

BOARD OF DIRECTORS WORKSHOP MEETING

Friday, August 25, 2017

9:00 AM


NOTE MEETING, TIME, DATE, AND LOCATION

VTA Auditorium
3331 North First Street
San Jose, CA 95134

AGENDA

To help you better understand, follow, and participate in the meeting, the following information is provided:

- Persons wishing to address the Board of Directors on any item on the agenda or not on the agenda are requested to complete a blue card located at the public information table and hand it to the Board Secretary staff prior to the meeting or **before the item is heard**.
- Speakers will be called to address the Board when their agenda item(s) arise during the meeting and are asked to limit their comments to 2 minutes. The amount of time allocated to speakers may vary at the Chairperson's discretion depending on the number of speakers and length of the agenda. **If presenting handout materials, please provide 25 copies to the Board Secretary for distribution to the Board of Directors.**
- All reports for items on the open meeting agenda are available for review in the Board Secretary's Office, 3331 North First Street, San Jose, California, (408) 321-5680, the Monday, Tuesday, and Wednesday prior to the meeting. This information is available on our website, www.vta.org, and also at the meeting. Any document distributed less than 72-hours prior to the meeting will also be made available to the public at the time of distribution. Copies of items provided by members of the public at the meeting will be made available following the meeting upon request.

In accordance with the Americans with Disabilities Act (ADA) and Title VI of the Civil Rights Act of 1964, VTA will make reasonable arrangements to ensure meaningful access to its meetings for persons who have disabilities and for persons with limited English proficiency who need translation and interpretation services. Individuals requiring ADA accommodations should notify the Board Secretary's Office at least 48-hours prior to the meeting. Individuals requiring language assistance should notify the Board Secretary's Office at least 72-hours prior to the meeting. The Board Secretary may be contacted at (408) 321-5680 or *e-mail: board.secretary@vta.org or (408) 321-2330 (TTY only). VTA's home page is on the web at: www.vta.org or visit us on  Facebook at: www.facebook.com/scvta. (408) 321-2300: 中文 / Español / 日本語 / 한국어 / tiếng Việt / Tagalog.

**NOTE: THE BOARD OF DIRECTORS MAY ACCEPT, REJECT OR MODIFY
ANY ACTION RECOMMENDED ON THIS AGENDA.**

3331 N First St., San Jose, California is served by bus lines 58 and Light Rail.
For trip planning information, contact our Customer Service Department at (408) 321-2300 between the hours of 6:00 a.m. to 7:00 p.m. Monday through Friday and 7:30 a.m. to 4:00 p.m. on Saturday. Schedule information is also available on our website, www.vta.org.

1. CALL TO ORDER AND ROLL CALL

1.1 ROLL CALL

2. PUBLIC COMMENT

This portion of the meeting is reserved for persons desiring to address the Board of Directors on any item within the Board's jurisdiction. Speakers are **limited to 2 minutes**. The law does not permit Board action or extended discussion of any item not on the agenda except under special circumstances. If Board action is requested, the matter can be placed on a subsequent agenda. All statements that require a response will be referred to staff for reply in writing.

3. WORKSHOP ITEMS

- 3.1. INFORMATION ITEM** - Receive status of VTA's BART Silicon Valley Phase I - Berryessa Extension. (Verbal Report)
- 3.2. DISCUSSION ITEM** - Review and discuss VTA's BART Silicon Valley Phase II activities:
 - State and Federal Environmental Process
 - Evaluation Criteria
- 3.3. DISCUSSION ITEM** - Discuss the steps to tunnel methodology decision for VTA's BART Silicon Valley Phase II.
- 3.4. DISCUSSION ITEM** - Preview September 22, 2017, VTA Board of Directors' workshop meeting. (Verbal Report)

4. OTHER ITEMS

4.1. ANNOUNCEMENTS

5. ADJOURN



Date: August 18, 2017
 Current Meeting: August 25, 2017
 Board Meeting: August 25, 2017

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director - Engr & Transp Program Dev., Carolyn M. Gonot

SUBJECT: BART Silicon Valley - Overview of Phase II Project and Environmental Process

FOR INFORMATION ONLY

This memorandum will provide an update on critical Phase II project items:

- Environmental clearance status,
- Station and tunnel methodology options,
- Environmental evaluation criteria for the options to determine the final project description.

Staff seeks input and guidance from Board of Directors these critical items.

At the September 22nd Workshop, staff will present the evaluation of the options for the final project description and at the October 5th Board meeting staff seeks board action of these recommendations for the final project description.

BACKGROUND:

In 2001, VTA completed a Major Investment Study (MIS) which analyzed various transportation investment options for the Silicon Valley Rapid Transit Corridor. The results of the MIS were reviewed by the VTA Board of Directors, which on November 9, 2001, approved a locally preferred alternative that would extend Bay Area Rapid Transit (BART) service from Fremont through the Cities of Milpitas, San Jose, and into Santa Clara. The locally preferred alternative was further defined and is now known as VTA's BART Silicon Valley Program consisting of a 16-mile extension of the BART system.

In 2004, a combined Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR) and Draft 4(f) Evaluation for the 16-mile, 6-station BART extension was prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) and

California Environmental Quality Act (CEQA). The Final EIR was certified and the project approved by VTA's Board of Directors in December 2004. As preliminary engineering progressed, a number of design changes were identified, and a supplemental document was prepared to evaluate the environmental impacts. The VTA Board of Directors considered these changes and certified the Final Supplemental EIR and approved the revised 10-mile, 2-station project in June 2007.

In 2010, the Federal Transit Administration prepared a Final Environmental Impact Statement and issued a Record of Decision for a Phase I 10-mile, 2-station extension based on available funding. The VTA Board of Directors certified a second Supplemental EIR and approved the Phase I 10-mile, 2-station extension in March 2011. This action resulted in both NEPA and CEQA approval of the Phase I 10-mile, 2-station extension currently under construction. The remaining approximately 6-mile, four station extension of VTA's BART Silicon Valley Program is referred to as Phase II.

DISCUSSION:

The purpose of this memorandum is to provide an overview of the Phase II Extension and the environmental clearance status. The Phase II Extension 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, extend through downtown San Jose and continue onto the City of Santa Clara. The extension would include an approximately 5-mile tunnel, or subway, through downtown San Jose. Four stations are under consideration: Alum Rock/28th Street, Downtown San Jose, Diridon, and Santa Clara. Two options are under consideration for both the Downtown San Jose and Diridon Stations: Downtown San Jose Station - East or West Option and Diridon Station - North or South Option. There are two tunnel construction methodology options under consideration: Single-Bore or Twin-Bore Option. Attachment A shows a map of the Phase II alignment.

A combined Supplemental Environmental Impact Statement and Subsequent Environmental Impact Report (SEIS/SEIR), which includes both NEPA and CEQA analysis is being prepared. The Phase II NEPA SEIS is being prepared to address the remaining six miles of the 16-mile Silicon Valley Rapid Transit Project (SVRTP) Alternative that was studied in the 2010 Final EIS but not approved as part of the Record of Decision. In 2010, FTA issued a Record of Decision for the Berryessa Extension Project or Phase I 10-mile extension that is currently under construction. Considerable time has passed since the prior EIS was prepared in 2008-2010. Therefore, the Draft SEIS/SEIR evaluates changes in existing conditions, regulatory requirements, and project design to the remaining six miles of the extension since the 2010 EIS. A CEQA SEIR is being prepared to address substantial changes in the proposed project, including new alternatives considerably different from previous EIRs, and to consider new circumstances and information, such as new existing conditions, regulatory requirements, potential impacts, and mitigation measures.

There are two alternatives evaluated in the Draft SEIS/SEIR in accordance with NEPA: The No Build Alternative and the BART Extension Alternative. The NEPA No Build Alternative

consists of planned and programmed transit improvements, but does not include the 6-mile BART extension to Santa Clara. The NEPA BART Extension Alternative consists of a 6-mile, 4-station extension of the BART system from the Berryessa BART Station, currently under construction, through downtown San Jose to the vicinity of 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 Transit-Oriented Joint Development (TOJD) Alternative. The CEQA No Build Alternative is the same as the NEPA No Build Alternative described previously. The CEQA BART Extension Alternative is also the same as the NEPA BART Extension Alternative described previously. The CEQA BART Extension with TOJD Alternative consists of the 6-mile, 4-station BART Extension as described above as well as TOJD at the BART Extension's four stations and two tunnel ventilation structure sites. The TOJD has independent utility and is included to support transit ridership. The TOJD is intended to be consistent with local and regional land use planning. No federal dollars would be used to design or construct the TOJD, and no federal approvals are required. Because no federal action is involved, VTA's TOJD, which is intended to be consistent with City general plans and approved area plans, would be considered as a cumulative conditions for NEPA purposes. The SEIS/SEIR evaluates and discloses the environmental effects of all of these alternatives. Topics of concern include construction and operational transportation, air quality, cultural resource, and noise and vibration impacts, among other topics. Mitigation measures to reduce or avoid adverse effects are identified in the document.

On January 30, 2015, VTA issued the Notice of Preparation for the SEIS/SEIR. VTA conducted three formal environmental scoping meetings in February 2015 to gather public input and comments prior to the development of the Draft SEIS/SEIR. A Notice of Availability of the Draft SEIS/SEIR was published on December 28, 2016 for CEQA purposes and in the Federal Register on January 6, 2017 for NEPA purposes. Three public hearings were held on January 25, 26, and 30, 2017, in east San Jose, Santa Clara, and downtown San Jose. There were approximately 170 total attendees at the three hearings, and the public comment period ended on March 6, 2017. Approximately 860 individual comments were received from approximately 110 commenters. The main topical areas of comments included:

- Support for the project or support for various options
- Comments on the Project Description
 - Alternatives - 101 Alignments and TOJD
 - Station locations - Downtown San Jose, Diridon, and Santa Clara
 - Ventilation structure locations
- Comments on Project Impacts
 - Traffic and circulation impacts during construction
 - Parking loss during and after construction in the Diridon Station area
 - Noise and vibration impacts during construction and operation

- Tunneling under properties
- Twin-Bore and Single-Bore tunneling methodologies

Responses to all of the comments received on the Draft SEIS/SEIR are being prepared. Both the comments and responses will be included in the Final SEIS/SEIR. The Final SEIS/SEIR will also identify the options that will be included the recommended project description. The options to be selected for the recommended project description are the Downtown San Jose station location (East or West Option), the Diridon station location (North or South Option), and the tunnel construction methodology (Single-Bore or Twin-Bore Option).

Environmental evaluation criteria will be used to provide a qualitative and quantitative assessment of the options and in the determination of the staff recommendation to VTA's Board of Directors. The topical areas of the environmental evaluation criteria for station locations are:

- construction impacts
- connectivity
- long-term economic development
- ridership
- cost
- right of way
- alignment

The topical areas of the environmental evaluation criteria for tunneling methodology are:

- constructability
- environmental
- system operations
- long-term economic development
- cost

The environmental evaluation criteria will be discussed in more detail and input will be requested from the Board of Directors at the August Workshop.

NEXT STEPS:

At the September VTA Board of Directors Workshop, staff will present the draft recommended project description, including the criteria for selection of options to be carried in forward in the Final SEIS/SEIR. The staff recommended project description will be presented at the October

Board meeting for consideration and action by VTA's Board of Directors. The recommended project description approved by the Board will be carried forward in the Final SEIS/SEIR. Once the Final SEIS/SEIR is published for public review, VTA's Board of Directors will consider certifying the Final SEIR and approving a recommended project. After this action, FTA will prepare a Record of Decision to complete the NEPA process.

Prepared By: Erica Roecks
Memo No. 6193



VTA's BART Silicon Valley Phase II Extension Project



TEAM Horace PTO—Horace Mann Elementary

An International Baccalaureate School

TO: VTA Board of Directors
FROM: TEAM Horace PTO, Horace Mann Elementary School
RE: Support for WEST Station Option, VTA Bart Silicon Valley Phase II Extension
Date: August 21, 2017

Dear VTA Board of Directors,

Team Horace PTO of Horace Mann Elementary, which represents over 420 elementary students, roughly 700 parents, extended family members, and neighborhood and community members have reviewed the station options for the proposed VTA Bart Silicon Valley Phase II Extension.

As a school community, we wish to express our strong opinion that you do not build the East station option for the following reasons:

1. It will negatively impact the safety and security of Horace Mann elementary school with increased pedestrian and vehicle traffic, including an increased number of unknown persons in close proximity to our children.
2. With a BART station immediately adjacent to the school, it will change the dynamic of a close-knit school community that has taken years to build, with the unique distinction that Horace Mann is the ONLY International Baccalaureate elementary school in San José.
3. The multi-year construction of the station will cause a significant hardship for the school community, such as impacts to the school learning environment through noise/ground shaking during the school day as well as increased traffic and reduced parking needed for picking up and dropping off children.
4. School staff and the school district will face significant recruiting challenges for new students as families will have similar concerns about construction impacts and long-term safety for their children. School attrition due to east station construction will have irreparable impacts on Horace Mann enrollment.
5. It will result in the loss of Grocery Outlet, a valuable neighborhood grocery store that offers healthy and affordable food options for families and SJSU students in our downtown community.
6. The West Option is a more favorable location.

Furthermore, we wish express our reasons for our strong support of the WEST station option:

1. Its proximity to existing parking garages (3rd and Market).
2. Its proximity to St. James Park and the possible Levitt Pavilion and park improvements.
3. It is closer to the downtown business and corporate centers, as well as higher density housing.
4. It is closer to the 2nd and 1st street Light Rail Stations, thus creating a more seamless connection to existing public transportation networks.
5. It was the original site proposed for the Downtown station for a multitude of reasons.

We wish to thank you for your service in improving public transportation in downtown San Jose, which we support fully, and hope you can support our position on this matter. Please vote in support of the West station option.

Sincerely,

Angie Brizuela, Co-President & Parent

Norma Mercado

Norma Mercado, Co-President & Parent

Cc: Lori Gustafson, Principal, Horace Mann Elementary School
Nancy Albarran, Superintendent San José Unified School District
Lawrence DeSantis, Director of Communications, School Site Council Chair, Horace Mann Elementary School
Stephanie Jayne, parent of a 4th grader, Horace Mann Elementary School
Alex Shoor, VTA Public Engagement



Date: August 21, 2017
 Current Meeting: August 25, 2017
 Board Meeting: August 25, 2017

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Nuria I. Fernandez

FROM: Director - Engr & Transp Program Dev., Carolyn M. Gonot

SUBJECT: BART Silicon Valley – Phase II Design Process and Construction Methodology Options

FOR INFORMATION ONLY

Since 2014, staff's planning efforts for BART Silicon Valley Phase II (Phase II), extending BART from the San Jose Berryessa BART station and into downtown San Jose and the City of Santa Clara, have initiated a number of key decision making activities. These decision making activities are intended to inform a final staff recommendation for the project's tunneling methodology:

- **Single-bore Tunneling Feasibility Study (2015)** - Confirmed the feasibility of this tunneling methodology and related station construction approach.
- **Single-bore Tunnel Technical Studies (2016)** - Further analyzed the single-bore tunneling methodology and developed design concepts for tunnel and station configurations, ventilation, and emergency egress.
- **Independent Comparative Analysis of Tunneling methodologies (2017)** - Evaluated risk impacts to project cost, schedule and performance for tunneling options.
- **Tour of Barcelona's technologically advanced Line 9 metro system (July 2017)** - Included representatives from VTA, BART and City of San Jose.
- **Upcoming Board of Directors workshops and meetings.**

BACKGROUND:

Twin-Bore Tunnel Methodology

In previous engineering phases (2004-2009), the planned methodology for constructing Phase II of the BART Silicon Valley Extension underground stations and tunnel system has included a twin-bore tunnel design. The twin-bore design option includes two tunnels, approximately 20 feet in

diameter that would be constructed using tunnel-boring machines (TBMs), and that would each separately house tracks for a single direction of travel. The underground stations would also be constructed using “cut-and-cover” construction, which involves excavating ground material (soil, earth and rock) from the depth of where a station or facility would be located. This excavation would occur within the public right-of-way and on adjacent parcels of land. Cut-and-cover construction in areas of public right-of-way (such as downtown San Jose) would also require relocation of underground utilities, and have significant impacts to existing infrastructure and street level activities.

Worth noting, because the twin-bore design was completed in 2008, it would need to be re-evaluated to verify compliance with the current NFPA 130, CBC, and BFS codes and standards used to evaluate the single-bore alternate, as described below. Additionally, recent seismic findings by the United States Geological Survey, and changes to the project alignment due to recently approved corridor developments need to be considered.

Single-Bore Tunnel Methodology

In 2014, staff began reviewing project plans to look for opportunities to minimize impacts to streets and underground utilities caused by cut-and-cover construction. Other objectives in reviewing the project plans included studying advances made in the tunneling industry since completing engineering on the twin-bore tunnel in 2008, identifying lessons learned from other tunneling projects, and reviewing the feasibility of alternate tunneling methodologies.

In 2015, after reviewing the Phase II project plans and after interacting with tunneling subject matter experts, staff identified the single-bore tunneling methodology as an option to explore. Staff learned that single-bore tunneling, and its related station construction approach, would allow for station construction with reduced impacts to street level activities and underground utilities and preliminary analysis of the single-bore tunneling methodology indicated that construction using this methodology was feasible.

As a result, in early 2016, VTA reviewed the preliminary analysis for the single-bore tunneling methodology with BART and FTA, and elected to include both twin-bore and single-bore tunnel construction approaches in the environmental impact studies required for Phase II, and currently underway. Later in 2016, VTA initiated additional technical studies to further analyze and develop concepts for key areas of the tunnel and station system.

Specifically, in October 2016, VTA selected HNTB to complete the *BART Silicon Valley Phase II Single-Bore Tunnel Technical Studies*. This study completed detailed verifications of the preliminary findings and further developed conceptual design for a single-bore tunnel profile, station configuration, station and tunnel ventilation, and emergency egress and response based on current national codes and standards, including the National Fire Protection Association (NFPA 130) and California Building Code (CBC), BART Facility Standards (BFS), and BART input. Based on the findings of the study, it was determined the single-bore tunneling methodology would meet applicable industry standards and exhibited no fatal flaws.

The single-bore option design concept includes a 45-foot diameter tunnel that would be constructed with a TBM. Tracks within the tunnel would be either side-by-side (separated by a

fire-rated center wall), or stacked one above the other (separated by a fire-rated concrete slab). A benefit of the larger diameter of the tunnel is that it allows station boarding platforms to be accommodated within the tunnel in a stacked configuration to serve travel in each direction. All other station facilities, including station agent booths, ticket vending machines, fare gates, and vertical circulation elements (elevators, escalators and stairs) required to access the platforms would be constructed via cut-and-cover construction on off-street parcels and connect to the single-bore tunnel via mined passageways below ground. Since most cut-and-cover construction would not be in the public right-of-way, impacts to street level activities and underground utilities would be reduced.

Comparative Analysis

VTA also initiated an independent comparative analysis of the twin-bore and single-bore tunneling options. The objective of the analysis is to compare common subsurface elements of each tunneling option, and determine risk impacts to project cost, schedule, and performance in order to assist VTA in selecting a tunneling methodology. Aldea Services, Inc. of Maryland was awarded the contract by a joint VTA and BART selection panel, and received a Notice to Proceed in March 2017. Results for the complete analysis are expected to be presented to the Board of Directors at the September 22, 2017 Board of Directors Workshop.

Barcelona's Metro System

In July, representatives from VTA, BART and the City of San Jose traveled to Barcelona, Spain to meet with officials regarding the city's Line 9 metro system and experience system operations. Line 9 is the only existing system that operates passenger platforms and two directions of track within a single-bore tunnel. The system is also similar to the single-bore concept that has been developed for Phase II of the BART Silicon Valley Extension.

Staff Recommendation

Staff will provide a recommendation for tunneling methodology at the September 22nd VTA Board of Directors Workshop. This recommendation will be based on information collected in Barcelona, results of the single-bore feasibility and technical studies, results of the tunneling comparative analysis, and input obtained from the Board of Directors.

Prepared By: Kevin Kurimoto
Memo No. 6192

VTA's BART Silicon Valley Phase II Extension Project

VTA Board Workshop

August 25, 2017



Solutions that move you

Agenda

- Status of VTA's BART Silicon Valley Phase I – Berryessa Extension
- VTA's BART Silicon Valley Phase II activities
 - Project Background
 - State and Federal Environmental Process
 - Options Under Consideration
 - Evaluation Criteria
- Steps to tunnel methodology decision for VTA's BART Silicon Valley Phase II
- Preview September 22, 2017 VTA Board of Directors' workshop meeting

Status of VTA's BART Silicon Valley Phase I – Berryessa Extension

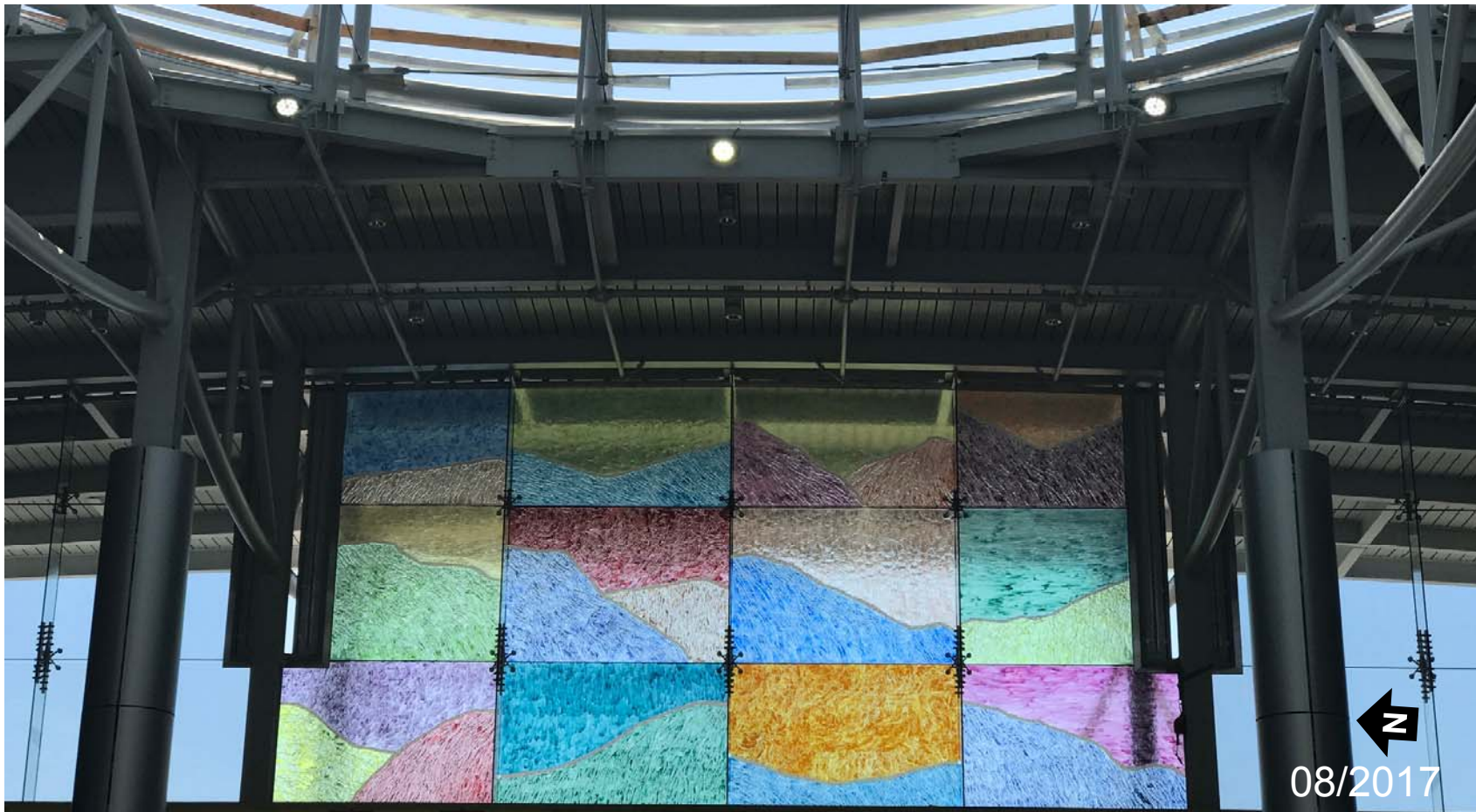
Phase I Project Review - Construction Progress: Stations



Overhead View of the Milpitas Station

Solutions that move you

Phase I Project Review - Construction Progress: Stations (cont.)



Art glass at the Milpitas Station

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Phase I Project Review - Construction Progress: Stations (cont.)



Overhead View of the Berryessa/North San Jose Station

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BART to Silicon Valley

Sequence of Events to Complete Phase 1



Station Construction



Complete landscaping, station interiors and exteriors

Static Testing



Perform all communications, track and signal tests

Dynamic Testing



Test train movements along 10-mile extension

Integration Testing



Integrate 10-mile extension **with** existing BART system

Safety Certification



Certify the safety and reliability of the integrated 10-mile extension

Passenger Service



AUG
22
2017



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Questions?



VTA's BART Silicon Valley Phase II Activities

BART Phase II Decision Making Process

Today

- History of Phase II project
- Environmental clearance update
- Environmental evaluation criteria
- Steps to tunnel methodology decision

September 22nd Board Workshop

- Results of Final Tunneling Options Comparative Analysis
- Environmental Draft Final Project Description
 - Evaluation of options

October 5th Board Meeting

- Staff Recommendation on Final Project Description
- VTA Board's approval of Final Project Description



Questions?



Project Background



A map showing the proposed BART extension route from San Jose to Fremont. The route is highlighted in red and includes the following stations from north to south: BART Warm Springs Station (near Mission Blvd), Milpitas Station (near Montague Expy), Berryessa/ North San Jose Station (near Berryessa Rd and Capitol Ave), Alum Rock/ 28th Street (near Mabury Rd), Downtown San Jose (near SJSU), and Diridon. The map also shows major highways (680, 880, 237, 101, 82, 87, 280) and geographical features like the San Jose Int'l Airport and Santa Clara University. The cities of Fremont, Milpitas, Santa Clara, and San Jose are labeled.

- 10-mile extension under construction
- 2 stations: Milpitas & Berryessa/North San Jose
- Anticipated opening year ridership: 23,000 per average weekday
- \$2.4 billion

- 6-mile extension (5-mile tunnel)
- 4 stations: Alum Rock/28th Street, Downtown San Jose, Diridon, Santa Clara
- Newhall Yard Maintenance Facility
- Anticipated opening year ridership: 33,000 per average weekday
- \$4.7 billion*



VTA/BART Partnership

Santa Clara Valley Transportation Authority (VTA) Responsibilities

- Pay all costs associated with the extension
- Contracting/Procurement
- Construct to applicable BART/industry standards, codes, and regulations
- Retain ownership of infrastructure

Bay Area Rapid Transit (BART) Responsibilities

- Technical assistance
- Operations
- Maintenance
- Fare policy



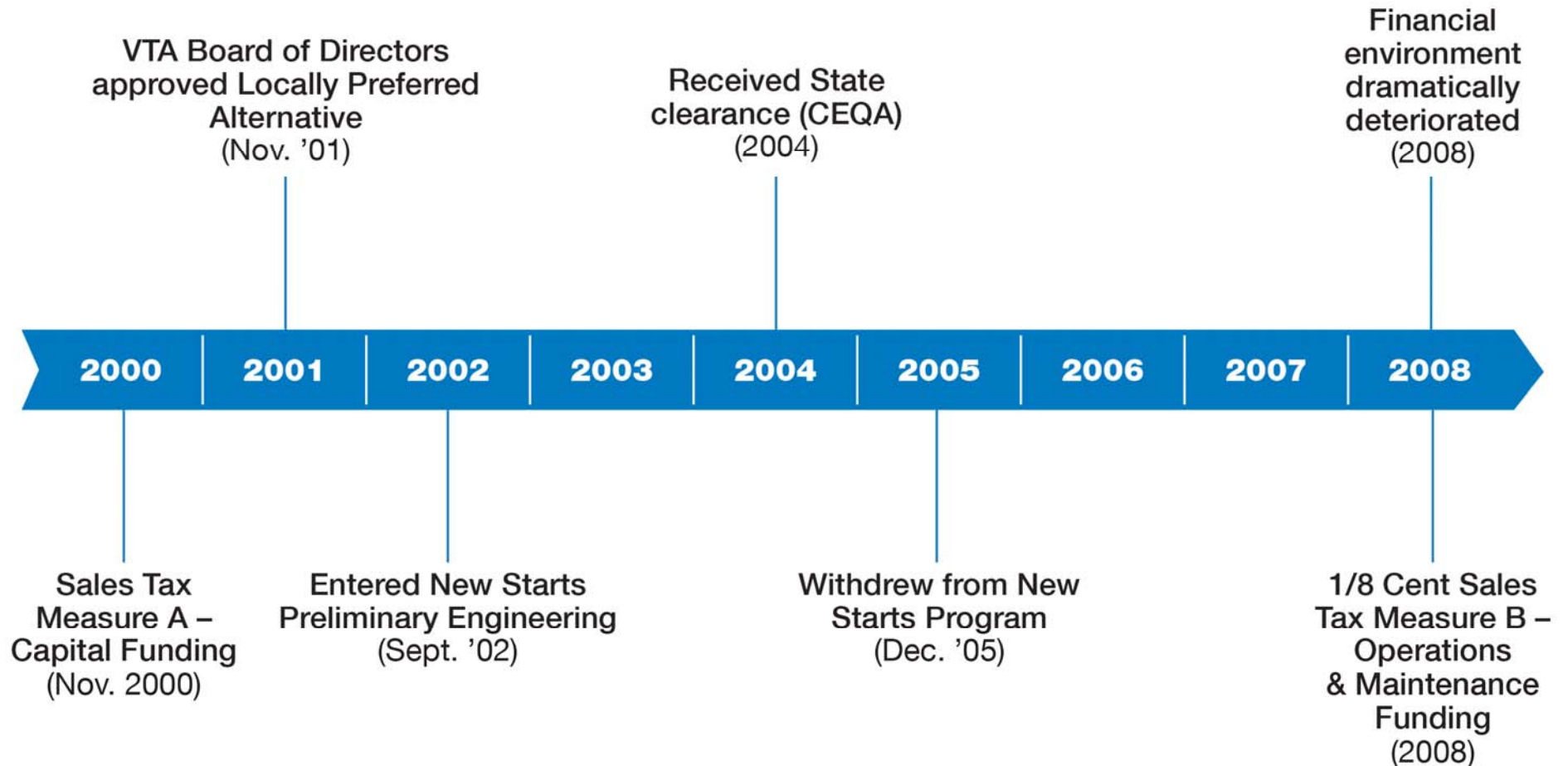
Santa Clara County is not part of the BART districts.

A Comprehensive Agreement provides a framework for the partnership.

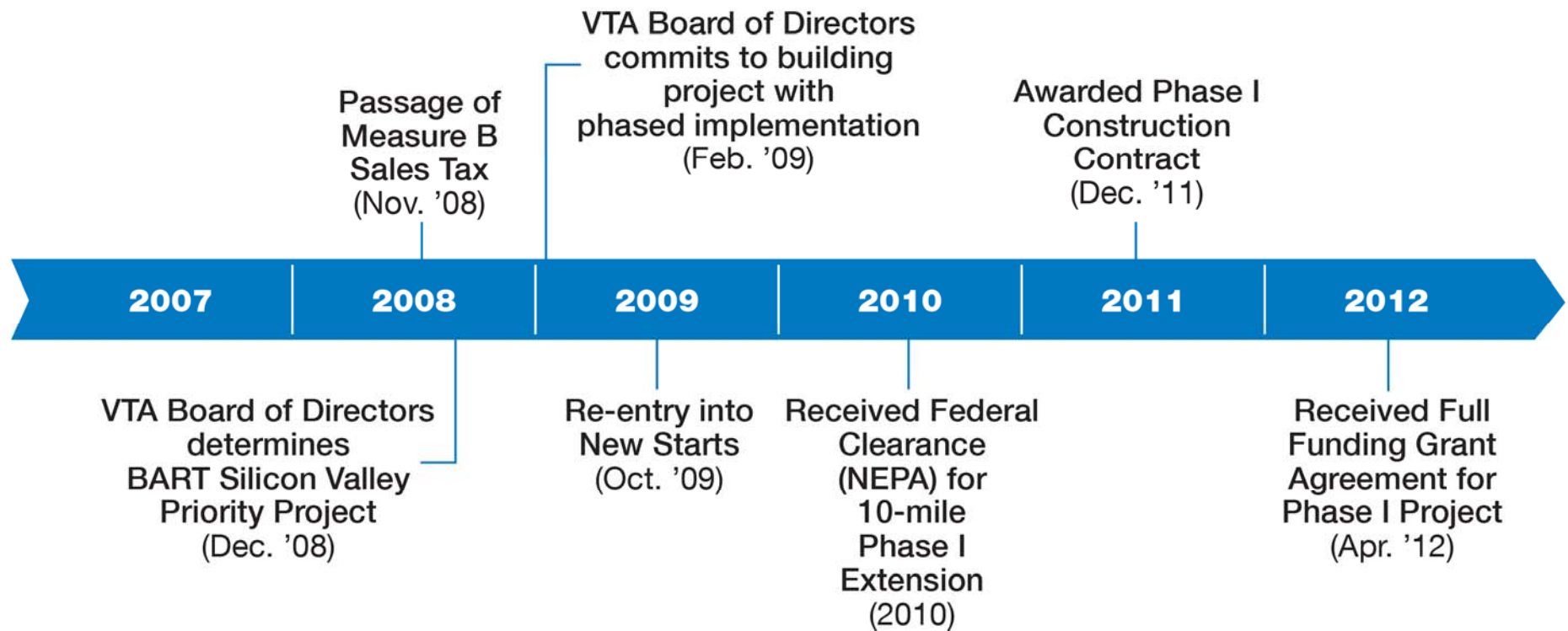


Solutions that move you

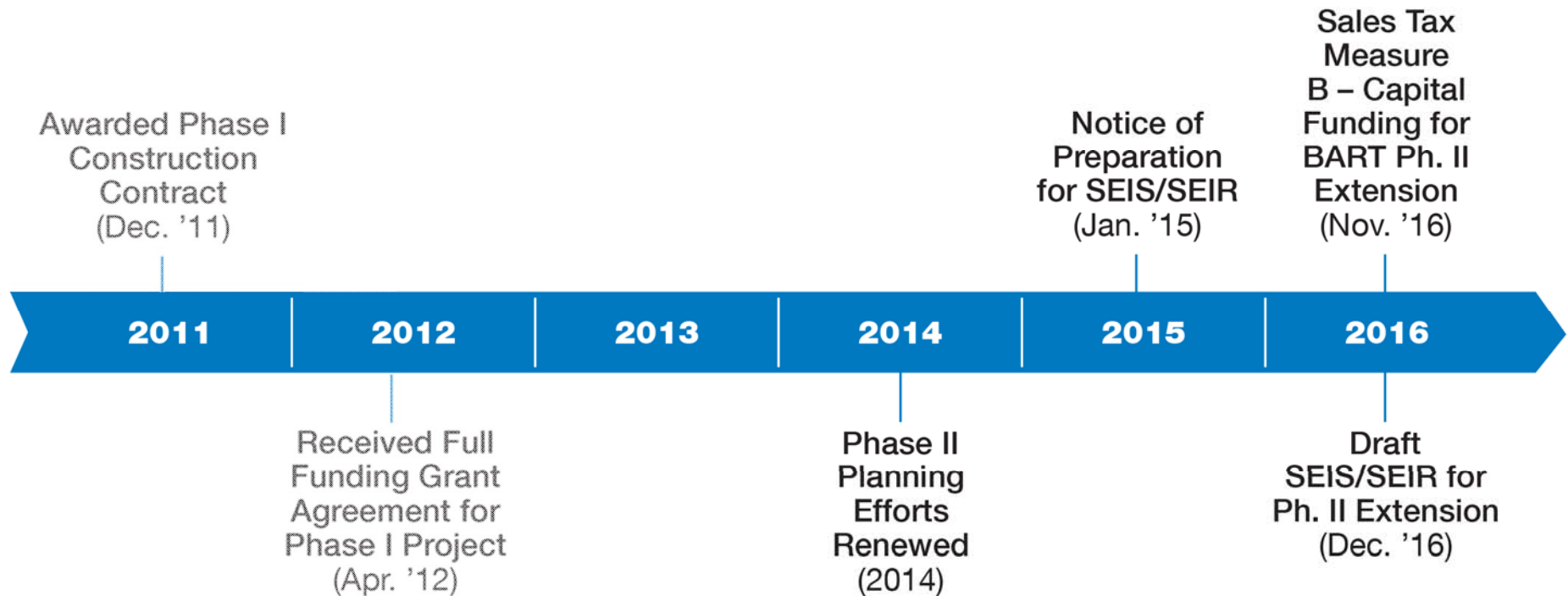
Program History



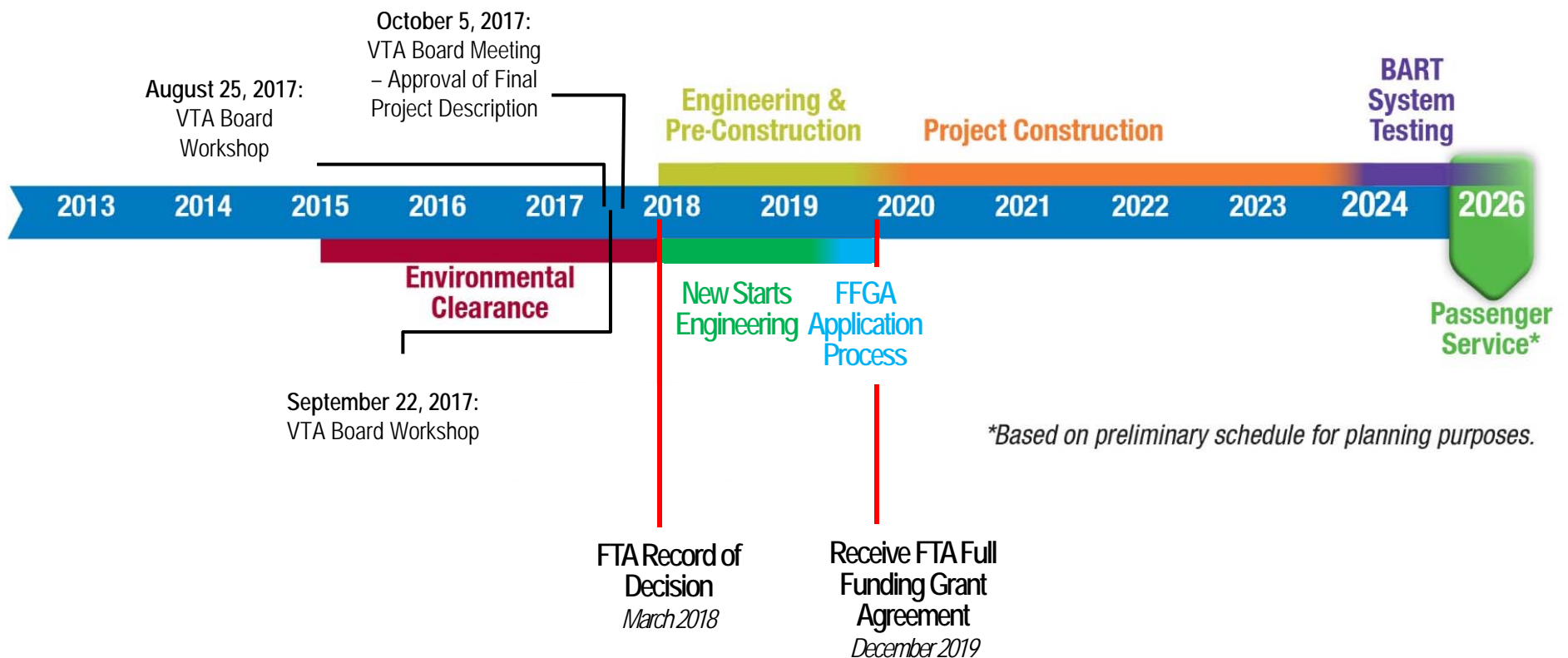
Program History



Program History



Phase II Extension Project Schedule



Phase II Extension Project Funding Strategy

Project Cost: **\$4.69 Billion¹**

○ **Expended Funds:** **\$160 Million**

☒ Measure A Sales Tax & TCRP

○ **Projected Local & State Funds:** **\$3.25 Billion**

☒ Existing Measure A Sales Tax

☒ 2016 Sales Tax Measure B

☐ State Transit & Intercity Rail Capital Program²

○ **Projected Federal Funds:** **\$1.5 Billion**

☐ FTA New Starts

Projected Funding: **\$4.91 Billion³**

¹ As part of the Federal New Starts review process, FTA will conduct a risk evaluation and establish with VTA the contingency levels for the project.

² VTA is targeting the maximum State Transit & Intercity Rail Capital Program amount of \$750 million. The current program is competitive and any allocation awarded to VTA could be less than the target amount.

³ The amount included in the funding strategy assumes pre-risk assessed cost and excludes finance costs.



Phase II Extension Project



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Questions?



State and Federal Environmental Process



Current and Previous Environmental Documents

- 2016 Draft Supplemental EIS/Subsequent EIR: 6-mile project
- 2011 Final 2nd Supplemental EIR: 10-mile project
- 2010 Draft 2nd Supplemental EIR: 10-mile project
- 2010 Record of Decision: 10-mile project
- 2010 Final EIS: 10- and 16-mile projects
- 2009 Draft EIS: 10- and 16-mile projects
- 2007 Final Supplemental EIR: 16-mile project
- 2007 Draft Supplemental EIR: 16-mile project
- 2004 Final EIR: 16-mile project
- 2004 Draft EIS/EIR: 16-mile project



2016 Draft Supplemental EIS/Subsequent EIR CEQA/State Alternative

State

- No Build Alternative
- BART Extension Alternative (4 stations)
- BART Extension with Transit-Oriented Joint Development (TOJD) Alternative (4 stations)



Existing View of West Santa Clara Street



Diridon Station North and South Option –
BART Extension with TOJD Alternative



2016 Draft Supplemental EIS/Subsequent EIR NEPA/Federal Alternative

Federal

- No Build Alternative
- BART Extension Alternative (4 stations)



Existing view from Autumn Street



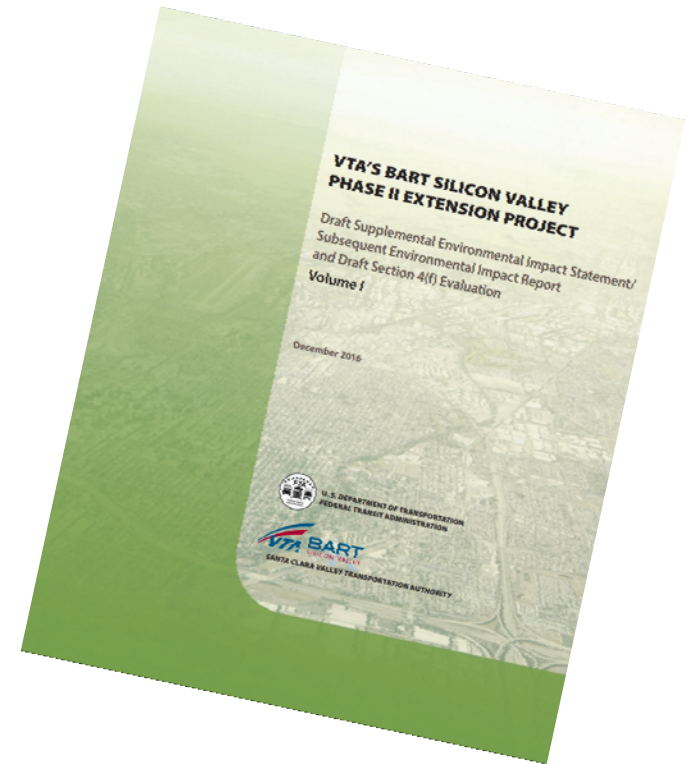
Diridon Station – North Option with Single-Bore Tunnel –
BART Extension Alternative



New Items for Environmental Clearance

New Key Elements under evaluation:

- Downtown San Jose East Option
- Diridon North Option
- Station entrance location options
- Transit Oriented Joint Development on Construction Staging Area sites
- Single-Bore construction methodology



Draft SEIS/SEIR Timeline

- 1) January 30, 2015 – Notice of Preparation of Draft SEIS/SEIR
- 2) February 2015 – Scoping Meetings
- 3) December 28, 2016 – Draft SEIS/SEIR released
- 4) January 2017 – Public Hearings (~170 total attendees)
 - 1/25 Mexican Heritage Plaza
 - 1/26 Santa Clara Senior Center
 - 1/30 San Jose City Hall
- 5) March 6, 2017 – Public Comment Period ended
 - Approximately 110 Commenters
- Approximately 860 Individual Comments Received



Additional Community Engagement During Environmental Phase

1) Community Working Groups (CWGs) established in May 2015:

- Alum Rock, Downtown/Diridon, and Santa Clara CWGs
 - Members are project liaisons and act as conduits for information to larger community
 - Members have participated in 13 rounds of CWG meetings

2) Additional engagement:

- 10 community meetings
- Live webinar



Draft SEIS/SEIR Comments Received

Summary of Comments Received

- Support for the project or support for various options
- Comments on the Project Description
 - Alternatives – alignments in the vicinity of US-101 & TOJD
 - Station locations – Downtown San Jose, Diridon & Santa Clara
 - Ventilation structure locations
- Comments on Project Impacts
 - Traffic and circulation impacts during construction
 - Parking loss during and after construction in the Diridon Station area
 - Noise and vibration impacts during construction and operation
 - Tunneling under properties
 - Twin-Bore and Single-Bore tunneling methodologies



No Adverse/Significant Impacts after Mitigation

Construction

- Transportation
- Air Quality
- Biological Resources & Wetlands
- Community Facilities & Public Services
- Cultural Resources
- Geology, Soils, and Seismicity
- Hazards and Hazardous Materials
- Land Use
- Noise & Vibration
- Socioeconomics
- Visual Quality & Aesthetics
- Water Resources, Water Quality, and Floodplains

Operations

- Transportation
- Air Quality
- Greenhouse Gas Emissions
- Geology, Soils, and Seismicity
- Hazards and Hazardous Materials
- Noise
- Utilities & Service Systems
- Visual Quality & Aesthetics
- Water Resources, Water Quality, and Floodplains



Operations Mitigations

Traffic

- Santa Clara Station
 - *Coleman Avenue/I-880 SB Off-Ramp*
 - *Coleman Avenue/Brokaw Road*
 - *Lafayette Street/Lewis Street*

Groundborne Noise

- Isolated Slab Track
 - *Twin-Bore Option: 3.9 – 4.3 miles*
 - *Single-Bore Option: 2.5 – 3 miles*



Mitigation Plans/Measures

Mitigation Monitoring and Reporting Program (MMRP)

- Identifies specific mitigation measures, requirements, and reporting procedures
- More coordination and plan development with city partners

Construction Outreach Management Program (COMP)

- Pre-construction and construction plans to be developed in coordination with city partners
 - Construction Education & Outreach Plan
 - Construction Transportation Management Plan
 - Emergency Services Coordination Plan



Adverse/Significant Unavoidable Impacts after Mitigation

Construction Related Impacts

- *Transportation*
- *Air Quality*
- *Noise*
- *Socioeconomics*

Construction Related Impacts – Related to TOJD

- *Traffic*
- *Air Quality*
- *Greenhouse Gas (GHG) Emission*



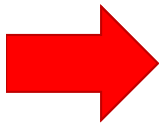
Environmental Process Next Steps

- Responses to all comments received are being prepared
- Comments and responses will be included in Final SEIS/SEIR
- Final SEIS/SEIR will identify options that will be included in the recommended project description
- Final SEIS/SEIR targeted to be released in late 2017



VTA's BART Phase II - Project Schedule

Activity	Schedule
VTA Board Workshop – Project Overview, Environmental Process & Steps to Tunnel Methodology Decision	August 25, 2017
VTA Board Workshop – Final Tunneling Options Comparative Analysis & Draft Final Project Description	September 22, 2017
VTA Board Meeting – Select Final Project Description	October 5, 2017
VTA Board Meeting – Certify Final SEIR/Approve Project	January 4, 2018
BART Board Action on Final SEIR	January 2018
Record of Decision Anticipated to be Signed by FTA	March 2018
New Starts Project Development Phase Complete	March 2018



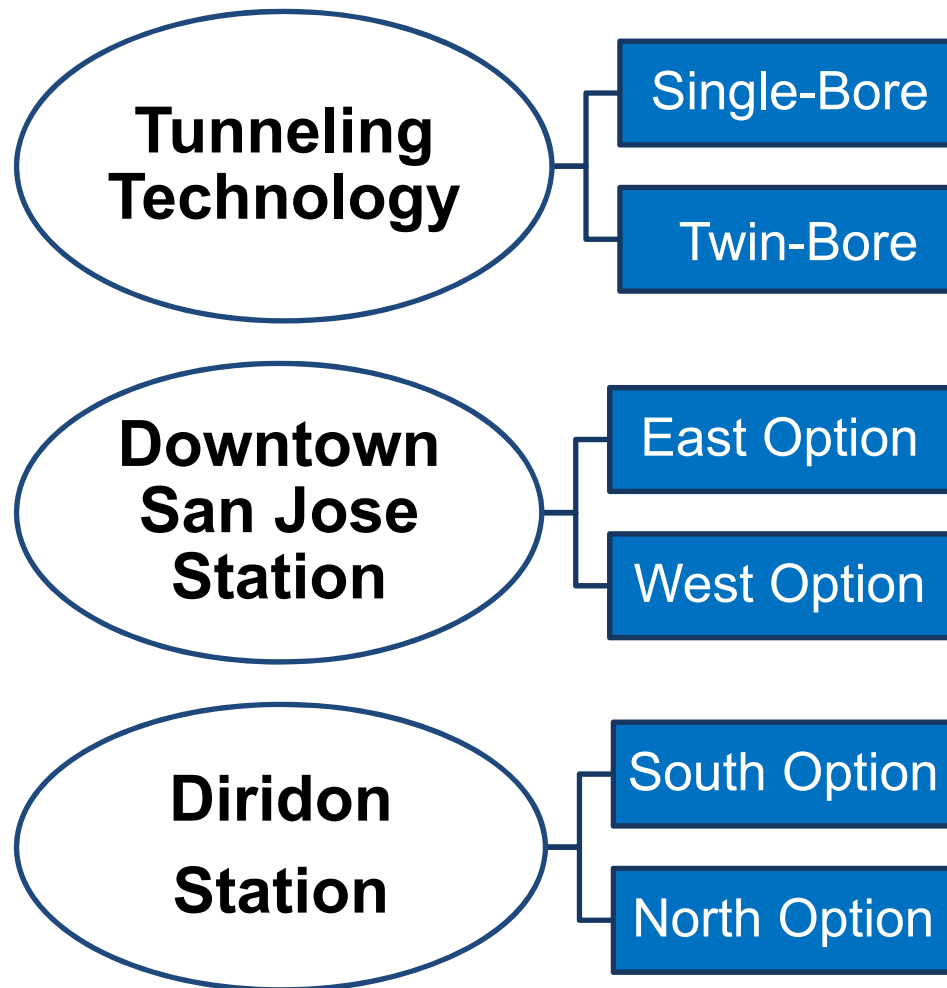
Questions?



Environmental Options Under Consideration



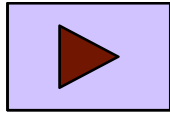
Options Under Consideration



Station Options



Site Plan Elements



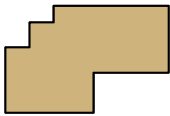
STATION ENTRANCE OPTIONS



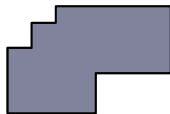
UNDERGROUND STATION, SYSTEM FACILITIES,
STATION CONCOURSE (SINGLE-BORE ONLY)



SYSTEM FACILITIES
(ABOVE AND BELOW GROUND)



PARKING/PUBLIC FACILITY/
VTA'S TRANSIT-ORIENTED JOINT DEVELOPMENT



ROADWAY MODIFICATIONS



VEHICLE MAINTENANCE AND STORAGE FACILITY/
TAIL TRACKS (SANTA CLARA STATION)



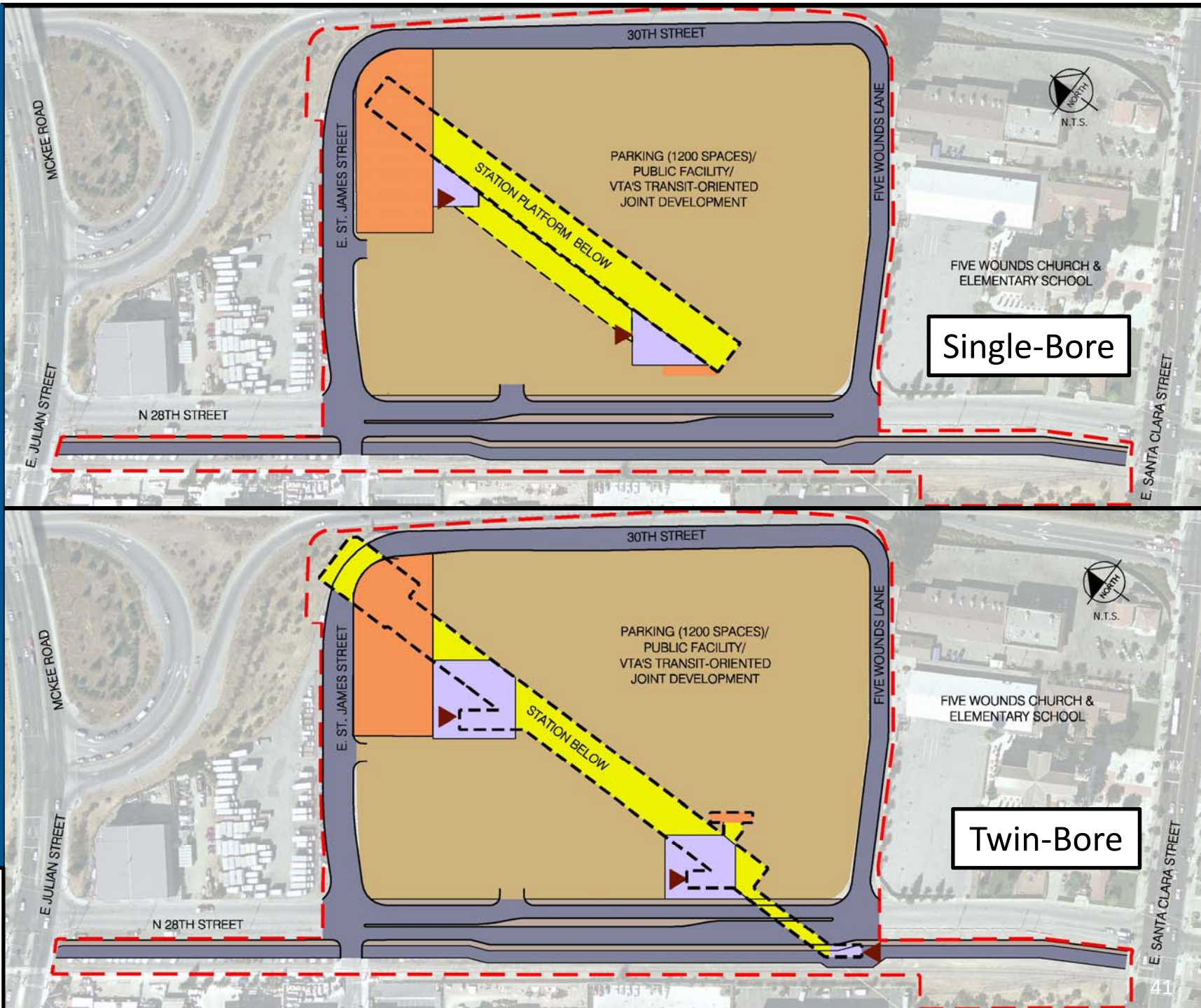
CONSTRUCTION STAGING AREA





Alum Rock/28th Street Station

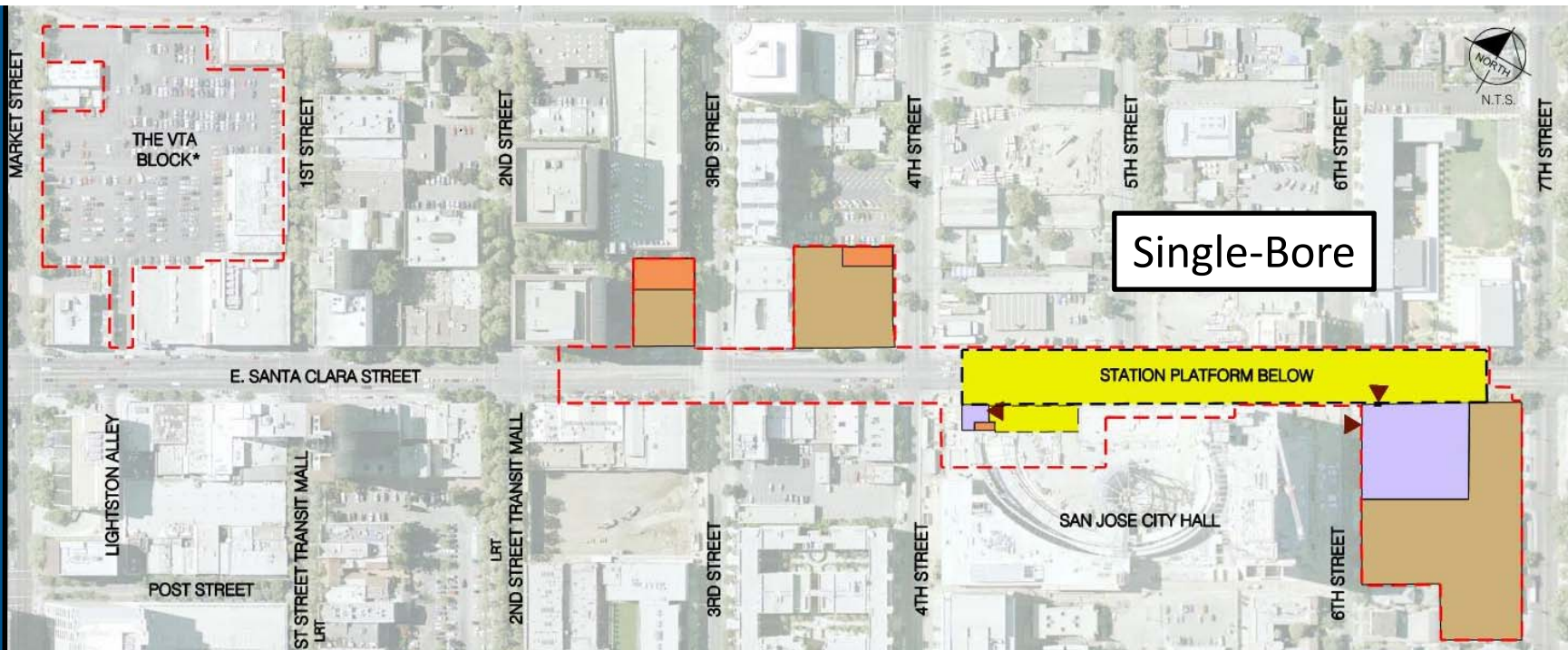
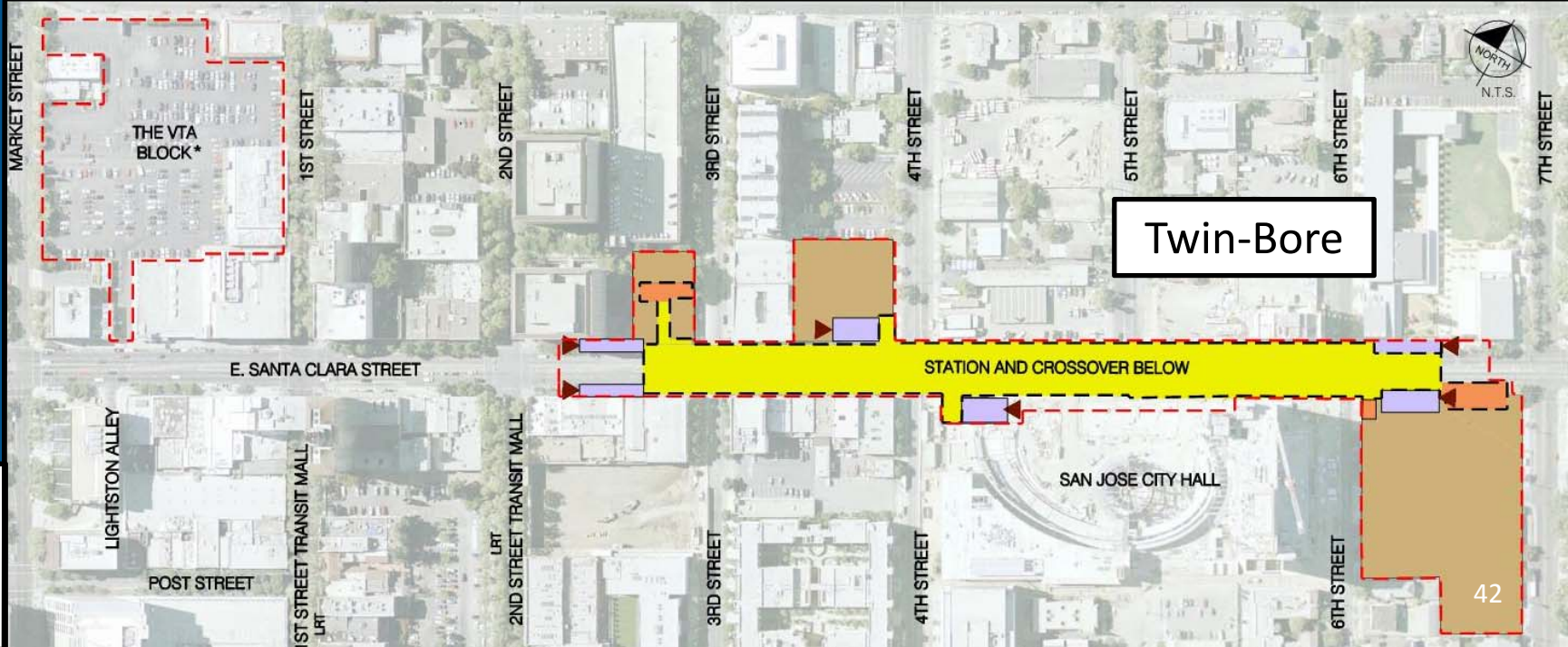
Draft Conceptual Exhibit





Downtown Station East Option

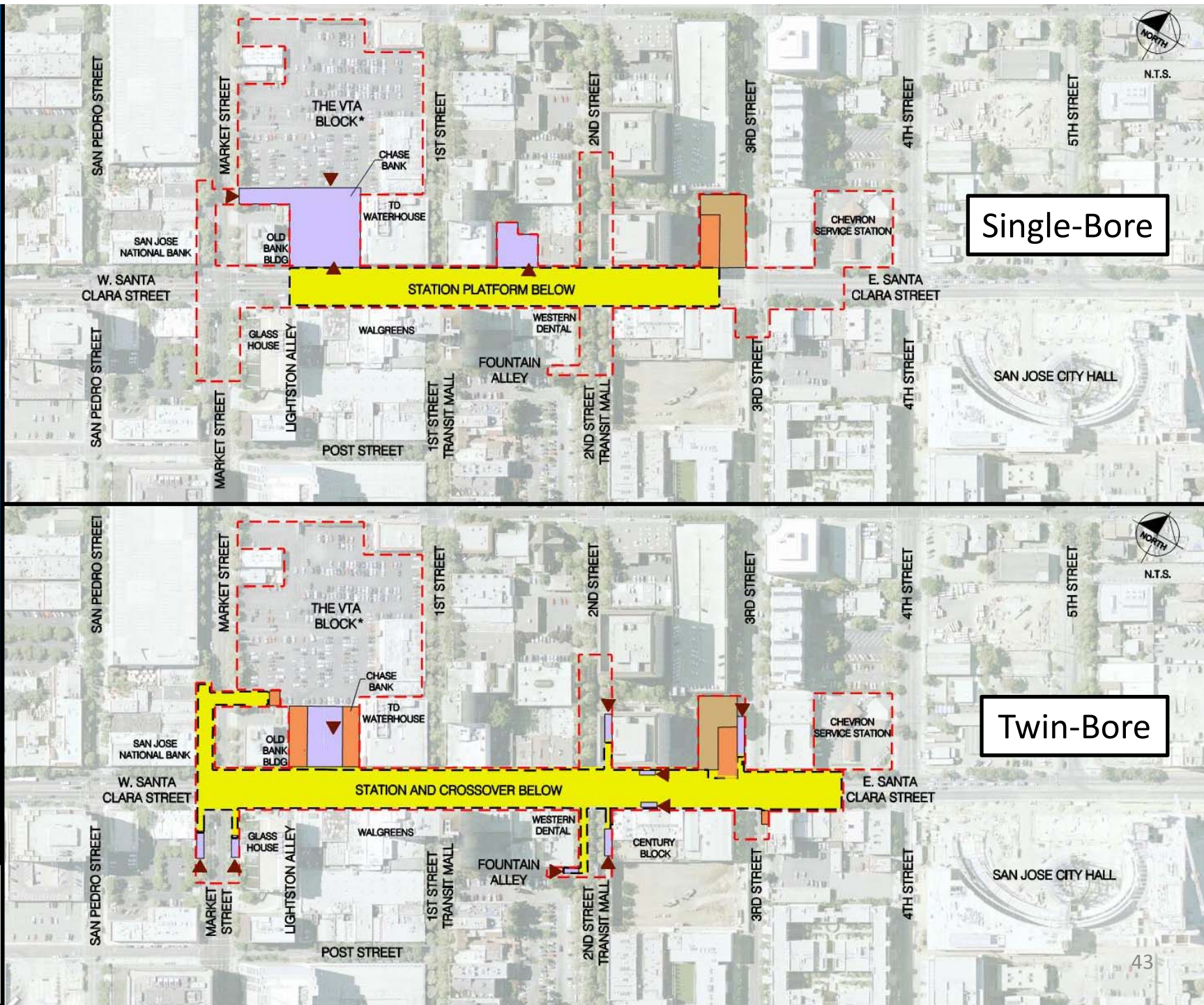
Draft Conceptual Exhibit





Downtown Station West Option

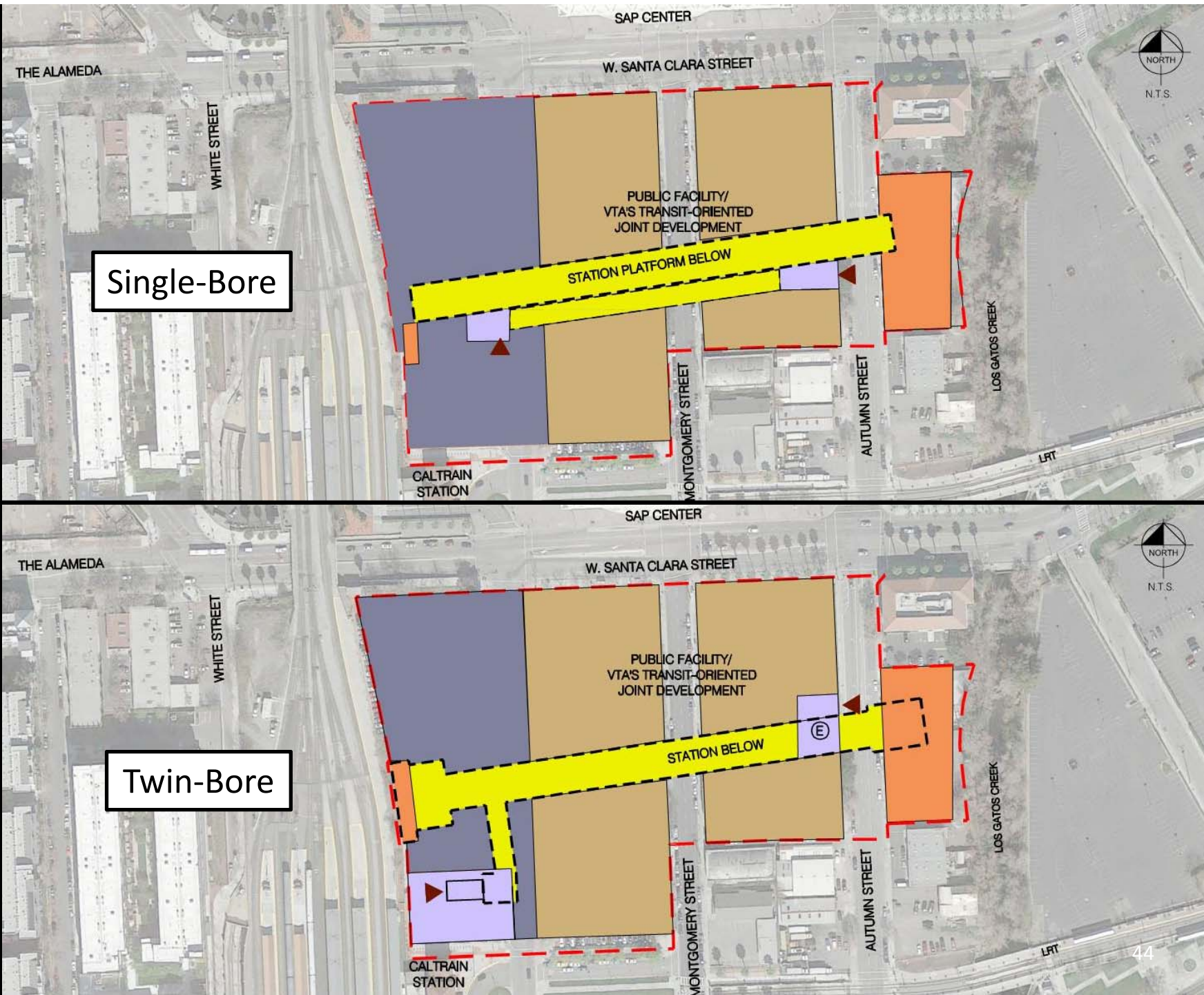
Draft Conceptual Exhibit





Diridon Station South Option

Draft Conceptual Exhibit

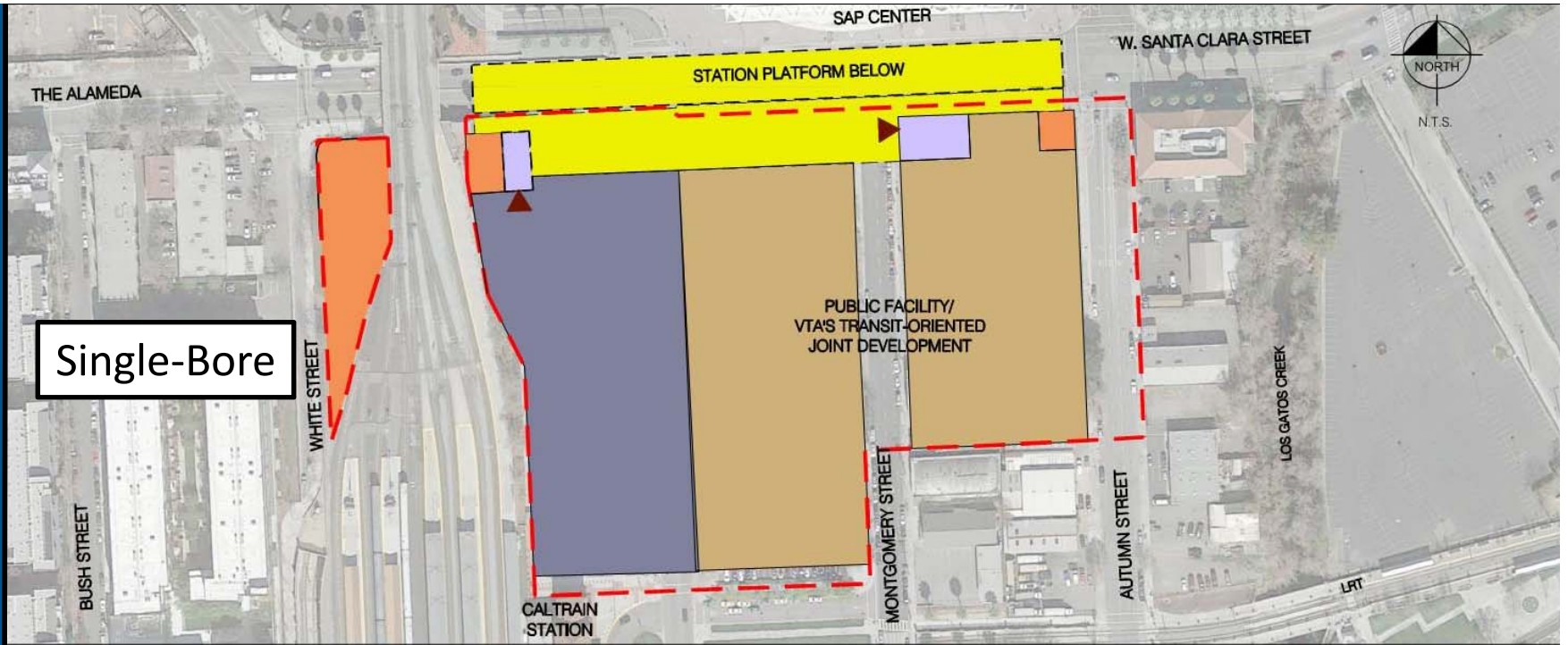


Diridon Station North Option

Draft Conceptual Exhibit



Single-Bore

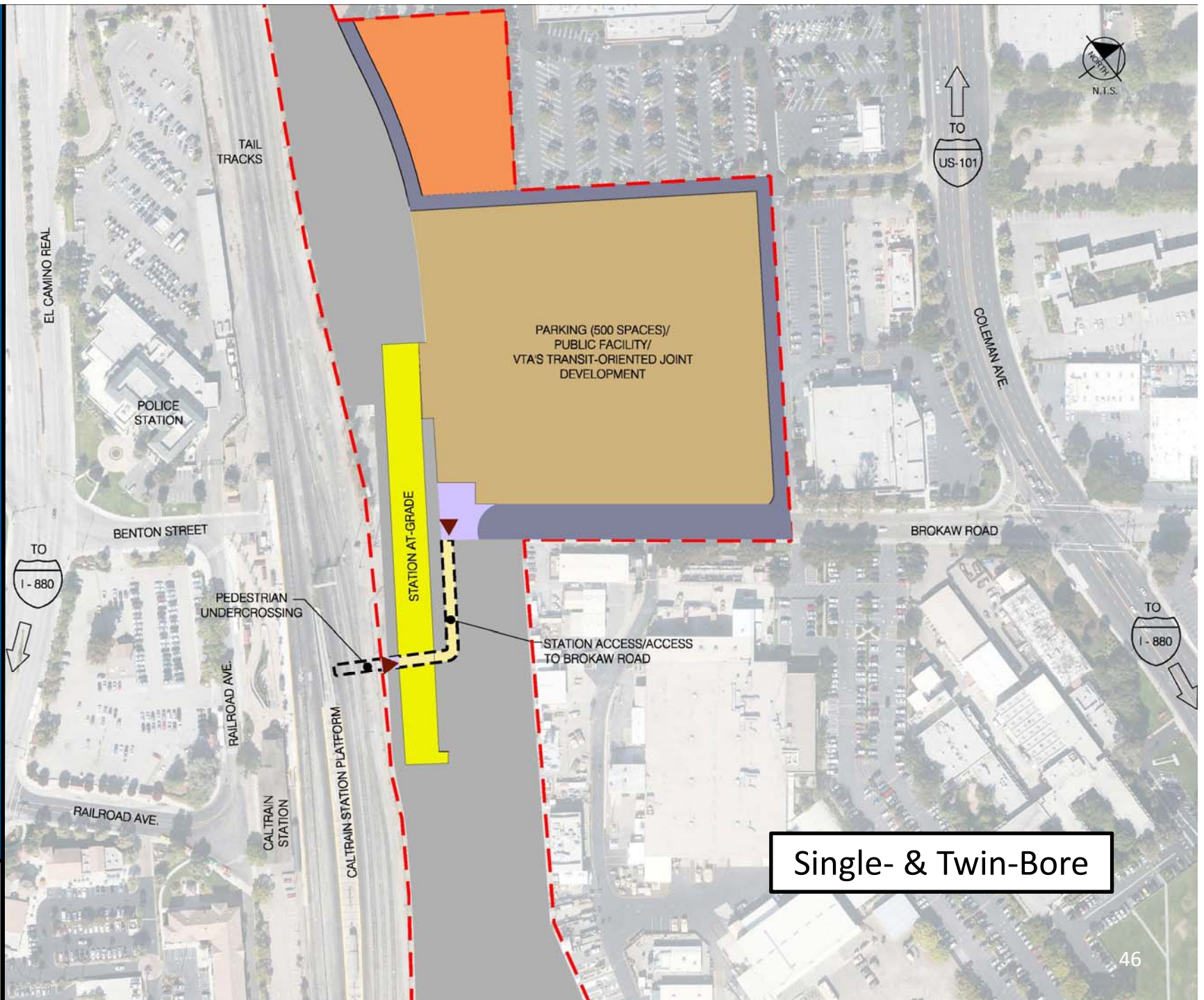


Twin-Bore



Santa Clara Station

Draft Conceptual Exhibit



Single- & Twin-Bore

Questions?



Environmental Evaluation Criteria



How the Environmental Evaluation Criteria Will be Used

- Environmental evaluation criteria will be used to provide qualitative and quantitative assessment of the options
- Used in determination of staff recommendation to the Board of Directors
- This process has been readily used on all environmental documents created for capital projects
- Board input requested on environmental evaluation criteria
- Preliminary staff recommendation will be presented at the September 22nd Board Workshop



Environmental Evaluation Criteria for Station Locations

Construction Impacts	<ul style="list-style-type: none">• Impacts to existing infrastructure and sub-surface easements• Impacts to businesses, institutions and key destinations• Impacts to existing utilities
Connectivity	<ul style="list-style-type: none">• Connections to other transit modes• Connections to key activity centers• Station access
Long-term Economic Development	<ul style="list-style-type: none">• Compatibility with City's long-range plans• Compatibility to timing of area development• Transit Oriented Joint Development
Ridership	<ul style="list-style-type: none">• Increases/decreases due to station location
Cost	<ul style="list-style-type: none">• Overall magnitude of cost due to impacts to existing infrastructure, sub-surface easements, construction staging areas, engineering, etc.
Right of Way	<ul style="list-style-type: none">• Availability of "right" ROW for entrance and construction staging• Impacts to historic resources
Alignment	<ul style="list-style-type: none">• Optimization of horizontal and vertical alignments



Environmental Evaluation Criteria for Tunneling Methodology

Constructability	<ul style="list-style-type: none">• Risk profile• Complexity• Staging requirements• Impacts to existing infrastructure
Environmental	<ul style="list-style-type: none">• Construction impacts• Impacts to ground surface activities and circulation, e.g. vehicle, bike/ped and transit detours• Impacts to historic resources
System Operations	<ul style="list-style-type: none">• Routine operations and maintenance• Ventilation systems
Long-term Economic Development	<ul style="list-style-type: none">• Impacts to businesses, institutions and key destinations• Transit Oriented Joint Development
Cost	<ul style="list-style-type: none">• Overall magnitude of cost due to impacts to existing infrastructure, sub-surface easements, construction staging areas, construction elements, utility relocations, engineering, etc.



Questions?



Steps to the Tunneling Methodology Decision for VTA's BART Silicon Valley Phase II

Engineering History



- **2001:** Master Agreement between VTA & BART Executed
- **2002-2004:** Conceptual Engineering Phase
 - (Full 16 miles)
- **2004-2008:** 65% Engineering Phase
 - (Full 16 miles)
- **Early 2009:** VTA Board commits to building project with phased implementation
- **2009:** Focus on Phase I delivery
Phase II Engineering on hold based on input from FTA



Since 2008...

Updates to:

- National Codes and Standards:
 - National Fire Protection Association 130 (NFPA 130)
 - California Building Code (CBC)
- United States Geological Survey (USGS) Seismic Reviews
- Project Requirements:
 - BART Facility Standards (BFS)
 - Emergency exiting requirements

Changes in:

- Corridor (approved developments)
- Station locations
- Tunneling technology



Renewed Planning Efforts for Phase II (2014)

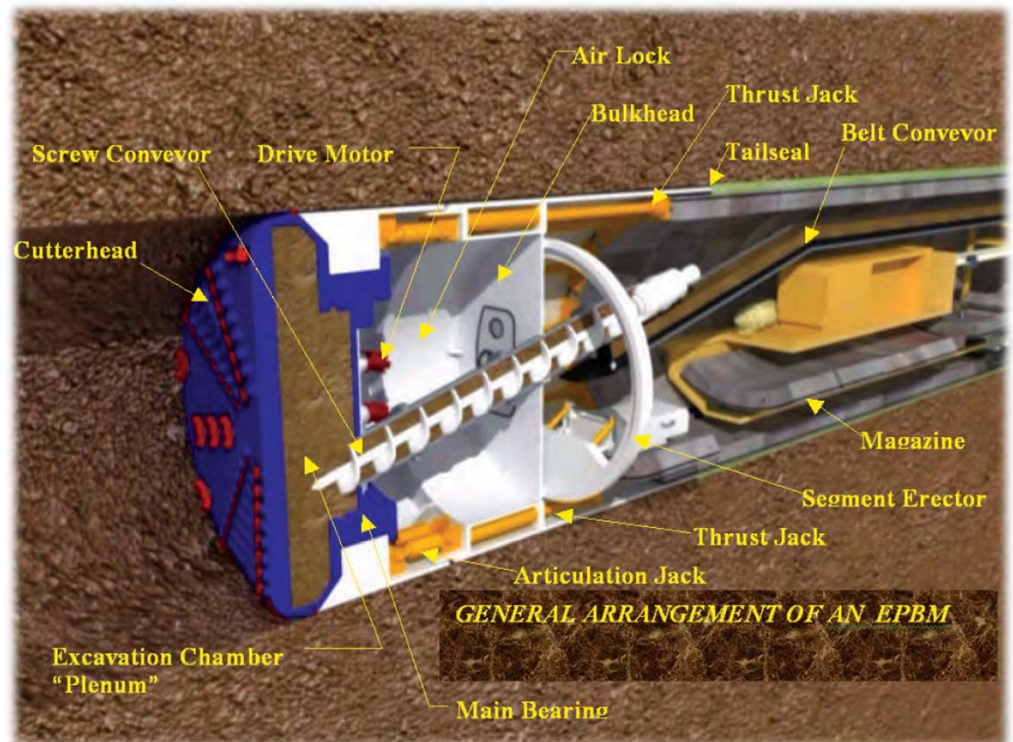
- Phase I construction underway
- Review of Phase II construction methodologies
 - Impacts to street level activities and underground utilities
 - Advances in the tunneling industry since 2008
 - Feasibility of alternate tunneling methodologies



Tunnel Boring Machine (TBM)



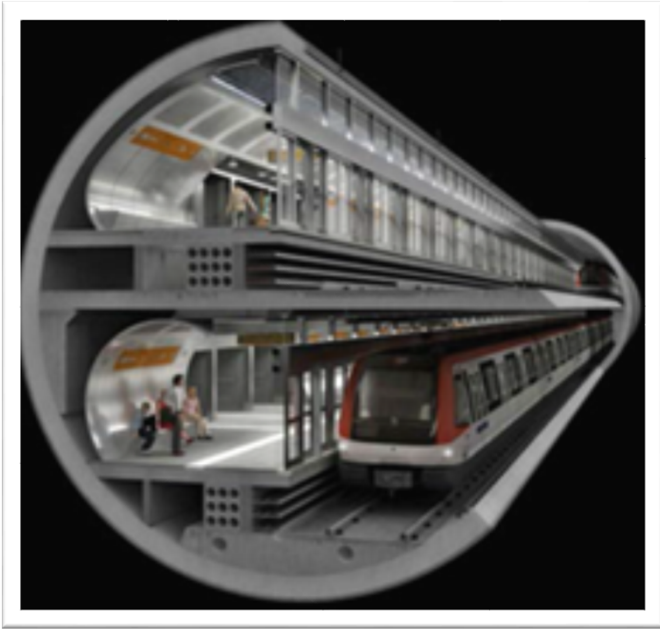
- Excavates ground material
- Creates tunnel structure
- Removes excavated material



TBM Arrangement



Types of Tunnels



Single-Bore

Twin-Bore

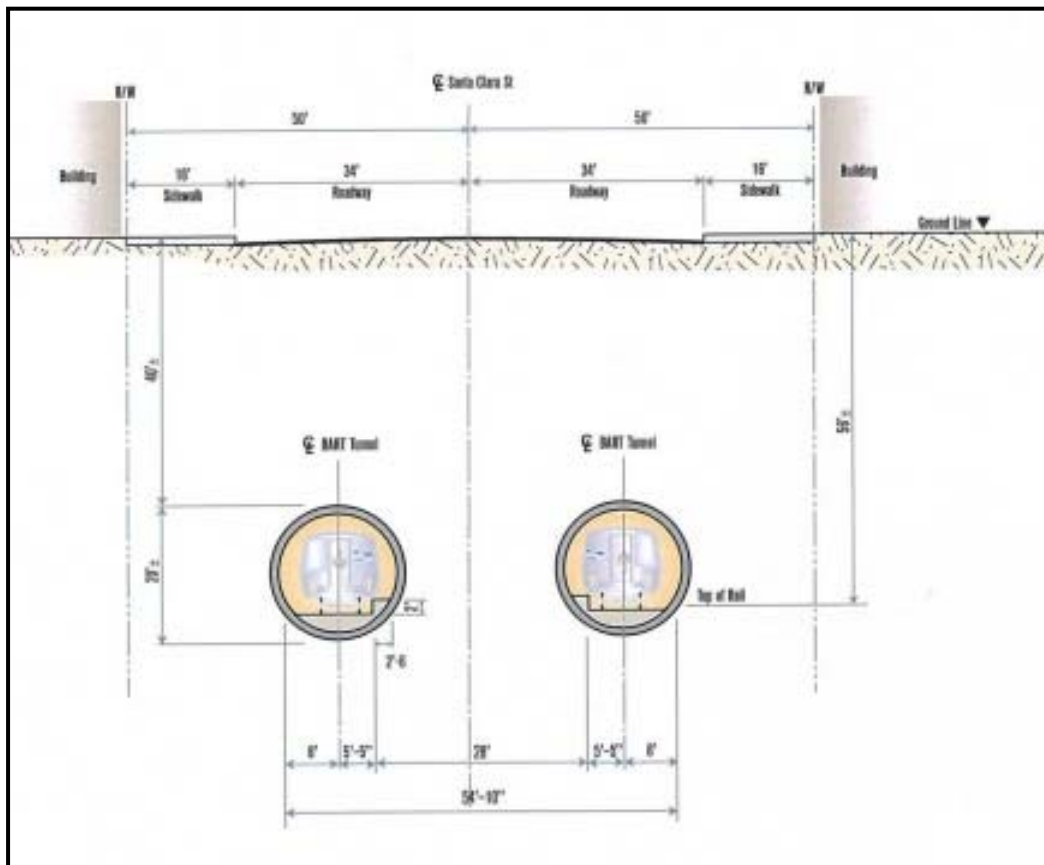


Twin-Bore Configuration



Twin-Bore Configuration

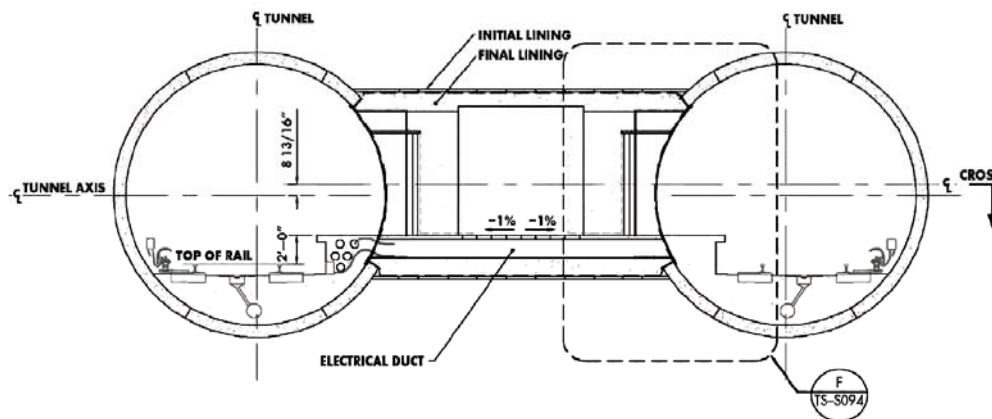
Section View



- Two approximately 20 ft. diameter tunnels with one track per tunnel
- Tunnels run side-by-side
- Tunnel built via Tunnel Boring Machine (TBM)

Twin-Bore Cross Passages

Cross Passages



- Required by BART and NFPA 130 for emergency situations
- 33 underground connections between tunnels
 - 16 under private properties
 - 17 under public ROW

Tunnel Cross Passages

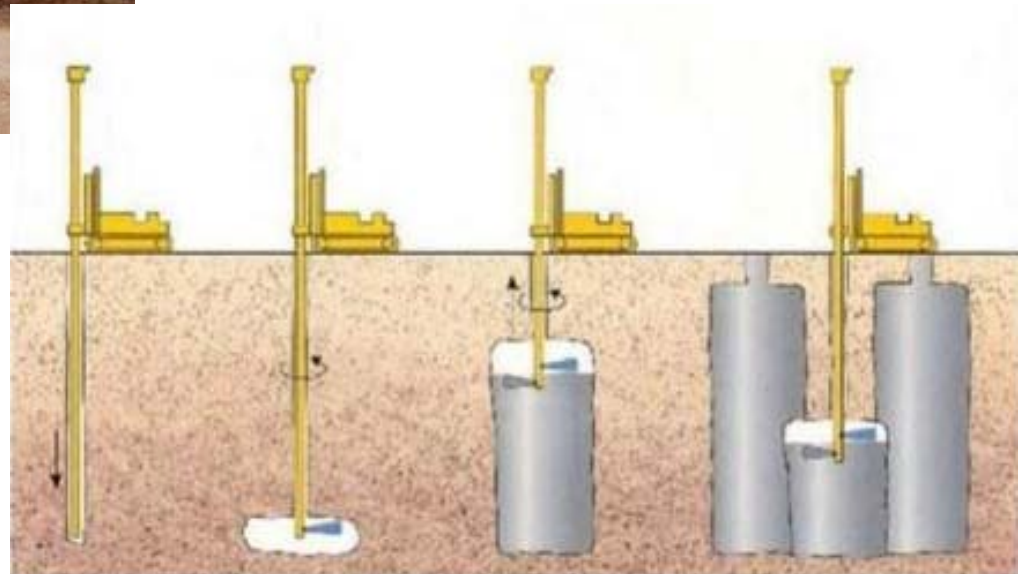


Construction sequence:

1. Ground Improvement
2. Tunnel liner support
3. Tunnel liner breakout
4. Excavation (Mining)
5. Install waterproofing and concrete liner
6. Install doors and other finishes



Ground Improvements

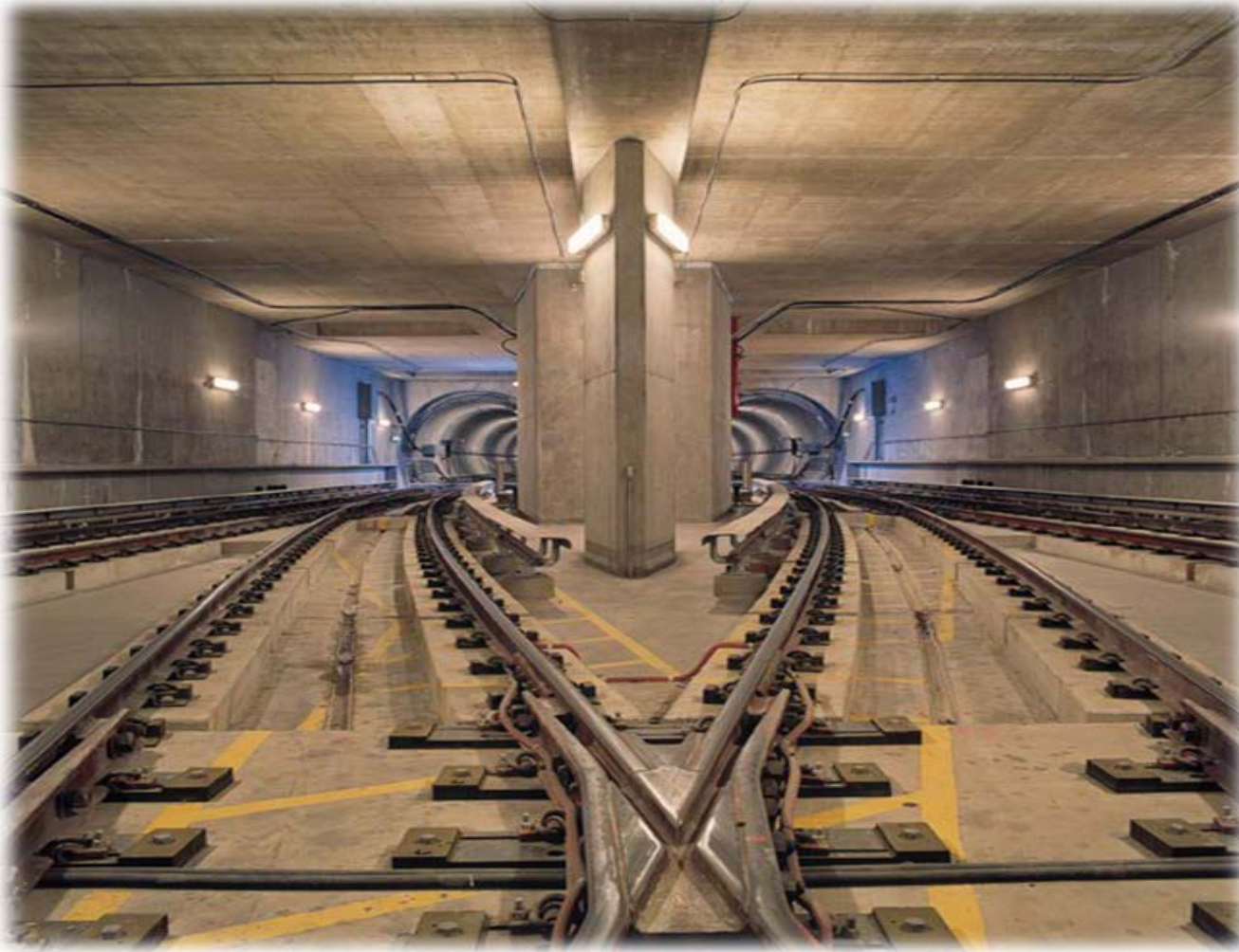


Utility Relocations



Twin-Bore Downtown Crossover

Crossover

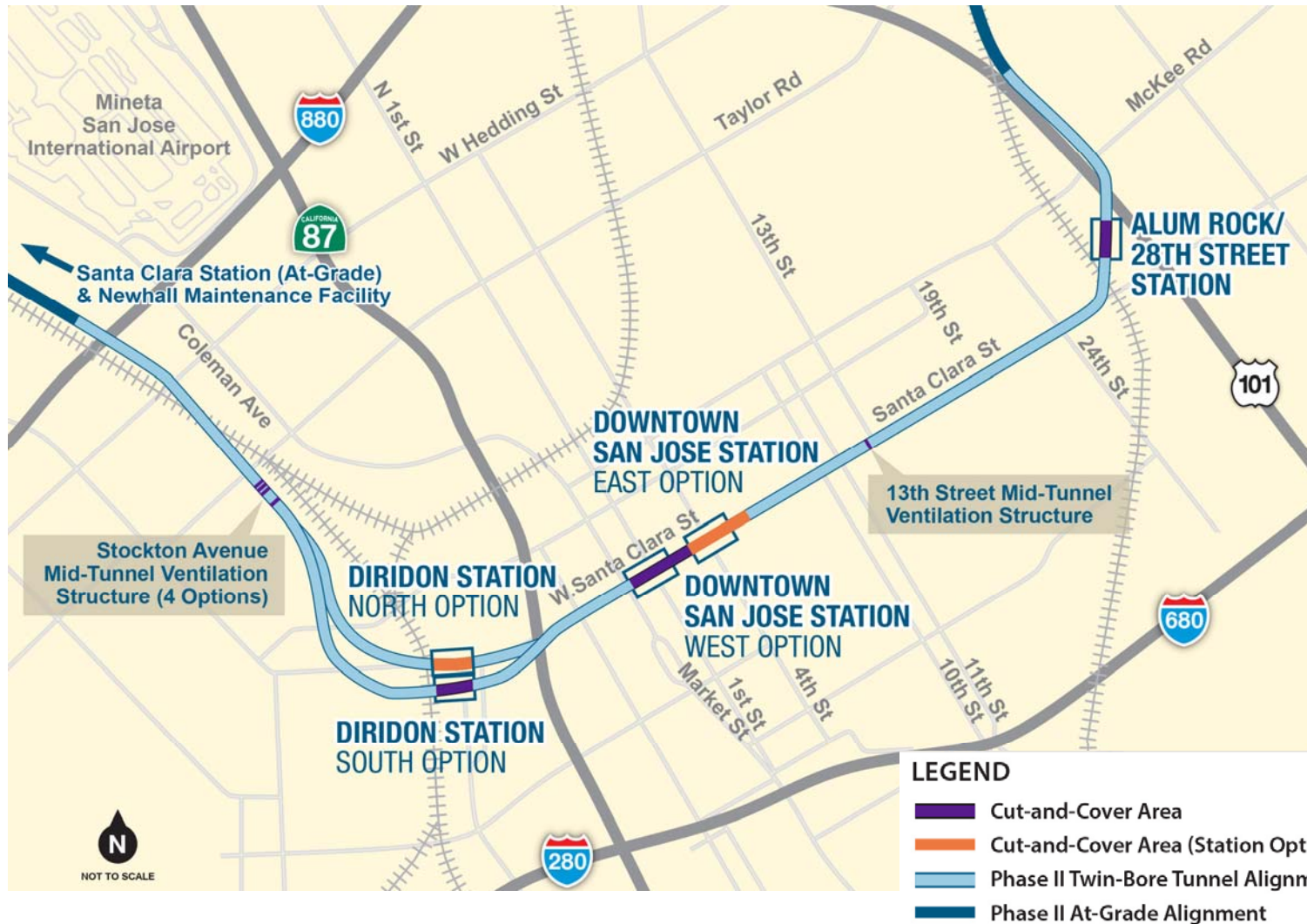


Used for trains to switch from one trackway to the other

Built via Cut-and-Cover in Downtown San Jose



Twin-Bore Cut-and-Cover Construction Areas

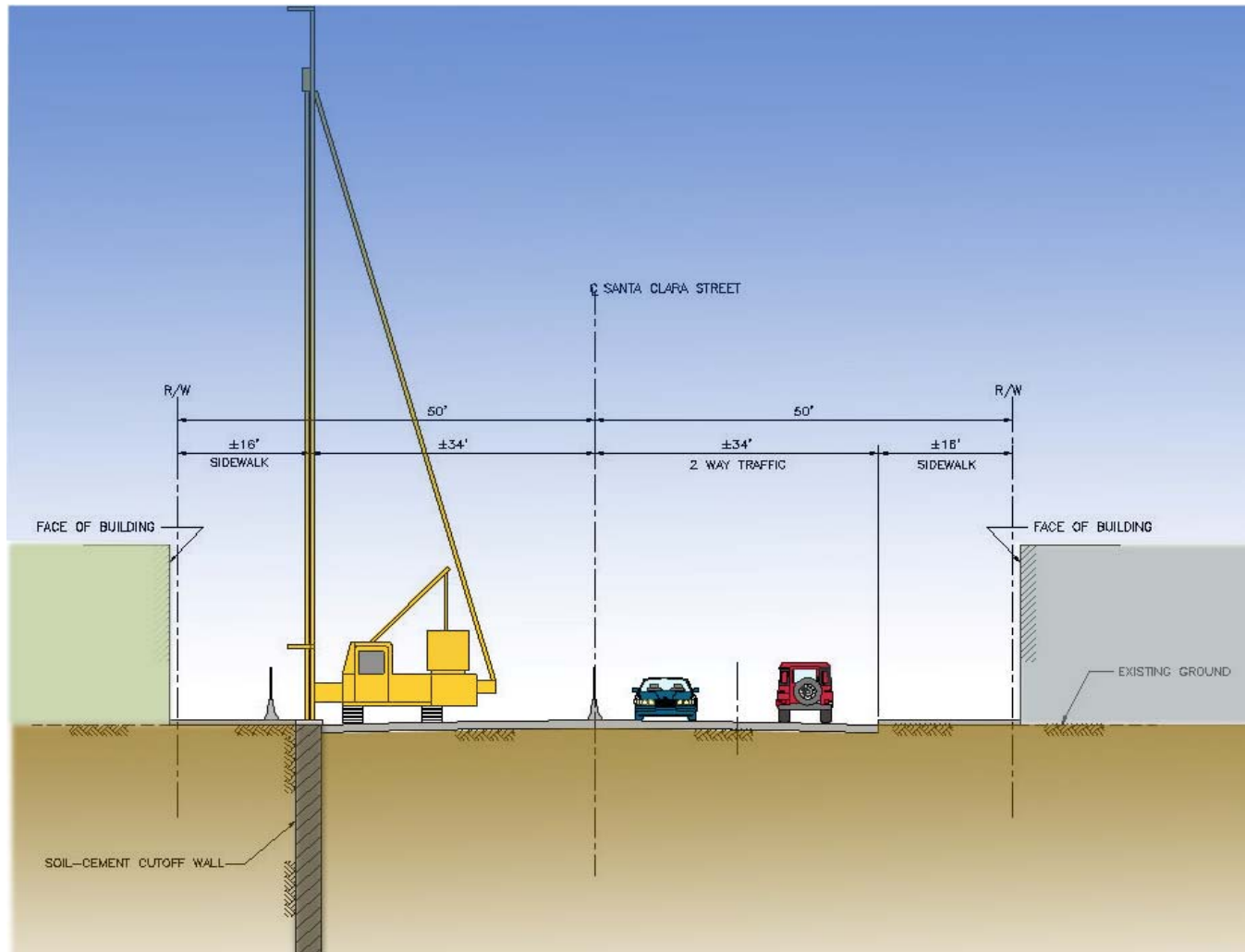


Length of Twin-Bore Cut-and-Cover Construction Areas



Twin-Bore Cut-and-Cover Station Construction

Step 1: Support of Excavation (SOE) Wall Installation



Twin-Bore Cut-and-Cover Station Construction

Reinforced Concrete Slurry Walls



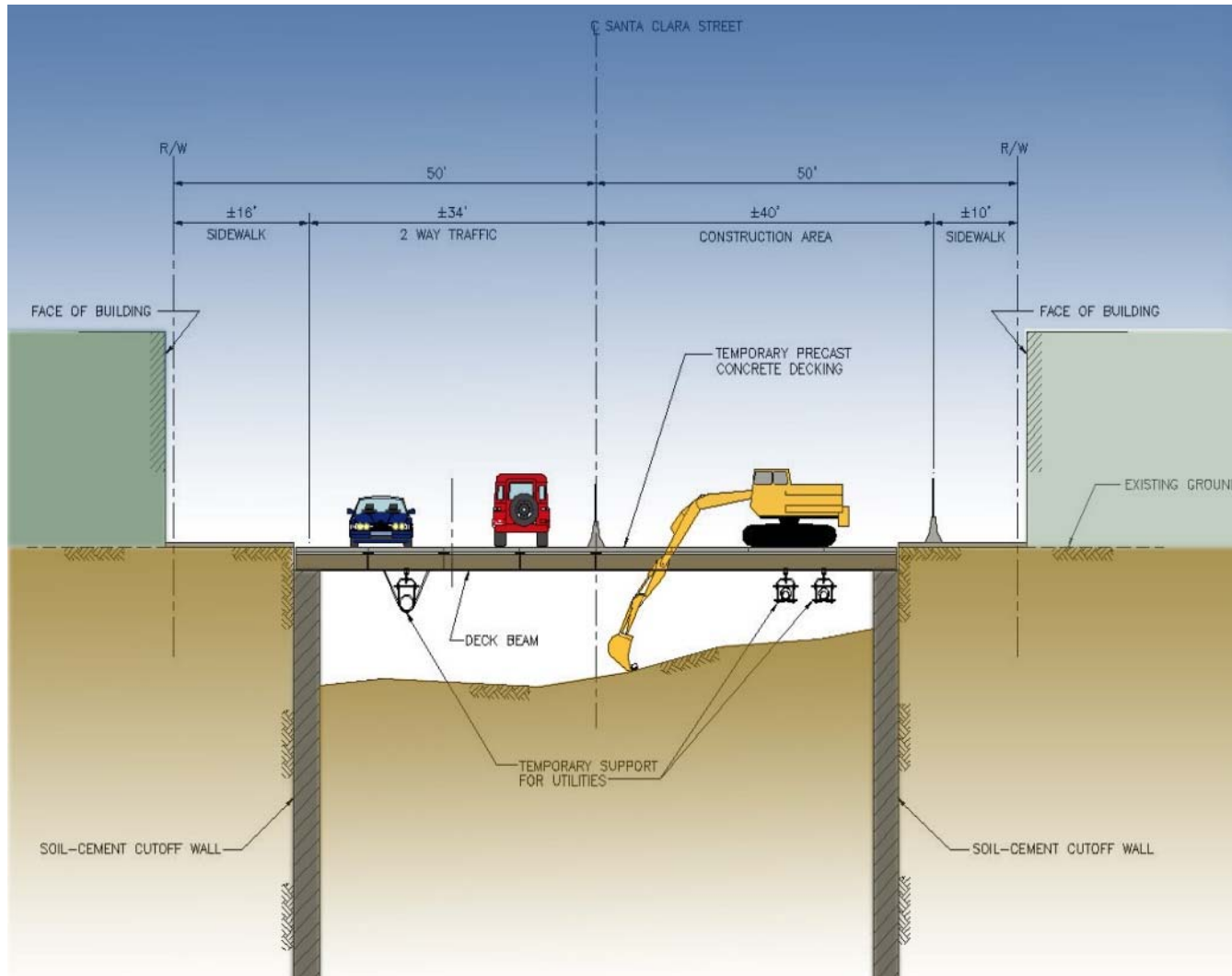
Twin-Bore Cut-and-Cover Station Construction

Deep Soil Mix (DSM) Wall



Twin-Bore Cut-and-Cover Station Construction

Step 2: Excavation, Decking & Temp Utility Support

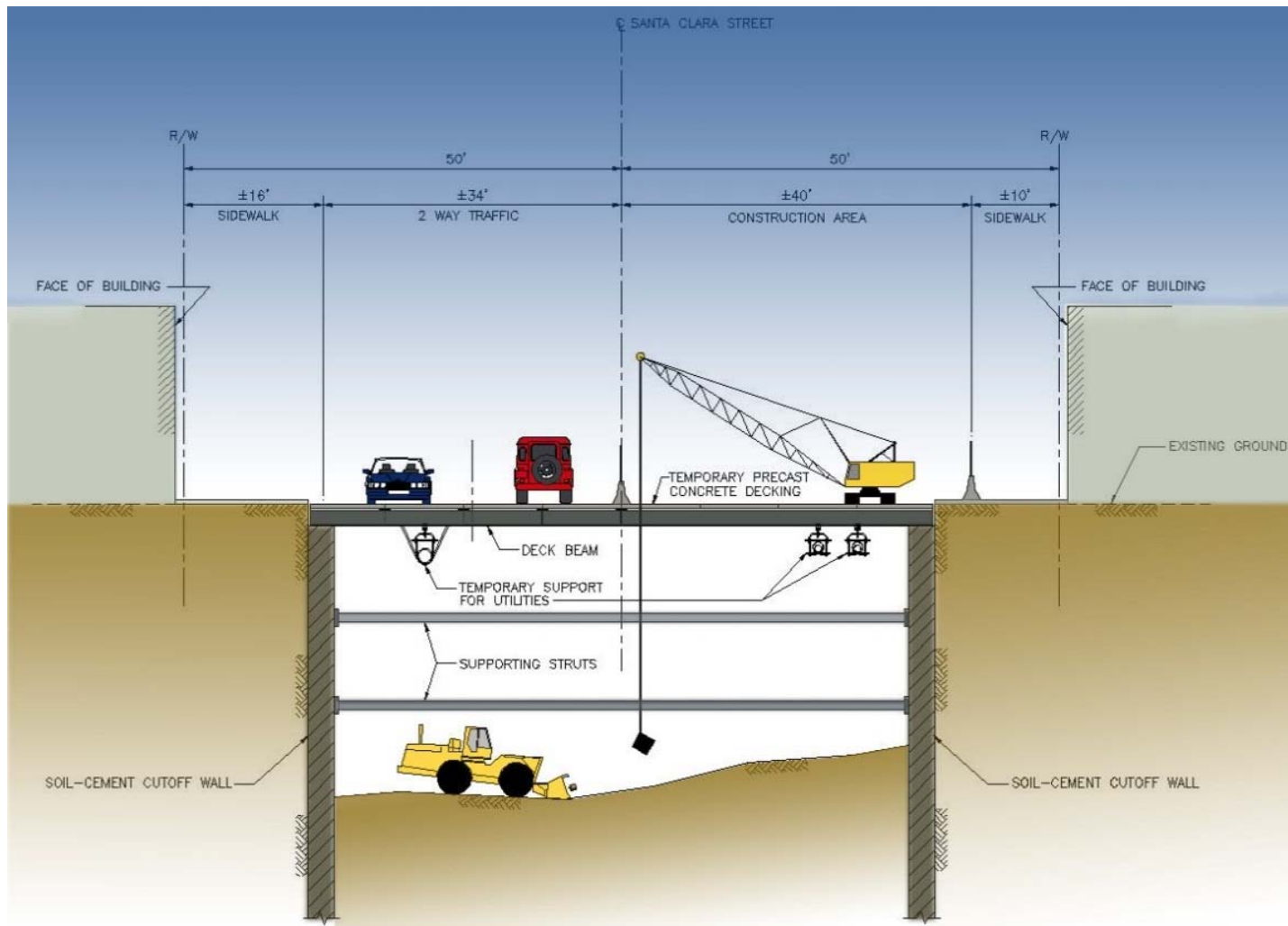


Twin-Bore Cut-and-Cover Station Construction



Twin-Bore Cut-and-Cover Station Construction

Step 3: Continue Excavation & Add Internal Bracing

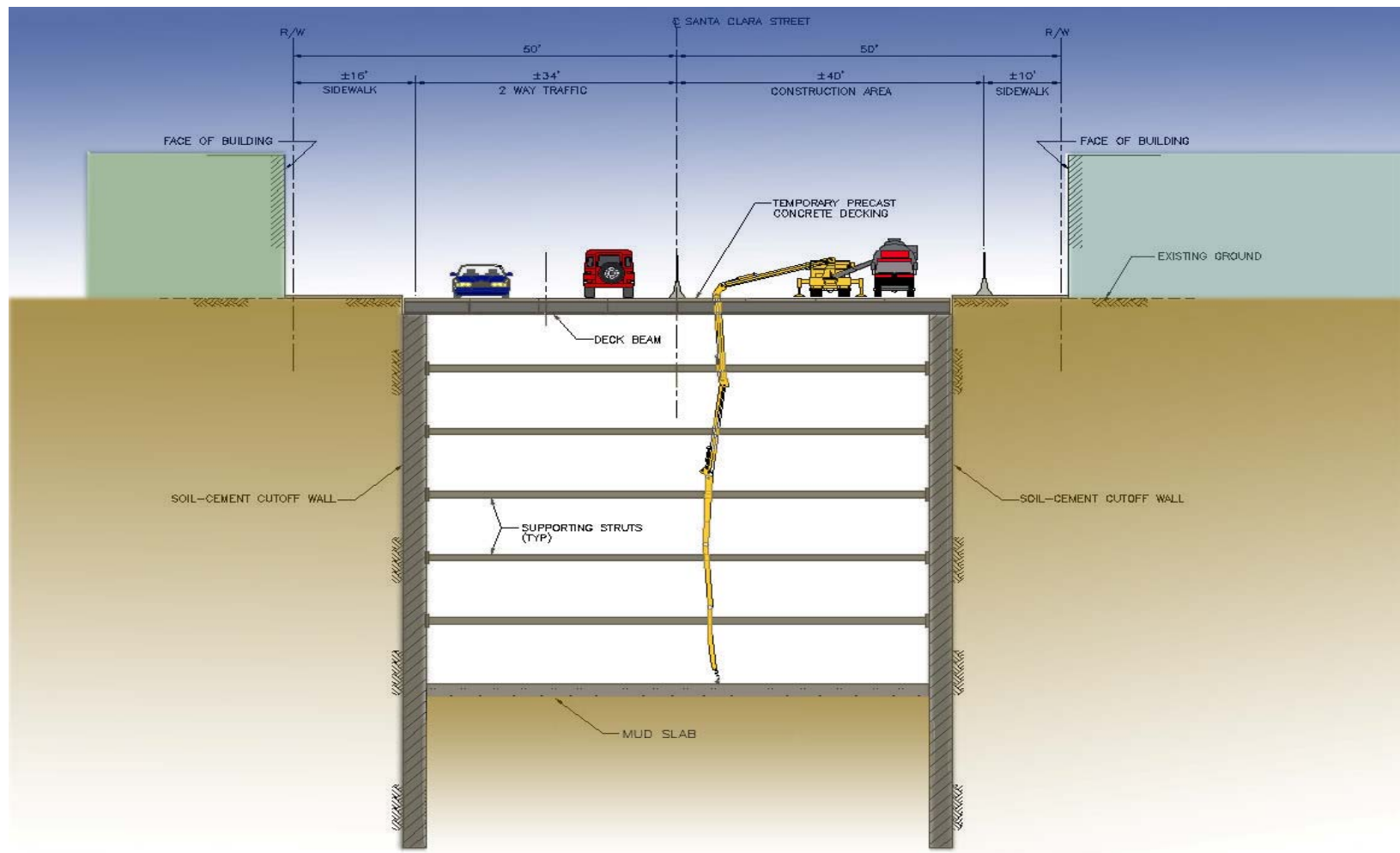


Twin-Bore Cut-and-Cover Station Construction



Twin-Bore Cut-and-Cover Station Construction

Step 4: Excavation & Decking Complete, Traffic Reinstated, Tunneling into Excavation

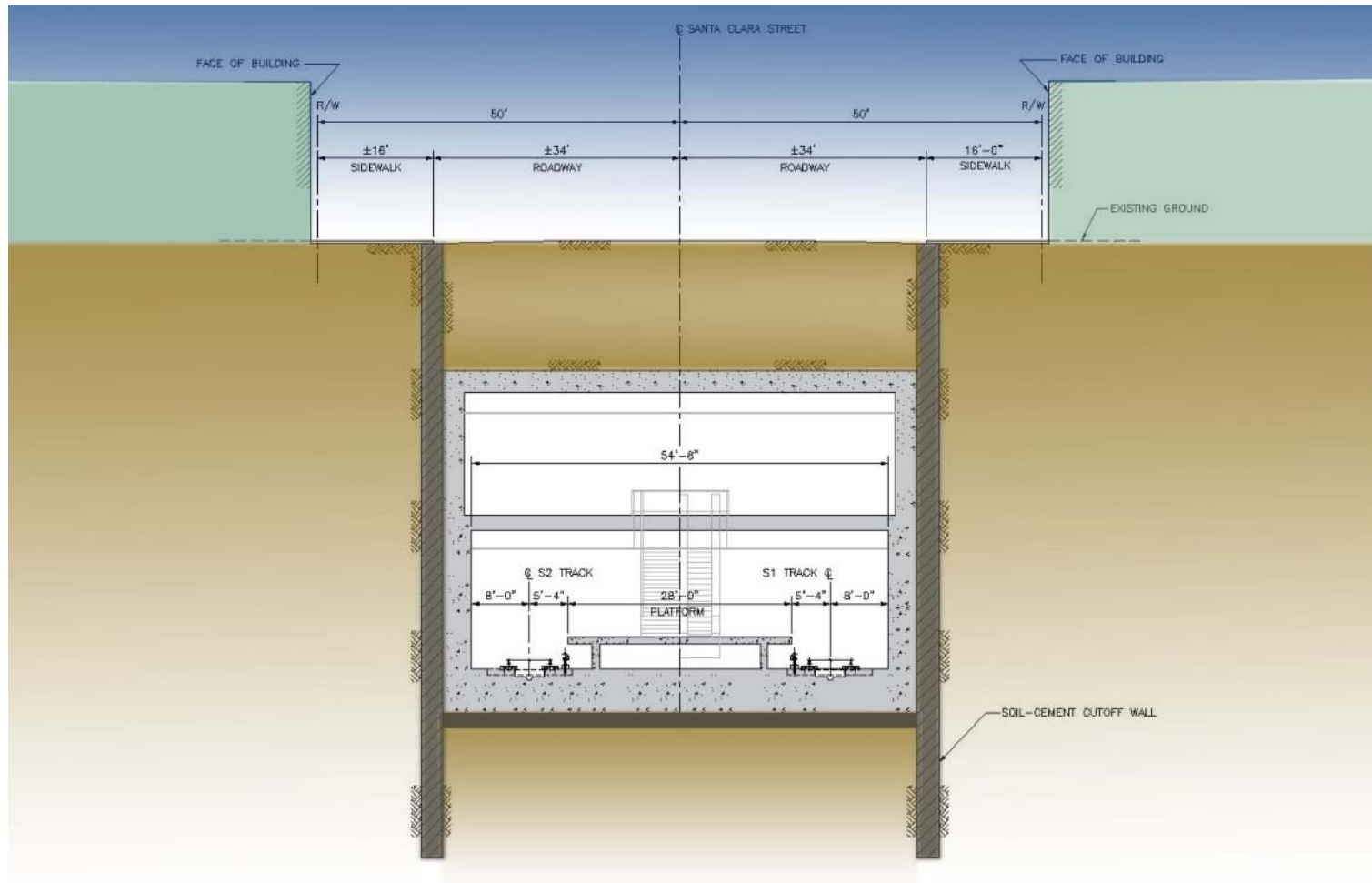


Twin-Bore Cut-and-Cover Station Construction



Twin-Bore Cut-and-Cover Station Construction

Step 5: Construct Structure & Restore Street



Downtown San Jose Station Twin-Bore Roadway Construction Impacts

Activity	Duration	Adverse Effects on Roadways
Advanced Utility Relocations	16–24 months	Temporary lane closures and some street closures along Santa Clara Street – one block, or one block and one intersection, or two blocks and one intersection at a time – for periods of up to 3 months at a time.
Support of Excavation Wall Installation	12–18 months	Temporary street closures along Santa Clara Street – one block or one block and one intersection, or two blocks and one intersection at a time – for periods of up to 3 months at a time. Light Rail Transit will require bus bridges at 1 st and 2 nd Street intersections for up to 3 months at each intersection.
Decking Installation	1–6 months	Temporary street closures along Santa Clara Street – one block or one block and one intersection, or two blocks and one intersection at a time – for approximately 2 weeks to 1 month at a time.
Station Box Excavation	10–18 months	Intermittent lane closures along Santa Clara Street.
Tunnel Boring Machine Removal	2–4 weeks	Intermittent lane closures on each end of the station – up to 4 weeks four times.
Station Structure Construction	18–30 months	Intermittent lane closures along Santa Clara and up to 2-month street closure of Market Street.
Decking Remove, Backfill and Street Restoration (includes Street Resurfacing, Landscape, Sidewalk, Signals, Lighting)	18–24 months	Temporary one-block or one block and one intersection street closures of 1 to 2 months, with intermittent lane closures along Santa Clara Street and the effected cross street.

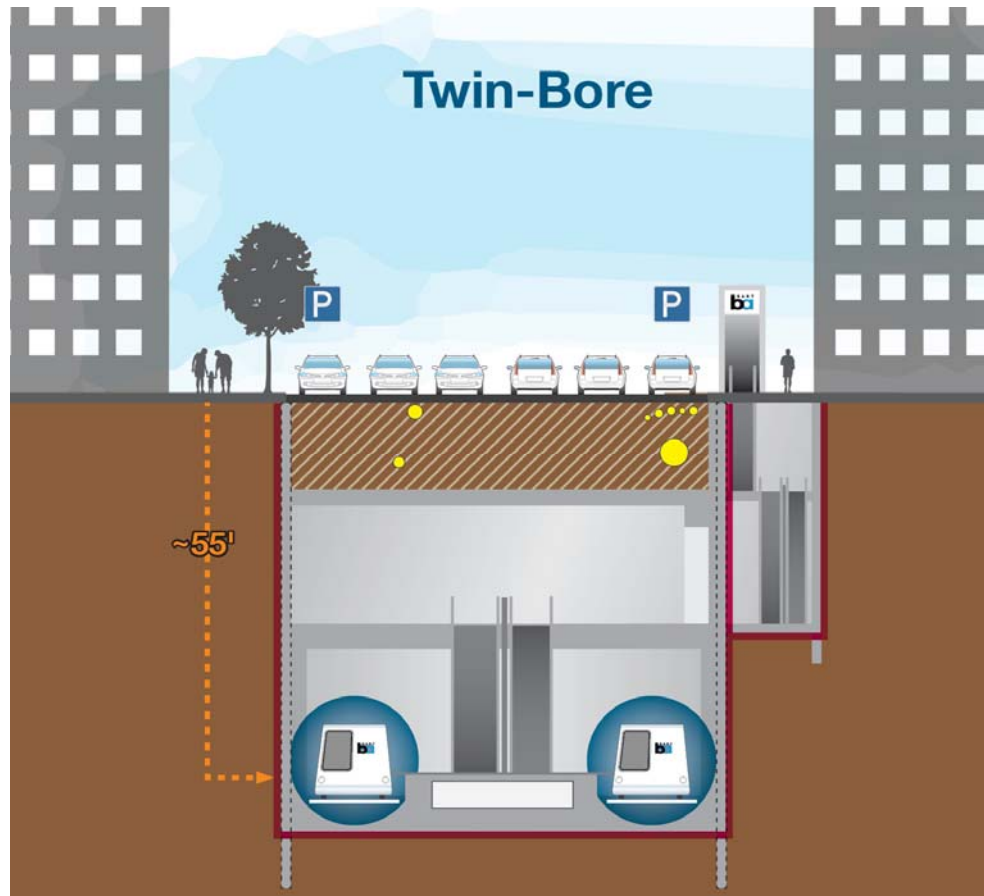
Source: VTA 2016. Table 5-2 in Draft SEIS/SEIR.

Note: Station construction is projected to last less than six years.



Twin-Bore Configuration

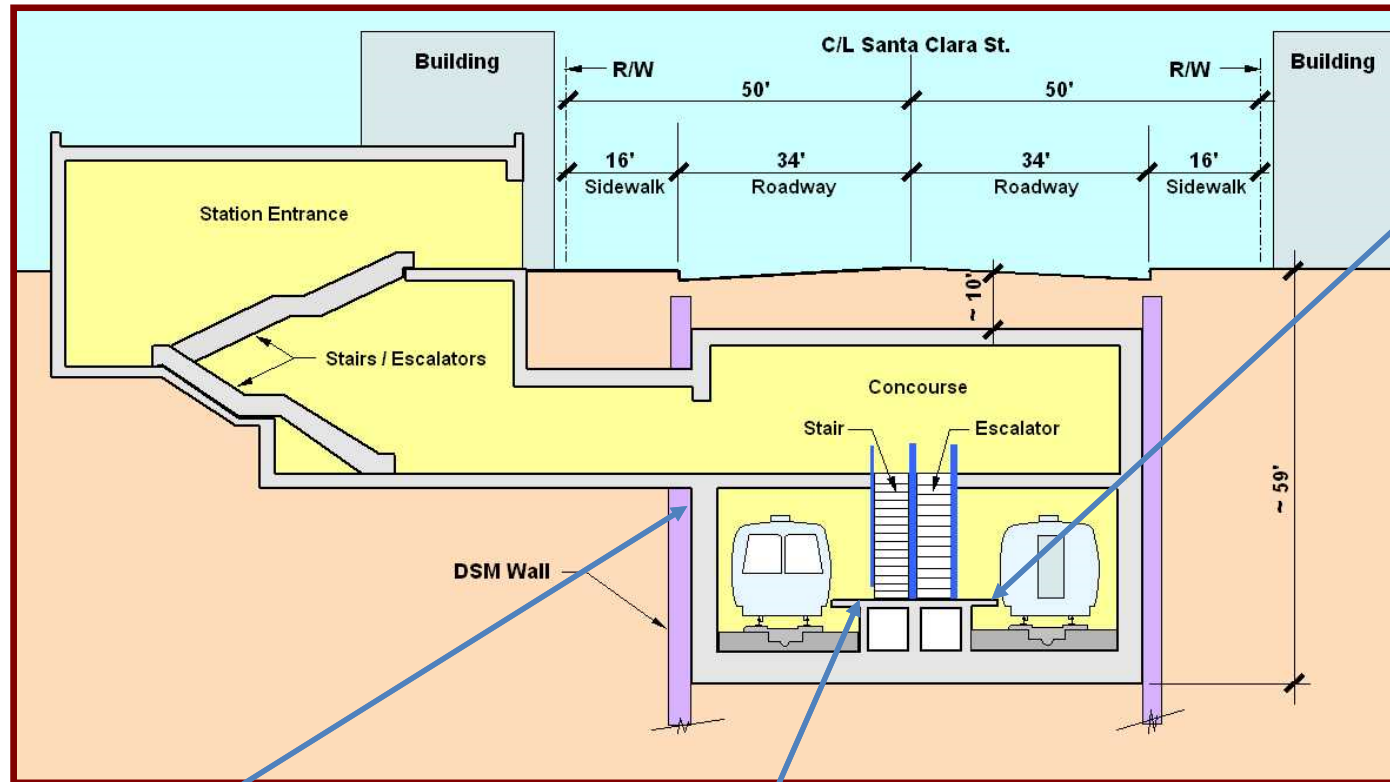
Downtown San Jose Station Configuration



- ~55 ft. from ground to platform
- 28 ft. wide center platform (serving both directions of travel)
- 9'3" unobstructed width per side of platform
- Built via cut-and-cover construction

Twin-Bore Configuration

Downtown San Jose Station Configuration



Platform depth:
~55'

28' wide center
platform (serving
both directions
of travel)

Built via cut-and-cover

9'3" unobstructed width per
side of platform



Solutions that move you

Twin-Bore Configuration

Summary

- Two approximately 20 ft. diameter tunnels with independent trackways
- Cut-and-Cover Construction to build:
 - Three underground stations
 - Two Mid-Tunnel Ventilation Structures
 - One crossover
- 33 Cross Passages (Emergency connections between tunnels): localized mining between tunnels, often requiring ground improvements
- Extensive utility relocations at cut-and-cover at five locations within the public right-of-way



Questions?

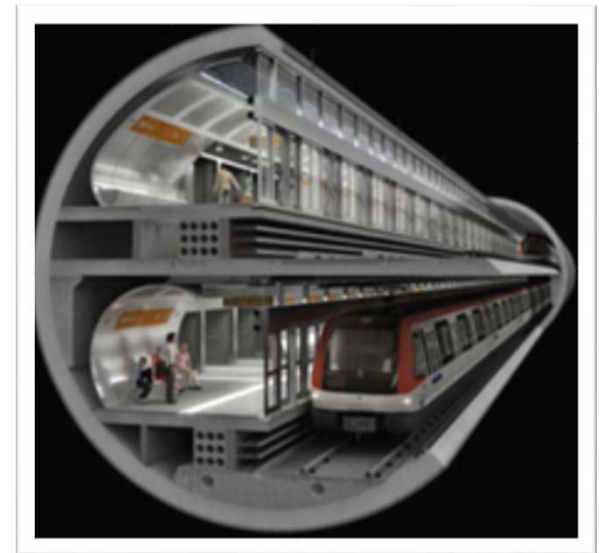


Single-Bore Configuration



Single-Bore Configuration

- Large bore with two independent trackways separated by wall or slab
- No cut-and-cover for platform construction
- Platforms, crossovers and cross-passages within tunnel
- Construction avoids extensive relocation of utilities
- Less disruptions to the neighborhood
- Barcelona Line 9, the only single-bore transit system with station platform within tunnel



Single-Bore Analysis

Preliminary Analysis of Single-Bore Methodology (2015)

- Determined feasible
- Reviewed with BART and FTA
- Included as option in environmental document

Single-Bore Tunnel Technical Studies (2016)

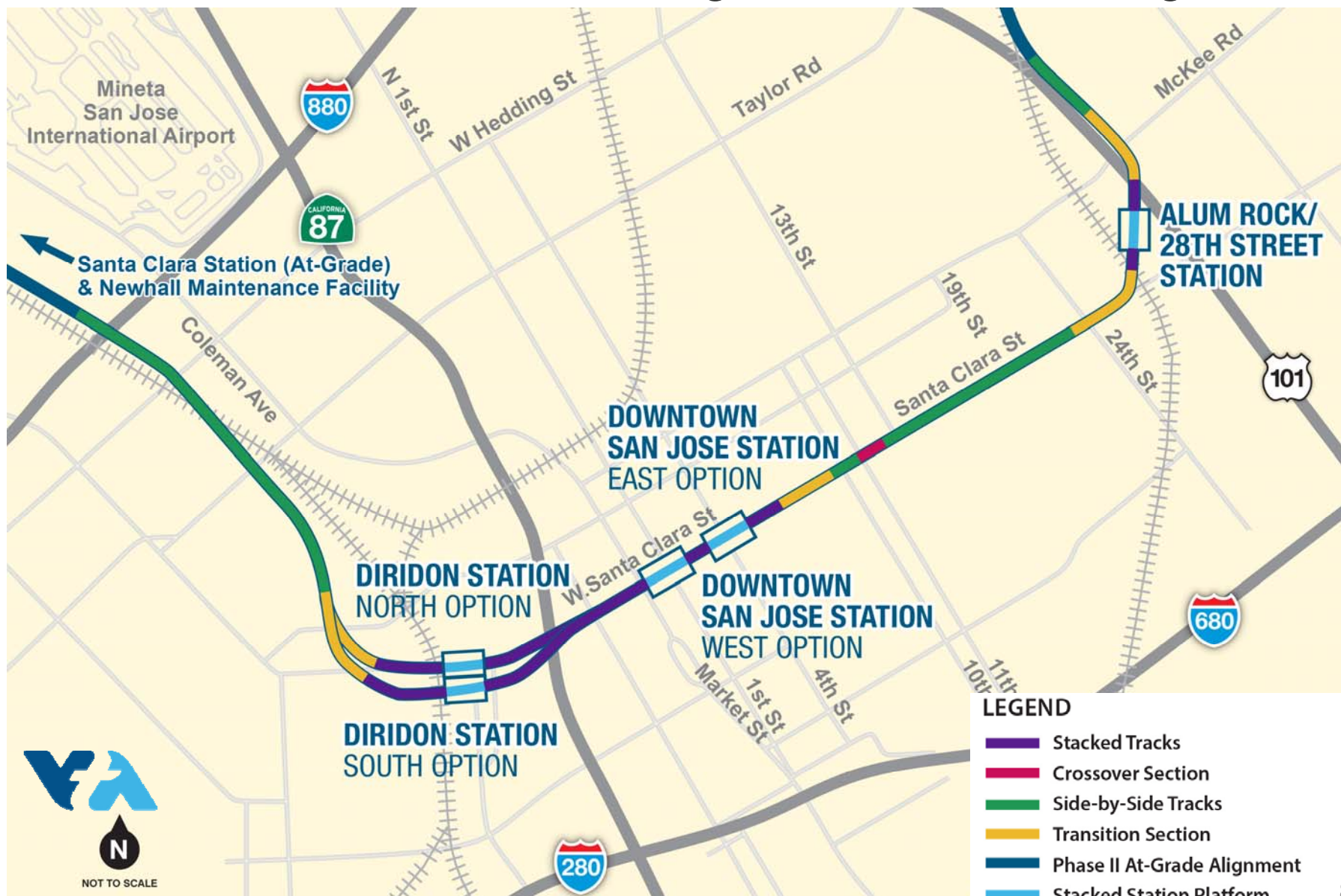
- Focus on key areas including tunnel, station configuration, emergency egress, and ventilation
- Design criteria and key assumptions developed in concert with BART
- Ongoing BART participation
- Topic specific workshops and presentations

Barcelona Study Tour (2017)

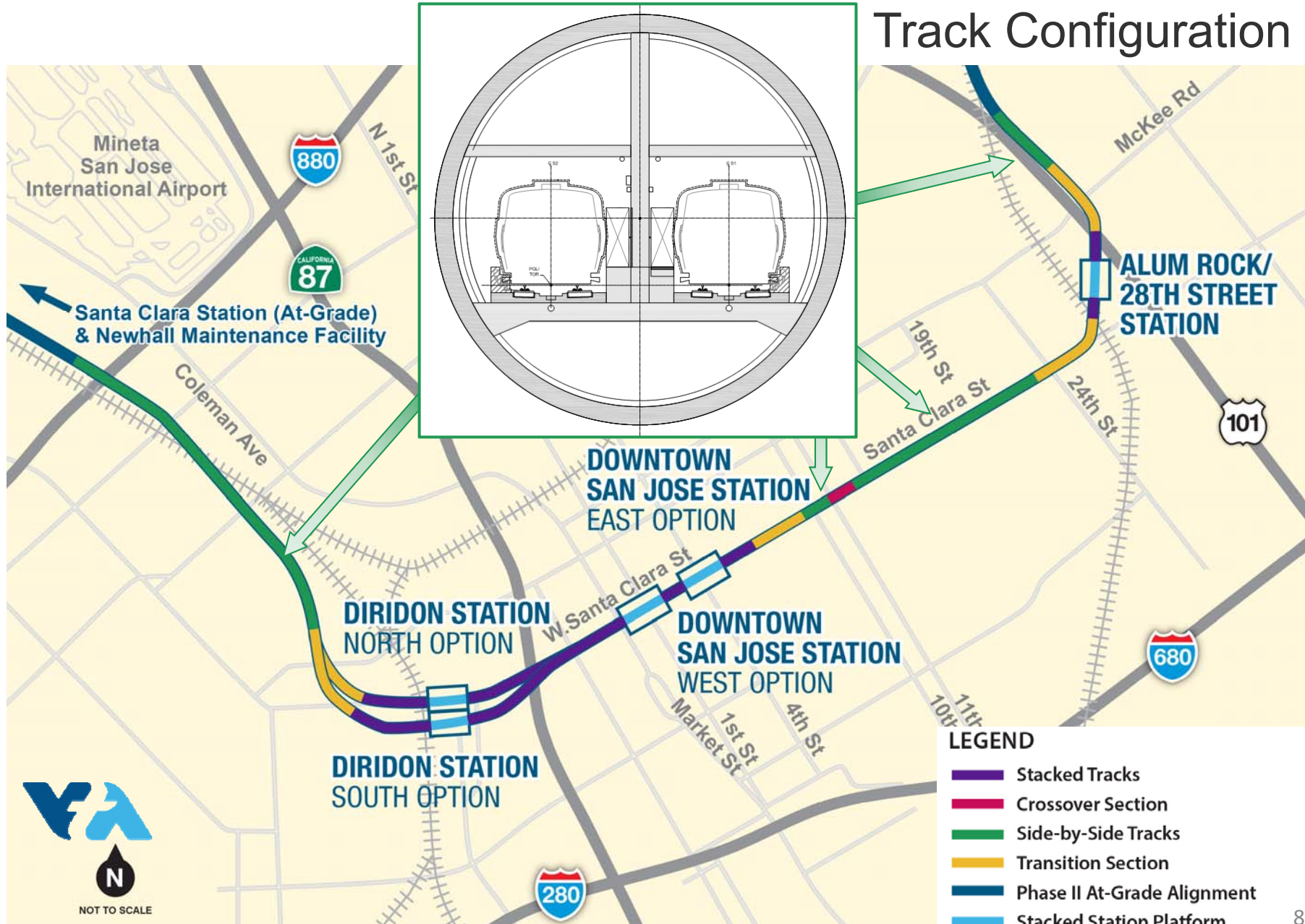
Tunneling Options Comparative Analysis (2017)



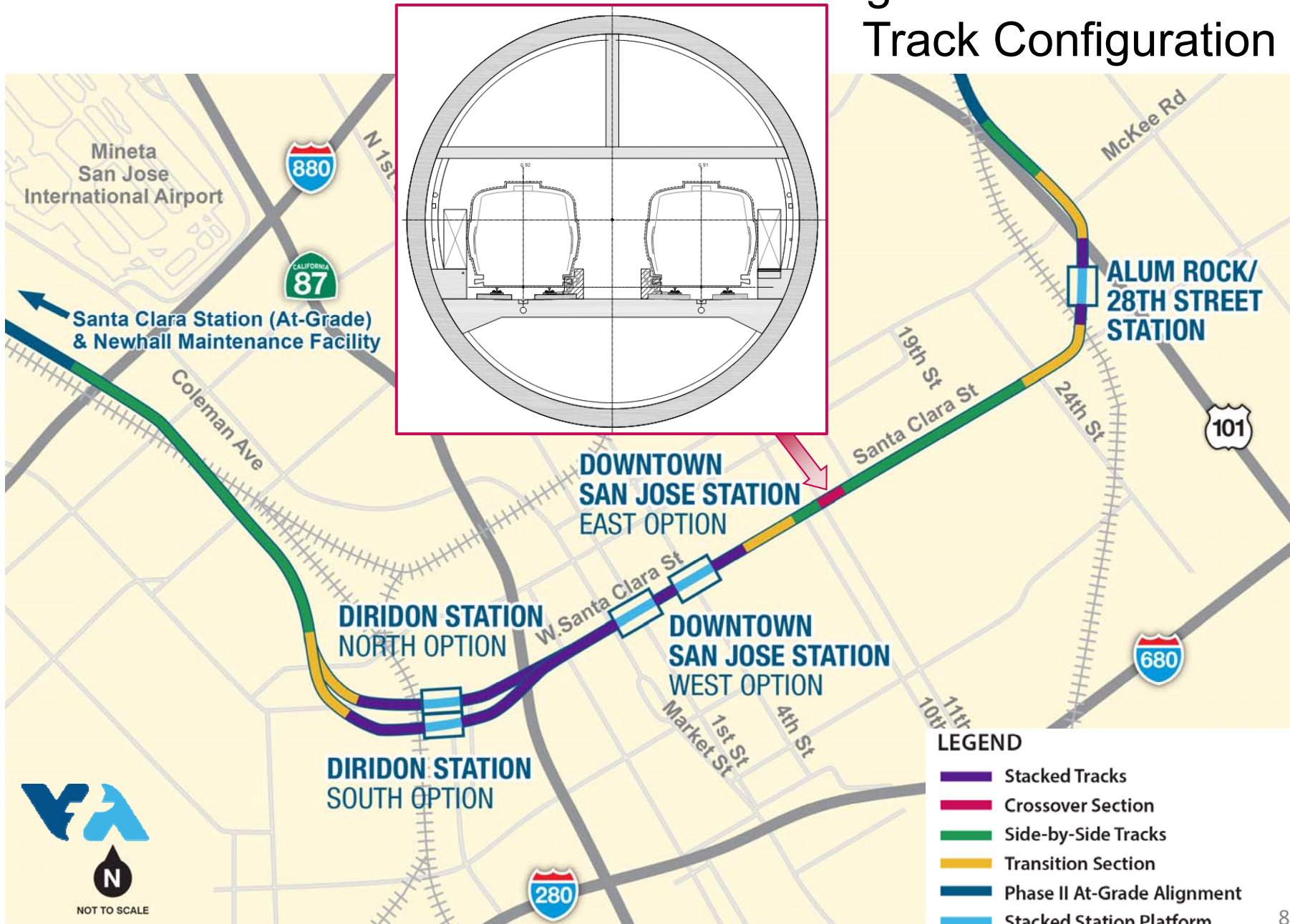
Single-Bore Track Configuration



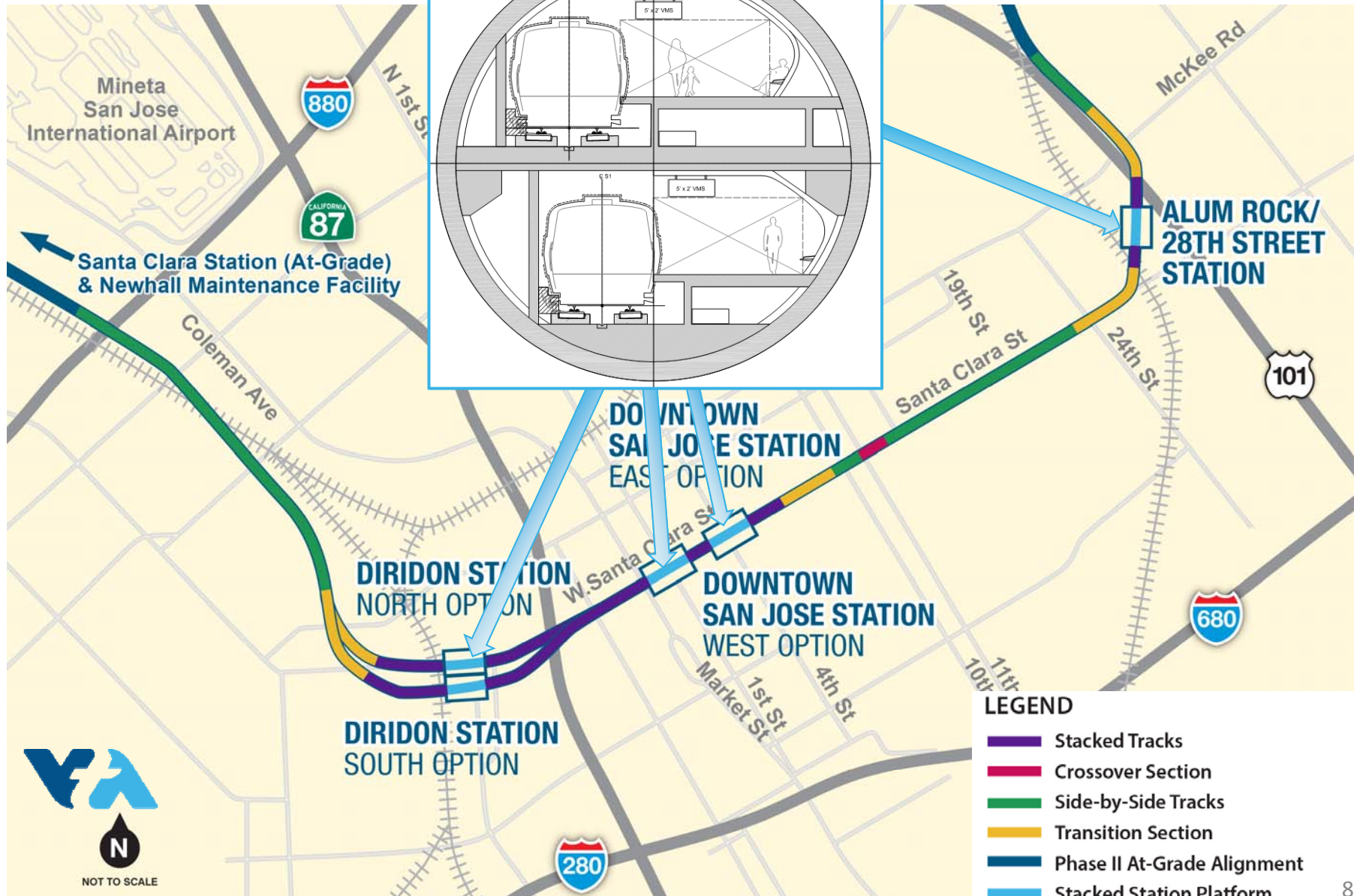
Single-Bore Side-by-Side Track Configuration



Single-Bore Crossover Track Configuration



Single-Bore Stacked at Stations Track Configuration



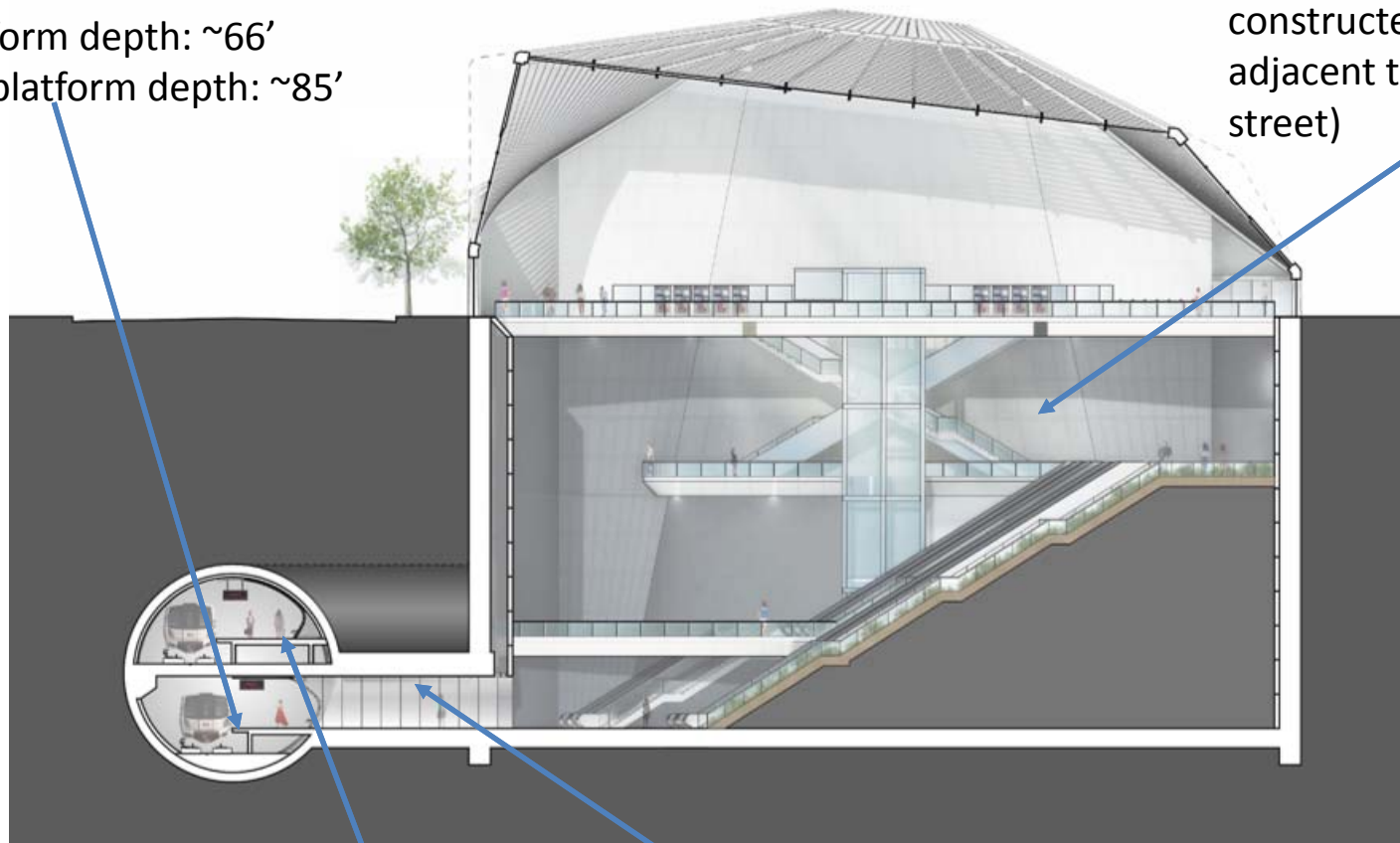
Single-Bore Station Concept

Downtown San Jose Station

Top platform depth: ~66'

Bottom platform depth: ~85'

Station facilities, stairwells, escalators, elevators, etc. constructed via cut & cover adjacent to tunnel (off street)



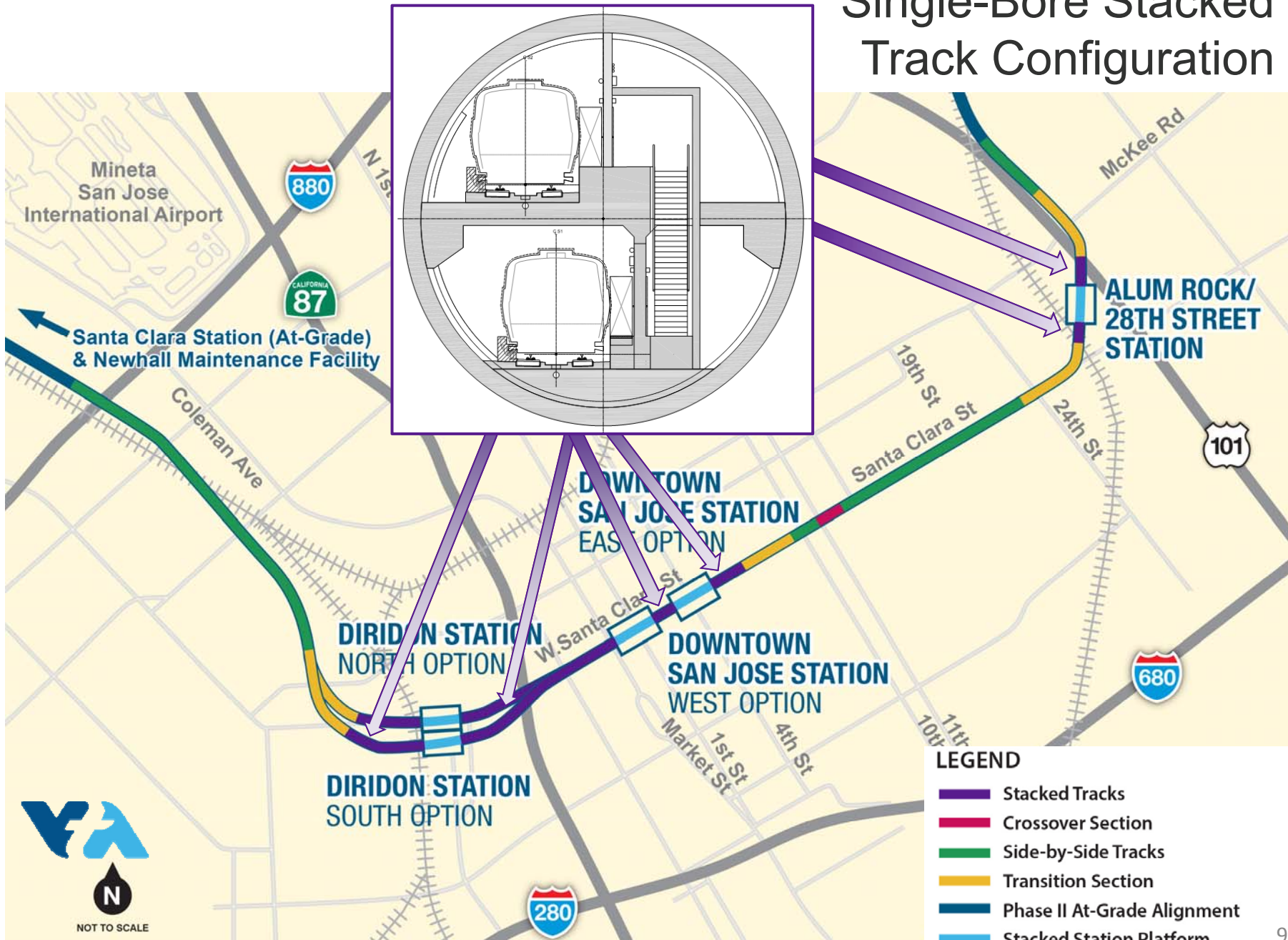
15'-6" wide
unobstructed
platforms

Underground
connection to platform

Solutions that move you



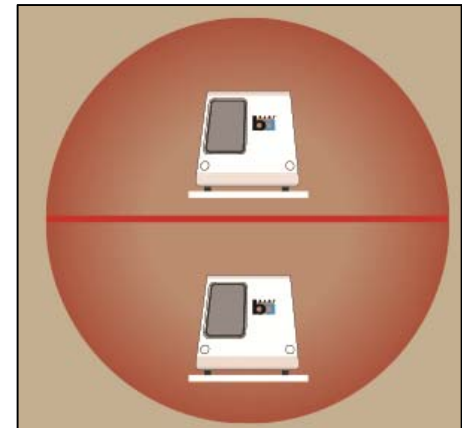
Single-Bore Stacked Track Configuration



Single-Bore Configuration

Summary

- One 45 foot diameter tunnel with both trackways within tunnel
- Cut-and-Cover Construction to build:
 - Minimum of two off-street entrances per station
 - Two mid-tunnel ventilation structures
- Three stations with stacked platforms within tunnel
- Crossover within tunnel
- 76 cross passages within tunnel
- Utility relocation work at entrance locations



Results of Single-Bore Technical Study

The Single-Bore configuration:

- ✓ Is feasible and practical
- ✓ Is compliant with applicable industry standards
- ✓ Meets critical functional, operational and maintenance requirements for underground stations and running tracks



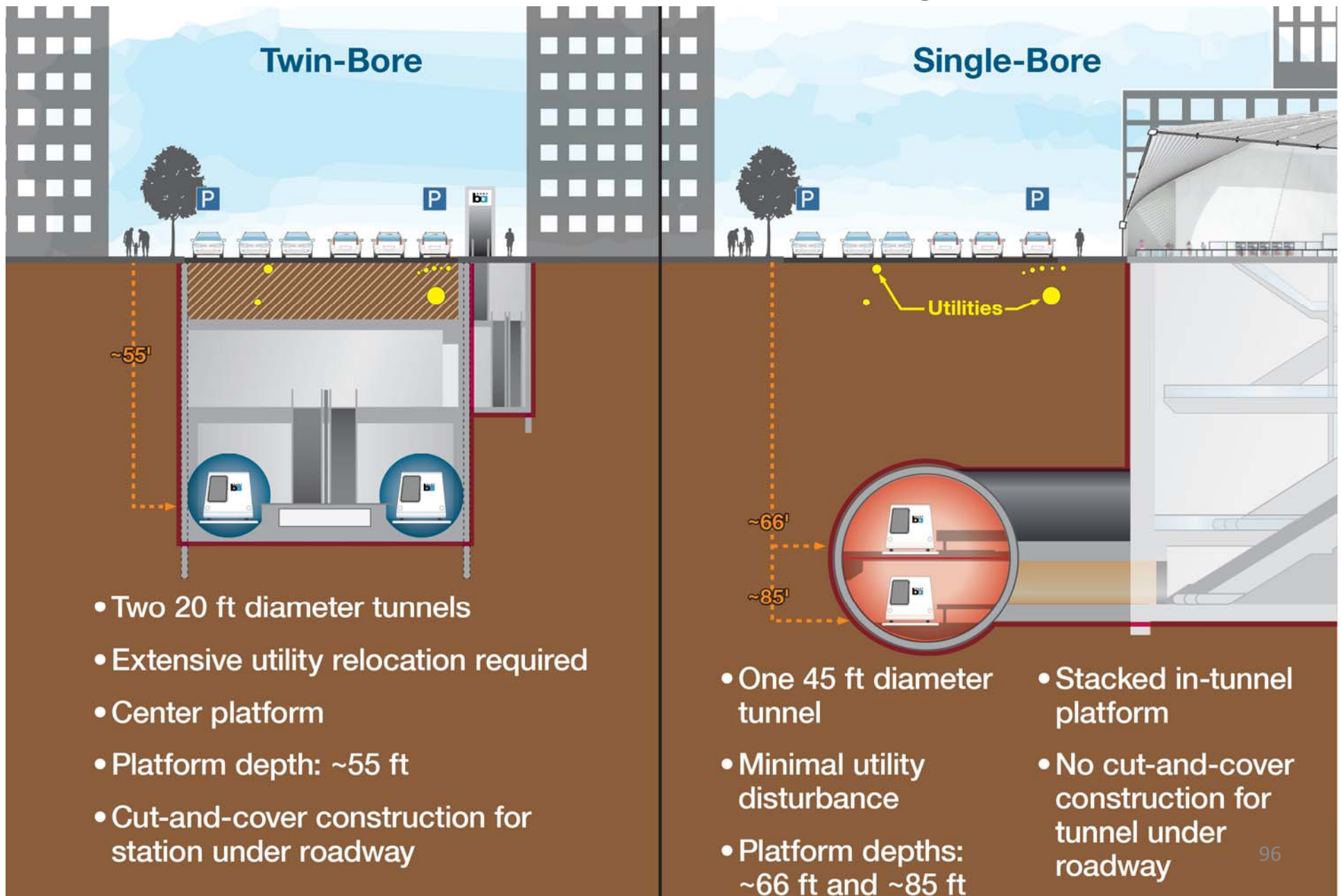
Questions?



Tunneling Options Comparative Analysis



Twin-Bore and Single-Bore Stations



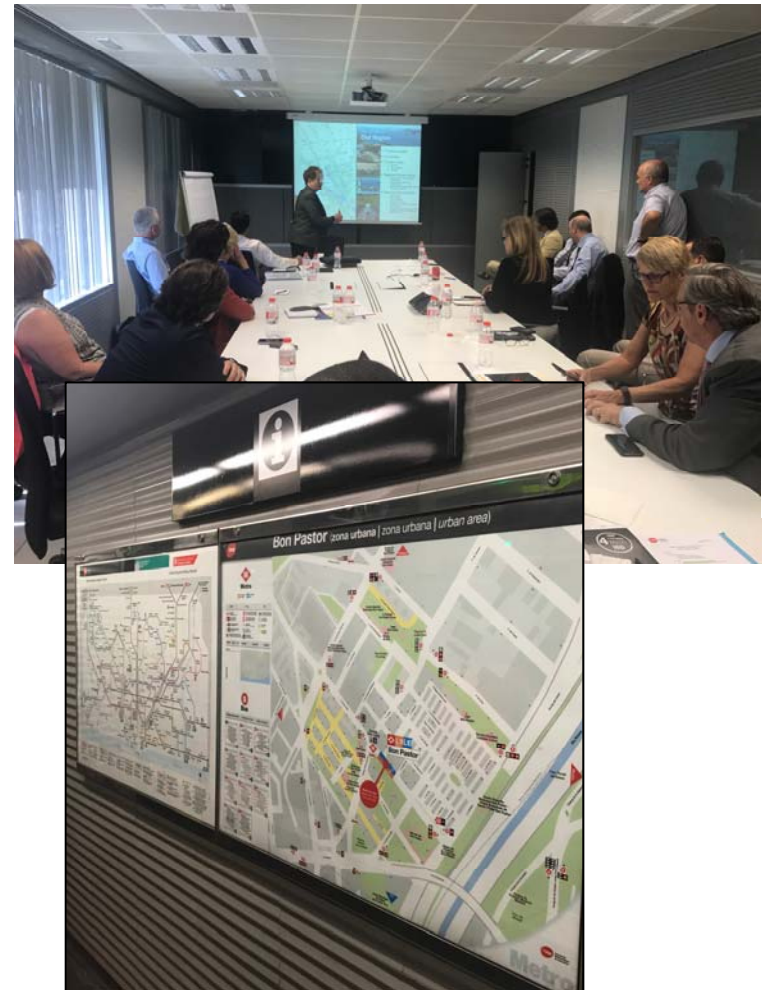
Tunneling Options Comparative Analysis

- Independent comparative analysis of tunneling alternatives under consideration
- Analysis to evaluate risks (cost, schedule, performance) associated with tunneling alternatives
- Scope of work includes:
 - Interviews with technical experts and stakeholders
 - Qualitative & quantitative assessment
 - Development of risk profiles and report
- Consultant selected by a joint VTA/BART review panel
- Analysis conducted by Aldea Services LLC, Maryland
- Results expected to be presented to the Board at the September 22nd Workshop



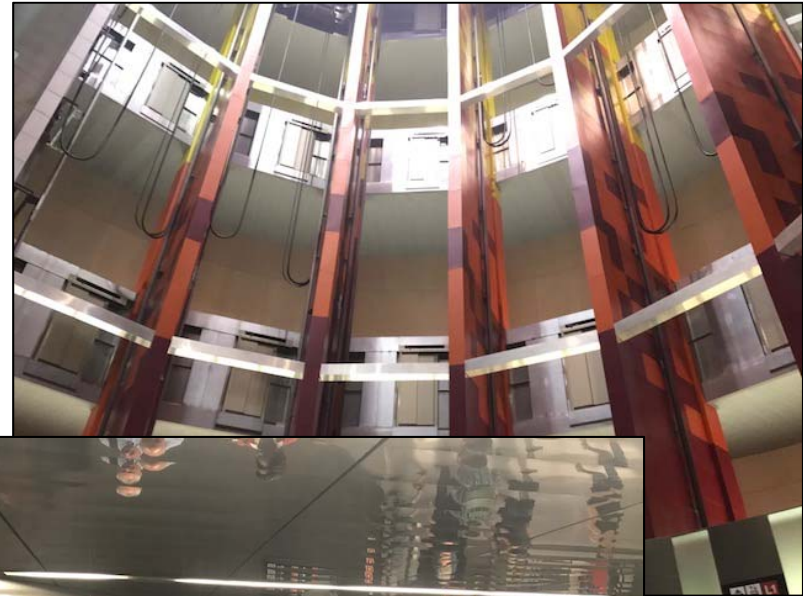
Barcelona Line 9 Metro System Tour

- Experienced the system's operations
- Topical areas discussed and lessons learned
 - Design
 - Operations & maintenance
 - Ventilation systems
 - Emergency egress
 - Vertical circulation
 - Community impacts during construction



Barcelona Line 9 Metro System Tour

Station high-speed elevator bank



Station platform within the tunnel



Delegation touring a station



Steps to Tunneling Methodology Decision

- ✓ Preliminary Analysis of Single-Bore Methodology (2015)
- ✓ Single-Bore Tunnel Technical Studies (2016)
- ✓ Tour of Barcelona's Line 9 Metro System (2017)
- ✓ Tunneling Options Comparative Analysis (2017)
- Board of Directors' Workshops and Meetings



Station platform within the tunnel

Questions?



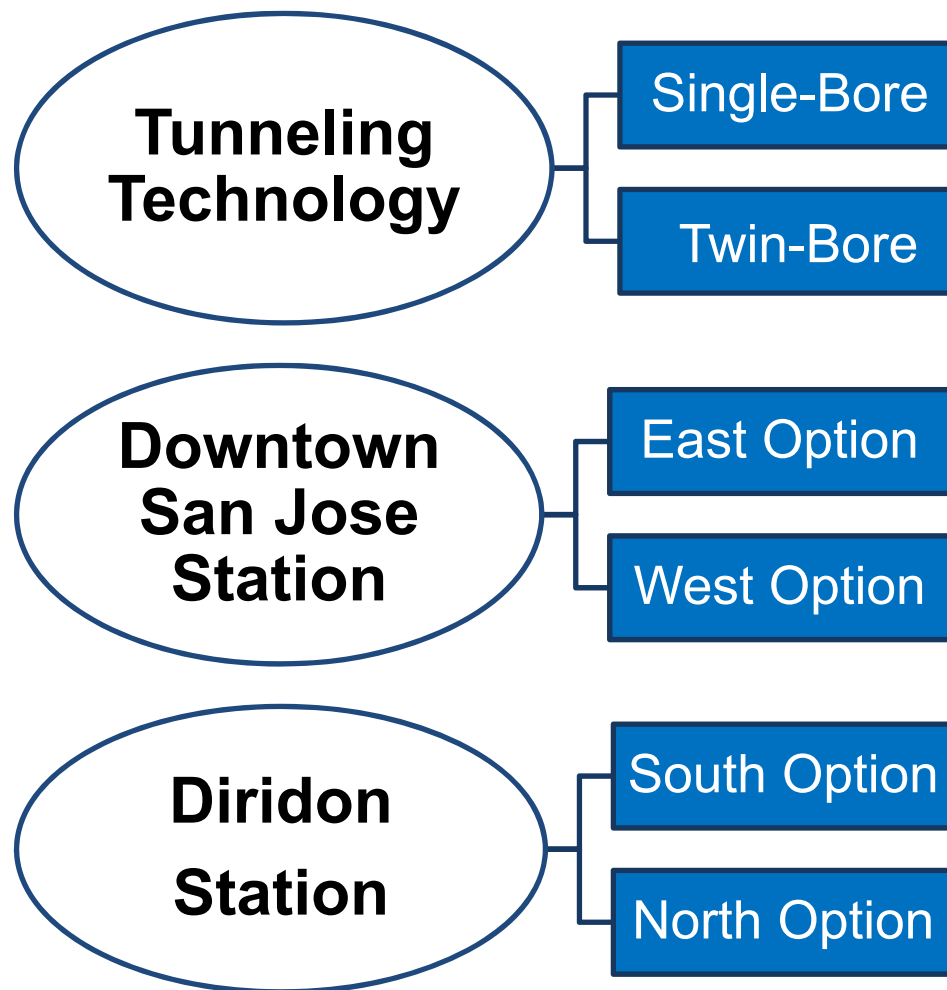
Preview September 22, 2017 VTA Board of Directors Workshop

At the September 22nd Board Workshop

- Final Results of Tunneling Options Comparative Analysis
- Draft Recommended Project Description
 - Schedule and Process
 - Options and Criteria
 - Preview of Staff Recommendation

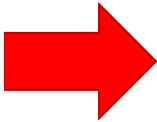


Selections for Final Project Description



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New Starts Project Development Phase Complete	March 2018



Questions?

