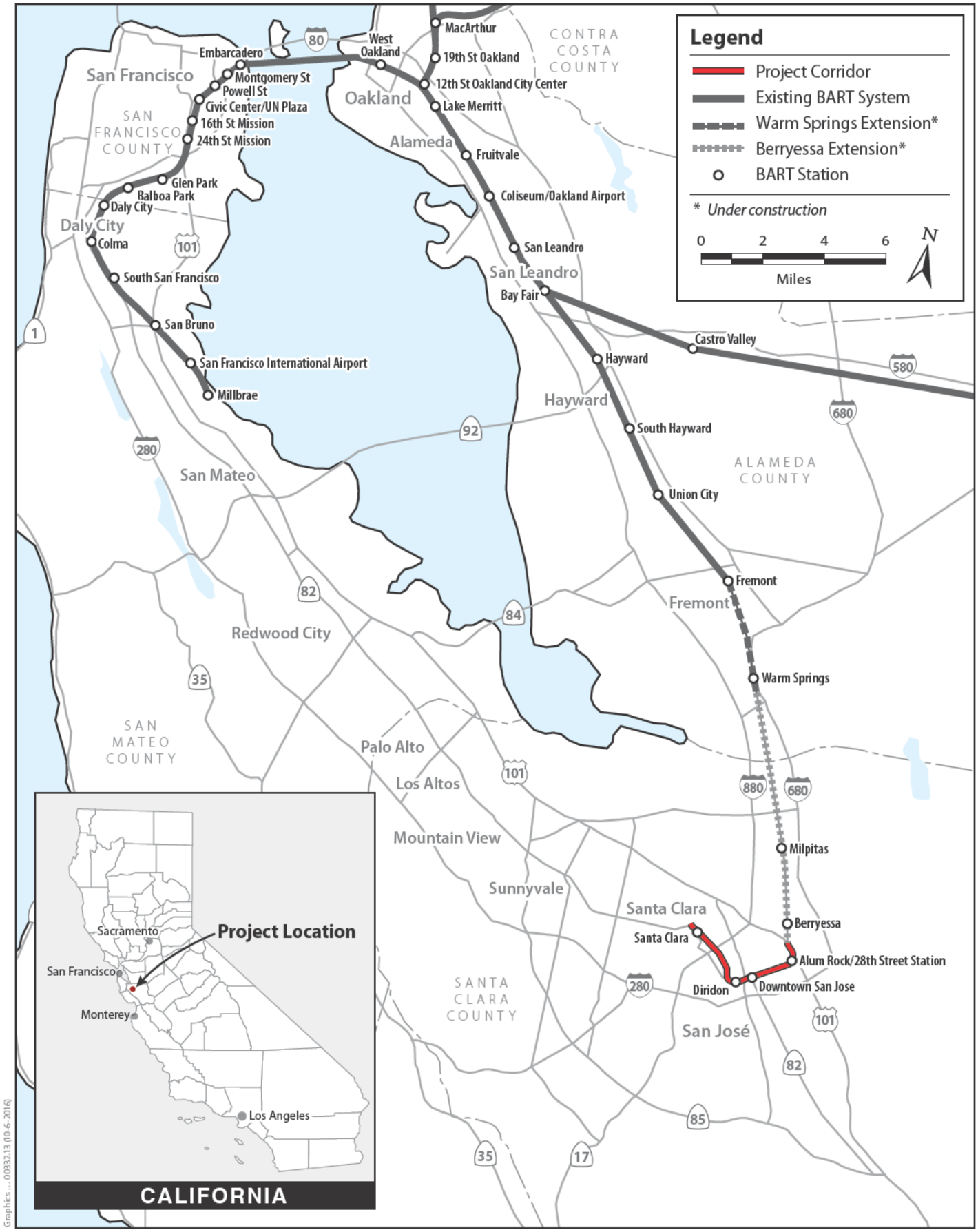
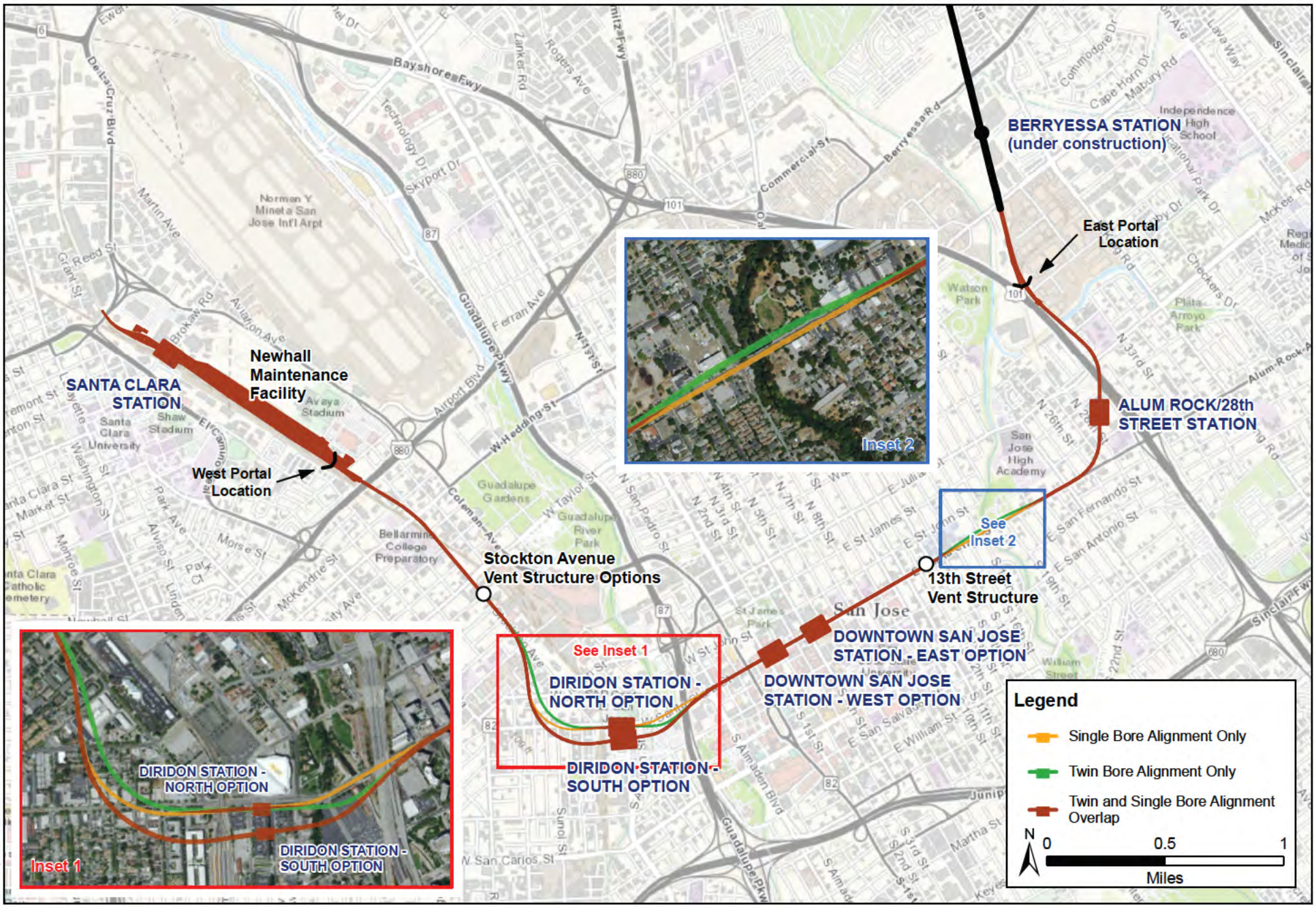


Figure 2-1
Regional Location
VTA's BART Silicon Valley–Phase II Extension Project



Source: Station and Track, VTA 2014; Basemap, ESRI 2015

Figure 2-2
BART Extension Alternative
VTA's BART Silicon Valley – Phase II Extension Project

2.2 NEPA Alternatives

2.2.1 NEPA No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed improvements in the corridor that are identified in the Bay Area's Regional Transportation Plan (RTP), *Transportation 2035 Plan for the San Francisco Bay Area* (Transportation 2035 Plan), adopted by the Metropolitan Transportation Commission (MTC) in April 2009; the *Valley Transportation Plan 2040* (VTP 2040), adopted by VTA in October 2014; and the *Expressway Plan 2040 Study* (County of Santa Clara Roads and Airports Department 2015). Future land uses would be consistent with the General Plans and area plans for the Cities of San Jose and Santa Clara.

2.2.1.1 Transit System

Existing Transit System

Existing transit services consist of bus services, light rail transit (LRT), shuttle services, paratransit service, and inter-county services, and are briefly described below with the ridership provided in Chapter 3, Section 3.4, *2035 Forecast Year Transit Ridership*. A complete description of existing services is included in VTA's *Short Range Transit Plan FY 2014–2023* (Santa Clara Valley Transportation Authority 2014b).

VTA currently operates 70 bus routes, which consist of 17 core routes, 1 rapid route, 18 local routes, 18 community bus routes, 12 express routes, and 4 limited stop routes.

VTA also operates three LRT routes: Ohlone/Chynoweth to/from Almaden, Alum Rock to/from Santa Teresa, and Mountain View to/from Winchester. Total fleet size to operate the LRT service is 99 low-floor light rail vehicles. VTA provides shuttle service to LRT stations and major Silicon Valley employment destinations, activity centers, and transit facilities and offers accessible paratransit services for seniors and the disabled community.

VTA is a member of the Peninsula Corridor Joint Powers Board, which operates Caltrain service in Santa Clara, San Mateo, and San Francisco Counties. VTA is also a member of the Capitol Corridor Joint Powers Board, which operates train service from Placer County to Santa Clara County.

BART currently operates five routes: the Pittsburg/Bay Point to/from San Francisco International Airport, Fremont to/from Richmond, Fremont to/from Daly City, Richmond to/from Millbrae and to Daly City during evenings and weekends, and Dublin/Pleasanton to/from Daly City. Figure 1-2 in Chapter 1, *Purpose and Need*, shows these existing and planned BART systems. The total existing fleet size to operate BART service is 669 cars.

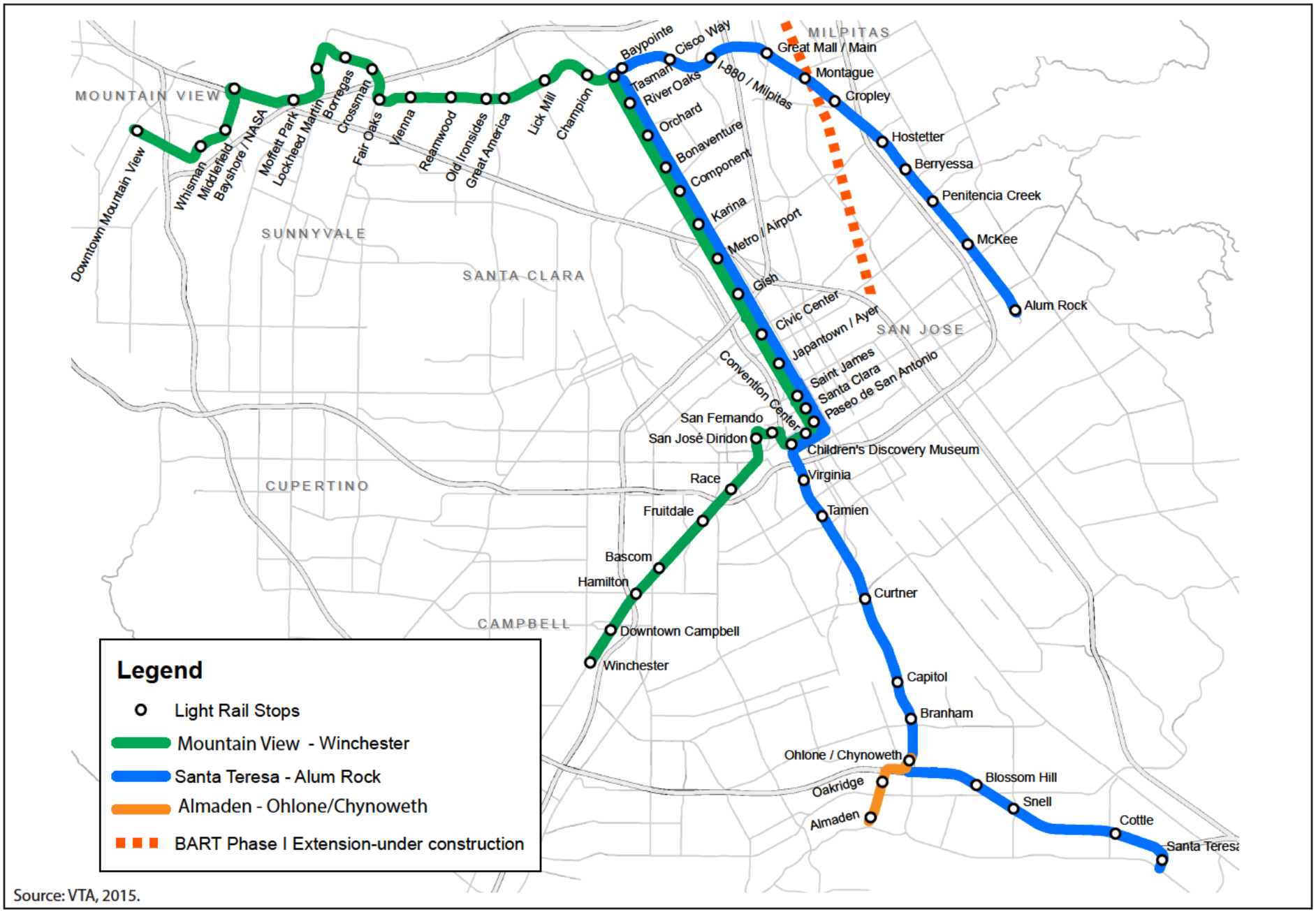
Planned and Programmed Improvements through 2035

New transit services and capital projects planned and programmed for the corridor through 2035 are identified in Table 2-1. These consist of bus rapid transit projects, an LRT extension, rail service upgrades, and the Airport People Mover to Mineta San Jose International Airport.

Table 2-1: 2035 No Build Alternative Transit Improvements in BART Silicon Valley Area

Transit Projects	Notes
1. VTA's BART Silicon Valley—Berryessa Extension Project (Phase I)	Project connects the existing BART system from the Warm Springs Station in Southern Fremont through Milpitas to the Berryessa District of San Jose.
2. Bus Rapid Transit (BRT) Line 523 – Stevens Creek Boulevard (previously Line 23)	Berryessa BART Station through Downtown San Jose to Cupertino, offering 10-minute service each direction.
3. El Camino BRT Line 522 (previously Lines 22/Line 300)	Limited stop service at 10-minute intervals; target is minimum 15% travel time reduction on El Camino Real from Downtown San Jose to Palo Alto (Line 22).
4. Santa Clara/Alum Rock BRT	Project provides enhancements in Santa Clara County's highest ridership corridor, including 2 miles of dedicated lanes. Limited stop service at 10-minute intervals.
5. Capitol Corridor Commuter and Intercity Rail	Expanded service to 11 round trips/day between Sacramento and San Jose; new Union City intermodal station in service.
6. LRT – Guadalupe Express Service	A Guadalupe Express service between Ohlone/Chynoweth and San Jose Convention Center.
7. LRT – Additional Line, Alum Rock to Mountain View	An additional line that would travel from Downtown Mountain View to Alum Rock all day.
8. Caltrain Modernization/Electrification Projects	Electrify the existing rail line from San Francisco to 2 miles south of Tamein Station. Improve train performance and increase service, shorten headways and increase travel speeds, and reduce noise and air pollution.
9. Caltrain/HSR Station Improvements: Diridon Station	Provide station improvements needed to accommodate and support proposed high-speed rail service.
10. Mineta San Jose International Airport Automated People Mover (APM) Connector	Project would provide transit link to San Jose International Airport from VTA's Guadalupe LRT line, and from Caltrain and future BART stations in Santa Clara using APM technology.
Sources: Metropolitan Transportation Commission 2009; Santa Clara Valley Transportation Authority 2014a.	

VTA's LRT service map for service through 2035 is shown in Figure 2-3. VTA's Phase I Project is included in the Transportation 2035 Plan and is currently under construction. Figure 1-2 in Chapter 1 shows the BART system map for service through 2035 and includes the Phase I Project.



Source: VTA, 2015.

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Figure 2-3
LRT Service Map
VTA's BART Silicon Valley–Phase II Extension Project

2035 Forecast Year Fleet Requirements

A total VTA bus fleet of 451 vehicles is estimated to meet 2035 service levels, which represents a slight increase over the 2015 fleet to account for additional bus service shuttling passengers between the Berryessa Station and downtown stations. Although the light rail network will expand by 2035, it will be served with no increases to the existing light rail fleet of 100 vehicles.

The current BART fleet is 669 cars. BART has ordered a new fleet of 775 cars to replace the existing fleet and accommodate the Warm Springs and VTA's Phase I Project. BART plans to purchase an additional 306 cars as part of their Core Capacity Project. Table 2-2 summarizes VTA and BART fleet sizes.

Table 2-2: 2035 No Build Alternative Fleet Size

Service	2015 Existing Service	2035 No Build Alternative
VTA Buses	440	451
VTA Light Rail Transit Vehicles	99	99
BART Cars (entire BART system)[a]	669	1,081
[a] The No Build Alternative includes the Phase I Project, which is currently under construction. Source: Connetics Transportation Group and VTA 2015.		

2035 Forecast Year Facility Requirements

The buses operated by VTA and identified under the No Build Alternative would be stored and maintained at the following existing bus operating and maintenance facilities: the Cerone Bus Operating Division and Overhaul and Repair Facility in North San Jose, the Don Pedro Chaboya Bus Operating Division in South San Jose, and the North Bus Operating Division in Mountain View. These facilities have sufficient land to enable any potential future need for expansion as necessary to accommodate additional buses above the 2035 fleet levels. Because the LRT fleet size is not anticipated to change by 2035, LRT vehicles would be stored and maintained at the existing Guadalupe Light Rail Maintenance facility near downtown San Jose.

2.2.1.2 Roadway System

Existing Roadway System

The corridor contains two major north-south regional freeways, Interstate 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 extensive regional roadway system that converges in Santa Clara County around the San Jose Central Business District. Other freeways and expressways that traverse the corridor are U.S. 101, State Route (SR) 87, and San Tomas Expressway.

Major arterials, such as Mabury Road/Taylor Street, McKee Road/Julian Street, San Antonio Street, Autumn Street, San Fernando Street, San Carlos Street, Brokaw Road, Lafayette Street, Benton Street, and Alum Rock Avenue/Santa Clara Street/The Alameda/El Camino Real (SR 82), traverse the corridor from east to west. Major north-south streets within the corridor include North 28th Street, Bird Avenue/Montgomery Street, Stockton Avenue, Coleman Avenue, and De La Cruz Boulevard.

Planned and Programmed Roadway Improvements Through 2035

Roadway improvements planned and programmed for the corridor through 2025 or 2035 include projects in Santa Clara County. These roadway improvements consist of widenings and new interchanges on existing routes. No new freeways or other major roadways are planned.

The following list identifies road and highway improvements that are assumed to be completed by 2025[1] in the corridor under the No Build Alternative.

- Convert all existing freeway high-occupancy vehicle (HOV) lanes to express lanes.
- I-880: Add HOV lanes and convert to express lanes between SR 237 and U.S. 101.
- Coleman Avenue: Widen from four lanes to six lanes between I-880 and Taylor Street.
- 10th and 11th Streets, Almaden Avenue and Vine Street, and 2nd and 3rd Streets: Convert one-way couplets to two-way streets.
- Central Expressway: Widen from four lanes to six lanes between Lawrence and San Tomas Expressways.
- Central Expressway: Convert HOV lanes to mixed-flow lanes between De La Cruz Boulevard and San Tomas Expressway.
- San Tomas Expressway: Widen to eight lanes between Williams Road and El Camino Real.
- San Carlos Street: Replace and widen bridge at Caltrain/Vasona LRT.
- U.S. 101 and Mabury Road/Taylor Street: Construct interchange.
- Julian Street: Realign between SR 87 and North 1st Street to extend the downtown urban grid system.
- St. James Street: Convert from a one-way to two-way street from Notre Dame/SR 87 to Market Street (part of the Julian Realignment project).
- Autumn Street: Complete the realignment and extension between St. John Street and Coleman Avenue.

[1] This list was generated from VTA staff, Cities of San Jose and Santa Clara staff, the County's 2040 Expressway Plan, and VTP 2040.

- Autumn Street: Convert from a one-way (northbound) street to a two-way street between Santa Clara Street and Park Avenue. Autumn Street will become a four-lane street.
- Montgomery Street: Convert from a one-way (southbound) street to a two-way street between Santa Clara Street and San Fernando Street. Montgomery Street will remain a two-lane street.
- Montgomery Street: Create cul-de-sac at southerly end, just north of Park Avenue.
- King Road and McKee Road: Add a second eastbound left-turn lane.
- Eastbound SR 87 and Julian Street: Convert the existing northbound shared right-through lane to separate through and right-turn lanes; convert the existing westbound shared right-through lane to a dedicated right-turn lane.
- Montgomery Street and Santa Clara Street: Add a left-turn and a right-turn lane on the northbound approach; eliminate one of the existing westbound left-turn lanes.
- Autumn Street and Santa Clara Street: Add a southbound through lane and convert the existing southbound right-turn lane to shared right-through lane; add an eastbound right-turn lane; and add two westbound left-turn lanes and a separate westbound right-turn lane.
- Montgomery Street and San Fernando Street: Add an all-movement lane on the northbound approach and convert all intersection approaches to single all-movement lanes.
- Autumn Street and San Fernando Street: Convert the existing northbound shared left-through lane to a dedicated left-turn lane; add one left-turn, one through, and one shared right-through lane on the southbound approach; and convert the existing westbound through lane to a shared left-through lane.
- Montgomery Street and Park Avenue: This intersection will become Autumn Street and Park Avenue. Reconfigure intersection with one left, one through, and one shared right-through lane on the northbound approach; one left, one through, and one shared right-through lane on the southbound approach; one left and one shared right-through lane on the eastbound approach; and two left-turn and one shared right-through lane on the westbound approach.
- Bird Avenue and San Carlos Street: Add a second left-turn lane and convert the shared right-through lane to exclusive right-turn lane (reducing the number of through lanes by one) on the northbound approach; and eliminate one southbound through lane.
- Autumn Street and Julian Street: Reconfigure the northbound and southbound approaches to include one left-turn, one through, and one shared right-through lane.
- Lafayette Street and El Camino Real: Add second left-turn lanes on both the southbound and eastbound approaches.

- Coleman Avenue and Brokaw Road: Widen Coleman Avenue to accommodate a third southbound through lane.
- San Tomas Expressway and El Camino Real: Add second left-turn lanes on both the eastbound and westbound approaches.

The following list identifies road highway improvements that are assumed to be completed by 2035[2] in the corridor under the No Build Alternative.

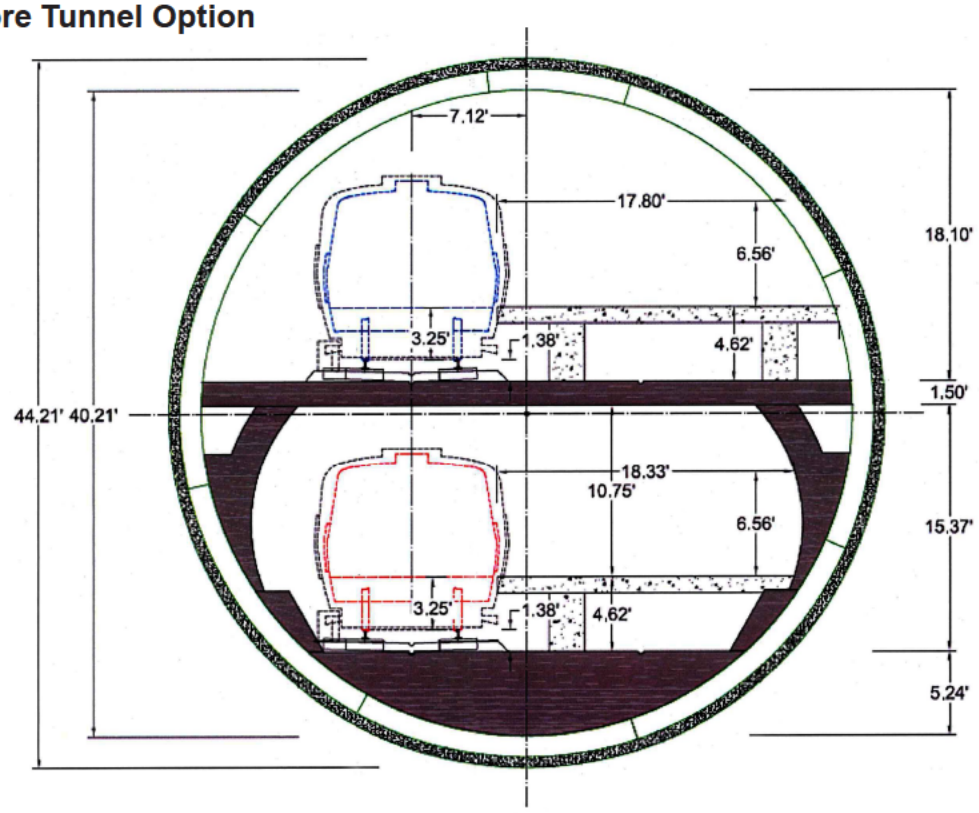
- I-280: Convert one mixed-flow lane to express lanes between U.S. 101 and Leland Avenue.
- I-680: Convert one mixed-flow lane to express lanes between Montague Expressway and U.S. 101.
- I-280: Downtown San Jose access improvements between 3rd and 7th Streets; reconstruct existing ramps at 7th and 4th Streets; eliminate existing off-ramp connection at 5th Street.
- I-280/Senter Road interchange: Extend Senter Road and construct new on-/off-ramps, and modify existing on-/off-ramps into a collector/distributor ramp system.
- U.S. 101 Southbound/Trimble Road/De La Cruz Boulevard/Central Expressway interchange: Modify existing loop cloverleaf ramp from Southbound U.S. 101 to Trimble Road into a partial cloverleaf ramp. Modify the Southbound U.S. 101 on-ramp from De La Cruz Boulevard/Central Expressway to one mixed-flow and one HOV lane with ramp meter. Widen the De La Cruz Boulevard bridge from four to six lanes.

2.2.2 NEPA BART Extension Alternative

The BART Extension Alternative consists of the approximately 6-mile extension of the BART system from the Berryessa BART Station in San Jose through downtown San Jose, terminating in Santa Clara near the Santa Clara Caltrain Station. There are two tunneling methodologies proposed to construct the BART Extension, the Twin-Bore and Single-Bore Options. Both options have a length of approximately 4.5 miles with the differences shown on Figure 2-2. The Twin-Bore Option tunnel diameter is approximately 20 feet, and the Single-Bore Option tunnel diameter is approximately 44 feet as depicted in Figure 2-4. The larger Single-Bore Option tunnel diameter requires the tunnel to be at a greater depth to reduce vertical settlement displacement. Therefore, stations are deeper and escalators, elevators, and stairways cover greater distances. The tunnel(s) would be lined with precast concrete segmental linings, which are installed behind the tunnel boring machine as it moves forward. These linings serve as permanent waterproof support for the tunnel(s). Chapter 5, Section 5.3.1 *Tunnel, Trackwork, and Ventilation Structures* provides additional descriptions of the tunnel boring options.

[2] This list was generated from VTA staff, Cities of San Jose and Santa Clara staff, the 2008 Santa Clara County Expressway Plan, and VTP 2040.

Single-Bore Tunnel Option



TYPICAL SECTION IN STATION

Twin-Bore Tunnel Option

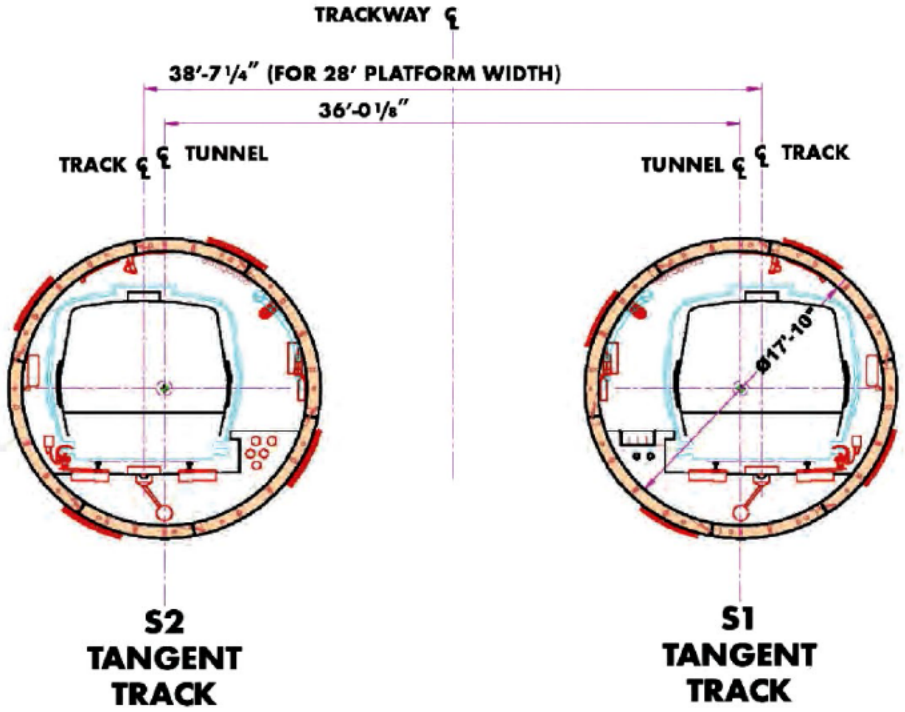


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Figure 2-4
Tunnel Options
VTA's BART Silicon Valley–Phase II Extension Project

The differences between the Twin-Bore and Single-Bore Options are described below. Where no differences are described, the project description applies to both tunnel boring options.

In order to provide maximum flexibility, both aboveground and belowground options will be evaluated in the environmental analysis. In order to optimize future joint development and ridership around the stations, the traction power substations in the three underground stations are located underground. VTA will work with BART and key joint development stakeholders to determine the final location. Where the facilities are placed underground they will be within the Single-Bore Option tunnel or within the Twin-Bore Option station box. Two BART lines are planned to serve the BART Extension Alternative: Santa Clara–Richmond, and Santa Clara–Daly City. The service level description that follows represents the combined service of these two lines in one direction. BART would operate every weekday from 4 a.m. to 1 a.m., with 6- to 12-minute average headways from 4 a.m. to 6 a.m., 6-minute peak to 7.5-minute average headways from 6 a.m. to 7 p.m., and 15- to 20-minute average headways after 7 p.m. Saturday BART service would be from 6 a.m. to 1 a.m., with 7.5- to 10-minute average headways from about 9 a.m. to 6:30 p.m., and 15- to 20-minute average headways before 9 a.m. and after 6:30 p.m. Sunday BART service would be from 8 a.m. to 1 a.m., with 15- to 20-minute headways all day. However, BART service levels are subject to refinement based on BART's updates to their systemwide operating plan. Approximately 48 new BART vehicles would be needed to accommodate these service levels and the 2035 Forecast Year ridership demand.

2.2.2.1 Alignment and Station Features by City

City of San Jose

Connection to Phase I Berryessa Extension

The BART Extension would begin where the Phase I tail tracks end. The at-grade Phase I tail tracks would be partially removed to allow for construction of the bored tunnels, East Tunnel Portal, and supporting facilities. The new tracks would be connected to the Phase I tracks to allow for future BART operation along the entire BART Silicon Valley corridor from southern Fremont to Santa Clara.

The alignment would transition from a retained-fill configuration east of U.S. 101 and south of Mabury Road near the end of the Phase I alignment into a retained-cut configuration and enter the East Tunnel Portal just north of Las Plumas Avenue (approximately STA 570+00).

South of the portal, the alignment would pass beneath North Marburg Way, then approximately 25 feet below the creek bed of Lower Silver Creek (STA 581+00) for the Twin-Bore Option, or approximately 30 feet for the Single-Bore Option, just to the east of U.S. 101 (STA 581+00), then curve under U.S. 101 south of the McKee Road overpass, and enter Alum Rock/28th Street Station.

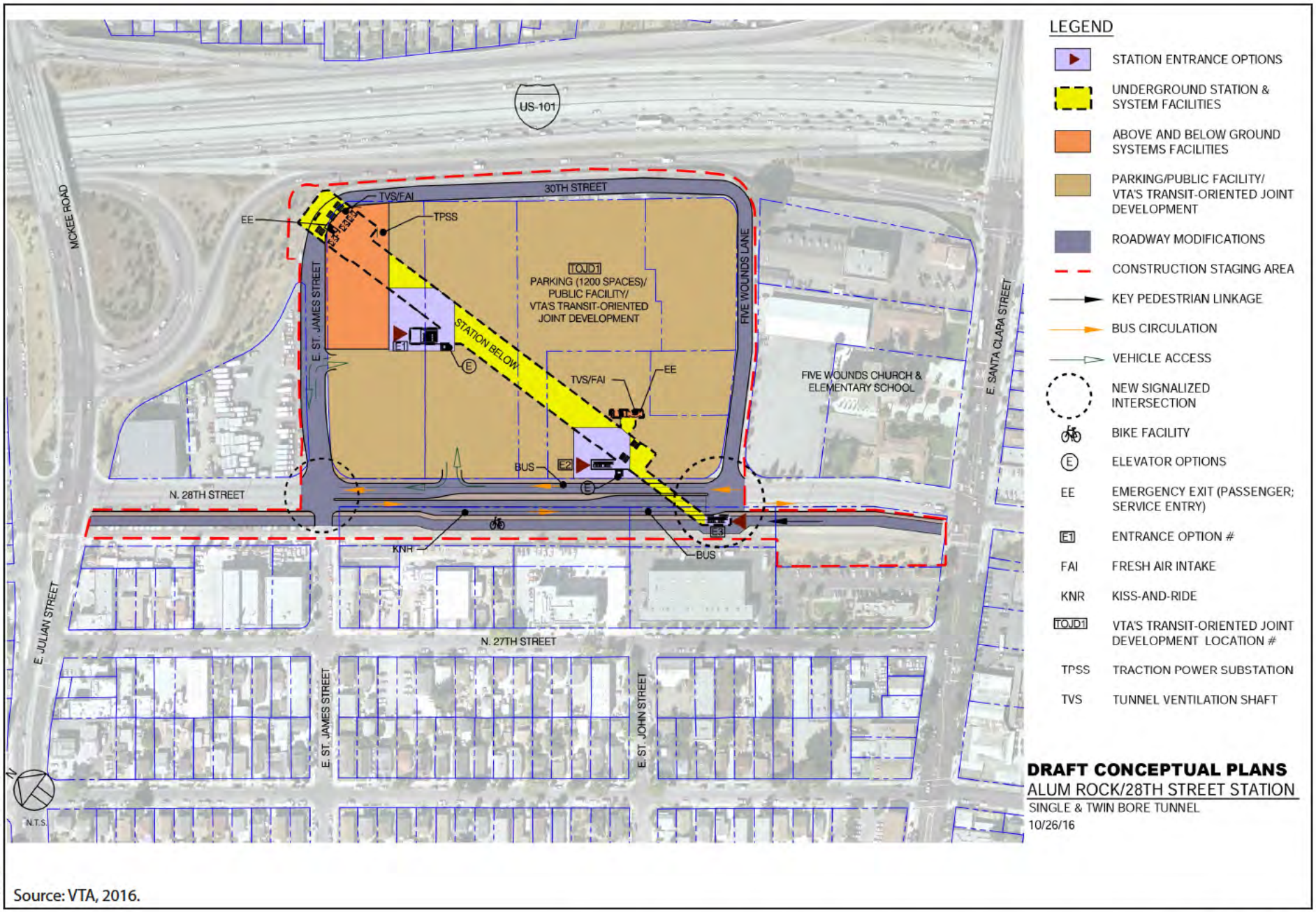
Alum Rock/28th Street Station

Alum Rock/28th Street Station would be located between U.S. 101 and North 28th Street (starting at approximately STA 600+00) and between McKee Road and Santa Clara Street. The approximately 11-acre station campus would include an underground station and aboveground facilities, such as a parking structure, systems facilities, and roadway improvements to North 28th Street as shown on Figure 2-5. The station would be underground with street-level entrance portals with elevators, escalators, and stairs covered by canopy structures. The station would have a minimum of two entrances. The number, location, and configuration of the station entrances would be finalized during final design based on BART Facilities Standards and ridership projections. Signage for all stations would comply with Metropolitan Transportation Commission's Regional Transit Wayfinding Guidelines and Standards.

A parking structure of up to seven levels would accommodate BART park-and-ride demand with 1,200 parking spaces. Areas for automobiles, shuttles, and buses to drop off passengers would be provided on North 28th Street and/or within the station campus.

Access to Alum Rock/28th Street Station would be primarily from McKee Road and North 28th Street at the north end of the station site, and from Santa Clara and North 28th Streets at the south end of the site. New or modified traffic signals would be provided at the intersections of North 28th Street and McKee Road, and North 28th and Santa Clara Streets. New traffic signals would also be provided in the station area on North 28th Street at St. James Street and at Five Wounds Lane for access to the parking structure and passenger loading areas. A pedestrian connection along the south side of the station campus at North 28th Street from Santa Clara Street would be designed as a pedestrian/bicycle/transit gateway into the station campus with amenities such as street trees, wide sidewalks, bicycle facilities, and pedestrian-scaled lighting. This gateway would link the station with buses and Bus Rapid Transit (BRT) operating on Santa Clara Street and Alum Rock Avenue. Accommodations for the Five Wounds Trail would be provided along North 28th Street as part of station access improvements.

The station would include systems facilities such as electrical, ventilation, and communication equipment as shown on Figure 2-5 and described in Section 2.2.2.2. Systems facilities include a Traction Power Substation (TPSS), Train Control Communications Room (TCCR), an auxiliary power substation, and an emergency generator. Systems facility sites within public view would be surrounded by an approximately 9-foot-high concrete block (CMU) wall, and sites outside of public view would be surrounded by a 9-foot-high fence. Under the Twin-Bore and Single-Bore Options, most of these system facilities would be located underground; however, these systems facilities may also be located aboveground. If aboveground, access to the aboveground systems facilities and parking areas for service vehicles would be restricted by access gates.



Source: VTA, 2016.

Figure 2-5
Alum Rock/28th Street Station Plan (Twin-Bore and Single-Bore)
VTA's BART Silicon Valley–Phase II Extension Project

The station would include emergency exhaust ventilation facilities and at least three ventilation shafts as shown on Figure 2-5. Fresh air intake/exhaust hatches at grade would be near the emergency ventilation facilities.

From Alum Rock/28th Street Station, the alignment would curve under North 28th Street, North 27th Street, and North 26th Street before aligning under Santa Clara Street (STA 620+00). The alignment would continue under the Santa Clara Street right-of-way (ROW) until the alignment approaches Coyote Creek (STA 644+00).

Tunnel Alignment near Coyote Creek

For the Twin-Bore Option, the alignment would transition north of Santa Clara Street beginning just west of 22nd Street and pass approximately 20 feet beneath the creekbed of Coyote Creek to the north of Santa Clara Street and avoid the Coyote Creek/Santa Clara Street bridge foundations. The alignment would transition back into the Santa Clara Street ROW near 13th Street, west of Coyote Creek. However, for the Single-Bore Option, the alignment would continue directly under Santa Clara Street and pass approximately 55 feet beneath the creekbed of Coyote Creek and approximately 20 feet below the existing bridge foundations.

13th Street Ventilation Structure

A systems facility site would be located at the northwest corner of Santa Clara and 13th Streets. This site would include a tunnel ventilation structure, which would be an aboveground structure with an associated ventilation shaft and is described in Section 2.2.2.2.

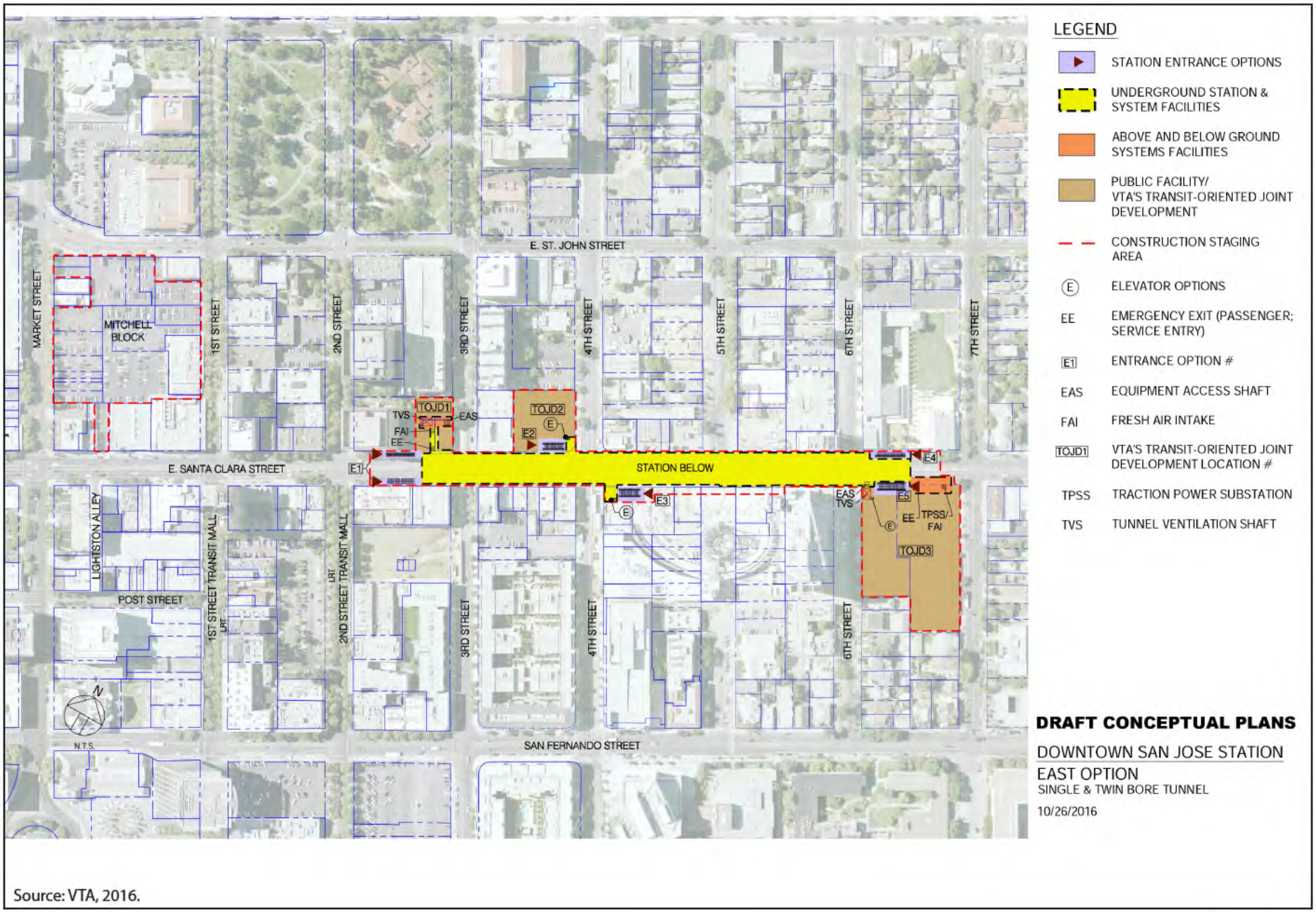
Downtown San Jose Station

There are two station location options for the Downtown San Jose Station: the Downtown San Jose Station East Option and the Downtown San Jose Station West Option, as described in detail below. The alignment for this area would be the same irrespective of the station option.

Downtown San Jose Station East Option

The alignment would continue beneath Santa Clara Street to the Downtown San Jose Station East Option. Under the Twin-Bore Option, crossover tracks would be located east of the Downtown San Jose Station between 7th and 5th Streets (within the cut-and-cover box). Under the Single-Bore Option, the crossover tracks would be located east of the station between 9th and 5th Streets. The station would not have dedicated park-and-ride facilities.

The Downtown San Jose Station East Option would be located between 5th and 2nd Streets as shown on Figure 2-6. The station would consist of boarding platform levels and some systems facilities within the tunnel beneath Santa Clara Street, as well as entrances at street level.



Source: VTA, 2016.

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Figure 2-6
Downtown San Jose Station East Option Station (Twin-Bore and Single-Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Elevators, escalators, and stairs that provide pedestrian access to the mezzanine would be at station portal entrances as shown on Figure 2-6. Escalators and stairs would be covered by canopy structures. Several station portal entrance location options in sidewalks along Santa Clara Street between 2nd and 7th Streets are being evaluated. The station would have a minimum of two entrances. Stairs and up/down escalators would be provided at each of the entrances. Elevators would be provided at each station near each end. The number, location, and configuration of station entrances would be finalized during final design and based on BART Facilities Standards and ridership projections.

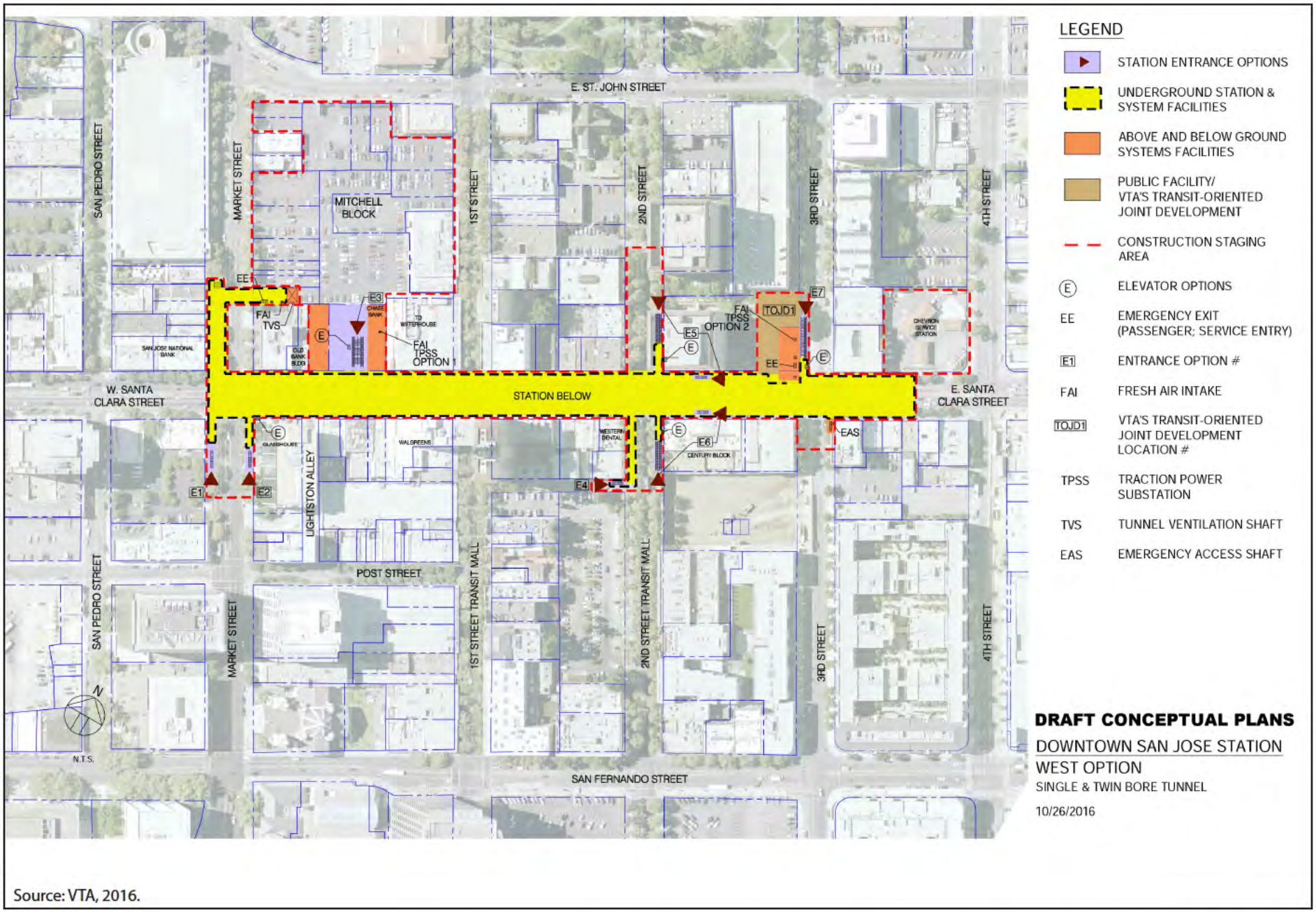
Systems facilities would be located aboveground and underground as shown on Figure 2-6 and would include a TPSS, an auxiliary power substation, ventilation facilities, and a TCCR. Under the Twin-Bore and Single-Bore Options, most of these system facilities would be located underground; however, these systems facilities may also be located aboveground. The station would also include emergency exhaust ventilation facilities with ventilation shafts and fresh air intake/exhaust hatches as shown on Figure 2-6.

Streetscape improvements would be provided along Santa Clara Street between 7th and 1st Streets to create a pedestrian corridor connecting San Jose City Hall and San Jose State University with the Downtown Commercial District. Streetscape improvements would be guided by San Jose's Master Streetscape Plan.

Downtown San Jose Station West Option

The alignment would continue beneath Santa Clara Street to the Downtown San Jose Station West Option. Crossover tracks for the Twin-Bore Option would be located east of the Downtown San Jose Station between 2nd and 4th Streets (within the cut-and-cover box. Under the Single-Bore Option, the crossover tracks would be located east of the station between 7th and 2nd Streets. The station would not have dedicated park-and-ride facilities.

The Downtown San Jose Station West Option would be located between 2nd and Market Streets as shown on Figure 2-7. The station would consist of boarding platform levels and some systems facilities within the tunnel beneath Santa Clara Street, and entrances at street level as shown on Figure 2-7. Elevators, escalators, and stairs that provide pedestrian access to the mezzanine level would be at station portal entrances. Escalators and stairs would have canopy structures. Several station entrance location options within sidewalks along Santa Clara Street and cross streets between Market and 3rd Streets are being evaluated. The station would have a minimum of two entrances. Stairs and up/down escalators would be provided at each of the entrances. Elevators would be provided near each end of the station. The number, location, and configuration of station entrances would be finalized during final design and based on BART Facilities Standards and ridership projections.



Source: VTA, 2016.

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Figure 2-7

Downtown San Jose Station West Option Plan (Twin-Bore and Single-Bore)

VTA's BART Silicon Valley–Phase II Extension Project

Systems facilities would be located aboveground and underground as shown on Figure 2-7 and would include a TPSS, an auxiliary power substation, ventilation facilities, and a TCCR. Under the Twin-Bore and Single-Bore Options, most of these system facilities would be located underground; however, these systems facilities may also be located aboveground. The station would also include emergency exhaust ventilation facilities with ventilation shafts and fresh air intake/exhaust hatches as shown on Figure 2-7.

Tunnel Alignment into Diridon Station

There are two station location options at Diridon Station: the Diridon Station South Option and the Diridon Station North Option, as described in detail below. The alignment into Diridon Station varies between the Diridon Station North and South Options and between the Twin-Bore and Single-Bore Options for the tunnel as described below and as shown in Appendices B and C.

Tunnel Alignment into Diridon Station South Option

The alignment would continue from the Downtown San Jose Station beneath Santa Clara Street and shift south beginning just west of South Alamaden Boulevard to pass between the SR 87 bridge foundations. For the Twin-Bore Option, the alignment would pass 40 feet below the riverbed of the Guadalupe River and a retaining wall west of the river, and over 20 feet below the creekbed of Los Gatos Creek. For the Single-Bore Option, the alignment would pass 50 feet below the riverbed of the Guadalupe River, the retaining wall, and the creekbed of Los Gatos Creek. After passing under Los Gatos Creek, the alignment for both options would enter the Diridon Station between Los Gatos Creek and Autumn Street.

Tunnel Alignment into Diridon Station North Option

Under the Twin-Bore Option, the alignment would continue beneath Santa Clara Street and shift south beginning just west of South Almaden Boulevard to pass between the SR 87 bridge foundations. The alignment would then pass 45 feet below the riverbed of the Guadalupe River and a retaining wall, then veer back north to a location just south of and adjacent to Santa Clara Street. The alignment passes 25 feet below the creekbed of Los Gatos Creek. After passing under Los Gatos Creek, the alignment would enter Diridon Station under Autumn Street and directly south of Santa Clara Street. The Diridon Station North Option is closer to Santa Clara Street in comparison to the South Option.

Under the Single-Bore Option, the alignment would continue beneath Santa Clara Street, continue 50 feet below the riverbed of the Guadalupe River and 50 feet below the creekbed of Los Gatos Creek. After passing under Los Gatos Creek, the alignment would shift north and enter Diridon Station between Autumn and Montgomery Streets, directly south of Santa Clara Street. The Diridon Station North Option is closer to Santa Clara Street in comparison to the South Option.

Diridon Station

There are two station location options for the Diridon Station: the Diridon Station South Option and the Diridon Station North Option, as described in detail below. The alignment varies by station location.

Diridon Station South Option

The Diridon Station South Option would be located between Los Gatos Creek to the east, the San Jose Diridon Caltrain Station to the west, Santa Clara Street to the north, and West San Fernando Street to the south as shown on Figure 2-8. The station would consist of a boarding platform level, a mezzanine level, and entrances at street-level portals. Entrances would have elevators, escalators, and stairs covered by canopy structures.

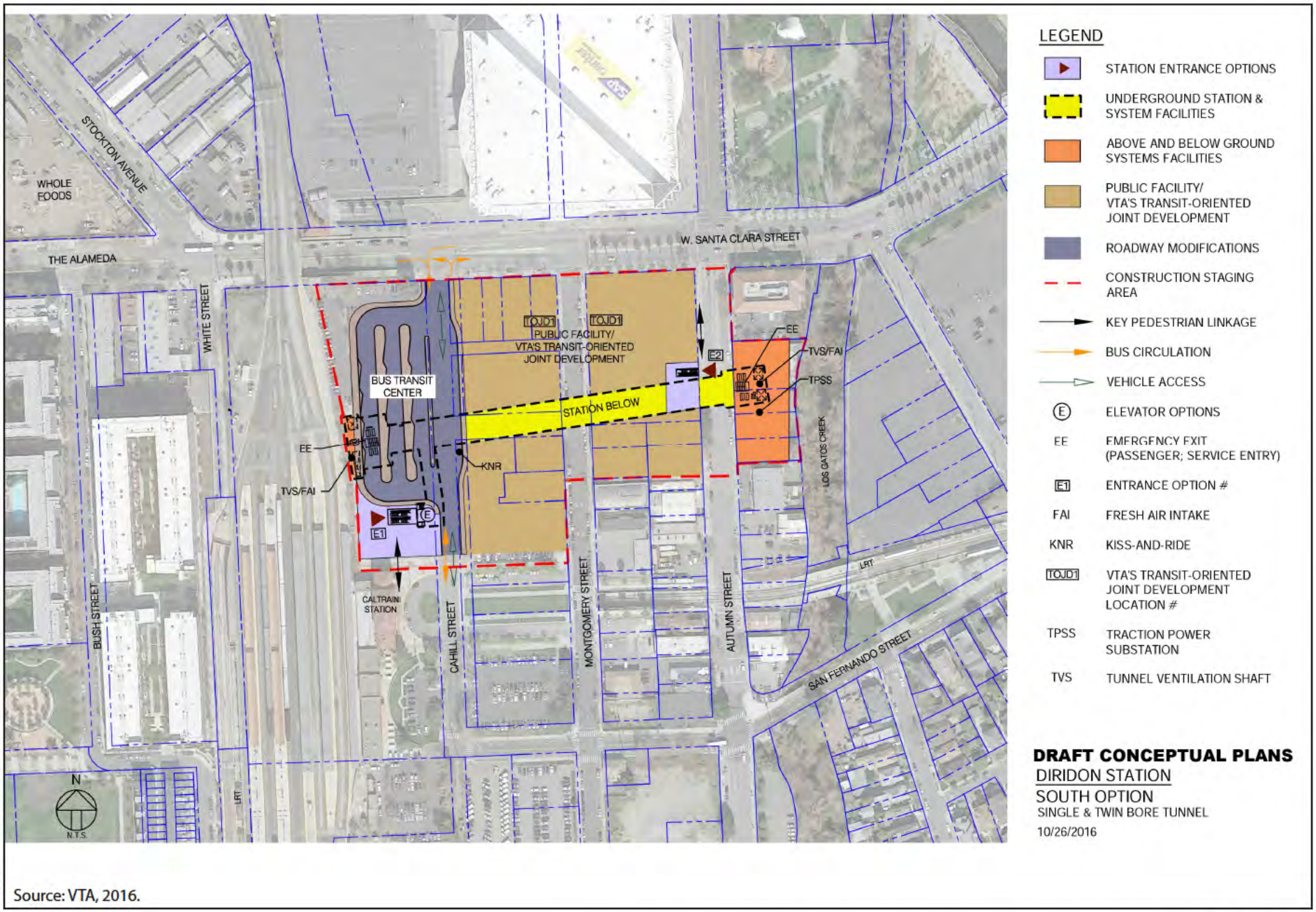
The station would have a minimum of two entrances. Stairs and up/down escalators would be provided at each of the entrances. Two elevators would be provided at each station, generally one near each end. The number, location, and configuration of station entrances would be finalized during final design and based on BART Facilities Standards and ridership projections.

An existing VTA bus transit center would be reconfigured for better access and circulation to accommodate projected bus and shuttle transfers to and from the BART station. Kiss-and-ride facilities would be located along Cahill Street. No park-and-ride parking would be provided.

Access to the station would be from Santa Clara Street from the north and from West San Fernando Street from the south. Street-level station entrance portals would provide pedestrian linkages to the Diridon Caltrain Station and SAP Center.

Systems facilities would be located aboveground and underground as shown on Figure 2-8 and would include a TPSS, an auxiliary power substation, ventilation facilities, associated ventilation shafts, and a TCCR. Under the Twin-Bore and Single-Bore Options, most of these system facilities would be located underground; however, these systems facilities may also be located aboveground. The station would also include emergency exhaust ventilation facilities with ventilation shafts and fresh air intake/exhaust hatches as shown on Figure 2-8. System facility sites within public view would be surrounded by an approximately 9-foot-high CMU wall, and sites outside of public view would be surrounded by a 9-foot-high fence. Access to the aboveground systems facilities and parking areas for service vehicles would be restricted by access gates.

West of the station, the alignment for both the Twin-Bore and Single-Bore Options would continue beneath the Diridon Caltrain Station train tracks and White Street. The alignment would then turn towards the north, crossing under The Alameda at Cleaves Avenue and under West Julian Street at Morrison Avenue before aligning under Stockton Avenue (STA 780+00).



Source: VTA, 2016.

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Figure 2-8
Diridon Station South Option Plan (Twin-Bore and Single-Bore)
VTA's BART Silicon Valley–Phase II Extension Project

Diridon Station North Option

Under the Twin-Bore Option, the Diridon Station North Option would be located between Autumn Street to the east, the Caltrain tracks to the west, Santa Clara Street to the north, and West San Fernando Street to the south as shown on Figure 2-9.

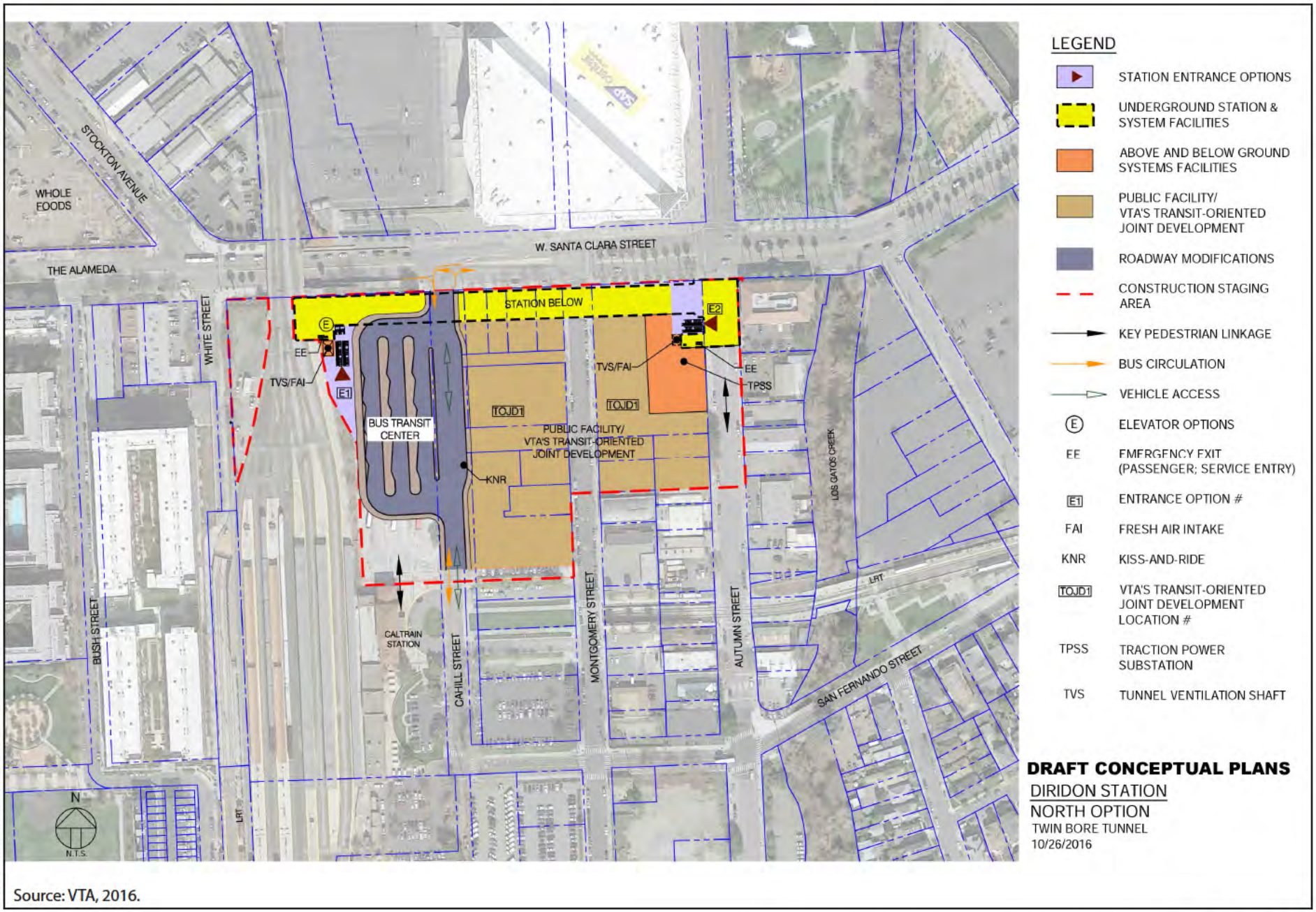
Under the Single-Bore Option, the Diridon Station North Option would be located between Autumn Street to the east, White Street to the west, Santa Clara Street to the north, and West San Fernando Street to the south as shown on Figure 2-10.

The station would be located underground and adjacent to, and just south of, Santa Clara Street. The station would consist of a boarding platform level, a mezzanine level, and entrances at street-level portals. Access to the station would be from Santa Clara Street. Street-level station entrance portals would provide pedestrian linkages to the Diridon Caltrain Station and SAP Center. Entrances would have elevators, escalators, and stairs covered by canopy structures. The station would have a minimum of two entrances. Stairs and up/down escalators would be provided at each of the entrances. Elevators would be provided at each station near each end as shown on Figure 2-9. The number, location, and configuration of station entrances would be finalized during final design based on BART Facilities Standards and ridership projections.

An existing VTA bus transit center would be reconfigured for better access and circulation to accommodate projected bus and shuttle transfers to and from the BART station. Kiss-and-ride facilities would be located along Cahill Street. No park-and-ride parking would be provided.

Systems facilities would be located aboveground and underground as shown on Figure 2-9 for the Twin-Bore Option and Figure 2-10 for the Single-Bore Option and would include a TPSS, an auxiliary power substation, ventilation facilities, associated ventilation shafts, and a TCCR. Under the Twin-Bore and Single-Bore Options, most of these system facilities would be located underground; however, these systems facilities may also be located aboveground. The station would also include emergency exhaust ventilation facilities with ventilation shafts and fresh air intake/exhaust hatches as shown on Figure 2-9. System facility sites within public view would be surrounded by an approximately 9-foot-high CMU wall, and sites outside of public view would be surrounded by a 9-foot-high fence. Access to the aboveground systems facilities, and parking areas for service vehicles would be restricted by access gates.

Under the Twin-Bore Option, west of the station, the alignment would continue beneath the Diridon Caltrain Station train tracks and White Street. The alignment would then turn towards the north, crossing under The Alameda at Wilson Avenue and under West Julian Street at Cleaves Street before aligning under Stockton Avenue (STA 775+00).



Source: VTA, 2016.

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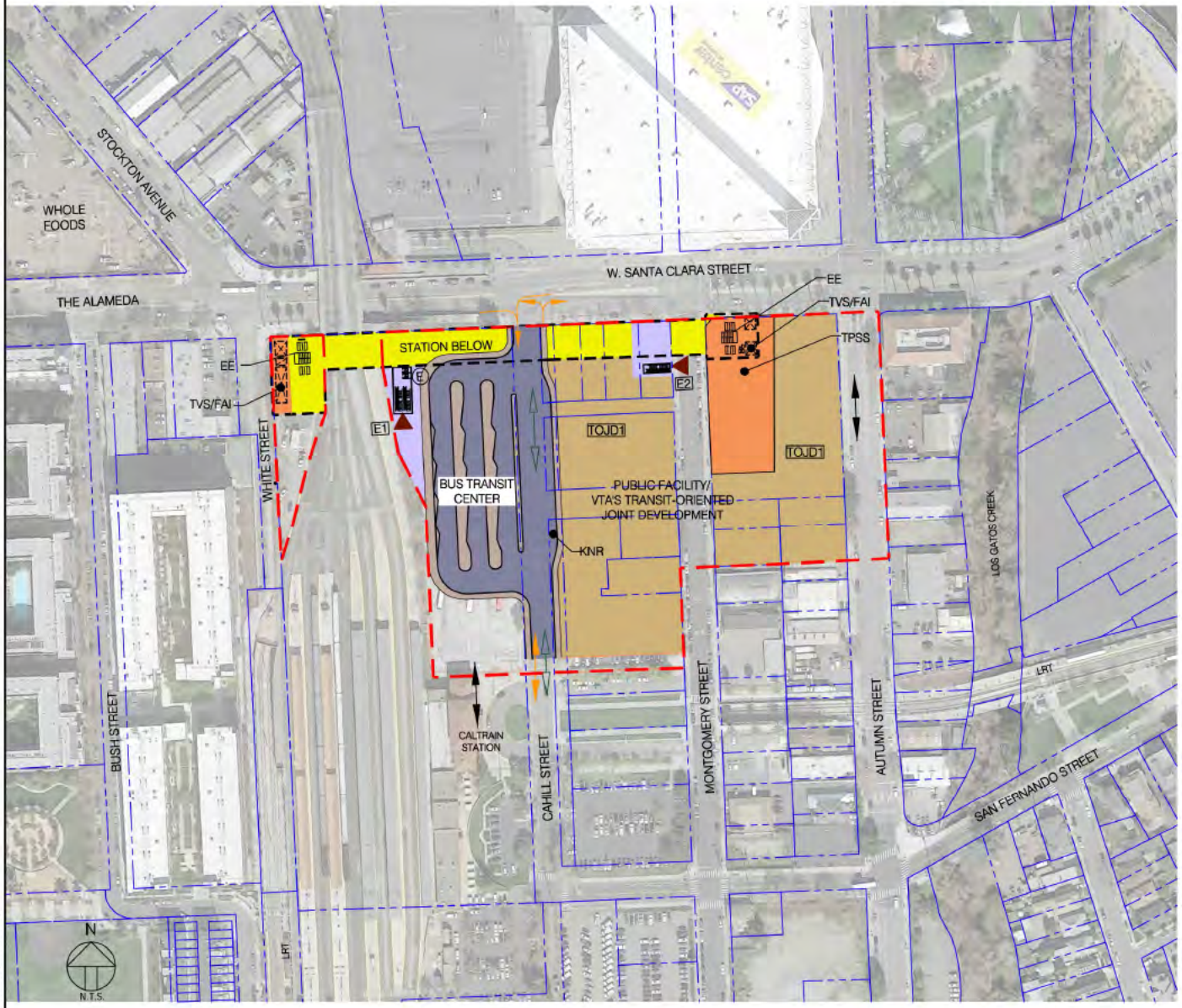
Figure 2-9
Diridon Station North Option Plan (Twin-Bore)
VTA's BART Silicon Valley–Phase II Extension Project



LEGEND

- STATION ENTRANCE OPTIONS
- UNDERGROUND STATION & SYSTEM FACILITIES
- ABOVE AND BELOW GROUND SYSTEMS FACILITIES
- PUBLIC FACILITY/ VTA'S TRANSIT-ORIENTED JOINT DEVELOPMENT
- ROADWAY MODIFICATIONS
- CONSTRUCTION STAGING AREA
- KEY PEDESTRIAN LINKAGE
- BUS CIRCULATION
- VEHICLE ACCESS
- (E) ELEVATOR OPTIONS
- EE EMERGENCY EXIT (PASSENGER; SERVICE ENTRY)
- E1 ENTRANCE OPTION #
- FAI FRESH AIR INTAKE
- KNR KISS-AND-RIDE
- TOJD1 VTA'S TRANSIT-ORIENTED JOINT DEVELOPMENT LOCATION #
- TPSS TRACTION POWER SUBSTATION
- TVS TUNNEL VENTILATION SHAFT

DRAFT CONCEPTUAL PLANS

DIRIDON STATION

NORTH OPTION

SINGLE BORE TUNNEL

10/26/2016

Source: VTA, 2016.

Graphics ... 00332.13 (10-31-2016)

Figure 2-10

Diridon Station North Option Plan (Single-Bore)

VTA's BART Silicon Valley–Phase II Extension Project

Under the Single-Bore Option, west of the station, the alignment would continue under White and Bush Streets south of The Alameda. The alignment would then turn towards the north, crossing under The Alameda at Sunol Street and under West Julian Street at Morrison Avenue before aligning under Stockton Avenue (STA 780+00).

Tunnel Alignment along Stockton Avenue

Around Pershing Avenue, all of the options—the Twin-Bore and Single-Bore Options and the Diridon Station South and North Options—converge back onto the same alignment under Stockton Avenue, The alignment is the same for all four options mentioned above after Pershing Avenue; however, the station numbering is different between the Diridon Station South and North Options because the alignment for the Diridon Station North Option is slightly "shorter" than the South Option as shown on Appendices B and C. On the east side of Stockton Avenue between Schiele Avenue and West Taylor Street, there are three alternate locations for a systems facility site that would house a tunnel ventilation structure, auxiliary power substation, and a gap breaker station (Twin Bore: STA 780+00 to STA 793+00, Single Bore: 785+00 to 798+00) as described in Section 2.2.2.2. Sites within public view would be surrounded by an approximately 9-foot-high CMU wall, and sites outside of public view would be surrounded by a 9-foot-high fence. Access to the aboveground systems facilities and parking areas for service vehicles would be restricted by access gates.

The alignment would continue north and cross under the Caltrain tracks (STA 807+00) and Hedding Street (STA 813+00). The alignment would continue on the east side of the Caltrain tracks and cross under Interstate (I-) 880 before ascending and exiting the West Tunnel Portal near Newhall Street (Single Bore: STA 835+00, Twin Bore: 833+00).

A high-voltage substation, TPSS, and TCCR would be located at a systems facility site above the West Tunnel Portal and near Pacific Gas & Electric Company's (PG&E's) FMC Substation as described in Section 2.2.2.2. A 115-kiloVolt (kV) line from PG&E's existing FMC substation would serve the high-voltage substation. There are two alternate routes for this 115-kV line connection. The first alternate route would begin at the high-voltage substation, run north to Newhall Street, then run east on upgraded poles along Newhall Street, then south on an existing line along Stockton Avenue. A second alternate route would also run north to Newhall Street and then run east on upgraded poles along Newhall Street, but a new line would be constructed to traverse the PG&E substation site. The 115-kV line would require approximately 80- to 115-foot-high galvanized tapered tubular steel towers or wood poles spaced approximately every 150 to 300 feet.

Crossover tracks would be located in the retained-cut trench just outside the West Tunnel Portal (Single Bore: STA 833+00, Twin Bore: STA 831+00 (Diridon North Option) and STA 836+00 (Diridon South Option). The alignment would transition to be at grade (Twin Bore: STA 844+00 and Single Bore: STA 848+00) as it enters the Newhall Maintenance Facility and the Santa Clara Station to the north.

City of Santa Clara

The BART Extension Alternative in Santa Clara would consist of the Newhall Maintenance Facility and the Santa Clara Station. The San Jose/Santa Clara boundary is located approximately midway through the Newhall Maintenance Facility.

Newhall Maintenance Facility

The Newhall Maintenance Facility would begin north of the West Tunnel Portal at Newhall Street in San Jose and extend to De La Cruz Boulevard near the Santa Clara Station in Santa Clara as shown in Figure 2-11. A single tail track would extend north from the Santa Clara Station and cross under the De La Cruz Boulevard overpass and terminate on the north side of the overpass. A systems facility is located north of Brokaw Road that includes a radio tower, traction power substation, and auxiliary power substation.

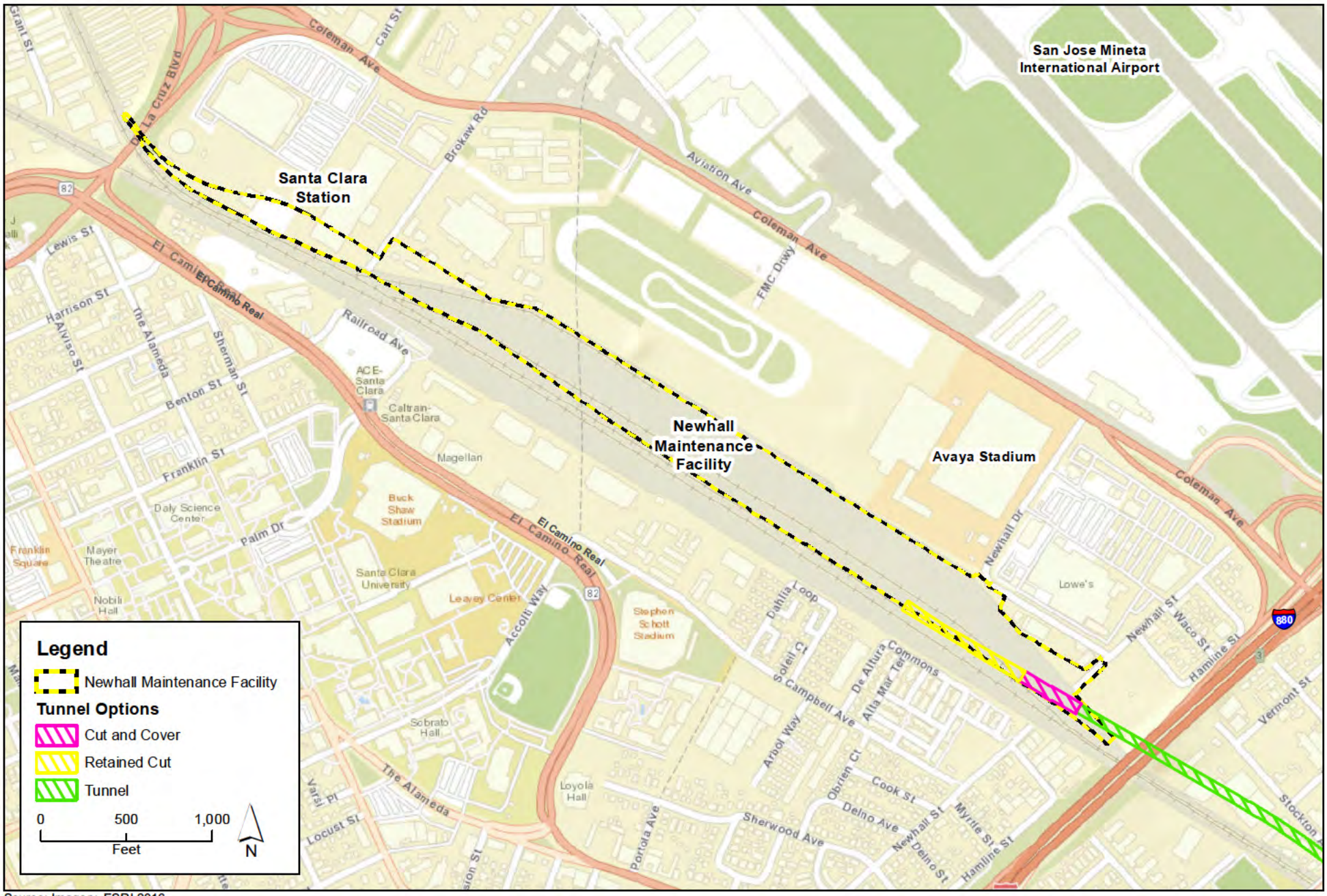
The maintenance facility would be constructed on the former Union Pacific Railroad (UPRR) Newhall Yard that was purchased by VTA in 2004 and has been cleared of all structures. The main entrance to the facility would be from Newhall Drive. Other secured entrances would be provided at various locations for employees and emergency personnel. The site would include service roads to all buildings and approximately 225 onsite parking spaces for employees, authorized visitors, and delivery and service vehicles. The layout of the facility is provided in Appendix B.

The maintenance facility would serve two purposes: (1) general maintenance, running repairs, and storage of up to 200 BART revenue vehicles and (2) general maintenance of non-revenue vehicles. The facility would also include maintenance and engineering offices and a yard control tower. To provide for these functions, several buildings and numerous transfer and storage tracks would be constructed.

The following systems facilities would be located in the maintenance facility: a TPSS (11,000 square feet and 12 feet high), an auxiliary power substation (3,000 square feet and 12 feet high), two gap breaker stations (one 3,800 square feet and 12 feet high, and the other 3,200 square feet and 12 feet high), and a TCCR (3,300 square feet and 35 feet high).

System facility sites within public view would be surrounded by an approximately 9-foot-high CMU wall, and sites outside of public view would be surrounded by a 9-foot-high fence. The systems site would require two access points with gates and internal parking areas for service vehicles. An approximately 150-foot-high radio tower and an associated equipment shelter would be located within the systems site north of Brokaw Road.

Provisions would be made in the maintenance facility area for storage of maintenance equipment and supplies. Two detention basins, one in each city, would be constructed to retain and provide controlled release of stormwater into the respective city's storm drain systems.



Source: Imagery, ESRI 2016

Figure 2-11
Newhall Maintenance Facility
VTA's BART Silicon Valley – Phase II Extension Project

Specific features of the Newhall Maintenance Facility are described below.

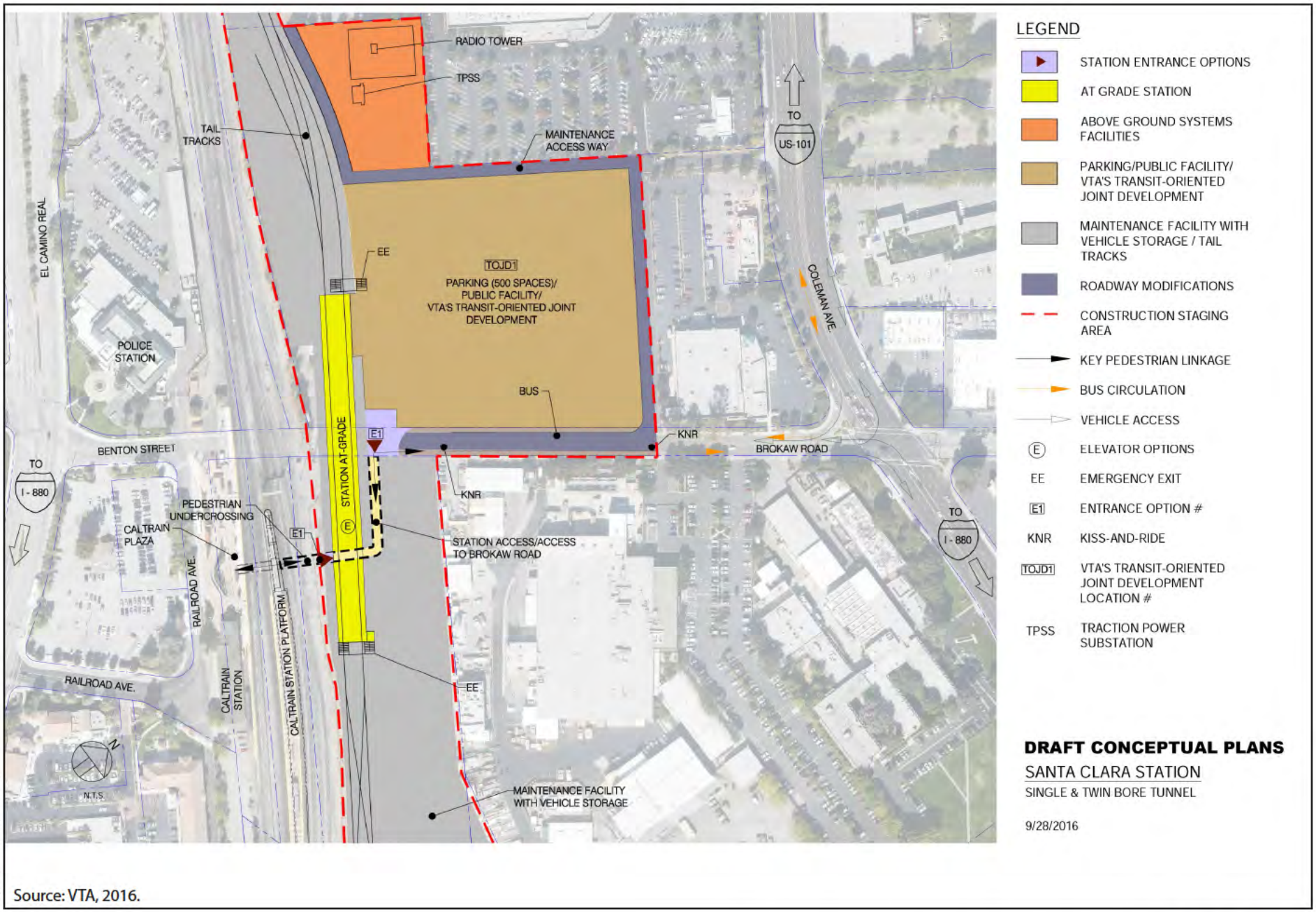
- **Train Car Washer.** The train car washer would be an open-ended building with an automated vehicle washing machine. As each train returns to the yard for storage, it would be driven through the car washer, where the exterior would be cleaned.
- **Yard Control Tower.** The yard control tower would be approximately three stories in height. The tower would be situated to have a view of train operations in the maintenance yard area. Employees staffing the tower would control the majority of train movements within the yard area, while shop area movements would be made under local control.
- **Inspection Pit.** The inspection pit would be enclosed in a shed and open at each end to allow trains to travel over a depressed pit so that the underside of trains could be inspected.
- **Blowdown Facility.** The blowdown facility would be used primarily for cleaning the underside of trains in a combined wet and dry process in preparation for scheduled inspections. The cleaning operation would be performed within a service pit.
- **Wheel Truing Facility.** The wheel truing facility would be located next to the revenue vehicle maintenance shop. The primary function of this facility would be to enclose the wheel truing pit and equipment to facilitate the maintenance and repair of BART vehicle wheel sets.
- **Revenue Vehicle Maintenance Shop.** The revenue vehicle maintenance shop would be approximately 70,000 square feet. Tracks would lead to and through the building. Vehicle car lifts, bridge cranes, and jib cranes would be located within the first floor of the shop. The second floor would be primarily for administration offices. The major functions carried out in the shop would include car inspections and repairs, parts storage, heavy component repairs, electro-mechanical repairs, and electronic repairs.
- **Vehicle Turntable.** The approximately 85-foot-diameter vehicle turntable would be located on a spur track close to the storage tracks. The vehicle turntable would be used for turning cars that must be oriented in the correct direction before they are added to a consist (a group of rail vehicles that make up a train).
- **Non-revenue Vehicle Maintenance Shop and Maintenance and Engineering Offices.** The non-revenue vehicle maintenance facility would be for maintenance of non-revenue service vehicles, such as rubber-tired vehicles, and cars for the maintenance of track and equipment. The facility would contain maintenance bays for rubber-tired vehicles, a service bay with a depressed pit for train maintenance, and a storage area for replacement parts. It would also contain an overhead crane, vehicle hoists, and diagnostic repair equipment.
- **Material Storage Area.** The material storage area would be utilized to store maintenance equipment and stockpile supplies.

- **Train Control House.** The train control house would be a one-story building located within the maintenance facility.
- **Gap Breaker Station.** The maintenance facility gap breaker station would be located adjacent to the train control house.
- **Radio Tower.** An approximately 150-foot-high radio tower and associated equipment shelter would be located near the traction power substation.
- **High-Voltage Substation.** A High-Voltage Substation and Switching Station would be located in the north east corner of the maintenance facility.

Santa Clara Station

The closest streets to the Santa Clara Station would be De La Cruz Boulevard to the northwest, Coleman Avenue to the northeast and Brokaw Road to the east. The station would be at grade, centered at the west end of Brokaw Road, and would contain an at-grade boarding platform with a concourse one level below (Figure 2-12). Access to the boarding platform would be provided via elevators, escalators, and stairs covered by canopy structures. A pedestrian underpass would connect from the concourse level of the BART station to the Santa Clara Caltrain plaza. In addition, a pedestrian underpass would connect from the station concourse level to a new BART plaza near Brokaw Road. Kiss-and-ride, bus, and shuttle loading areas would be provided on Brokaw Road. Brokaw Road would be widened, and the intersection of Coleman Avenue and Brokaw Road would be reconfigured.

A parking structure of up to five levels would be located north of Brokaw Road and east of the Caltrain tracks within the approximately 10-acre station area and would accommodate 500 BART park-and-ride parking spaces in addition to public facilities on the site. Vehicular access to the parking structure would be provided from Brokaw Road. Pedestrian access from the parking structure to the Santa Clara BART Station would be provided by a pedestrian tunnel from Brokaw Road to the below-grade BART concourse level.



Source: VTA, 2016.

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Figure 2-12
Santa Clara Station (Twin-Bore and Single-Bore)
VTA's BART Silicon Valley–Phase II Extension Project

2.2.2.2 Description of NEPA BART Extension Alternative Auxiliary Features

This section describes various features of the NEPA BART Extension Alternative to assist the reader's understanding of the electrical, communication, cross passages, ventilation, and pump facilities required to operate the transit system. Definitions for the terms used in this chapter and throughout this SEIS/SEIR are included in Chapter 12, *Definitions, Abbreviations, and Acronyms*.

Electrical Facilities

Several types of electrical facilities are required to provide power to BART trains, stations, and associated facilities. High-voltage substations transform 115-kV AC power distributed from PG&E to 34.5kV AC power that is then distributed to the dual 34.5kV sub-transmission cable system (two sets of cables on the guideway that deliver this intermediate voltage to various locations throughout the system such as the traction power substations). Traction power substations convert the 34.5kV power to 1,000-volt (V) DC power that is then distributed to the BART third rail (also called the contact rail). Switching and sectionalizing stations control power on the 34.5-kV sub-transmission system. The switching stations are co-located with the high-voltage substations, and the sectionalizing stations are between these locations and co-located with traction power substations.

High-Voltage Substations and Switching Stations

High-voltage substations transform 115-kV AC power distributed from PG&E to 34.5-kV AC power that is then distributed to the dual 34.5-kV sub-transmission cable system. High-voltage substations include outdoor type equipment consisting of power utility interface equipment, such as a disconnect switch; metering potential and current transformers; a revenue metering facility; a 115-kV, outdoor-type power circuit breaker; a power transformer; a 34.5-kV indoor-type power circuit breaker; and electrical auxiliary equipment, protection relays, meters, telemetering devices, and supervisory control and data acquisition system (SCADA).

Switching stations consist of 34.5-kV metal-clad, walk-in-type switchgear circuit breakers, protection relays and meters, and SCADA, all of which are used for switching, distribution, and protection of the dual 34.5kV sub-transmission cable system.

High-voltage substations would require installation of high-voltage (115-kV) power feed lines connecting to nearby existing PG&E towers and lines or to PG&E substations. Permanent overhead or underground easements would be required for the 115-kV lines. Site dimensional requirements would vary based on site-specific requirements and where sites would be combined with other facilities such as traction power substations and train control buildings. However, approximate dimensional requirements are 75 by 190 feet and 20 feet in height for high-voltage substations and 30 by 60 feet and 20 feet in height for switching stations. Some sites would require construction of an access road.

Traction Power Substations and Sectionalizing Stations

Traction power substations provide the power required to run BART trains on the mainlines, storage tracks, and maintenance facility tracks. These substations transform 34.5-kV AC to 1,000-V DC for distribution through BART's electrified third rail (also called the contact rail). Traction power substations include both outdoor and indoor equipment. The equipment consists of 34.5-kV AC metal clad walk-in type switchgear, transformer-rectifier assemblies, 1,000-V DC switchgear circuit breakers, control equipment, electrical auxiliary equipment, protection relays, meters and telemetering devices, SCADA, and connecting AC and DC power and control cables.

Sectionalizing stations consist of metal-clad, walk-in-type 34.5-kV switchgear circuit breakers, protection relays and meters, and SCADA, all of which are used to tie-in existing BART 34.5-kV cable distribution circuits or new 34.5-kV cable distribution circuits to obtain a flexible and reliable power supply system during contingency operations.

Site dimensional requirements would vary based on site-specific requirements and where sites would be combined with other facilities, such as train control buildings. Some sites would require an access easement or construction of an access road. Minimum approximate dimensional requirements for traction power substations are 60 by 200 feet and 15 feet in height. Approximate dimensional requirements of sectionalizing stations are 30 by 20 feet, and the equipment would be combined with the traction power substation's 34.5-kV AC switchgear assembly.

Auxiliary Power Substations

Auxiliary power substations provide the power required to run the stations and Newhall Maintenance Facility. Electric power to the substations would be supplied by nearby overhead and underground medium voltage 480-V, 12.47-kV, and 21-kV distribution lines. Short (typically less than 1,000 feet) sections of overhead and underground power lines would be constructed from existing distribution facilities to the new facilities. Transformers and switching equipment would be located within ancillary areas at stations. In addition, each station and the Newhall Maintenance Facility would have a standby diesel-electric generator located aboveground. Additional standby diesel-electric generators would be located at pump stations and possibly at train control buildings.

Gap Breaker Stations

Gap breaker stations isolate appropriate electrified third rail sections for maintenance and repair purposes or de-energize third rail sections during an emergency. Gap breaker stations include indoor equipment in pre-fabricated enclosures or custom-built buildings. The equipment consists of 1,000-V DC switchgear circuit breakers and associated ancillary equipment such as relays and meters. DC power cables run in ductbanks from the gap breaker circuit breakers to BART's electrified third rail. Approximate dimensional requirements for gap breaker stations are 30 by 40 feet and 15 feet high.

Train Control and Communication Equipment

Train control equipment would be installed to provide automatic train control functions (e.g., accelerating, maintaining speed, braking, switching tracks, maintaining separation between different trains on the same track) and to integrate operations with the existing BART system. Some of the equipment required to monitor and control trains would be mounted along the trackways and on the trains. This equipment would include radios and antennae. Much of the wayside equipment would be contained in stand-alone train control buildings along the alignment or in train control rooms within the station areas. Train control buildings would be custom-built structures that range from 50 by 60 feet to 35 by 90 feet and 15 feet high.

Communications equipment for transmission of voice, video, and data would be installed as a means to: (1) provide information to passengers; (2) facilitate communication between passengers, BART staff, and BART Central; (3) provide transmission of closed circuit television camera data to a BART security center; and (4) enable subsystems to be monitored and remotely controlled where necessary.

Cross Passages

Under the Twin-Bore Option, cross passages are underground connections located between the two tunnel bores and fitted with fire-rated doors. Cross passages would be spaced approximately 450 to 750 feet apart and are not required within the underground station boxes. Cross passages permit crossing from one tunnel bore to the other tunnel bore for purposes of emergency evacuation. For example, in the event of a fire, cross passages would provide the means to evacuate passengers from the tunnel with the fire incident to the other tunnel. Passengers could access rescue trains within the tunnel not affected by the emergency via the cross passages.

Under the Single-Bore Option, both train tracks would be located within one large diameter tunnel, not within two separate tunnels as in the Twin-Bore Option. Cross passages are required between two side-by-side tunnels, but the larger tunnel diameter of the Single-Bore Option includes emergency evacuation areas between each set of tracks within the single tunnel. For more information, see Chapter 5, Section 5.3.1, *Tunnel, Trackwork, and Ventilation Structures*.

Tunnel and Underground Station Ventilation Facilities

Tunnel and underground station ventilation facilities consist of emergency ventilation, fresh air intake, and exhaust facilities.

Emergency Ventilation Facilities

Emergency ventilation facilities would be located along the tunnel alignment between the underground stations (called mid-tunnel ventilation structures) and within the underground stations. The facilities include fans, dampers, ventilation shafts, and associated facilities and

operate primarily to remove smoke in cases of emergency in either the tunnels or the stations. In addition, the facilities limit air velocities as trains pass through the tunnel and push the air forward and ventilate the tunnel when diesel propelled vehicles are being used during tunnel maintenance. Periodic testing of the facilities is required to ensure their proper operation.

There would be two mid-tunnel ventilation structures: one located at the northwest corner of Santa Clara and 13th Streets and another located east of Stockton Avenue south of Taylor Street. There are four optional locations for the Stockton Avenue ventilation structures. The final decision of a location would be based on the environmental impacts, property negotiations, and acquisition costs. The mid-tunnel ventilation structures would include an aboveground structure, or building, that houses the equipment required to ventilate the tunnel. The area required to accommodate each facility would be approximately 110 by 200 feet (including a small paved area used for maintenance activities or parking for maintenance personnel and an area for electrical transformers) with most of the equipment housed in a structure approximately 90 by 140 feet and 25 feet in height. A ventilation shaft would connect the structure to the tunnel below. The shaft opening would be located on the roof of the structure, with the smoke and air exhaust discharging vertically out of, or fresh air being drawn into, a protective grate.

There would be several underground ventilation facilities at the Alum Rock/28th Street, Downtown San Jose, and Diridon Stations, with all of the equipment located in the ancillary areas at both ends of the station boxes. The surface feature would be one or more ventilation shafts at each end of the station. Each shaft would be approximately 15 by 20 feet and 10 to 15 feet in height above ground level. An opening would be located at the top of each ventilation shaft with the smoke and air exhaust discharging vertically out of a protective grate.

Fresh Air Intake and Exhaust Facilities

Fresh air intake and exhaust facilities would be located within the underground stations. Dedicated fresh air intake and exhaust facilities supply fresh air exchange to the non-public ancillary areas. Similar to the tunnel and underground emergency ventilation facilities, these facilities would include shafts leading to the surface. Each shaft would be approximately 10 by 10 feet and approximately 18 feet in height above ground level. As trains pass through the tunnel and push air forward, fresh air exchanges into the station public area through the station entrances.

Pump Stations

All the equipment for pump stations along the tunnel alignment or in underground stations would be located underground. Access to these facilities for maintenance purposes would be from the nearest underground station or another facility. Access to pump stations located elsewhere along the alignment would be from within the retained cuts or from an at-grade location.

Pump stations would be located in the East and West Tunnel Portals, in the tunnel south of Lower Silver Creek, in the tunnel at Santa Clara and 13th Streets, in the tunnel west of SR 87, and in the tunnel between Schiele and Villa Avenues (location would vary depending on location of the ventilation structure near Stockton Avenue).

2.2.2.3 Sustainability Strategies

To the maximum extent practicable and in consultation with BART as required, the design and operation of the BART Extension Alternative would incorporate VTA's Sustainability Program green strategies through features that reduce energy, water, and solid resource consumption and improve indoor environmental quality. Some features that VTA will consider are listed below.

- **Daylighting and lighting controls.** Daylight combined with controls for artificial lighting can reduce electric power consumption. Photosensor-driven lighting control and dimming control is a well-established technology that could be applied to station platforms and interiors, and also on train cars. Controls should also offer low-power settings for after-hours periods at stations.
- **Escalators.** Because many passengers arrive at BART stations during peak hours, running escalators at full speed during non-peak hours uses energy needlessly. To reduce energy consumption, variable speed escalators that can stop and re-start or that operate at a low-speed mode (which may result in fewer maintenance problems than the start/stop escalators) could be installed.
- **Renewable power.** Photovoltaic solar panels are typically used to generate on-site power for transportation facilities. The top of roofs provide an opportunity for installing solar panels.
- **Water.** There are numerous well-established ways to save water, reduce stormwater flooding, and improve water quality in landscape design that are directly applicable to station areas and potentially to BART trackways. These methods include planting native, drought-resistant plants; using low-flow fixtures; increasing pervious surface with porous paving and unit pavers; capturing surface flow with bioswales and raingardens; and using soil-water separators and other filters. At the Newhall Maintenance Facility, the train car washing process could use recycled grey water and save up to 90 percent of the water used. If access to the San Jose and Santa Clara recycled water networks is available, then recycled water could be used for station landscaping.
- **Plant-based lubricants and coolants.** Soy-based oil is being considered in the design for use with large transformers and potentially other system machinery.
- **Materials and resources.** Green strategies in this category include the management of construction and demolition waste through recycling and reuse to keep waste out of landfills to the maximum extent practicable; the use of recycled and regionally or locally available materials; and the reuse of soils onsite or elsewhere in the vicinity. Excavated soils could also be made available for use at other sites.

- **Indoor environmental quality.** Given that there would be indoor space involved, measures are being considered to address indoor environmental quality. These include the use of paints, coatings, carpet, and other materials containing reduced volatile organic compounds and green cleaning products.

2.3 CEQA Alternatives

2.3.1 CEQA No Build Alternative

The No Build Alternative consists of the existing transit and roadway networks and planned and programmed improvements in the corridor that are described in Section 2.2.1, *NEPA No Build Alternative*. Future land uses would be consistent with the General Plans and area plans for the Cities of San Jose and Santa Clara.

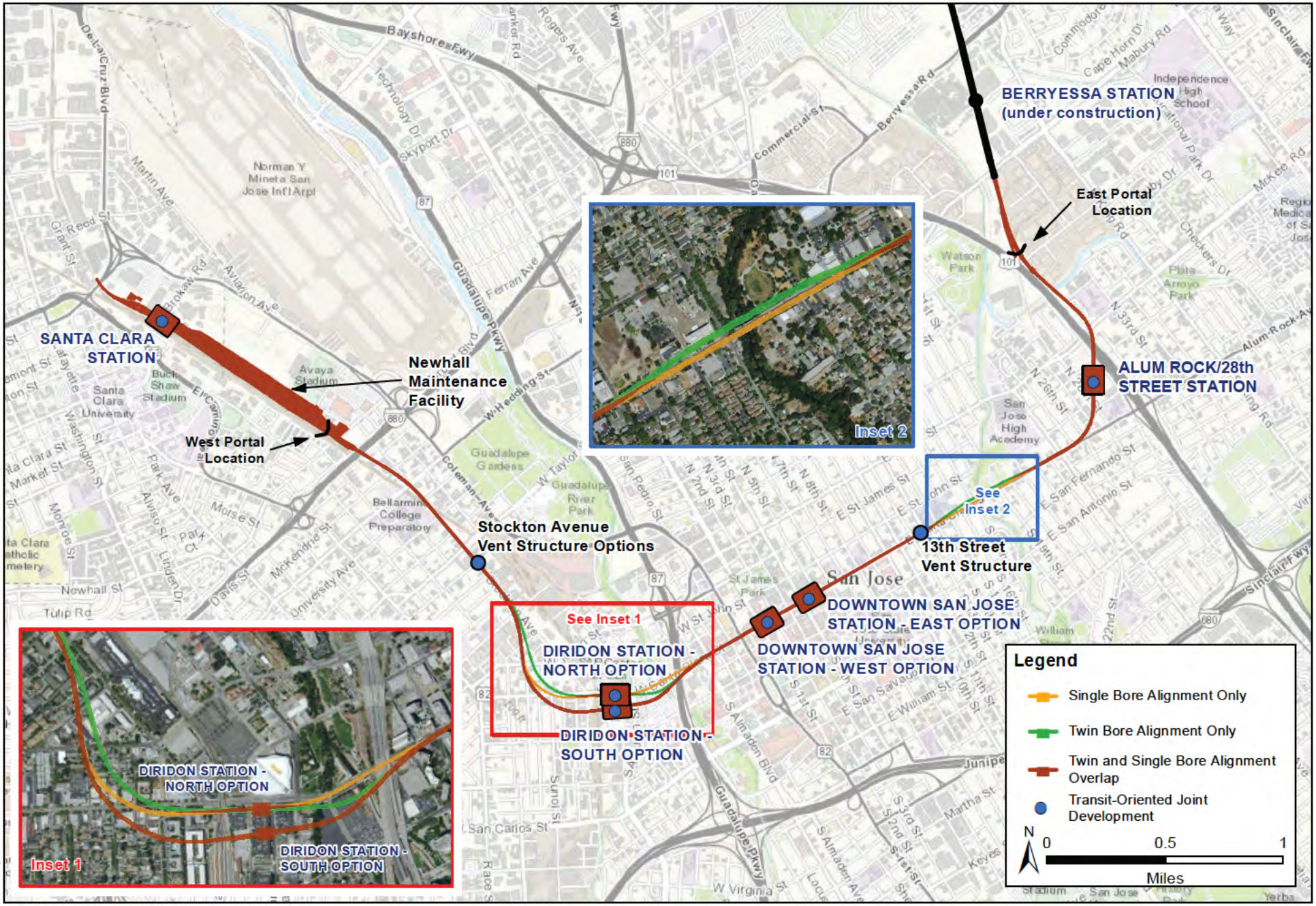
2.3.2 CEQA BART Extension Alternative

The CEQA BART Extension Alternative consists of the approximately 6-mile extension of the BART system from the Berryessa BART Station in San Jose through downtown San Jose terminating in Santa Clara near the Santa Clara Caltrain Station as described in Section 2.2.2, *NEPA BART Extension Alternative*.

2.3.3 CEQA BART Extension with TOJD Alternative

The CEQA BART Extension with TOJD Alternative consists of the approximately 6-mile extension of the BART system from the Berryessa BART Station in San Jose through downtown San Jose terminating in Santa Clara near the Santa Clara Caltrain Station, as described in Section 2.2.2, *NEPA BART Extension Alternative.* In addition, this alternative has TOJD at each of the four BART stations and TOJD at the two ventilation structures as described below. The alignments, stations, and TOJD locations are depicted on Figure 2-13.

The TOJD would involve VTA working with a private developer to develop mixed-use developments consistent with California Public Utilities Code Section 100130-100133. The code defines TOJD as a commercial, residential, or mixed-use development that is undertaken in connection with existing, planned, or proposed transit facilities and is located ¼ mile or less from the external boundaries of that facility. The TOJD may be constructed at the same time as the BART Extension Alternative or later in time, dependent on the availability of funding and subject to market forces. However, the design of the stations and structures would not preclude TOJD. A private developer has not been identified at this time.



Source: Station and Track, VTA 2014; Basemap, ESRI 2015

Figure 2-13
BART Extension (with Station options) and Transit-Oriented Joint Development Alternative
VTA's BART Silicon Valley–Phase II Extension Project

In October, 2016, VTA was awarded a $1.52 million Fiscal Year 2016 Pilot Program for Transit-Oriented Development (TOD) Planning grant for the Phase II Project. The Pilot Program supports comprehensive planning efforts of local communities. Under the Pilot Program requirements, agencies and local communities who receive funds through this planning program must examine ways to improve economic development and ridership, foster multimodal connectivity and accessibility, improve transit access, identify infrastructure needs, and enable mixed-use development near transit stations. The Pilot Program for TOD Planning funds will be used to support a study on concepts and future opportunities for transit-oriented development along the alignment. After the VTA Board of Directors defines the scope of work and approves the selection of a consultant, the study will take approximately a year to complete.

No federal dollars would be used to design or construct the TOJD. Because the TOJD is a separate action by VTA from the NEPA BART Extension Alternative, VTA's TOJD, which is consistent with city general plans and approved area plans, would be considered in the cumulative background conditions for NEPA purposes. However, the potential impacts of TOJD are fully analyzed under the CEQA BART Extension with TOJD Alternative.

2.3.3.1 Proposed Development

VTA is proposing to construct TOJD (office, retail, and residential land uses) at the four BART stations (Alum Rock/28th Street, Downtown San Jose, Diridon, and Santa Clara), which offers the benefit of encouraging transit ridership. VTA is also proposing to construct TOJD at two mid-tunnel ventilation structure locations (the northwest corner of Santa Clara and 13th Streets and east of Stockton Avenue south of Taylor Street). VTA's primary objective for the proposed TOJD is to encourage transit ridership and support land use development patterns that make the most efficient and feasible use of existing infrastructure and public services while promoting a sense of community as envisioned by the San Jose and Santa Clara General Plans and relevant adopted specific plans. Estimates for VTA's TOJD at the station sites and at the mid-tunnel ventilation structure locations are provided below and are based on current San Jose and Santa Clara general plans, approved area plans, the existing groundwater table constraints, and market conditions.

Table 2-3 summarizes the land uses at each proposed TOJD location, which are explained in further detail below. The number of parking spaces is based on meeting the Cities of San Jose and Santa Clara parking requirements for residential and commercial land uses. Parking for BART riders is not included in the table nor is shared parking with BART riders.

Table 2-3: Summary of Proposed TOJD

Location	Residential (dwelling units)	Retail (square feet)	Office (square feet)	Parking (spaces)
Alum Rock/28th Street Station	275	20,000	500,000	2,150
Santa Clara and 13th Streets Ventilation Structure	N/A	13,000	N/A	N/A
Downtown San Jose Station – East Option (at 3 sites)	N/A	160,000	303,000	1,398
Downtown San Jose Station – West Option	N/A	10,000	35,000	128
Diridon Station South Option	N/A	72,000	640,000	400
Diridon Station North Option	N/A	72,000	640,000	400
Stockton Avenue Ventilation Structure	N/A	15,000	N/A	N/A
Santa Clara Station	220	30,000	500,000	2,200

City of San Jose

Alum Rock/28th Street Station

TOJD would be located within the station campus and would consist of a maximum of 500,000 square feet of office space with approximately 1,650 parking spaces, 20,000 square feet of retail with 100 parking spaces, and up to 275 dwelling units with approximately 400 parking spaces. The TOJD would range from 4 to 9 stories within the station area identified on the *Alum Rock/28th Street Station Conceptual Site Plan* in Appendix C.

Santa Clara and 13th Streets Ventilation Structure

TOJD would be co-located with the ventilation structure at the northwest corner of Santa Clara and 13th Streets. The development would consist of a maximum of 13,000 square feet of ground-level retail along the street frontage facing Santa Clara Street.

Downtown San Jose Station East Option

Three TOJD sites would be located near the station as shown in *the Downtown San Jose Station East Option Conceptual Site Plan* in Appendix C. The first site is 2.79 acres located south of Santa Clara Street between 6th and 7th Streets. A station entrance, elevator, and system facilities, including a TPSS, tunnel ventilation shaft, fresh air intake, and exhaust would also be located at this site. Because of the high groundwater table, underground parking would be limited to three levels. The TOJD would consist of one level of retail (approximately 120,000 square feet) and two levels of office (approximately 220,000 square feet). Three levels of underground parking would accommodate approximately 1,030 spaces (480 spaces for retail uses and 550 spaces for office uses).

The second site is 0.7 acres and located north of Santa Clara Street, west of 4th Street. A station entrance and elevator would also be located at this site. Because of the high groundwater table, underground parking would be limited to three levels. The TOJD would

consist of one level of retail (approximately 30,000 square feet) and one and one-half levels of office (approximately 48,000 square feet). Three levels of underground parking would accommodate approximately 240 spaces (120 spaces for retail uses and 120 spaces for office uses).

The third site is 0.35 acres located north of Santa Clara Street, west of 3rd Street. System facilities, including a TPSS, tunnel ventilation shaft, fresh air intake, exhaust, emergency exit, and an equipment access shaft would also be located at this site. Because of the high groundwater table, underground parking would be limited to three levels. The TOJD would consist of one level of retail (approximately 10,000 square feet) and two and one-half levels of office (approximately 35,000 square feet). Three levels of underground parking would accommodate approximately 128 spaces (40 spaces for retail uses and 88 spaces for office uses).

Downtown San Jose Station West Option

The TOJD site for the West Option is 0.35 acre and located north of Santa Clara Street, west of 3rd Street, as shown in on the *Downtown San Jose Station West Option Conceptual Site Plan* in Appendix C. System facilities, including a TPSS, elevator, tunnel ventilation shaft, fresh air intake, exhaust, emergency exit, and an equipment access shaft would also be located at this site. Because of the high groundwater table, underground parking would be limited to three levels. The TOJD would consist of one level of retail (approximately 10,000 square feet) and two and one-half levels of office (approximately 35,000 square feet). Three levels of underground parking would accommodate approximately 128 spaces (40 spaces for retail uses and 88 spaces for office uses).

Diridon Station

Under both station location options, TOJD would be located adjacent to Diridon Station and would consist of a maximum of 640,000 square feet of office space with approximately 400 parking spaces, and 72,000 square feet of retail. The location of the TOJD is shown in the *Diridon Station Conceptual Site Plan* in Appendix C. The TOJD would be approximately 8 levels high and would have 3 levels of underground parking.

Stockton Avenue Ventilation Structure

TOJD would be located on the east side of Stockton Avenue, south of Taylor Street, with the ventilation structure at the rear of the site. The development would consist of a maximum of 15,000 square feet of ground level retail along the street frontage facing Stockton Avenue.

City of Santa Clara

Santa Clara Station

TOJD would be located within the station campus as shown on the *Santa Clara Station Conceptual Site Plan* in Appendix C. The TOJD would consist of a maximum of 500,000 square feet of office space with approximately 1,650 parking spaces, 30,000 square

feet of retail with approximately 150 parking spaces, and up to 220 dwelling units with approximately 400 parking spaces. The TOJD would range from 4 to 11 stories and have one level of underground parking.

2.3.3.2 Sustainability Strategies

The sustainability strategies described for the BART Extension Alternative would be similarly applied to the BART Extension with TOJD Alternative.

2.4 Alternatives Considered and Withdrawn

In 2001, VTA initiated a Major Investment Study/Alternative Analysis that evaluated 11 alternative alignments, including busway, commuter rail, light rail, and BART. Upon evaluating the performance of the alternatives and considering public comment, which favored the BART mode over light rail or other new modal options, the VTA Board of Directors on November 9, 2001, unanimously selected Alternative 11: BART on the former UPRR Alignment as the locally preferred alternative/preferred investment strategy. Alternative 11 was the environmentally superior alternative and best achieved the goals and objectives for the corridor. When compared with the other alternatives, BART on the former UPRR Alignment offered the fastest travel times to passenger destinations, the greatest congestion relief, improved air quality, best regional connectivity, lowest traffic and safety impacts due the fully grade-separated guideway, and consistency with local land use plans and policies. The VTA Board of Directors also approved a Comprehensive Agreement with the Bay Area Rapid Transit District that identified the terms and conditions for implementing and operating the locally preferred alternative/preferred investment strategy. On November 12, 2001, the BART Board of Directors adopted the terms and conditions of the Comprehensive Agreement.

Since then, the following additional variations to the selected alternative have been considered but withdrawn.

- **Santa Clara Station South Option.** The Santa Clara Station and 500-space parking garage would be located south of Brokaw Road requiring reconfiguration of the Newhall Maintenance Facility. Access to the station platform and concourse from intermodal connections would require 300- to 500-foot passenger tunnel/undercrossings and result in an inefficient maintenance facility layout.
- **San Fernando Street Alignment.** An alignment would run between Berryessa and Santa Clara BART Stations via UPRR ROW, then under San Fernando Street (subway alignment) to Diridon Station.
- **BART in a Bridge Over U.S. 101 Alignment.** An alignment would go from Berryessa Station to Santa Clara Street via the existing railroad bridge over U.S. 101, with Alum Rock Station west of 28th Street in a trench within VTA ROW. The alignment would pass

perpendicularly under and south of Santa Clara Street (subway alignment) before realigning with Santa Clara Street west of 19th Street.

- **Coyote Creek – South of Santa Clara Street Alignment.** An alignment would travel under Santa Clara Street (subway alignment) from 25th Street to 21st Street, then swing to the south of Santa Clara Street at 21st Street as it passes under Coyote Creek to avoid intersecting the bridge abutments. It would then realign under Santa Clara Street at 13th Street.
- **Coyote Creek – Under Santa Clara Street Alignment.** An alignment would run directly under Santa Clara Street (subway alignment) starting at 25th Street, continuing directly under Santa Clara Street as it passes under Coyote Creek with the alignment below the Santa Clara Street bridge abutments.
- **Alum Rock Station at 23rd Street.** An alignment would run from Berryessa Station over U.S. 101 on a bridge within VTA ROW, under Julian Street (subway alignment) parallel to 28th Street, and swing west starting north of East St. John Street to align parallel to and north of Santa Clara Street at 24th Street. Alum Rock Station would be north of Santa Clara Street between 24th and 20th Streets. Past the station, the alignment would realign directly under Santa Clara Street west of 13th Street.
- **Connection to Mineta San Jose International Airport.** A connection would be constructed to Mineta San Jose International Airport (SJIA) via a spur from the alignment just south of I-880. The alignment would be in a tunnel under I-880, then swing east and travel under the SJIA runways and terminate under the terminals.
- **St. James Street Alignment.** An alignment would travel from Berryessa Station over U.S. 101 on a bridge, along VTA ROW west of 28th Street, before swinging west near McKee Road and aligning under St. James Street (subway alignment). The alignment would then swing diagonally south through St. James Park and under Santa Clara Street, then west under SR 87 south of Santa Clara Street and into Diridon Station.

All of these variations to the selected alternative were considered and withdrawn because of substantial construction costs, operational costs, inefficient passenger access and intermodal connectivity, design and engineering concerns, inefficient maintenance yard operations, financial risk, lower ridership, or environmental impacts.

Also refer to Section 1.4, *BART Extension Project History,* which summarizes the previous environmental studies that have been completed.

2.5 Required Permits and Approvals

This Draft SEIS/SEIR for the BART Silicon Valley Phase II Extension Project has been prepared in accordance with NEPA, the Council on Environmental Quality regulations implementing NEPA, and CEQA. There are two alternatives evaluated in this document in accordance with NEPA: the No Build Alternative and the BART Extension Alternative. The

BART Extension Alternative consists of a 6-mile BART Extension from the Berryessa BART Station through downtown San Jose to the Santa Clara Caltrain Station. There are three alternatives evaluated in this document in accordance with CEQA: the No Build Alternative, the BART Extension Alternative, and the BART Extension with TOJD Alternative. The CEQA No Build Alternative is the same as the NEPA No Build Alternative. The CEQA BART Extension Alternative is the same as the NEPA BART Extension Alternative. The CEQA BART Extension with TOJD Alternative consists of the 6-mile BART Extension as described above in addition to TOJD at the four BART stations and retail at the two ventilation structure sites. This document discloses the environmental impacts of all the alternatives listed above and provides mitigation, where feasible, to minimize significant impacts.

VTA is the local project sponsor and CEQA lead agency intending to partially fund and implement the CEQA BART Extension with TOJD Alternative. In November 2001, the VTA and BART District governing boards approved a Comprehensive Agreement regarding the institutional, project implementation, and financial issues related to the SVRTCP. FTA is the federal lead agency for preparation of the EIS, and VTA is the implementing agency. BART is a designated Cooperating Agency on the SEIS and a Responsible Agency on the SEIR. BART will operate and maintain the system consistent with the Comprehensive Agreement. VTA has full responsibility for all capital improvements, operating, and maintenance funding of the BART Extension. While not a component of the NEPA BART Extension Alternative, the TOJD component of the CEQA BART Extension with TOJD Alternative is reviewed as part of the NEPA cumulative impact analysis in Section 7.1, *Cumulative Impacts under NEPA and CEQA*. The TOJD review under CEQA is contained in Chapter 3, *NEPA and CEQA Transportation Operation Analysis*, Chapter 6, *CEQA Alternatives Analysis of Construction and Operation*, and Section 7.1, *Cumulative Impacts under NEPA and CEQA*.

Information provided in this document will enable the public to review, evaluate, and comment on all of the alternatives. This document will also be used by federal, state, regional, and local agencies to assess the environmental impacts of all alternatives on resources under their jurisdiction and to make discretionary decisions. FTA, the State of California, and the San Francisco Bay Area's metropolitan planning organization, MTC, will use this document in deciding whether and how to fund the BART Extension. These and other agencies will use the SEIS/SEIR as the basis for their decisions to issue permits and other approvals necessary to construct the selected alternative.

FTA will use the final version of this document when amending the 2010 Record of Decision (ROD) to formalize the final selection of the preferred NEPA alternative. The ROD is a written public record explaining why an agency has taken a particular course of action. The 2010 ROD determined that the requirements of NEPA were satisfied for Phase I. Pursuant to Public Law 112-141, 126 Stat. 405, Section 13 l 9(b), the FTA can issue a single Final Supplemental Environmental Impact Statement/Record of Decision document unless the FTA determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 1319. For this project, if practicality considerations

preclude the issuance of a combined Final SEIS/ROD, FTA would issue a Final Supplemental Environmental Impact Statement followed by an amendment to the Record of Decision, as needed. When the amended ROD is issued, VTA would be able to proceed with final design, right-of-way acquisition, and construction of the federally funded BART Extension Phase II, subject to federal funding requirements.

A list of permits and approvals required for the BART Extension and TOJD is provided in Table 2-4. This includes working within the ROW of various jurisdictions.

Table 2-4: Required Permits and Approvals

Agency	Permits and Approvals
BART Extension Alternative	
Federal Railroad Administration	Coordination regarding common corridor and crossing under Caltrain/UPRR ROW.
Federal Highway Administration	Approval of plans for crossings under U.S. 101 and I-880.
California Department of Transportation	Approval of plans for crossings under U.S. 101, SR 82, SR 87, and I-880. Encroachment permit for any work or traffic control within the state right-of-way.
State Office of Historic Preservation	Approval and execution of Programmatic Agreement and Treatment Plan describing procedures for protection and mitigation of impacts on historic and cultural resources pursuant to Section 106 of the National Historic Preservation Act and Code of Federal Regulations, Title 36, Part 800.
California Public Utilities Commission	Coordination regarding common corridor and responsibility for all safety and security certification of the system.
San Francisco Bay Area Rapid Transit District	Approval of project pursuant to VTA/BART Comprehensive Agreement.
Peninsula Corridor Joint Powers Board (Caltrain)	Temporary Encroachment permit for closing easternmost track for construction (Diridon Station Twin-Bore Option only). Encroachment permit for crossing under railroad tracks at Diridon.
State Water Resources Control Board and San Francisco Bay Regional Water Quality Control Board	Approval of Section 402 General Construction Activity National Pollutant Discharge Elimination System Permit for construction phase impacts and project-specific construction compliance measures. Incorporation of Section 402 Phase II Small Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System General Permit project-specific control measures to reduce the discharge of stormwater pollutants to the Maximum Extent Practicable. Waste discharge requirements for discharges of stormwater associated with industrial activities, excluding construction activities (Industrial General Permit) for Newhall Maintenance Facilities.
Bay Area Air Quality Management District	Various permits for operating the Newhall Maintenance Facility.
Santa Clara Valley Water District	Issuance of encroachment permit if construction comes within specified limits of any Santa Clara County stream. Well permits for geotechnical and chemical investigations or groundwater monitoring. Permits for monitoring and dewatering well installations and destructions per District Ordinance 90-1.
City of San Jose	Encroachment permit for construction in the City ROW.
City of Santa Clara	Encroachment permit for construction in the City ROW.

Agency	Permits and Approvals
Additional Permits and Approvals for BART Extension with TOJD Alternative	
City of San Jose	Responsible Agency in accordance with CEQA. Approval of rezoning. Site and Architectural Review Issuance of site development, grading, and building permits.
City of Santa Clara	Responsible Agency in accordance with CEQA. Approval of rezoning. Site and Architectural Review. Issuance of grading, building, and occupancy permits.
State Water Resources Control Board and San Francisco Regional Water Quality Control Board	Approval of Section 402 General Construction Activity National Pollutant Discharge Elimination System Permit for construction phase impacts and project-specific construction compliance measures. Incorporation of Section 402 Phase II Small Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System General Permit project-specific control measures to reduce the discharge of stormwater pollutants to the Maximum Extent Practicable.

All of the TOJD that would be constructed under the BART Extension with TOJD Alternative at the four BART stations and two ventilation structures is consistent with the land uses identified in the approved General Plans of the Cities of San Jose and Santa Clara. The TOJD is also consistent with a number of other adopted land use plans including the Diridon Station Area Plan, the San Jose Downtown Strategy 2000 Plan, the Five Wounds/Roosevelt Park Urban Villages Plan, and the Santa Clara Station Area Plan. CEQA review for all of these plans previously occurred at a program level with the Cities of San Jose and Santa Clara as CEQA Lead Agencies, as applicable.

In that context, the intent of this document is to provide project-level CEQA clearance for all components of the BART Extension with TOJD Alternative. VTA recognizes that the TOJD is subject to the approvals of the Cities of San Jose and Santa Clara as they have jurisdiction over land use decisions within their respective boundaries. Because VTA has assumed the role of CEQA Lead Agency, the Cities of San Jose and Santa Clara would function as CEQA Responsible Agencies in conjunction with their necessary approvals and actions for the TOJD (e.g., rezonings, site development permits, demolition permits, grading permits, building permits, etc.). This document will be used by San Jose and Santa Clara during this process.

2.6 Construction Schedule

With all of the permits and approvals secured in a timely manner, construction of the BART Extension is still projected to take at least 8 years. With preconstruction activities beginning in 2018, revenue service would begin in late 2025 or 2026. Chapter 5, *NEPA Alternatives Analysis of Construction*, provides a discussion of construction activities and durations for the various activities. Figure 5-1, Construction Schedule, provides an overview of the construction timelines.