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To: [Downtown West Project](#)
Subject: Fw: DISC Concept Layout Info
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Attachments: [DISC Concept Layout.zip](#)

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Cc: Keyon, David <david.keyon@sanjoseca.gov>
Subject: DISC Concept Layout Info

Hi All,

In follow up to our roundtables last week, I have attached a zip file containing the City Council Memos approving Decisions 1 and 2 for the preferred layout (referred to as the "Concept Layout"), and an illustrative of the Concept Layout from DOT's presentation to City Council. In addition, the minutes are not posted yet with City Council's determination on Decision 3 from the 1/28 Study Session, but here is the link to the 2/4 City Council meeting at which that decision was to be made: <https://sanjose.legistar.com/MeetingDetail.aspx?ID=712175&GUID=42B7D295-2384-4896-AA46-B400D3F914C6&Options=info&Search=>.

I'm sending this information, so you can respond to DOT'S comment to include more information on decisions made for DISC to date.

Thanks!

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Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: John Ristow

SUBJECT: SAN JOSÉ DIRIDON STATION
INTEGRATED CONCEPT PLAN

DATE: November 22, 2019

Approved

Date

11/22/19

COUNCIL DISTRICTS: 3 & 6

RECOMMENDATION

Accept staff recommendation of the Concept Layout for the San José Diridon Station, advance the project to the next phase of development, and commit to work to develop a design for the southern rail corridor that results in noise, vibration, and visual conditions that are no worse and ideally better than today, even with higher future train volumes.

OUTCOME

A preliminary spatial layout for an expanded and redesigned Diridon Station.

BACKGROUND

When BART, commuter rail, high-speed rail, light rail, and supporting bus services converge, Diridon Station will support more high-capacity transit connections than any other place in the Bay Area. In order to plan for the substantial growth of Diridon Station, the City of San José, the Peninsula Corridor Joint Powers Board (PCJPB), Santa Clara Valley Transportation Authority (VTA), and the California High-Speed Rail Authority (the “Partner Agencies”) formed a public agency partnership via a Cooperative Agreement in July 2018.

The Partner Agencies have been working together with a consultant team led by Arcadis Design & Consultancy and Benthem Crouwel Architects (“Team ABC”) since September 2018 to develop a spatial vision for a new and expanded station. In that time, the Partner Agencies developed three different spatial layouts for the station, which are described in the attached Layout Development Report.

After considerable evaluation and interaction with the community, Team ABC and the Partner Agencies have developed a fourth spatial layout that optimizes transit and passenger needs, while

supporting future development potential. Staff now requests that the Mayor and City Council accept this recommended Concept Layout with the following three major decisions:

- **Decision #1: Elevated Station Platforms.** Elevating the tracks and platforms will allow for street-level east/west connections through the station area, which will reconnect and knit back together neighborhoods on either side of the tracks and facilitate connections for people walking, bicycling, and driving.
- **Decision #2: Two Station Entrances.** The Partner Agencies recommend two station entrance locations. One entrance at Santa Clara Street will be close to BART, light rail, bus, and other connecting modes and allow for quick transfers. The other near San Fernando Street will allow for easy connections to the bike network, creeks, existing neighborhoods, and future office and housing development.
- **Decision #3: Existing Track Approaches into the Future Station.** The Partner Agencies recommend track approaches in the existing northern and southern corridors.

The Concept Layout is preliminary and subject to further station design development and rail operations analysis. The next phase of work will refine many elements of the Layout, particularly access modes.

ANALYSIS

The Concept Layout reflects overall community preferences for elevated platforms, major station entrances near Santa Clara Street as well as easy access to the south via San Fernando Street, and short transfer times between transit modes, including BART. The layout prioritizes access to the station for pedestrians, bicyclists, and transit patrons, while also siting vehicle parking and pick-up and drop-off zones adjacent to the core station area. It creates the opportunity for grade-separated light rail through the station area, as well as space for bus stops and a future airport connection. These elements will continue to be studied and refined in the next phases of the process.

With respect to Decision 3, the Partner Agencies asked Team ABC to develop a track alignment south of the station that would include a rail viaduct structure over the I-280/87 interchange to accommodate a portion of the anticipated growth in train traffic. While constructible and operationally viable, the Partner Agencies determined that this option would expand visual and noise impacts over a larger area, potentially affecting many more people. Moreover, much of the existing and future additional rail service would remain in the existing corridor.

Remaining within the existing southern rail corridor, potential future train service will require up to four tracks, given the long-term future plans from all rail operators. The Partner Agencies believe community concerns relating to safety, noise, vibration, and visual impacts, among others, would be better addressed through tangible improvements to the existing southern

corridor rather than by creating an additional new rail corridor and thereby adding impacts to a larger area. Table 1 below summarizes the Partner Agencies' evaluation of the benefits and tradeoffs associated with accommodating projected 2040 train volumes on a new I-280 viaduct structure as compared with an upgraded existing corridor.

**Table 1 – Summary of Benefits and Trade-Offs
Existing Rail Alignment vs. the Addition of the I-280 Rail Viaduct**

Area of Concern	Existing Rail Alignment in 2040	Existing Rail Alignment Plus I-280 Rail Viaduct Addition in 2040
Train volumes	Overall increase	Overall increase
Neighborhoods affected	Same as today	Same as today plus additional neighborhoods
Infrastructure footprint	Modest increase	Significantly greater footprint
Noise and vibration	Increase expected	Increase expected to affect more areas and more people
Visual impact	Modest	Significant visual changes to areas around structures
Environmental effects	Some	Significantly greater, especially along Guadalupe River
Maintenance implications	Modest	Much higher

Pages five and six of the attached joint Partner Agency memorandum include a number of tangible improvements that the Partner Agencies will pursue in the next phases of planning to the southern track approach into the station in close consultation with the affected communities, including:

- Grade separations keeping people and vehicles away from train traffic while maintaining good local connectivity and access;
- Sound and vibration dampening treatments for tracks;
- Aesthetic and functional treatments like sound walls with added landscaping (“green walls”) or other attractive, maintainable coverings;
- Optimize design to minimize the need to demolish existing buildings and/or acquire land; and
- Fuller Park as a permanent, city-owned park with high-quality landscaping and other amenities to be determined through a community-based process.

In addition, the Partner Agencies will work to develop appropriate metrics that will enable tracking and monitoring of these goals and conditions over time.

The goal of these improvements is to improve the quality of life in the neighborhoods adjacent to the tracks, including Gregory, Gardner, and North Willow Glen, even as the corridor accommodates increasing volumes of train traffic.

At the November 15, 2019 Diridon Joint Policy Advisory Board meeting, Board members Davis and Peralez requested that the December 3, 2019 City Council presentation include more information about specific elements, including:

- Anticipated train service/volumes along the rail corridor
- More detail regarding the I-280 viaduct alternative, including the implications of putting all trains on the viaduct and for Tamien Station
- Estimated property impacts along the rail corridor, including at Fuller Park

Staff is organizing the requested information, which will be posted along with the other presentation materials in advance of the City Council meeting.

CONCLUSION

The Partner Agencies believe that this Concept Layout combines the station elements with the most promise to meet the project objectives and should be advanced to the next stage of project development, analysis, and definition.

EVALUATION AND FOLLOW-UP

The Partner Agencies will continue to provide periodic updates to the Transportation and Environment Committee and/or City Council at key milestones in the Concept Plan's development.

CLIMATE SMART SAN JOSE

The recommendation in this memo aligns with one or more Climate Smart San José energy, water, or mobility goals.

PUBLIC OUTREACH

The Partner Agencies have conducted five community meetings, including a Spanish-language meeting, three presentations to the City's Station Area Advisory Group (SAAG), three pop-up booths at Diridon Station and community events, an online survey, and additional meetings with stakeholder groups and neighborhood associations. In addition, the Partner Agencies have presented and received important feedback from the Diridon Joint Policy Advisory Board

November 22, 2019

Subject: San José Diridon Station Integrated Concept Plan

Page 5

(JPAB) at five meetings. The community input has informed the Partner Agencies' work throughout the Phase 1 process, which has culminated in a single, optimized layout – the DISC Concept Layout. The Partner Agencies presented staff's recommended layout to the Diridon JPAB on November 15 at 3:00 at VTA's Auditorium, 331 North First Street, San Jose.

Additionally, the project team will present staff's recommended layout to the four Partner Agency policy bodies at the following public meetings:

- San Jose City Council: Tuesday, December 3
- Caltrain Board of Directors: Thursday, December 5
- VTA Board of Directors: Thursday, December 5
- California High-Speed Rail Authority Board of Directors: Tuesday, December 10

More information is available at the project website: www.diridonsj.org/disc.

COORDINATION

This memorandum has been coordinated with the City Manager's Office and City Attorney's Office.

COMMISSION RECOMMENDATION/INPUT

No commission recommendation or input is associated with this action.

CEQA

Not a Project, File No. PP17-009, Staff Reports, Assessments, Annual Reports, and Informational Memos that involve no approvals of any City action.

/s/
JOHN RISTOW
Director of Transportation

For questions, please contact Eric Eidlin, DOT Station Planning Manager, at (408) 795-1638.

Attachment A – Partner Agency Report
Attachment B – Layout Development Report

SUBJECT

This memo presents the Staff Recommendation of a spatial layout for the San José Diridon Station.

BACKGROUND

When BART, commuter rail, high-speed rail, light rail, and supporting bus services converge, Diridon Station will support more high-capacity transit connections than any other place in the Bay Area. In order to plan for the substantial growth of Diridon Station, the City of San José, the Peninsula Corridor Joint Powers Board (PCJPB), Santa Clara Valley Transportation Authority (VTA), and the California High-Speed Rail Authority (the “Partner Agencies”) formed a public agency partnership via a Cooperative Agreement in July 2018. The Partner Agencies hired a consultant team led by Arcadis and Benthem Crouwel Architects (“Team ABC”) to aid in preparing of the Diridon Integrated Station Concept Plan (“Concept Plan”).

The eventual outcome of the Concept Plan process will be a project description for the future intermodal hub and an organizational framework for carrying the project forward toward implementation. Over the past year, the Partner Agencies worked to develop the spatial layout for the future station that included completing supporting analyses. Staff is presenting a recommended spatial layout to the Diridon Joint Policy Advisory Board for input and advice. Staff is recommending that the policy boards and/or executive management of the four Partner Agencies accept the Concept Layout for further development in coordination with the related Partner Agency planning processes and projects.

The Concept Layout is preliminary and subject to further station design development and rail operations analysis. This memo summarizes the Layout Development Report prepared by the Partner Agencies that describes the process for developing the staff-recommended Concept Layout. For the Layout Development Report and additional background information, please refer to the project website: www.diridonsj.org/disc.

INTEGRATED CONCEPT PLAN TOPICS

The Concept Plan spatial layout planning process thus far addresses the following topics:

- Alignment and vertical profile of the heavy rail tracks at the station, as well as track approaches into the station from the north and the south.
- Location of passenger rail concourse(s) and heavy rail passenger platforms.
- Integration of all high-capacity modes at the station, including commuter and intercity rail, BART, light rail, local bus, and a future airport connector.
- Pedestrian and bicycle access to and through the station, as well as facilities for emerging modes of “micro-mobility” such as e-scooters.
- Facilities for other access modes and private vehicles, including long-distance bus, private shuttles, taxi, transportation network companies (TNC), kiss-and-ride, and park-and-ride.

- Urban integration (i.e., the connection between the station, track infrastructure, and surrounding neighborhoods and potential for amenities, such as plazas and community gathering space).

SUMMARY OF THE PROCESS

Team ABC began work on the Concept Plan with a series of interviews with the Partner Agencies. In these interviews, ABC learned about the existing context, history related to the Diridon Station area (including many years of public involvement), and each agency's project goals, design criteria, and operational requirements. This information set an important foundation in the concept planning process. Based on work, the Partner Agencies developed eight key objectives:

- A Multi-Modal, Integrated, and Human-centered Station
- The Station as Catalyst for the Urban Environment
- The Station as a Destination
- A Futureproof, Flexible, Adaptive, and Innovative Station
- Organizational Partnership
- Internal & External Stakeholder engagement
- Funding Objectives and Risk Management

Subsequently, Team ABC facilitated a series of interdisciplinary, interactive workshops with technical experts from each Partner Agency. The workshops occurred on a monthly basis. During this process, Team ABC and the Partner Agencies developed an iterative series of work products - going from a wide range of ideas for each of the station elements to ultimately the staff-recommended layout. Along the way there were many potential combinations of station elements, three possible layouts, and a fourth layout that was based on optimizing the design to maximize benefits and reduce impacts to the community and developable land based on the feedback received from engaged stakeholders and the public.

An important component of this process focused on the Big Moves of the station layout: a) vertical configurations for the heavy rail corridor and station platforms; b) the location of the future station concourse; and c) the track approaches from the north and the south into the future station. These three Big Moves have been the focus because they are the least flexible and the way in which these heavy infrastructure elements are configured will have profound effects on urban integration. These moves create an infrastructure solution to support the next 100 years of rail service.

Community Engagement

Concurrent with the workshops led by Team ABC, the Partner Agencies conducted four rounds of public outreach to share information and gather community input for consideration as part of the technical process. Community engagement is of utmost importance to the Partner Agencies to ensure that the future station realizes the ambitions of the community members and station

users while also meeting regional and statewide transportation goals. The outreach rounds corresponded to major milestones in the process. The purpose of each outreach round was as follows:

1. **Introduce** the project and gather feedback on the initial vision for the station and key objectives for the process.
2. **Present and obtain feedback** on preliminary concepts related to the vertical position of the platforms and station location as well as a draft evaluation framework for assessing design options under development.
3. **Present and obtain feedback** on three possible layouts for the station.
4. **Further explore** the Big Moves and present a fourth possible, optimized layout.

The Partner Agencies have conducted five community meetings, including a Spanish-language meeting, three presentations to the City's Station Area Advisory Group (SAAG), three pop-up booths at Diridon Station and community events, an online survey, and additional meetings with stakeholder groups and neighborhood associations. In addition, the Partner Agencies have presented and received important feedback from the JPAB at four meetings.

Based on this outreach, the top priority voiced by community members is designing the station to foster easy, convenient, well-timed connections between modes, particularly a short, direct, and intuitive connection between the BART platforms and the platforms for the other heavy rail services. Other general themes that are important to the community relate to:

- Identity as a local and regional destination
- Station access, both easy connections within the station as well as getting to the station from around San Jose
- Transit service improvements
- Street, pedestrian, and bicycle connectivity
- Activity center oriented near Santa Clara Street
- Create neighborhood quality of life
- Vibrant indoor and outdoor public spaces
- Effects on the historic depot building
- Concerns around the use of the existing southern corridor
- Potential for future transit-oriented development
- Parking and traffic
- Environmental sustainability
- Social equity
- Fiscal responsibility

These themes and the specific community input informed the Partner Agencies' work throughout the concept design process and have been reflected in the staff-recommended Concept Layout. The following section describes the Concept Layout that staff is recommending for advancement. For additional information about the community engagement process and the themes from input received, please refer to Chapter 6 of the Layout Development Report.

THE CONCEPT LAYOUT

Stakeholder and community input and ongoing technical work led to the creation of an optimized fourth layout that attempted to take some of the best features of each of the other layouts and respond to much of the feedback received. The recommended Concept Layout creates two concourses – one facing Santa Clara Street and one facing San Fernando Street. The platforms and tracks are elevated, and it utilizes the existing northern and southern track alignments.

Decision #1: Elevated Station Platforms

The Partner Agencies included an elevated station concept in the Concept Layout. Elevating the tracks and platforms brings significant benefits in the station area in terms of urban integration and allows pedestrians, cyclists, and vehicles to pass underneath the tracks at street-level. This will knit together the neighborhoods to the east and west of the tracks. It also creates a significant amount of street-level space that can be used to house station facilities as well as storefronts and workspace to enliven the street in the station area. Elevating the tracks may present construction and phasing challenges and also requires complex trackwork both north and south of the station to reconnect to the rail network. While complicated, the Partner Agencies believe elevating the station will be worth the benefits derived from connecting neighborhoods, improving the streetscapes around the station, and improving safety through new grade separations. The Layout Development Report offers further details regarding the technical analysis and conclusions for the vertical configuration of tracks and platforms.

Decision #2: Station Entrances at Santa Clara Street and San Fernando Street

The Partner Agencies recommend two main concourses with four station entrance locations in the Concept Layout. One concourse is oriented toward Santa Clara Street with entrances both on the east and west sides of the station, and one concourse is oriented toward San Fernando Street with entrances both on the east and west sides of the station. It is estimated that more than 60 percent of passengers will use the northern entrance, while as many as 40 percent will use the southern entrance. The northern station hall will create a center of gravity that would promote pedestrian activity and reinforce Santa Clara Street's role as the main route to and through downtown San José. The southern station hall will allow for easy connections to the bike network and creeks and trails. This layout places BART, light rail, and VTA buses close to each other near the core of the station, which allows for efficient transfers between modes. Finally, both station halls are envisioned to feature iconic design and outdoor public space to provide increased visibility, intuitive wayfinding, and a dynamic public realm. The Layout Development Report offers further details regarding the technical analysis and preliminary conclusions for station entrances, plazas, and intermodal hub elements.

Decision #3: Existing Track Approaches into the Future Station

The Partner Agencies recommend maintaining the track approaches that generally stay within the existing northern and southern corridors. This will leverage existing rail corridor infrastructure, minimize overall community impact, and minimize the need to acquire significant land. However, in making this recommendation, the Partner Agencies want to maintain the quality of life in the neighborhoods along the tracks. Specifically, the Partner Agencies commit to work to develop a design that results in noise, vibration, and visual conditions that are no worse and

ideally better than today, even with higher future train volumes. The Layout Development Report provides additional technical analysis that underpins this recommendation.

Northern Track Approach

Layout configurations explored early in the concept plan process showed significant property impacts to land intended for transit-oriented development north of Santa Clara Street. In response, the Partner Agencies asked Team ABC to develop an alignment north of the station that would support expanded future rail service while minimizing the need to acquire land. In order to accomplish these goals, ABC shifted the station platforms to the south and developed a northern track approach that impacts less property. The resulting alignment supports related Partner Agency planning projects, including the Caltrain Business Plan and implementation of the Diridon Station Area Plan (DSAP).

Southern Track Approach

Early in the Concept Plan process, the Partner Agencies asked Team ABC to develop a track alignment south of the station that would include a rail viaduct structure over the I-280/87 interchange. Team ABC designed a viaduct option determined to be constructible and operationally viable. However, upon further study, it became clear that this option would not address as many issues as the Partner Agencies and community hoped and would actually create new concerns. First, the viaduct would create a second rail corridor in the Gardner area without reducing the overall volume of train traffic along the existing rail corridor. This would spread visual and noise impacts over a larger area and affect many more people. It would also introduce substantial track infrastructure to previously unaffected neighborhoods, particularly those on the east side of SR-87. Second, the I-280 viaduct infrastructure would have a sizable footprint, decrease the amount of developable land available within the station area, and would affect the Guadalupe River corridor.

The Partner Agencies believe that community concerns relating to safety, noise, vibration, and visual impacts, among others, would be better addressed through tangible improvements to the existing southern corridor rather than by creating an additional new rail corridor that would be expensive to build and maintain. With these tangible improvements, the Partner Agencies believe that with proper design and investment the rail corridor can coexist with the communities along the corridor, including Gregory, Gardner, and North Willow Glen, and accommodate increasing train traffic without having a negative impact on the quality of life in those neighborhoods. To this end, the Partner Agencies recommend working on and evaluating the following strategies, plans and associated measurements, in close consultation with the affected communities, in the next phases of planning:

- Grade separations keeping people and vehicles away from train traffic while maintaining good local connectivity and access;
- Sound and vibration dampening treatments for tracks;
- Aesthetic and functional treatments like sound walls with added landscaping (“green walls”) or other attractive, maintainable coverings;

- Optimize design to minimize the need to demolish existing buildings and/or acquire land; and
- Fuller Park as a permanent, city-owned park with high-quality landscaping and other amenities to be determined through a community-based process.

In addition, the Partner Agencies will work to develop appropriate metrics that will enable tracking and monitoring of these goals and conditions over time.

DECISION SUMMARY

In summary, the Concept Layout reflects overall community preferences for elevated platforms, major station entrances near Santa Clara Street as well as easy access to the south via San Fernando Street, and short transfer times between transit modes (including BART). It also creates the opportunity for grade-separated light rail through the station area and conveniently located bus stops. The layout prioritizes pedestrian, bicyclist, light rail, and local bus access, while accommodating intercity bus and vehicle drop-off and pick-up zones adjacent to the core station area. These elements will continue to be studied and refined in the next phases of the process. The layout places entrances in visible locations to support an iconic station design and “natural” wayfinding, and also includes space for a future airport connection. The Concept Layout optimizes future transit needs, while supporting future development potential. The Partner Agencies believe that this Concept Layout combines the station elements with the most promise to meet the project objectives and should be advanced to the next stage of analysis and definition.

NEXT STEPS OF THE CONCEPT PLAN

A key focus of this phase of work was to organize the necessary elements for an iconic, integrated intermodal transit center into a spatial layout. The Partner Agencies first had to organize the elements physically to understand potential impacts to the functionality of the station. This is a foundation for the Partner Agencies to now build on. The next step to advance the Concept Layout is to continue planning, analysis of rail operations, and conceptual design work on the rail corridor and station facilities to better understand and refine the benefits and tradeoffs of each component of the layout. Some elements, including but not limited to, the bus and VTA light rail layouts, may evolve during the continued planning and design process. The Partner Agencies recognize that the development of the future Diridon Station is a long-term, multi-year program.

Over the next year, a critical planning focus will be on studying the best options to organize the Partner Agencies and technical expert teams, building a viable financial plan, developing environmental strategies, and designing an implementation path to build and govern the future station. The conceptual design work will result in updated conceptual engineering drawings to define the Concept Layout, capital cost estimates, conceptual construction sequencing passenger flow analysis, and refined station footprint. There are many critical decisions ahead and the next course of work will focus on how to take the spatial vision of the Concept Layout forward through project development sufficient for environmental evaluation, and eventually implementation.

In addition to the technical work on the layout, the Partner Agencies plan to continue community and stakeholder engagement. The design and implementation strategy work will be conducted in close coordination with interdependent project efforts happening around the station area, including the Diridon Station Area Plan (DSAP) and Google's proposed "Downtown West" mixed-use development project.

The Partner Agencies continue to be committed to the partnership set forth by the Cooperative Agreement.

ADDITIONAL INFORMATION

Additional information on the Concept Plan, including the Layout Development Report and Frequently Asked Questions, can be found on the project website at www.diridonsj.org.



Acknowledgements

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Table of Contents

I. INTRODUCTION	4	6. SUMMARY OUTREACH	41
1.1 Project Purpose.....	5	6.1 Overview of Outreach Rounds	42
1.2 Project Overview	5	6.2 Key Themes	42
1.3 Existing Conditions	6	6.3 Feedback on Draft Layouts	44
1.4 Report Outline.....	8		
2. STUDY PROCESS	9	7. LAYOUT OPTIMIZATION AND	
2.1 Ambitions and Requirements	10	ADVANCEMENT	46
2.2 Elements.....	11	7.1 Heavy Rail	48
2.3 Heavy Rail Options	11	7.2 Station Hall, Concourses, and Public Square ..	49
2.4 Six Draft Layouts.....	13	7.3 Bike Parking.....	51
2.5 Three Layouts.....	13	7.4 Light Rail.....	51
2.6 Concept Layout.....	13	7.5 VTA Bus	51
2.7 Community Outreach		7.6 Intercity Buses	52
and Stakeholder Engagement	13	7.7 BART	52
		7.8 Curb Space for Pick up/Drop off modes.....	52
3. LAYOUT DESCRIPTIONS	15	8. NEXT STEPS	53
3.1 Layout Development Inputs.....	16		
3.2 Layout At Grade West San Fernando Street ..	17	APPENDIX A: ACRONYMS AND TERMINOLOGY	
3.3 Layout Elevated West Santa Clara Street	20	APPENDIX B: LAYOUT DRAWINGS	
3.4 Layout Elevated Stover Street	23	APPENDIX C: LAYOUT SKETCHES	
3.5 Cost Estimates.....	26	APPENDIX D: COMMUNITY MEETING	
4. LAYOUT EVALUATION		SUMMARIES	
METHODOLOGY	28		
4.1 Evaluation Criteria.....	28		
4.2 Ratings	32		
5. JOINT EVALUATION RATINGS.....	33		
5.1 Rating Visual.....	33		
5.2 Evaluation Justifications	35		
5.2.1 Future-Proofing &			
Operational Efficiency.....	35		
5.2.2 Multimodal Integration.....	36		
5.2.3 Access	36		
5.2.4 Urban Integration	37		
5.2.5 Development Potential	38		
5.2.6 Community	39		
5.2.7 Local Environment.....	40		



I. INTRODUCTION

SAN JOSÉ DIRIDON STATION IS LOCATED AT the western edge of downtown San José, which is the nation's 10th largest city, with a population of more than 1 million. San José is a thriving community that continues to experience significant growth, densification, and urbanization, contributing to its vibrancy and regional, national, and international significance. Within San José and the region, Diridon Station serves as a key transportation hub, connecting several modes and services.

Just as the city is transforming, so, too, is San José's transit network. Between 2025 and 2040, the existing transit network will be expanded to include two new passenger rail services – Bay Area Rapid Transit (BART) and California High-Speed Rail – and will be enhanced by the electrification and modernization of Caltrain. These new services will blend with existing bus and rail services, which include Caltrain, Capitol Corridor, Altamont Corridor Express (ACE), Amtrak, and Santa Clara Valley Transportation Authority (VTA) bus and Light Rail. In addition, substantial public and private development in downtown San José will bring thousands of new workers, residents, and visitors to the area. This is likely to make Diridon

Within San José and the region, Diridon Station serves as a key transportation hub, connecting several modes and services.

Station one of the busiest intermodal stations in California, with a projected 100,000-plus daily passengers by 2040.¹

Recognizing the station's potential, four Partner Agencies, VTA, City of San José, Caltrain, and the California High-Speed Rail Authority (CHSRA), have joined together in a cooperative partnership to develop the Diridon Integrated Station Concept Plan (the Concept Plan). The Concept Plan will broadly identify the future spatial layout of the station, the intermodal hub, integration with the surrounding community, and an organizational framework to deliver the vision. The project scope includes not only the redevelopment of the station and upgrading of transit infrastructure, but also focuses on transit-oriented

¹ Projections were forecasted using the 2019 VTA Travel Demand Model for San José Diridon Station and includes the following modes: CHSRA, Caltrain, BART, Light Rail Transit, Bus, Amtrak, and ACE.



The four Partner Agencies

development and establishing the station as a destination for transportation, retail, housing, employment, and entertainment. The transformation of Diridon Station into a world-class multimodal transit hub will establish the station as a major gateway to Silicon Valley.

1.1 Project Purpose

To support economic development, vibrancy, and future growth in San José, the four Partner Agencies are making valuable investments in transportation enhancements and expansion of Diridon Station. As part of this investment, the Partner Agencies initiated development of the Concept Plan to establish a unified vision for combining transportation and land use components into a single station project. The Partner Agencies will work together to realize this vision by moving the project forward over the course of several phases. The purpose of this report – the Layout Development Report – is to summarize the collaborative and iterative design process employed during Phase 1.

1.2 Project Overview

To create a transformative spatial layout for San José Diridon Station, the Partner Agencies engaged an internationally acclaimed design team of engineers, architects, and city planners from Arcadis and Bentham Crouwel Architects (the Study Team) to assist with development of the Concept Plan.

The technical design component of the Concept Plan will establish (1) the transportation infrastructure to provide capacity for future, expanded transit services, (2) an optimal physical rela-

tionship between transportation modes, and (3) a balanced relationship between the station and surrounding neighborhoods. This will frame the vision for what the station will become over time. The Concept Plan will focus on the functionality of the station, rather than its architectural appearance. Later phases of work will include detailed design and engineering, as well as environmental review. The general study area for the track alignment of the Concept Plan is Taylor Street in the north to Tamien Station in the south.

The Study Team guided the Partner Agencies through an intensive design process that began by identifying the elements of the intermodal hub. Subsequently, the Study Team and the Partner Agencies together combined these elements to create a multitude of potential layouts. The Partner Agencies thoroughly vetted the layouts to assess the benefits and tradeoffs of each. This process led to refinement of the layouts to create a layout that holds the most promise in fulfilling the Concept Plan's key objectives. The development of a spatial layout for Diridon Station was, and continues to be, an iterative process.

Table 1 includes terminology commonly used throughout this report and other project documentation. Appendix A contains a full list of terminology and acronyms used in this report.

Table 1: Project Terminology

Project Terminology	
Elements	The building blocks of the station and the surrounding intermodal hub used to create layouts. Together, all of the elements are commonly referred to as the “Kit of Parts.”
Heavy Rail Options	A combination of alternatives for the four heavy rail components, which are commonly referred to as “Big Moves”: 1) Vertical Platform Position 2) Horizontal Platform Position 3) North Track Alignment 4) South Track Alignment
Layout	A combination of all elements that create a conceptual design of the station and intermodal hub.
Evaluation	A comprehensive review process based on a variety of criteria to assist in narrowing down the number of possible layouts.
Concept Layout	A comprehensive review process based on a variety of criteria to reduce the number of possible layouts.

1.3 Existing Conditions

San José Diridon Station serves as a major transit hub for Santa Clara County and Silicon Valley, with an approximated 17,000 daily passengers. Diridon Station is located directly across from the SAP Center, a major sports and entertainment venue, and faces east toward downtown San José. The urban context surrounding the station is highly varied. The eastern side of the station is primarily dominated by surface parking lots and low-intensity light industrial uses. The western side of the station, by contrast, is home to several small-scale pedestrian-oriented neighborhoods, including Cahill Park. However, the railroad tracks and other infrastructure hinder east-west non-vehicular movement. The existing layout of the Diridon Station and surrounding relevant points of interest are illustrated on Figures 1 and 2.

The current focal point of Diridon Station is the historic depot building. Constructed in 1935 and restored in 1994 after sustaining significant damage from the 1989 Loma Prieta Earthquake, the depot runs parallel to the tracks and connects to

a narrow underground concourse that provides access to the platforms. Figure 2 shows the location of the station in relation to downtown and nearby points of interest.

Currently, the station is served by a multitude of rail and bus services. The station includes nine heavy rail tracks, which primarily run at grade along a north-south axis and are primarily used by diesel commuter and freight trains. The station has nine platform faces, all of which are 8 inch-

Diridon Station Facts



Opened in 1935



Major transit hub for the Bay area



17,000 daily passengers

es above the top of the rails and vary in length from 740 feet to 1,255 feet. Diridon Station and the rail corridor are owned by the Peninsula Corridor Joint Powers Board (PCJPB), which operates the Caltrain commuter rail service along the existing alignment of the heavy rail tracks to the north and south, and through Diridon Station. The light rail (or LRT) tracks, which are owned and operated by VTA, run parallel to the heavy rail tracks along the western edge of the station and shift to the east underneath the station, running toward downtown.

A semi-circular driveway in front of the station allows for pick-up and drop-off of passengers using taxis, transportation network companies (TNCs), company shuttles, and private vehicles. The current configuration of the driveway limits the num-

ber of vehicles to roughly eight. The VTA bus stop is also near the current station building, and intercity buses utilize curb space in front of the station. The parking lot to the east of the station, which is generally full, has a total of 581 parking spaces. During workdays, this parking lot is primarily used by passengers, while during evenings and weekends, it is used by SAP Center customers. Bicyclists can reach the station via several bicycle routes, including a route from downtown across West San Fernando Street and via the Guadalupe Trail from the south, east, and north. There are three locations for bicycle parking at the station, with a total of 16 rack spaces near the entrance, 48 keyed lockers inside the station, and eight electronic lockers west of the station.

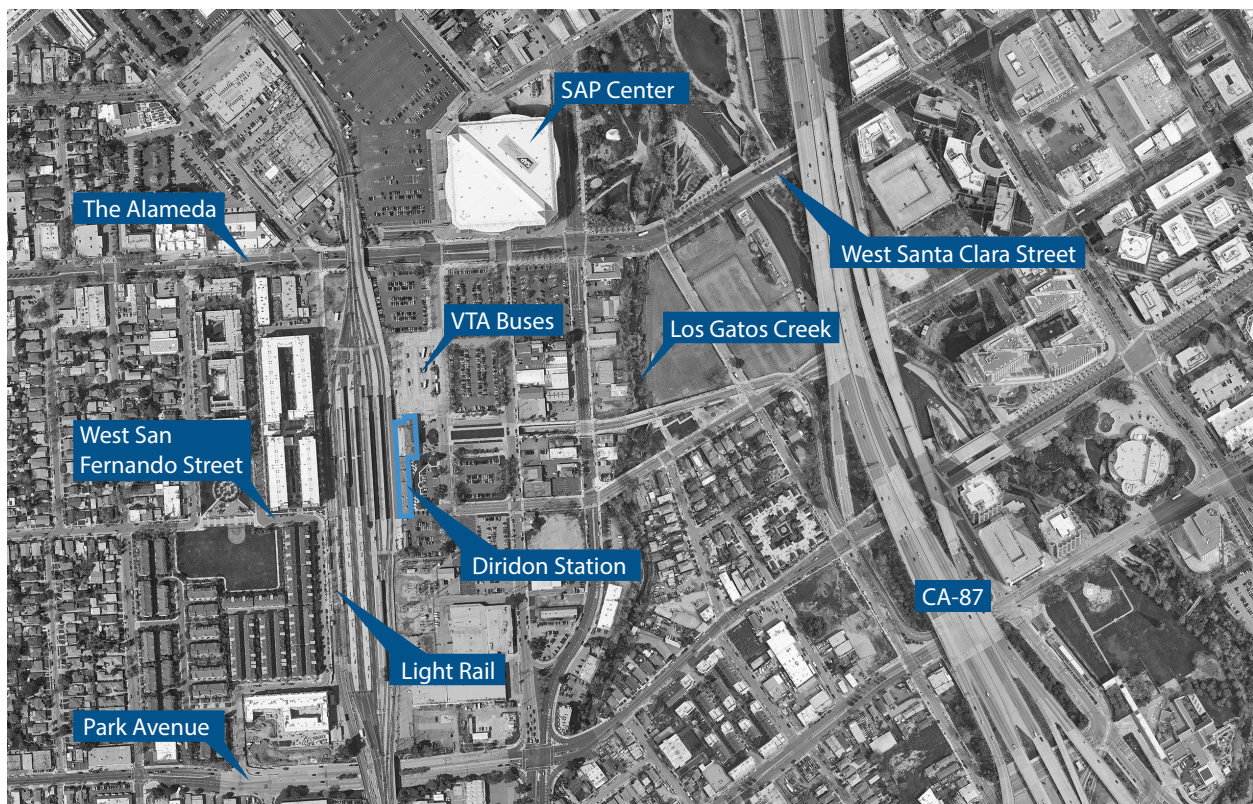


Figure 1: Existing Conditions at Diridon Station



Figure 2: Existing Conditions at Diridon and Surrounding Area

I.4 Report Outline

The remainder of the Layout Development Report includes the following sections:

Section 2: Study Process – A chronology of how station components were identified, combined, and evaluated to develop spatial layouts and ultimately, a Partner Agency recommended layout — the Concept Layout.

Section 3: Layout Descriptions – A detailed description of the three layouts and justifications for the placement of each element.

Section 4: Layout Evaluation Methodology – An overview of the evaluation framework developed by the Partner Agencies.

Section 5: Joint Evaluation Ratings – A comprehensive evaluation of the three layouts using the evaluation framework.

Section 6: Summary Outreach – A summary of the four rounds of outreach completed during Phase 1.

Section 7: Layout Optimization and Advancement – A detailed description of the Concept Layout.

Section 8: Next Steps – Overview of Phase 2 activities.



Section 2

2. STUDY PROCESS

THE STUDY PROCESS FOR THE CONCEPT PLAN includes a comprehensive and iterative series of meetings and workshops. All of the tasks completed in Phase 1 have contributed to the Concept Layout, which is the layout that the Partner Agencies recommended for advancement. Figure 3 summarizes the five primary milestones of the study process and the documentation that has been produced throughout Phase 1. Each study process milestone is described in more detail in the following sections.

At the commencement of Phase 1, the Partner Agencies and Study Team participated in several kickoff workshops, meetings, and individual interviews to establish the key objectives and design and engineering requirements for the project (outlined in the Ambitions and Requirements Report). The project objectives and requirements served as the foundation for the development of layouts.

After establishing the project ambitions and requirements, the Study Team and Partner Agencies began the technical study process. The Partner Agencies and Study Team used the ambitions and requirements to create layouts and evaluate each layout's ability to achieve the project objectives. The Partner Agencies began by identifying

The Concept Layout is the layout that the Partner Agencies recommended for advancement.

the elements (defined in Table 1) to use in drafting layouts. Next, the Study Team combined different options for each element to create a diverse set of layouts. This activity helped to illustrate a multitude of potential layouts for the future station and intermodal hub.

The layouts were then vetted through three separate processes – first through the assessment of heavy rail performance, then through screening the benefits and tradeoffs of draft layouts, and finally through a qualitative evaluation. These evaluations allowed the Study Team and Partner Agencies to continually refine the number of possible layouts and establish the Concept Layout, which is recommended to be advanced for Diridon Station. The reports listed at the top of Figure 3 – the Ambitions and Requirements Report, the Heavy Rail Assessment Report, and the Sce-

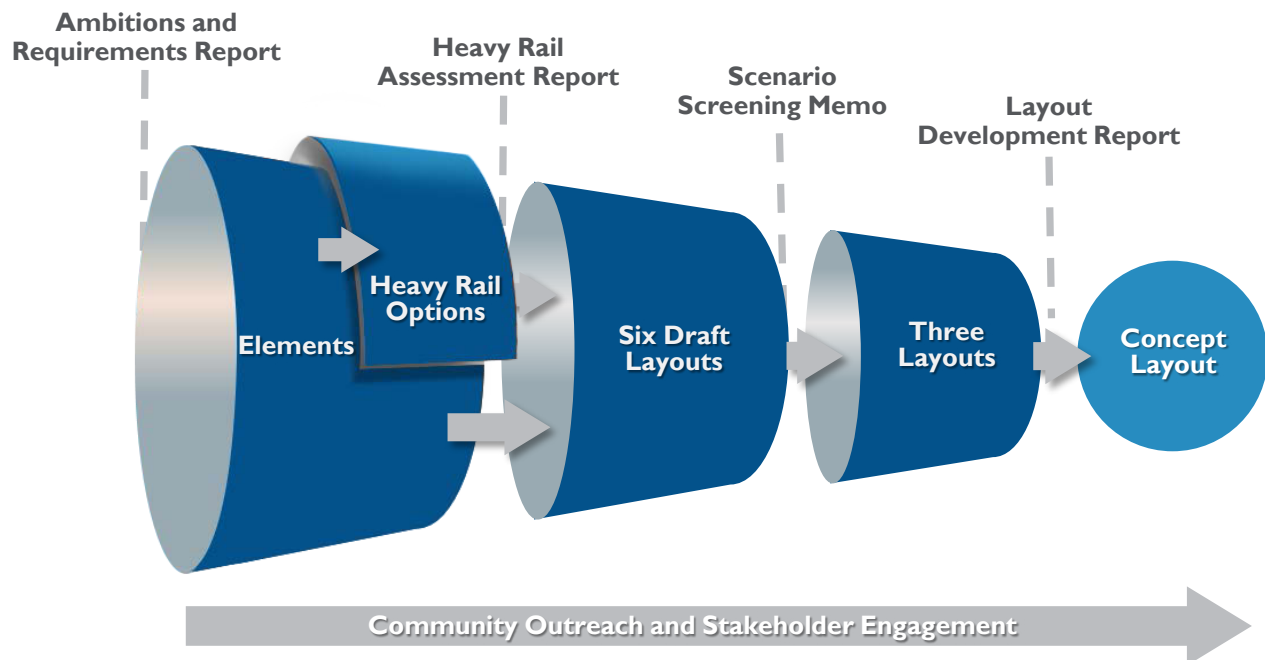


Figure 3: The Concept Plan Study Process for Phase One

nario Screening Memo² – contain detailed summaries and results of the first three milestones of the study process. This report, the Layout Development Report, provides the details of the three possible layouts and the optimization process that led to the development of the Concept Layout.

2.1 Ambitions and Requirements




Through a variety of collaborative workshops, interviews, meetings, and coordination with the Partner Agencies, an Ambitions and Requirements Report was developed to establish a foundation for the study process and to guide the development of the possible spatial layouts for San José Diridon Station. The Ambitions and Requirements Report established the key objectives, or ambitions, for the spatial layouts and the Client Requirement Specifications (CRS), which include mandatory design and engineering requirements and the Partner Agencies' priorities for the station and intermodal hub.

The Partner Agencies established five key objectives as “guiding principles” for the design and engineering aspects of the station and intermodal hub.

To guide the development of the spatial layouts for San José Diridon Station and the intermodal hub, the Partner Agencies established five key objectives as “guiding principles” for the design and engineering aspects of the station and intermodal hub. These key objectives also guided the development of the evaluation framework (discussed in Section 4).

² The term “scenario” is synonymous with “layout.”

The five key objectives consist of the following:

-  **A Multimodal, Integrated, and Human-Centered Station**
-  **The Station as Catalyst for the Urban Environment**
-  **The Station as a Destination**
-  **A Compelling Vision for the Future of Diridon Area**
-  **A Future-proof, Flexible, Adaptive, and Innovative Station**

Throughout the study process, the CRS components were (1) verified to confirm that the Partner Agencies' requirements were met and (2) validated to check that the priorities met the Partner Agencies' expectations. The Partner Agencies, recognizing that it was not possible to incorporate all priorities, worked together with the Study Team to compromise, consider tradeoffs, and move forward with the ideas that hold the most promise in meeting the objectives. The Study Team has used the key objectives and requirements to assess, screen, and evaluate potential layouts.

2.2 Elements

As previously noted, elements are the building blocks used to create the layouts. Elements were defined based on their roles in supporting the station's operability, functionality, accessibility, and connectivity as well as the environment, historical features, and urban space. Elements can be combined to make up what is commonly referred to as the "Kit of Parts." Table 2 presents the full list of elements and heavy rail options, which are described in Section 2.3.

2.3 Heavy Rail Options

Following the identification of the elements, the Study Team and Partner Agencies identified and analyzed several options for heavy rail. A heavy rail option is the combination of the following components:

- **Vertical Platform Position** – The heavy rail tracks could either be at grade (surface level) or elevated.
- **Horizontal Platform Position** – The platforms could be shifted north toward West Santa Clara Street or south to West San Fernando Street or remain adjacent to Stover Street, which is the current general location of the platforms.
- **North Track Alignment** – The heavy rail tracks in the north could either remain along the current alignment or be realigned to a position that is farther north than the existing corridor.

Table 2: Elements and Heavy Rail Options

Elements (or "Kit of Parts")	
<ul style="list-style-type: none"> • Heavy Rail • Light Rail • Station Building • Pedestrians • Bikes • VTA Bus • Intercity Bus 	<ul style="list-style-type: none"> • Taxis, TNCs, Autonomous Vehicles (AVs), Company Shuttles, Pick Up/Drop Off • Car Parking • BART • Airport Connector • Buildings
Heavy Rail Options (or "Big Moves")	
<ul style="list-style-type: none"> • Vertical Platform Position • Horizontal Platform Position • North Track Alignment • South Track Alignment 	

- **South Track Alignment** – The heavy rail tracks in the south could either remain along the current alignment or follow the current alignment with the addition of an I-280 elevated alignment, which would be located just south of I-280.

These four components are commonly referred to as “Big Moves,” which indicates that heavy rail is the least flexible of all of the elements. Further, heavy rail serves as the foundational element for all layouts – the placement of rail infrastructure must be identified before the placement of any other elements. For this reason, heavy rail options were assessed before the other elements.

The Partner Agencies and Study Team developed and assessed a wide variety of options for the heavy rail element to use as the base for the layouts. For all heavy rail options, the Study Team and Partner Agencies established a minimum requirement of at least 10 tracks and 5 island platforms at the station. The additional tracks would result in the overall expansion of the existing heavy rail corridor.

Additionally, all options considered were required to meet the service specifications and schedule developed by Caltrain and CHSRA through the Caltrain Business Plan process, as well as a

variety of critical rail design and engineering requirements from both agencies. Through assessment, the Partner Agencies chose the four heavy rail option combinations listed in Table 3 to use in layout development. These options were chosen to show the diverse range of possibilities for heavy rail. While the Partner Agencies used these as a basis for the layouts presented in this report, they acknowledged the feasibility of other heavy rail options and recognized those options could be pursued in the future, if needed due to unforeseen circumstances. However, the Partner Agencies consider all heavy rail options outside the option included in the Concept Layout to currently be dormant (and not being advanced at this time). A detailed overview of the heavy rail assessment process is documented in the Heavy Rail Assessment Report.

The four heavy rail components are commonly referred to as “Big Moves,” which indicates that heavy rail is the least flexible of all of the elements.

Table 3: Heavy Rail Options

Option	Vertical Platform Position	Horizontal Platform Position	North Track Alignment	South Track Alignment
Option 1	Platforms At Grade	Central (West San Fernando Street)	Modify Existing Corridor	Modify Existing Alignment
Option 2	Platforms Elevated	Central (West San Fernando Street)	New Northern Corridor	Modify Existing Alignment
Option 3	Platforms At Grade	North (West Santa Clara Street)	New Northern Corridor	New Southern Alignment with Existing Alignment
Option 4	Platforms Elevated	North (West Santa Clara Street)	New Northern Corridor	Modify Existing Alignment

2.4 Six Draft Layouts

The Partner Agencies then developed six draft layouts using the four heavy rail options defined in Table 3 followed by determining the placement of the remaining elements. The six draft layouts were then screened based on operational impacts, constructability, urban environment, transit integration, development opportunities, and the environment. This screening process led to the identification of the benefits and challenges for the layouts in each of these categories and allowed the Study Team and Partner Agencies to advance three layouts. The details and results of the process to evaluate these six layout combinations are documented in the Scenario Screening Memo.

2.5 Three Layouts

After advancing three of the draft layouts, the Study Team and Partner Agencies further refined the layouts by mixing and matching the placement of the elements. The purpose of this process was to show the spectrum of possibilities for the layouts, while creating a layout that best achieves the key objectives. This was iterative and completed through a series of evaluations, workshops, and meetings. This process resulted in the development of the following three layouts, which are described in detail in Section 3:

- Layout At Grade, West San Fernando Street
- Layout Elevated, West Santa Clara Street
- Layout Elevated, Stover Street

Appendix C contains illustrations showing the changes made to the three draft layouts to produce these three layouts.

2.6 Concept Layout

The final milestone in the study process is the establishment of the Partner Agency recommended layout for Diridon Station and the intermodal

The final milestone in the study process is the establishment of the Partner Agency recommended layout for Diridon Station and the intermodal hub.

hub. Section 7 of this report provides a detailed description of the Partner Agency recommended Concept Layout. This layout is the culmination of an intensive, thorough process, which has included numerous months of challenging and dynamic Partner Agency meetings, workshops, multilayered assessments of the elements and layouts, ongoing technical and data-driven analysis, and several rounds of public and stakeholder coordination. The Concept Layout will be further refined in future phases to better understand the benefits and tradeoffs of the design.

2.7 Community Outreach and Stakeholder Engagement

An integral component of Phase 1 was the implementation of a community outreach strategy that encourages active participation from a broad cross-section of the San José community. The strategy aims to:

- Inform and educate the public about the project and the decision-making process
- Gather feedback for the Partner Agencies to consider during preparation for the Concept Plan
- Foster a sense of pride and collective ownership in the vision established by the Concept Plan

The Partner Agencies completed four rounds of outreach, including community meetings, an on-line survey, presentations to the Diridon JPAB, the City's Station Area Advisory Group (SAAG), informational pop-up events at Diridon Station, and discussions with neighborhood and other stakeholder groups. Additionally, the Partner Agencies continue ongoing engagement with key stakeholders, including local community organizations and agencies, transit operators, and adjacent property owners.

A full list of completed activities can be found on the project website: <https://www.diridonsj.org/disc>. A detailed summary of the feedback received from the community is included in Section 6.

The Partner Agencies completed four rounds of outreach, including community meetings, an online survey, presentations to the Diridon JPAB, the City's Station Area Advisory Group (SAAG), informational pop-up events at Diridon Station, and discussions with neighborhood and other stakeholder groups.

Section 3

3. LAYOUT DESCRIPTIONS

THIS SECTION DESCRIBES THE PROPOSED location of the elements listed in Table 2 for the three layouts advanced by the Partner Agencies during the study process: At Grade West San Fernando Street, Elevated West Santa Clara Street, and Elevated Stover Street (see Appendix B for drawings of these layouts). These layouts are named after the vertical platform position (at grade or elevated) and the location of the platforms and station concourse (street name). These three layouts have been adapted and refined from three of the draft layouts (described in the Scenario Screening Memo). They are the result of a series of optimization decisions made by the Partner Agencies during several engineering meetings and design workshops; the refinements made to each layout are described in the footnotes of Sections 3.1, 3.2, and 3.3. Appendix C contains visuals that illustrate the changes made to produce the three new layouts. The benefits and challenges of the layouts are described in detail in Section 5 – Joint Evaluation Ratings.

Figure 4 illustrates the components of the intermodal hub at Diridon Station and the relationship between the station and the intermodal hub. This information is beneficial in understanding the design of the three proposed layouts. The in-

termodal hub is defined as a destination where passengers can access several modes of travel and other amenities, such as retail, employment, and housing, among other uses. The transportation services and primary amenities to be included in the future Diridon intermodal hub are listed on Figure 4³. The station is one component – and typically the focal point – of the intermodal hub and consists of the station building, the station hall, the concourse, and the heavy rail platforms.

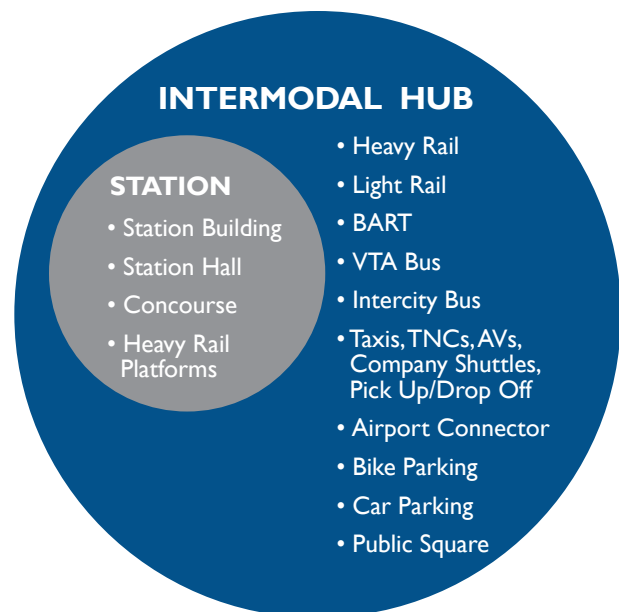


Figure 4: Intermodal Hub Diagram

³ This list is not exhaustive of all possible components and amenities for Diridon's intermodal hub. "Car parking" includes only the placement of parking at the station. All other parking-related work will be addressed in other planning efforts.

While preliminary work has been completed on the topics of constructability, phasing, cost estimates (overview included in Section 3.5), design requirements, and future land use development for the three layouts, detailed information on these subjects is not included in this report; rather, this information is documented in the Layout Development Technical Report.

3.1 Layout Development Inputs

The three layouts presented in the subsequent section show a wide variety of possibilities for the future Diridon Station and intermodal hub. The Partner Agencies and Study Team developed these layouts using several design principles that reflect the Concept Plan’s key objectives, and ambitions and requirements.

As noted previously, the layouts were developed by choosing the heavy rail options first, followed by the placement of the remaining elements. The purpose of this sequence is because heavy rail operations must, first and foremost, be feasible and functional in the layout.

The access hierarchy guided the placement of the elements to provide for an optimal passenger experience first for passengers using non-motorized travel, followed by those using motorized travel.

One of the fundamental principles used to create the layouts is the access hierarchy, depicted in Figure 5. The access hierarchy, which was defined by the Partner Agencies in the CRS, guided the placement of the elements to provide for an optimal passenger experience first for passengers using non-motorized travel, followed by those using motorized travel. An intermodal hub that adheres to the defined hierarchy will result in a human-centered station and hub that provides an optimal passenger experience.

Another important input used to inform the devel-

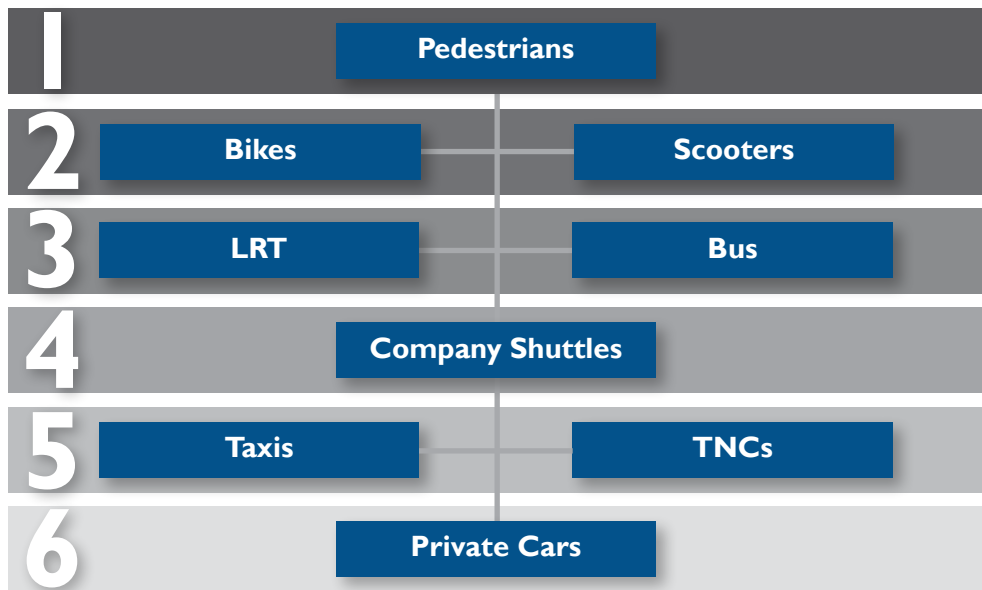


Figure 5: The Concept Plan Access Hierarchy

opment of the layouts is the preliminary ridership transfers calculated using the 2019 VTA Travel Demand Model for San José Diridon Station. According to the model, Diridon Station is forecasted to have more than 100,000 total daily passengers. The number of forecasted daily passengers by mode and the transfers between modes is illustrated on Figure 6⁴. These forecasts are important in not only the position of the platforms, but also to design for efficient passenger transfers. The demand model will be refined and further detailed as the design and planning process progresses.

3.2 Layout At Grade West San Fernando Street

Layout At Grade West San Fernando Street, illustrated on Figures 7 and 8 and summarized in Table 4, proposes an at grade station, which would require the least amount of right-of-way acquisition compared to the other layouts. While the northern and southern track alignment follows the existing corridor, the width of the corridor would be expanded due to the addition of heavy rail tracks.

Placing the station and heavy rail tracks at grade in the station would prevent the creation of at grade east-west street connections, given the physical constraints of the transit infrastructure. As a result, the construction of new underpasses or over-

Heavy Rail Options

- Vertical platform position: *At Grade*
- Horizontal platform/station position: *West San Fernando Street*
- North track alignment: *Existing corridor*
- South track alignment: *Existing corridor*

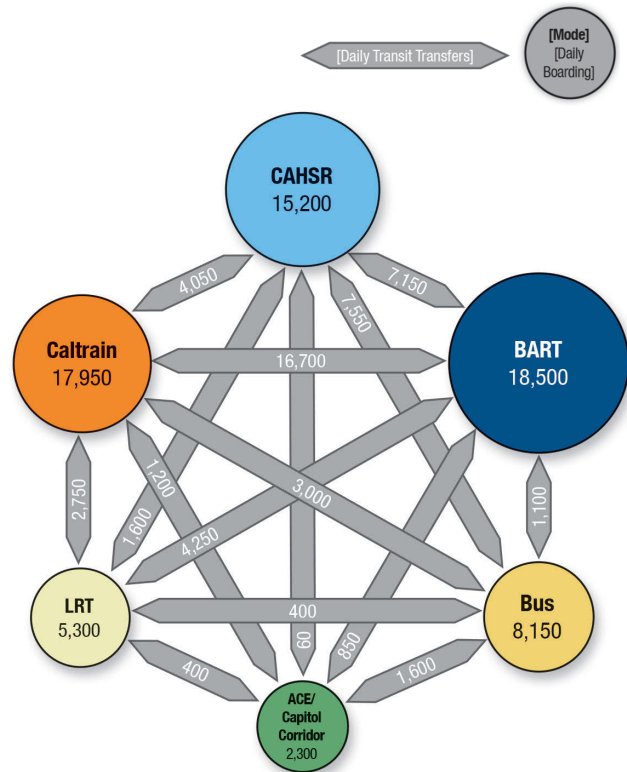


Figure 6: 2040 Preliminary Projected Ridership Transfers

passes would be required for east-west travel for both motorized and non-motorized traffic.

The entrance to the station hall would be located below grade and would provide access to the concourse. The light rail platforms, which would use a new optimized alignment in the station area, bike parking, and pick-up and drop-off areas for taxis, TNCs, company shuttles, and private vehicles are proposed to be recessed. Both the VTA and intercity bus stops would be located at grade – VTA buses would be located adjacent to Autumn Street and the intercity bus would be located between the heavy rail tracks and the SAP Center. Overhead development above the heavy rail tracks (but excluding the platforms) and the elements within the intermodal hub is possible in this layout.

⁴ Daily transit transfer estimates show sum of passenger flows in a single direction; estimates of daily boardings indicate total boardings for all transit and non-transit modes.

San José Diridon Integrated Station Concept Plan

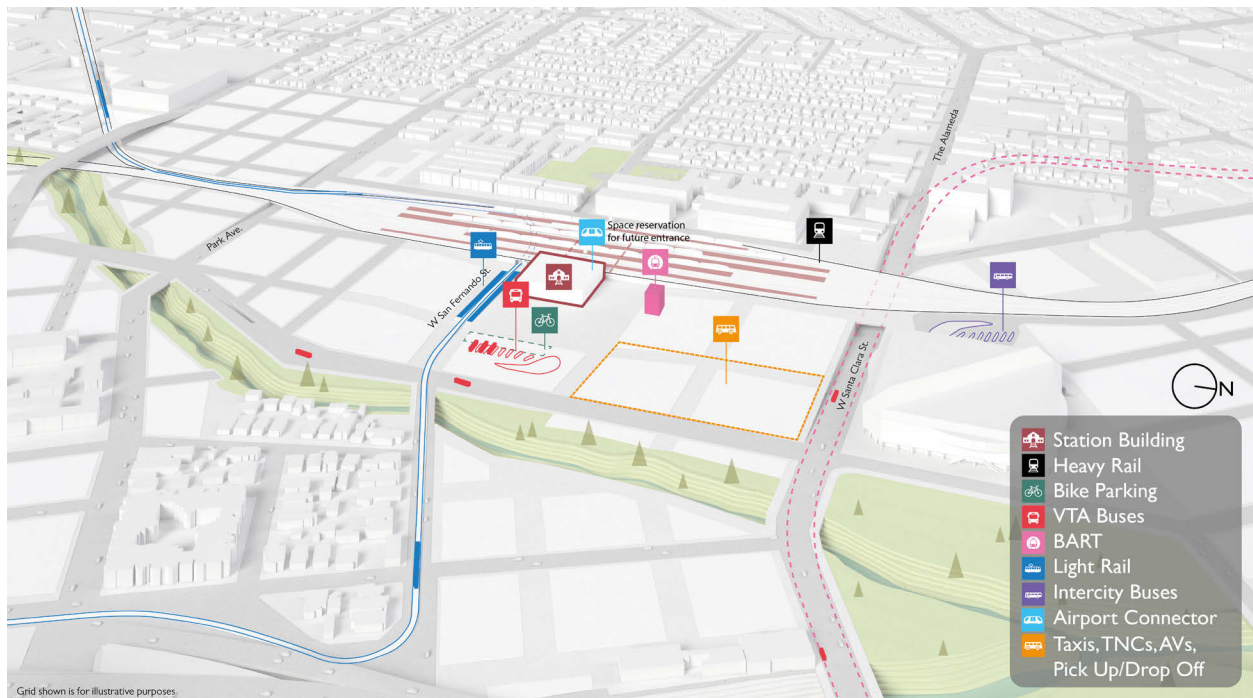


Figure 7: Proposed Intermodal Hub – At Grade West San Fernando Street Layout



Figure 8: Proposed Rail Corridor – At Grade West San Fernando Street Layout

Table 4: Elements Overview – At Grade West San Fernando Street

Elements Overview — At Grade West San Fernando Street		
	Heavy Rail	The heavy rail corridor would be at grade, which reflects the current vertical position of the tracks at the station. A total of 10 tracks and 5 island platforms (4 electrified and 1 non-electrified) are proposed, which would widen the station to the east. There is also an opportunity to include an additional dedicated freight track to the east side of the rail corridor. Maximum possible train speeds through the station are projected to be 25 miles per hour (mph).
	Light Rail	On the east side of the station, the light rail tracks would veer from the existing alignment and follow West San Fernando Street toward downtown San José. The light rail tracks would cross the station from east to west, allowing for a platform on the east side of the station below surface level.
	Station	The station would be located at West San Fernando Street, with station access and the public square one level underground. A recessed public square would be located directly in front of the station entrance on the east side of the building. A concourse underneath the tracks would be needed to access to the platforms. This layout would not accommodate the creation of a major western station entrance, as there is minimal space between the heavy rail tracks and White Street.
	Pedestrians	Since both the rail corridor and the station building are located at grade, pedestrians traveling east to west and vice versa would do so through underpasses.
	Bikes	Bike parking would be underground, beneath the at grade VTA bus platforms, which would make it easily accessible from the public square. Additionally, a new southern bike route along the tracks could provide bicyclists an alternate route to Bird Avenue.
	VTA Bus*	VTA bus platforms would be located at grade to the east of the public square and would be accessible from Autumn Street.
	Intercity Bus**	Pick up and drop off for intercity buses would be located adjacent to the heavy rail tracks, north of West Santa Clara Street between the heavy rail tracks and the SAP Center.
	Taxis, TNCs, AVs, Company Shuttles, Pick Up/ Drop Off**	The pick up and drop off area for taxis TNCs, AVs, company shuttles, and private vehicles would be in an underground facility west of Autumn Street. This area could possibly connect directly to the station hall.
	Car Parking	The location of vehicle parking is flexible and will be studied further before determining placement. It is proposed that the parking areas would be accessible via a tunnel located beneath Autumn Street. This location would be accessible from both Bird Avenue and San Carlos Street.
	BART**	The BART station entrance would be located just north of the station hall. The entrance would be connected to the BART platforms via an underground tunnel approximately 800 feet long. To improve accessibility, moving walkways could be constructed in the tunnel.
	Airport Connector	This layout could accommodate a future addition of an airport connector, which, for the purposes of the Concept Plan, is assumed to be located underground.
	Buildings	The Pacific Gas and Electric Company (PG&E) substation and the historic depot building would be relocated. Caltrain's Centralized Equipment Maintenance and Operations Facility (CEMOF) would remain in its current location. Overall, this layout will affect the least number of buildings and plots as compared to the other two layouts.

* Previously proposed to be located on Cahill Street.

** Previously proposed to be located inside a building near West Santa Clara Street.

3.3 Layout Elevated West Santa Clara Street

Layout Elevated West Santa Clara Street, illustrated on Figures 9 and 10 and summarized in Table 5, proposes an elevated station, approximately 25 feet high, with a new track alignment in both the northern and southern corridors. This layout includes a new northern corridor to accommodate the shift of the platforms north around West Santa Clara Street and to maximize train speeds north of the station. The southern I-280 alignment was developed to minimize community impacts, while accommodating operational requirements. The I-280 alignment would include the construction of a viaduct with two heavy rail tracks that is parallel to I-280, north of the Gardner neighborhood.

Elevating the tracks would provide space for various uses (e.g., bike parking, retail, small business studios, and mechanical and electrical systems) beneath the tracks and would allow for at-grade east-west connections for pedestrians, bicyclists, and motorists along West Santa Clara Street and West San Fernando Street. At-grade connections (as opposed to tunnels or underpasses) create clear lines of sight, which enhance the access and safety of all modes.

For this layout, the station building would be located at grade just south of West Santa Clara Street, which is the most northern proposed station location relative to the other layouts. The location of the concourse would allow for a western entrance to the station from The Alameda. The public square, light rail platforms, and the BART station entrance would be located at grade and adjacent to the station building. For this layout, development above the heavy rail tracks (but excluding the platforms) and the elements within the intermodal hub is possible. As in downtown San José, there are height restrictions⁵ related to the airport. Consequently, development above the elevated tracks would result in a more limited building volume than elsewhere in the station area.

Heavy Rail Options

- Vertical platform position: *Elevated*
- Horizontal platform/station position: *West Santa Clara Street*
- North track alignment: *Northern corridor*
- South track alignment: *I-280 and Existing*

⁵ The Federal Aviation Administration has established height restrictions for San José airport operations.















Figure 9: Proposed Intermodal Hub – Elevated West Santa Clara Street



Figure 10: Proposed Rail Corridor – Elevated West Santa Clara Street

San José Diridon Integrated Station Concept Plan

Table 5: Elements Overview – Elevated West Santa Clara Street

Elements Overview — Elevated West Santa Clara Street		
	Heavy Rail	The heavy rail tracks would be elevated approximately 25 feet above grade. A total of 11 tracks (including a dedicated freight track) and 5 island platforms (4 electrified and 1 non-electrified) are proposed, which would widen the station to the east. Maximum possible train speeds through the station are projected to be 35 mph (in some cases up to 50 mph).
	Light Rail*	A new light rail track would enter the station area from the east on West Santa Clara Street. The tracks would cross the station from east to west, with a 300-foot platform positioned on the east side of the track at grade level. Beyond the station, the tracks would slope up and follow the elevated heavy rail footprint to the south. Given the position of the east-west crossing, there would be enough room to slope the light rail tracks upward on the same level as the heavy rail tracks to provide a grade-separated crossing at West San Fernando Street.
	Station	The station would be located just south of West Santa Clara Street, a highly activated corridor. The concourse would be at grade (underneath the tracks and platforms) connecting West Santa Clara Street to The Alameda. The proposed northern shift of the station hall would allow for a major western entrance to the station from The Alameda.
	Pedestrians	The east-west street connections would be at grade, and the intermodal hub would be restricted to pedestrian, bicycle, scooter and bus traffic, minimizing conflicts with motorized traffic. This layout would place the station so that the public square is within line of sight for pedestrians traveling to and from downtown San José.
	Bikes	Bicyclists would access the station from either West Santa Clara or West San Fernando Streets. Bike parking would be at grade under the tracks, just south of the station hall, but would only be accessible from the south by crossing the light rail tracks. In this layout, taxis and TNCs would be positioned on Autumn Street – with VTA buses on West Santa Clara Street – forcing cyclists to cross wide streets to travel east or north.
	VTA Bus**	The VTA bus stops would be located along designated curbs on West Santa Clara Street (a total of three per direction) and on Autumn Street (one positioned eastward), meant for buses traveling from the southwest toward downtown and vice versa.
	Intercity Bus	Intercity buses would be located at grade at designated curbs along Autumn Street between West Santa Clara Street and Park Avenue.
	Taxis, TNCs, AVs, Company Shuttles, Pick Up/ Drop Off	Like intercity buses, taxis, TNCs, AVs, and shuttles would access the intermodal hub at designated at grade curbs along Autumn Street between West Santa Clara Street and Park Avenue.
	Car Parking	The location of vehicle parking is flexible and will be studied further before determining placement. It is proposed that the parking areas would be accessible via a tunnel located beneath Autumn Street. This location would be accessible from both Bird Avenue and San Carlos Street.
	BART	The BART station would be located directly beneath the station hall; the BART platforms would be directly accessible from the station hall.
	Airport Connector	This layout could accommodate a future addition of an airport connector, which, for the purposes of the Concept Plan, is assumed to be located underground.
	Buildings	The PG&E substation, the historic depot building, and CEMOF would be relocated in this layout. Additionally, several buildings to both the north and south would potentially be affected.

* Previously proposed to connect to the existing alignment.

** Previously proposed to be located at grade (beneath a building) west of Autumn Street.

3.4 Layout Elevated Stover Street

Layout Elevated Stover Street, illustrated on Figures 11 and 12 and summarized in Table 6, proposes elevated heavy rail platforms, a new northern corridor, and the existing southern heavy rail corridor. As in the other layouts, the additional heavy rail tracks will expand the existing width of the corridor.

The elevated tracks would create space at grade for bike parking, layover spaces for VTA buses, and space for other uses (e.g., retail, small business studios, and mechanical and electrical systems). The VTA bus platforms would be located at grade between the station building and West Santa Clara Street. In this layout, Autumn Street is proposed to be restricted to VTA bus-only traffic and shifted to the east toward Los Gatos Creek. This could create additional space within the intermodal hub for development. Further, the section of Autumn Street adjacent to the SAP Center would be removed, as it will no longer be necessary given that motorized through traffic would pass through the area via the tunnel beneath Autumn Street.

For this layout, the station and public square would be the central focal point of the intermodal

Heavy Rail Options

- Vertical platform position: *Elevated*
- Horizontal platform/station position: *Stover Street*
- North track alignment: *Northern corridor*
- South track alignment: *Existing*

hub, located at grade at Stover Street between West Santa Clara Street and West San Fernando Street. This position would create a clear line of sight along West Santa Clara Street east toward downtown from the station building entrance. The light rail tracks in the intermodal hub would be shifted slightly to the north and raised to be at grade and would then connect to the existing alignment in the east. The concourse would be designed in an oblique (or diagonal) fashion, which would allow for a major western entrance to the station. For this layout, development above the heavy rail tracks (but excluding the platforms) and the elements within the intermodal hub is possible. However, due to height restrictions⁶ in the area, development above the elevated tracks would result in a more limited building volume.

⁶ The Federal Aviation Administration has established height restrictions for San José airport operations.

San José Diridon Integrated Station Concept Plan



Figure 11: Proposed Intermodal Hub – Elevated Stover Street



Figure 12: Proposed Rail Corridor – Elevated Stover Street

Table 6: Elements Overview – Elevated Stover Street

Elements Overview — Elevated Stover Street		
	Heavy Rail	For this layout, the heavy rail tracks would be elevated approximately 25 feet above grade. A total of 10 tracks and 5 island platforms (4 electrified and 1 non-electrified) are proposed, which would widen the station to the east. There is also an opportunity to include an additional dedicated freight track to the east side of the rail corridor. Maximum possible train speeds through the station are projected to be 35 mph.
	Light Rail	From the east, the light rail tracks would veer north from West San Fernando Street. Light rail vehicles would be located at grade in the intermodal hub, just east of the heavy rail tracks. To the west, the light rail tracks would head south, descending underground to cross West San Fernando Street for a second time. To the south of West San Fernando Street, the light rail tracks would slope upward to cross Park Avenue on the same level as the heavy rail.
	Station	The station building would be located at grade on Stover Street. The proposed station building location positions it as the central connection to VTA buses, BART, and light rail. The station concourse and platforms would be located at grade beneath the elevated heavy rail tracks. The concourse position would be oblique (or diagonal), allowing for a major western entrance from The Alameda.
	Pedestrians	The east-west street connections would be at grade, and the intermodal hub would be restricted to pedestrian, bicycle, scooter and bus traffic, minimizing conflicts with motorized traffic.
	Bikes	Bike parking would be located at grade beneath the elevated heavy rail tracks. Bicyclists would access the parking area from the east or west side of the tracks, as well as from the public square. In this layout, there would be an opportunity to provide an additional bike route south of the tracks.
	VTA Bus	The VTA bus stops and layover spaces would be located at grade between the station building and West Santa Clara Street.
	Intercity Bus	Intercity buses would access the intermodal hub via a flyover (or an elevated platform/overpass) located to the east of the tracks above the station hall. The flyover would be accessible from Julian Street to the north, and San Carlos Street and Bird Avenue to the south.
	Taxis, TNCs, AVs, Company Shuttles, Pick Up/ Drop Off	Like intercity buses, taxis, TNCs, AVs, and shuttles would access the station via the flyover located to the east of the tracks above the station hall.
	Car Parking	The location of vehicle parking is flexible and will be studied further before determining placement. It is proposed that the parking areas would be accessible via a tunnel located beneath Autumn Street. This location would be accessible from both Bird Avenue and San Carlos Street.
	BART	The location of the station hall would provide direct access to the BART platforms via an escalator.
	Airport Connector	This layout could accommodate a future addition of an airport connector, which, for the purposes of the Concept Plan, is assumed to be located underground.
	Buildings	The PG&E substation, the historic depot building, and CEMOF would be relocated in this layout. Additionally, some buildings north of the intermodal hub could be affected.

3.5 Cost Estimates

The Study Team developed preliminary high-level cost estimates for the three proposed layouts. The estimates were not used in the formal evaluation process, but rather were used to understand the cost differences for major elements between the layouts. Further, the Partner Agencies recognize that these are initial cost estimates and are subject to change as the project continues and design refinements are made. Additional details regarding the initial cost estimates, including the elements excluded from the estimates, are included in the Layout Development Technical Report.

The initial cost estimates are based on the current track and station designs and include only costs directly associated with the station. Costs include, but are not limited to, costs for the station building, tracks, concourses, underpasses, bus facilities, and light rail facilities. Temporary estimates have been included for some of the elements

The initial cost estimates are based on the current track and station designs and include only costs directly associated with the station.

pending further design. Other items are excluded from the initial cost estimates due to insufficient detail at this phase of the study; such items will be developed in more detail in subsequent phases.

Figure 13 presents a comparison of relative costs for 10 elements among the three layouts (cost estimates for the Concept Layout are included in the Layout Development Technical Report). The majority of the costs for the three layouts are re-

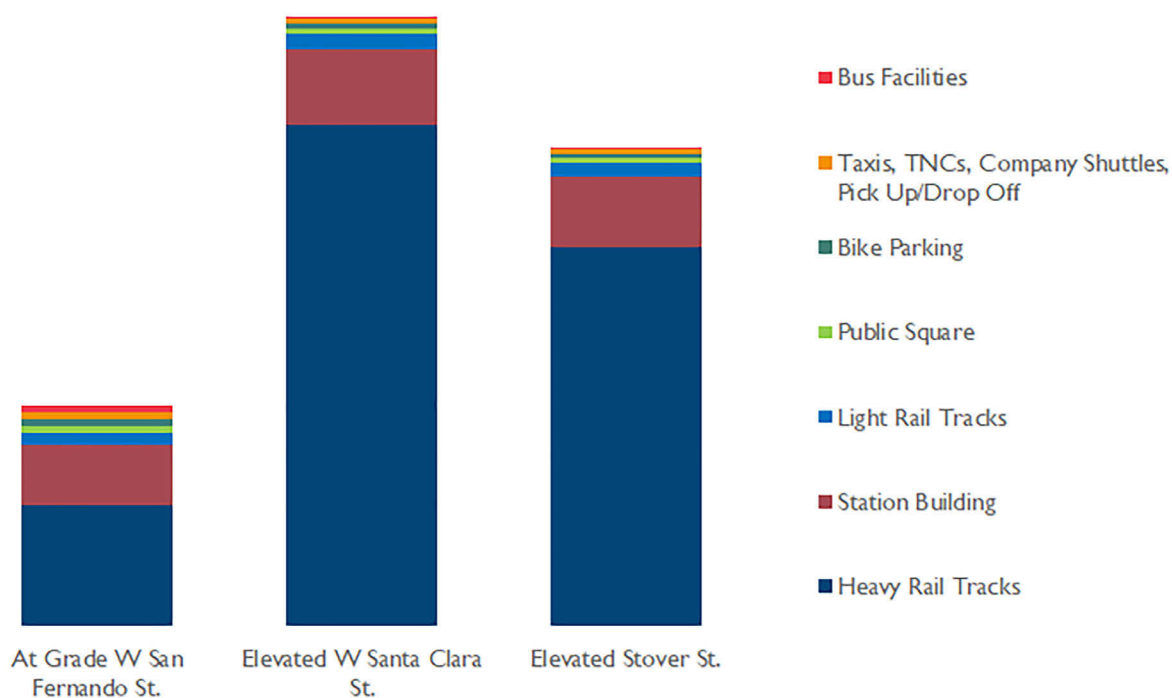


Figure 13: Preliminary Cost Estimates

lated to the heavy rail tracks. The heavy rail tracks in the Elevated West Santa Clara Street and Elevated Stover Street layouts are proposed to be elevated, rather than remain at grade, and therefore constitute a larger portion of the overall costs. Further, the proposed I-280 southern track alignment in the Elevated Santa Clara Street layout makes it the most expensive layout of the three. While overall estimated costs for the At Grade West San Fernando Street layout are relatively lower, the cost for underpasses and overpasses is higher than for the other two layouts, given that the heavy rail tracks would remain at grade.

Given the cost estimates are preliminary and may

vary as the design and planning process progresses, the Study Team also produced cost estimate ranges for the three layouts. These ranges are illustrated on Figure 14 and show the low- and high-end cost estimates for the layouts, relative to each other. The purpose of Figure 14 is to demonstrate that the cost estimates illustrated in Figure 13 are not stagnant and subject to vary based on several factors. For example, although the cost estimate for the At Grade West San Fernando Street layout is shown to be less expensive than the other layouts in Figure 13, the high-end cost estimate for this layout shows that it could potentially end up being more expensive than the others.

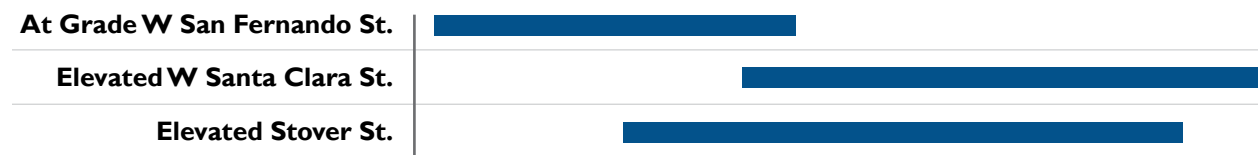


Figure 14: Relative Cost Estimate Ranges



Section 4

4. LAYOUT EVALUATION METHODOLOGY

FOLLOWING ESTABLISHMENT OF THE AMBITIONS AND REQUIREMENTS, the Partner Agencies developed an evaluation framework to evaluate the layouts at a high level. The purpose of the evaluation process was to provide the Partner Agencies with a comprehensive understanding of each layout from a variety of contexts, to understand the interrelation of the placement of the elements (i.e., mixing elements between the layouts), to compare the layouts, and to assess the benefits and trade-offs of key design decisions.

Development of the evaluation framework was an iterative process that involved extensive collaboration among the Partner Agencies and input from the community, which led to refinement of certain criteria to allow for a meaningful evaluation of the layouts. The evaluation process was an important tool to achieve consensus among the Partner Agencies on identification of the Concept Layout.

4.1 Evaluation Criteria

The evaluation framework is organized into criteria, sub-criteria, and evaluation factors. Table 7 provides an overview of the seven criteria and corresponding sub-criteria (29 total). Each of the seven evaluation criteria relates to one or more of the key objectives of the Concept Plan.

The purpose of the sub-criteria is to allow for specific evaluations of different aspects of the same element (e.g., northern versus southern corridor). A question, or measure, is listed for each sub-criterion and specifies which aspect or aspects of the sub-criterion are being evaluated (e.g., efficiency, safety, accessibility). Several evaluation factors are listed for each sub-criterion to define the intent of that sub-criterion. The Partner Agencies considered the evaluation factors to assign a qualitative rating for each sub-criterion.

It is important to note that the evaluation framework does not account for all of the objectives, priorities, and considerations driving development of the Concept Plan. Rather, it is intended to

Development of the evaluation framework was an iterative process that involved extensive collaboration among the Partner Agencies and input from the community.


highlight the differing factors among the layouts. For example, the design and engineering requirements listed in the CRS were assessed in parallel to the evaluation of each layout and therefore are not included in the evaluation framework.







Additionally, the evaluation framework does not include criteria for capital costs, effect on existing infrastructure (e.g., PG&E substation, historic depot building, CEMOF), constructability, or phasing. Although these are important considerations, they are excluded from the framework so that

the vision for the Concept Plan is not artificially constrained by parameters that are still largely in development. The Layout Development Technical Report provides additional information on the initial work completed on these topics. Further, the BART Operations sub-criterion (within Future-Proofing and Operational Efficiency) is included in the evaluation framework but assigned a rating of “Not Applicable” for all layouts, based on the assumption that BART can functionally operate trains in all layouts.

San José Diridon Integrated Station Concept Plan

Table 7: The Concept Plan Evaluation Framework



Key Objectives	Criteria	Sub-criteria	Measure(s)
 A Multimodal, Integrated, and Human-centered Station  A Futureproof, Flexible, Adaptive, and Innovative Station	1. Future-Proofing and Operational Efficiency – The station and supporting facilities in the area should meet the current and future capacity needs and requirements for transit operators/providers serving the station, while improving operational efficiencies.	1.1 Electrified Operations	How well does the layout facilitate efficient electrified passenger operations?
		1.2 Light Rail Operations	How well does the layout facilitate efficient LRT operations?
		1.3 Bus Operations	How well does the layout facilitate efficient operations for VTA and inter-city buses?
		1.4 Diesel Operations	How well does the layout maintain efficient service for diesel and freight operators through Diridon Station?
		1.5 BART Operations	How well does the layout facilitate BART operations?
 A Multimodal, Integrated, and Human-centered Station	2. Multimodal Integration – The station should work well for the passenger using human-centered design to provide a seamless travel experience.	2.1 Transfer Efficiency	How efficient are transfers between transit services?
		2.2 High-quality Passenger Experience	How well does the station design provide a high-quality passenger experience?
		2.3 Airport Connector	How efficient is the connection between the station and the airport connector?
 A Multimodal, Integrated, and Human-centered Station	3. Access – The station should be safe and easy to get to from all parts of the city with efficient multi-modal circulation.	3.1 Access Hierarchy	How well does the layout comply with the defined access hierarchy?
		3.2 Pedestrians	How well does the layout enable pedestrian access and flow?
		3.3 Bikes and Scooters	How well does the layout enable access and flows for bicycles and scooters?
		3.4 VTA Buses	How well does the layout enable access and flows for VTA buses?
		3.5 Light Rail	How well does the layout enable access and flows for LRT?
		3.6 Intercity Buses	How well does the layout enable access and flows for intercity buses?
		3.7 Shuttles, Taxis/ TNCs, Private Cars, & Airport Connector	How well does the layout enable access and flows for shuttles, taxis/TNCs, private cars, and airport connector?

Key Objectives	Criteria	Sub-criteria	Measure(s)
 <p>The Station as a Catalyst for the Urban Environment</p>  <p>The Station as a Destination</p>	4. Urban Integration – The station project should connect the urban fabric and improve physical and social connectivity in the surrounding area.	4.1 East-West Connection	How well does the layout facilitate high-quality connections across the rail corridor?
		4.2 North-South Connection	How well does the layout facilitate high-quality north-south connections?
		4.3 Station Location and Visibility	How visible and recognizable is the station?
		4.4 Public Spaces and Active Street Life	How well does the layout create high-quality public spaces and facilitate active street life?
 <p>The Station as a Catalyst for the Urban Environment</p>  <p>The Station as a Destination</p>	5. Development Potential – The station design should optimize opportunity for high-density Transit-Oriented Development.	5.1 Floor Area & Development – Northern Corridor	How well does the layout accommodate development adjacent to the station and tracks in the northern corridor?
		5.2 Floor Area & Development – Station Area	How well does the layout accommodate development adjacent to the station and tracks in the station area?
		5.3 Floor Area & Development – Southern Corridor	How well does the layout accommodate development adjacent to the station and tracks in the southern corridor?
		5.4 Space Efficiency	How well does the layout create development opportunities along the rail corridor?
		5.5 Urban Density	How effectively does the layout contribute to density around the station?
 <p>The Station as a Catalyst for the Urban Environment</p>  <p>A Compelling Vision for the Future of the Diridon Area</p>	6. Community – The station and infrastructure should be sensitive to the surrounding communities.	6.1 Construction Effects	How well does the layout minimize the effects of construction on residential buildings and community resources?
		6.2 Long-term Effects – Northern Corridor*	How well does the layout minimize negative and maximize positive direct effects on residential and commercial buildings and community resources in the northern corridor ?
		6.3 Long-term Effects – Station Area**	How well does the layout minimize negative and maximize positive direct effects on residential and commercial buildings and community resources in the station area ?
		6.4 Long-term Effects – Southern Corridor***	How well does the layout minimize negative and maximize positive direct effects on residential and commercial buildings and community resources in the southern corridor ?

*The 'Northern Corridor' is defined as the area from West Santa Clara Street to the CEMOF.

**The 'Station Area' is defined as the area between West Santa Clara Street and West San Fernando Street.

***The 'Southern Corridor' is defined as the area between West San Fernando Street and I-280.

Key Objectives	Criteria	Sub-criteria	Measure(s)
 <p>The Station as a Catalyst for the Urban Environment</p>  <p>A Compelling Vision for the Future of the Diridon Area</p>	<p>7. Local Environment – The station and infrastructure should be sensitive to the local natural environment.</p>	<p>7.1 Natural Environment Effects</p>	<p>How well does the layout minimize and mitigate environmental effects?</p>

4.2 Ratings

Ratings were assigned using a qualitative categorical scale that ranges from “Negative” to “Positive.” The Partner Agencies and Study Team determined that all of the criteria are equally important and are therefore not weighted in the evaluation framework. To visualize the ratings, a color scale was developed to show the range between “Negative” (lighter) and “Positive” (darker) ratings. A “Not Applicable” category was included in case a sub-criterion was not relevant to the layout rating. Additionally, a “No Consensus” category was included for use in the joint evaluations should the Partner Agencies not reach agreement for a rating.

The Partner Agencies conducted their evaluations by one of two methods: (1) comparing one layout relative to the others, or (2) assessing the layout’s potential to achieve the overall goals. The categories on the rating scale are as follows:

Positive – A sub-criterion is classified as “Positive” when most or all of the evaluation factors are improved in the layout.

Somewhat Positive – A sub-criterion is classified as “Somewhat Positive” when more evaluation factors are improved than worsened in the layout.

Somewhat Negative – A sub-criterion is classified as “Somewhat Negative” when more evaluation factors are worsened than improved in the layout.

Negative – A sub-criterion is classified as “Negative” when most or all of the evaluation factors are worsened or adversely affected.

Not Applicable – A sub-criterion is classified as “Not Applicable” when it is not distinctly relevant to the layout or the outcome for the sub-criterion is consistent among the layouts.

No Consensus – A sub-criterion is classified as “No Consensus” if the Partner Agencies could not agree on a rating during the joint evaluation.



Section 5

5. JOINT EVALUATION RATINGS

THE PARTNER AGENCIES USED THE EVALUATION FRAMEWORK to both individually and jointly assess how the layouts perform compared to each other. As discussed in Section 4, the framework is qualitative, with each layout being evaluated based on a set of seven criteria and the sub-criteria within each. The joint evaluation of the layouts is summarized in Section 5.2.

The evaluations were completed in a series of steps. First, the Partner Agencies determined an evaluation rating within their own organization. Then, during a workshop, the Partner Agencies completed a joint evaluation. For this activity, the Partner Agencies split into small groups and discussed their respective agency's evaluations and the justifications for the ratings provided. Given

Given the qualitative nature of the evaluation, the dialogue among the Partner Agencies was important in sharing the perspectives and considerations of each Partner Agency and for the four agencies to arrive at a consensus.

the qualitative nature of the evaluation, the dialogue among the Partner Agencies was important in sharing the perspectives and considerations of each Partner Agency and for the four agencies to arrive at a consensus. The technical experts and project staff from each agency who participated in the evaluation shared the joint ratings for approval within their agencies.

The first joint evaluation was completed for three draft layouts, which led to refinement and the development of the three layouts described in Section 3. The Partner Agencies then completed another round of evaluations, both individually and jointly, of these three layouts, which contributed to the development of the Concept Layout, described in Section 7.

5.1 Rating Visual

Figure 9 illustrates the joint evaluation completed by the Partner Agencies for the three layouts described in Section 3. Figure 15 represents the five categories on the rating scale that are described in Section 4 along with a “No Consensus” option. The scale ranges from “Negative,” represented by the lightest color, to “Positive,” represented by the darkest color. Gray indicates that a sub-criterion is “Not Applicable” to the layout rating, and dark gray indicates that “No Consensus” was reached to assign a joint rating.

San José Diridon Integrated Station Concept Plan




Criteria	Sub-Criteria	At Grade W. San Fernando St.	Elevated W. Santa Clara St.	Elevated Stover St.	
1. Future-Proofing & Operational Efficiency	Electrified Operations				 Positive  Somewhat Positive  Somewhat Negative  Negative  Not Applicable  No Consensus
	Light Rail Operations				
	Bus Operations				
	Diesel Operations				
	BART				
2. Multimodal Integration	Transfer Efficiency				
	Passenger Experience				
	Airport Connector				
3. Access	Access Hierarchy				
	Pedestrians				
	Bikes & Scooters				
	Light Rail				
	VTA Buses				
	Intercity Buses				
	Shuttles, Taxis/TNCs, Private Cars & Airport Connector				
4. Urban Integration	East-West Connection				
	North-South Connection				
	Station Location & Visibility				
	Public Spaces & Active Street Life				
5. Development Potential	Floor Area & Development — Northern Corridor				
	Floor Area & Development — Station Area				
	Floor Area & Development — Southern Corridor				
	Space Efficiency				
	Urban Density				
6. Community	Construction Effects				
	Long-term Effects — Northern Corridor				
	Long-term Effects — Station Area				
	Long-term Effects — Southern Corridor				
7. Local Environment	Natural Environmental Effects				

Figure 15: Partner Agencies' Joint Evaluation Rating

5.2 Evaluation Justifications

The qualitative nature of the evaluation resulted in different interpretations of the same criteria among the Partner Agencies. Therefore, the Partner Agencies discussed the reasons for their ratings as part of the joint evaluation. This process allowed the Partner Agencies to review the layouts based on different perspectives and to consider aspects of the layouts not previously considered. As previously noted, the Partner Agencies conducted the joint evaluations either by (1) comparing one layout relative to the others, or (2) assessing the layout's potential to achieve the overall goals. The following sections detail the justifications for the Partner Agency evaluations of the seven criteria in the Concept Plan evaluation framework.

5.2.1 Future-Proofing & Operational Efficiency

The Future-Proofing & Operational Efficiency criterion includes five sub-criteria: electrified operations, light rail operations, bus operations, diesel operations, and BART operations. The evaluation factors for these sub-criteria are primarily aimed at evaluating how a layout affects future capacity and operations. Specific evaluation factors include train speeds, bus stop design, and maintenance of connections to other rail lines, among others.

The seven evaluation criteria are Future-Proofing & Operational Efficiency, Multimodal Integration, Access, Urban Integration, Development Potential, Community, and Local Environment.

At Grade West San Fernando Street received two somewhat positive ratings (light rail operations and diesel operations). Operationally, the proposed light rail alignment would eliminate the right curve through the tunnel, resulting in shorter travel times and less maintenance. The Partner Agencies noted that diesel operations are acceptable, although not preferable, given speeds for all trains are projected to be lower in this layout. This layout received two somewhat negative ratings (electrified operations and bus operations). Electrified operations are acceptable, but the Partner Agencies prefer the other two layouts for this sub-criterion, as maximum possible speeds are projected to be lower for this layout. For bus operations, the Partner Agencies indicated they do not prefer the location, particularly given the distance from West Santa Clara Street.

Among the layouts, **Elevated West Santa Clara Street** rated the highest on the qualitative rating scale during the joint evaluation. It received three positive ratings (electrified operations, light rail operations, and diesel operations). The Partner Agencies noted that this layout would work optimally for electrified operations, as each service would have a dedicated zone within the station and separate, dedicated tracks would be added between Diridon and Tamien Stations. However, the addition of two heavy rail tracks along the southern I-280 alignment would create additional capacity, but this may not be necessitated without some certainty in future ridership demand. The agencies also noted that light rail operations would work well, and that diesel operations would perform best (because of additional tracks) in this layout. This layout received one somewhat positive rating (bus operations), with positive consensus on location and operations.

Elevated Stover Street received the second highest rating, with one positive rating (bus oper-

ations). The Partner Agencies indicated the location of the VTA bus stops adjacent to West Santa Clara Street is the preferred location among the three layouts, because operations would be centralized. However, they recognized this location may conflict with proposed location of the BART headhouse. This layout received three somewhat positive ratings (electrified operations, light rail operations, and diesel operations). This layout would work well for electrified operations, but not as well as compared to the West Santa Clara Street layout, as this layout proposes two fewer heavy rail tracks along the southern alignment. Diesel operations are acceptable but not preferable, as these trains would need to cross the busy main line south of Diridon Station at grade, which would limit capacity. As for light rail operations, the proposed alignment is functional, but the Partner Agencies prefer a new alignment along Santa Clara.

The Partner Agencies assigned the BART Operations sub-criterion as “Not Applicable,” since, as previously noted, it is assumed that BART trains can functionally operate in all three layouts.

5.2.2 Multimodal Integration

The Multimodal Integration criterion includes three sub-criteria: transfer efficiency, passenger experience, and airport connector. The evaluation factors for these sub-criteria are aimed at assessing the effect of a layout on passenger travel times and distances between modes and destinations within the intermodal hub, among others. The airport connector sub-criterion received the same rating in all three layouts, as it is assumed all layouts can accommodate the mode, but few details are known at this phase.

At Grade West San Fernando Street received a somewhat positive rating (airport connector) and two negative ratings (transfer efficiency and passenger experience). The Partner Agencies noted

It is assumed that BART trains can functionally operate in all three layouts.

the long walking distance between the station concourse and the BART platforms, intercity buses, and the pick up and drop off area made for a least desirable passenger experience.

Elevated West Santa Clara Street received the second highest rating, with one positive rating (transfer efficiency). Like Elevated Stover Street, this layout centralizes the rail modes, making for an efficient transfer process for passengers. It received two somewhat positive ratings (passenger experience and airport connector). The Partner Agencies cited the need for switchback stairs and elevators to travel from the below grade BART platforms up to grade, making wayfinding more difficult for the BART to rail passenger transfer. These issues would likely inhibit an optimal passenger experience.

Among the layouts, **Elevated Stover Street** was rated the highest during the joint evaluation. It received two positive ratings (transfer efficiency and passenger experience), as it would bring heavy rail, light rail, and BART together in a centralized location. This proposed configuration would minimize transfer times and create a convenient passenger experience.

This layout, like the other two, received one somewhat positive rating (airport connector), with the Partner Agencies agreeing that the airport connector fits within all three layouts without issues.

5.2.3 Access

The Access criterion includes seven sub-crite-

ria: access hierarchy; pedestrians; bikes and scooters; light rail; VTA buses; intercity buses; and shuttles, taxis/TNCs, private cars, and airport connector. The evaluation factors for these sub-criteria are aimed at assessing a layout's compliance with the defined access hierarchy, as well as the ease and directness of the flows of the above modes to and from the intermodal hub.

At Grade West San Fernando Street received one positive rating (light rail), in this case because this layout shortens the existing curve. However, it received four somewhat negative ratings (access hierarchy, pedestrians, bikes and scooters, and VTA buses). In terms of access hierarchy, the Partner Agencies noted the distance to BART as well as an overemphasis on private cars, which ranks last on the access hierarchy. The Partner Agencies also indicated that they did not favor the proposed underpass, a lack of a west entrance, and the separation of VTA bus lines 522 and 22. The two negative ratings (intercity buses and shuttles, taxis/TNCs, private cars, and airport connector) are a result of the distance of intercity buses from the station as well as the limited access and poor visibility for taxis and other modes.

Elevated West Santa Clara Street received the second highest rating, with one positive rating (light rail). The Partner Agencies noted the positive user experience, given that the light rail alignment runs straight to downtown. This layout received two somewhat positive ratings (access hierarchy and VTA buses), with the Partner Agencies identifying the benefits of the curb spaces for VTA buses while still noting opportunity for improvement. This layout received four somewhat negative ratings (pedestrians; bikes and scooters; intercity buses; and taxis, TNCs, company shuttles, private cars, and airport connector), attributable to the poor pedestrian crossings on Autumn Street and the proposed location of the intercity buses and the other pick up and drop off modes.

Among the layouts, **Elevated Stover Street** was identified as the most desirable layout in terms of access during the joint evaluation. It achieved a positive rating in five of the seven sub-criteria (access hierarchy, pedestrians, bikes and scooters, light rail, and VTA buses). The Partner Agencies noted that this layout best adheres to the defined access hierarchy among the three layouts, particularly for pedestrians and scooters. Additionally, it has no intersections between pedestrians and vehicles, which minimizes conflict points while maximizing safety. It also received positive ratings because of its west entrance, access to light rail and VTA buses, and direct walking route to downtown San José with limited crossings. This layout received two somewhat positive ratings for the elevated pick up and drop off area for intercity buses and, taxis, TNCs, company shuttles, and private cars. The Partner Agencies assigned this rating for these sub-criteria based on the justification that, while the elevated flyover would provide direct access to the station for these modes, the elevated flyover would have limited points of access from the street.

5.2.4 Urban Integration

The Urban Integration criterion includes four sub-criteria: east-west connection, north-south connection, station location and visibility, and public spaces and active street life. The evaluation factors for these sub-criteria are aimed at evaluating pedestrian connectivity to/from and through the intermodal hub, the location of the station and centrality to other destinations, and the creation of public spaces and a vibrant intermodal hub.

At Grade West San Fernando Street received three somewhat negative ratings (north-south connection, station location and visibility, and public spaces and active street life). The Partner Agencies noted that this layout provides the least

improvement for the north-south connection as well as poor visibility of the station hall. The lack of a west entrance and distance to BART were also identified as negatives. The station location did not appeal to the Partner Agencies due to the minimal amount of urban activity on West San Fernando Street. The Partner Agencies gave this layout one negative rating (east-west connection), noting a lack of safety because of inadequate line of sight and poor ease of movement because of pedestrian underpasses.

Elevated West Santa Clara Street received the second highest rating, with one positive rating (east-west connection). The Partner Agencies noted the benefits of the clear line of sight and even grade for pedestrians/bicyclists. This layout received three somewhat positive ratings (north-south connection, station location and visibility, and public spaces and active street life) given the location of the station on West Santa Clara Street, which is highly activated. However, the Partner Agencies noted that for station location and visibility, a Stover Street location is more desirable.

Among the layouts, **Elevated Stover Street** was identified as the preferred layout in terms of urban integration during the joint evaluation, receiving positive ratings in all four categories. The Partner Agencies identified the benefits of the clear line of sight, even grade for pedestrians/bicyclists, connection to the potential bike path over I-280, location of both BART and the station, and viability of a high-quality public square.

5.2.5 Development Potential

The Development Potential criterion includes five sub-criteria: floor area and development – northern corridor, floor area and development – station area, floor area and development – southern corridor, space efficiency, and urban density. The evaluation factors for the first three sub-criteria are the same and are aimed at evaluating the po-

*Among the layouts, **Elevated Stover Street** was identified as the preferred layout in terms of urban integration during the joint evaluation, receiving positive ratings in all four categories.*

tential for transit-oriented development for a given layout. The evaluation factors for the remaining two sub-criteria are used to assess the opportunity the layout provides to maximize space at the station as well as urban density. It is assumed that development is possible both above heavy rail (excluding the platforms) and within the intermodal hub above all elements that are proposed to be located at grade.

At Grade West San Fernando Street received two somewhat positive ratings (floor area and development – northern corridor and floor area and development – southern corridor), given the proposed (existing) northern and southern heavy rail alignment would not impact parcels that could potentially be developed. The layout received two somewhat negative ratings (floor area and development – station area and urban density) based on the assumption that the placement of the modes would disjoint development within the intermodal hub. The Partner Agencies rated the space efficiency sub-criterion as negative, as the at grade heavy rail tracks would prevent the placement of any uses beneath the tracks.

Among the layouts, **Elevated West Santa Clara Street** received three somewhat positive ratings (floor area and development – station area, space efficiency, and urban density) and two negative

ratings (floor area and development – northern corridor and floor area and development – southern corridor). The Partner Agencies assigned the positive ratings based on the justification that the location of the station on West Santa Clara Street would allow for adequate space for development within the intermodal hub. The negative ratings were assigned, noting the constraints placed on development by the elevated flyover in the northern corridor and the property effects in the south as a result of the I-280 alignment.

Elevated Stover Street received two somewhat positive ratings (floor area and development – southern corridor and space efficiency) and three somewhat negative ratings (floor area and development – northern corridor, floor area and development – station area, and urban density). The Partner Agencies noted that the new northern heavy rail alignment could adversely affect developable parcels in the north (though not as severely as in the Elevated West Santa Clara Street layout); whereas, in the southern corridor, the proposed (existing) alignment would not impact developable parcels. Within the station area, the proposed elevated heavy rail tracks would provide opportunity to utilize the space beneath the tracks for station amenities and other uses. However, the proposed elevated flyover and the large footprint of the VTA bus facility in the intermodal hub would displace land otherwise used for development within the station area and limits opportunity for urban density.

5.2.6 Community

The Community criterion includes four sub-criteria: construction effects, long-term effects – northern corridor, long-term effects – station area, and long-term effects – southern corridor. The evaluation factors for construction effects are used to assess the potential disruption to the surrounding community throughout the construction

of a given layout. Similar to the Development Potential criteria, the evaluation factors for the last three sub-criteria are the same and are aimed at evaluating the potential lasting effects on the surrounding community for the given layout.

Among the layouts, **At Grade West San Fernando Street** received two somewhat positive ratings (construction effects and long-term effects – northern corridor). Because this layout requires no elevated construction, the Partner Agencies assumed the fewest construction effects or impacts to the surrounding community. The Partner Agencies could not reach a consensus on the long-term effects – station area and long-term effects – southern corridor sub-criteria. The lack of consensus was attributed to the fact that effects could vary greatly with the specific corridors and among neighborhoods.

The Partner Agencies provided three somewhat negative ratings (construction effects, long-term effects – station area, and long-term effects – southern corridor) for the **Elevated West Santa Clara Street** layout. These ratings were assigned based on the justification that this layout would result in the construction of the most elevated structures, the most infrastructure/property impacts within the station area and the southern corridor and could result in the most visual im-

The evaluation factors for construction effects are used to assess the potential disruption to the surrounding community throughout the construction of a given layout.

pacts for the surrounding community. The Partner Agencies did not consider the potential effects of the I-280 alignment when assigning a rating to the long-term – southern corridor sub-criterion. The Partner Agencies assigned the long-term effects – northern corridor sub-criteria a somewhat positive rating, given the heavy rail tracks would be consolidated and there would be more space for development in the northern corridor.

The **Elevated Stover Street** layout received two somewhat negative ratings (long-term effects – northern corridor and long-term effects station area) and two no consensus ratings (construction effects and long-term effects – southern corridor). The Partner Agencies assigned the somewhat negative ratings based on the effects of the elevated flyover for pick up and drop off modes on the surrounding community in the station area and the property/infrastructure impacts in the northern corridor. The Partner Agencies could not reach consensus for the remaining sub-criteria for reasons of lack of information and differing perspectives on the positive and negative long-term effects.

5.2.7 Local Environment

The Local Environment criterion includes one sub-criterion: natural environmental effects. The main purpose of the evaluation factors for this sub-criterion are to assess the effects of a layout on the Los Gatos Creek corridor and the opportunity for habitat restoration after construction of the layout. The Partner Agencies assumed a direct relationship between the number of creek crossings and habitat restoration: that is, the more the tracks cross and cover Los Gatos Creek, the less potential there is for habitat restoration.

Among the layouts, both At Grade West San Fernando Street and Elevated Stover Street received somewhat positive ratings for the natural environmental effects sub-criterion. The Partner Agencies noted that these layouts propose fewer crossings over the Los Gatos Creek, as compared to the Elevated West Santa Clara Street layout, which could result in an increased potential for habitat restoration. The Elevated West Santa Clara Street layout received a somewhat negative rating, primarily because of the additional heavy rail track crossing in the southern corridor and the potential effect the extra crossing poses for habitat restoration.



Section 6

6. SUMMARY OUTREACH

AN INTEGRAL COMPONENT OF THE PHASE 1 STUDY process was to inform the community and solicit feedback on the concepts coming out of the technical work. The Partner Agencies and consultant team considered the community input as part of the development, evaluation, and optimization of the layouts. Through this process, the Partner Agencies were able to learn about and address the community's top concerns and priorities for the future station and adjoining public spaces. The outreach strategy, presented in Section 2.7, called for multiple rounds of public outreach aligning with key milestones in the planning process. The Partner Agencies completed four rounds of outreach, which are summarized below:

1. **Introduce** the project and gather feedback on the initial vision for the station and key objectives for the process.
2. **Present and obtain feedback** on preliminary concepts related to the vertical position of the platforms and station location as well as a draft evaluation framework for assessing design options under development.
3. **Present and gather** feedback on the three spatial layouts.
4. **Further explore** the "Big Moves" and present Concept Layout.

To ensure that feedback was gathered from a broad cross-section of the community, the Partner Agencies used a variety of methods to share information, gather feedback, and notify community members of opportunities to participate in the process. The project website serves as the primary repository for all outreach materials, some of which was translated into Spanish and Vietnamese. The Partner Agencies used social media and an email distribution list, maintained by the City of San José, to notify the public of upcoming engagement opportunities. Additionally, elected officials also shared information on the outreach events through their distribution lists.

A variety of different outreach events were held throughout Phase 1, including community meetings, SAAG meetings, information pop-ups, focus groups, neighborhood meetings, among others. A comprehensive list of outreach events and community meeting summaries for Phase 1 are included in Appendix D. In addition to community outreach, the Partner Agencies also presented to and met with the Diridon JPAB, City Council, Board of Directors for Caltrain, VTA, and CHSRA, as well as standing community working groups for the BART and High-Speed Rail projects. These meetings were open to the public and provided additional opportunities to learn about the project and provide comments.

6.1 Overview of Outreach Rounds

The first round of outreach included a total of five events between October and February. The objective of the first round was to introduce community members to the project and ask for feedback on the initial high-level vision and key objectives for the future station. Participants were asked to share their aspirations and concerns for the future of Diridon Station, interpret the vision and station objectives, and identify opportunities for improved connections and access at the station.

The second round of outreach involved four engagement activities held in March. During this round, the Partner Agencies presented several heavy rail track options and a draft evaluation framework for use in rating the layouts. The Partner Agencies also conducted some interactive activities during this round of outreach. For example, at a community meeting, participants were asked to consider the needs and desires of different station users by selecting one of 10 possible “personas,” such as a commuter transferring between BART and Caltrain and a family visiting from LA and arriving by High-Speed Rail. Community members found the exercise to be valuable in demonstrating the range of considerations for designing a station that would meet the project objectives and all station user needs.

The third round of outreach took place from May to June and included 10 events, as well as an online survey. The purpose of these events was to present the three layouts, described in Section 3. Participants at these events were able to indicate their urban integration and station access priorities, illustrate their ideas, mix-and-match different elements, and ask the Partner Agencies questions about the layouts. The online survey, which solicited similar to feedback as aforementioned, received nearly 800 responses.

The fourth round of outreach was held in September and included three events. The purpose of this round was to provide an update on the layout optimization process and further explore the “Big Moves” of the station design. The project team presented a fourth spatial layout – the Concept Layout. In addition to the outreach methods used during the other outreach rounds, the Partner Agencies also distributed fliers door-to-door in neighborhoods along the existing southern track alignment and possible new southern I-280 track alignment, which helped draw in new people to participate in the community meeting.

6.2 Key Themes

Throughout the four rounds of community outreach, several key themes emerged, which reflect a range of community perspectives and ideas. These themes are generally consistent with the key objectives established by the Partner Agencies. However, conflicting community priorities also emerged through the process. An example included the challenge of accommodating a safe walking and biking environment while also providing sufficient vehicular parking and pick-up/drop-off space. The key themes are listed on the following page.

Throughout the four rounds of community outreach, several key themes emerged, which reflect a range of community perspectives and ideas.

- 1. Seamless Passenger Experience.** The Station must work well for the passenger, above all. There is desire for short, direct connections between transit services, especially between BART and other modes. It should be easy to navigate and find the services you need with clear wayfinding.
- 2. Local and Regional Destination.** The station should function as a community hub with 24/7 activity. This reflects an underlying desire to make the station area feel safer and more vibrant, with interesting things to do. There is also desire for a world-class hub and regional destination in and of itself – generally meaning that people have reason to go to the station other than to take transit. This could mean having a variety of commercial opportunities, gathering spaces, and activities inside and outside of the station hall.
- 3. Identity.** The station should be a source of pride for San José – reflecting its history, diversity, and innovative spirit through amenities, art, and architecture. It should be highly visible, iconic, and welcoming to all. The station should contribute to an active street life and be part of an interconnected network of safe, well-maintained public spaces.
- 4. Access.** The station should be easy to get to from anywhere in the city. There should be improved station access by foot or bike, as well as passenger drop off near the station entrance for personal and ride-share vehicles. There is desire to maximize the efficiency of bus and light rail service to the station.
- 5. Transit.** The station should be designed to meet future transit needs. The Partner Agencies should also use this opportunity to improve transit serving the station, including more frequent train service, more bus service, and faster light rail service. The Partner Agencies should plan for a direct transit connection between the station and San José International Airport.
- 6. Connectivity.** Currently, the railroad tracks, freeway, major streets, and Los Gatos Creek serve as barriers to movement within the station area. Community members want safe, inviting routes to cross the tracks for pedestrian and bicycles, as well as increased connections within the street and trail network to make it easier to travel between the station, downtown, public spaces, and surrounding neighborhoods.
- 7. Parking and Traffic.** There are concerns about having sufficient parking for station users, especially during construction and until travel patterns adjust to more transit and new forms of travel. There are also concerns about additional traffic on local streets, including from ride-hailing services. Many community members want reduced vehicle parking and car traffic in the immediate station area to create a more pedestrian-friendly environment.
- 8. Neighborhood Quality of Life.** Residents close to the station have expressed concerns about the potential disruption to their neighborhood resulting from construction and increased activity in the area (e.g., noise, traffic, litter, crime, etc.). Some are concerned about effects on their views from new station infrastructure and encourage sensitive design to buffer the station from adjacent neighborhoods.
- 9. Existing Southern Corridor.** Residents of the Gardner and North Willow Glen neighborhoods consistently expressed deep concerns about using the existing southern rail corridor for the planned increases in train volumes.

The major concerns are summarized as follows:

- The Gardner neighborhood has borne the brunt of rail and infrastructure decisions for more than a century.
- The existing at grade crossings are problematic (whistle noise, risk for accidents, limited emergency access, and impacts to traffic when arms are down, etc.).
- Residents fought to get Fuller Park and don't want the rail projects to impact that or any other community resource.
- Residents do not want the rail projects to displace any homes.
- Trains are noisy, and more going through the neighborhood would increase noise.
- The tracks have maintenance issues. Elevated tracks and big, new infrastructure could attract more blight and be an eyesore.

10. Development Potential. The Concept Plan should optimize land for transit-oriented development, recognizing the high value of land around the station and the benefits of increasing the number of people who live or work within walking distances. There is interest in the relationship between the station plans and the proposed mixed-use development by Google.

11. Historic Depot. Community members frequently ask about what will happen to the historic depot building. There is a general desire to preserve it in some form.

There is community interest in optimizing land for transit-oriented development.

12. Environmental Sustainability. The station should minimize environmental impacts (such as to the creek), support habitat restoration, and use green building methods.

13. Social Equity. The Partner Agencies should ensure that the station is accessible and useable for people commuting from other parts of the city and for different types of users. They should also consider ways to maximize affordability of transit service and address the potential for displacement resulting from investments and gentrification.

14. Fiscal responsibility. There is concern about the potential cost to taxpayers of the station project, including for long-term operations and maintenance. There is some interest in the decision-making process and a desire for transparency and accountability.

6.3 Feedback on Draft Layouts

In addition to the overarching themes, the public also provided feedback specific to the three layouts. The primary feedback received is summarized below. The community's feedback on the Concept Layout is summarized in Section 7.

1. Transfer Times. The top priority resulting from community input on the layouts was to design the station to have "a short, intuitive connection between the BART platforms and the platforms for heavy rail services (such as CHSRA, Caltrain, Capitol Corridor, and ACE)." Community members noted that the Elevated West Santa Clara Street layout appeared to have the tightest concentration of transit, but liked that the Elevated Stover Street layout has the shortest travel times between modes overall. There was concern about the potential for complicated, long transfers between modes and rail platforms – vertically and horizontally.

- 2. Elevated Tracks.** Many community members liked the elevated track option due to the possibilities for enhancing pedestrian and bicycle connections across the tracks by eliminating dips and creating new pathways. They also like the idea of using space beneath the tracks.
- 3. Connectivity.** Community members generally found the West San Fernando Street layout to be the “status quo” and problematic with respect to multimodal integration and area connectivity, as it would maintain the at grade tracks and existing street network.
- 4. Visibility.** The West Santa Clara Street and Stover Street station locations were appealing for their proximity to the Arena, connection to downtown, the opportunity for a strong visual presence with an iconic building, and the potential to support more vibrancy along West Santa Clara Street.
- 5. Efficiency.** Community members also liked the West Santa Clara Street and Stover Street layouts for their relatively compact footprints and efficient use of land.
- 6. Access.** Several community members encouraged improvements to the light rail alignment to maximize speed and reduce conflicts

with pedestrians and bicyclists. Some people like the flyover for intercity buses and taxis shown in the Stover Street layout as a way of separating traffic from pedestrians. There is general interest in providing clear walking and biking routes.

- 7. Cost and Feasibility.** The most popular feature of the West San Fernando Street layout was the potential to have the lowest construction cost (this was the most frequently made comment in the online survey with respect to the pros and cons of the three possible layouts). Some participants were concerned about the challenge of completing the more complicated layouts.
- 8. Southern Track Alignment.** There is strong support among residents of the Gardner and North Willow Glen neighborhoods for the construction of a new viaduct along I-280/SR-87 (as shown in the West Santa Clara layout) for the reasons described under Key Theme #9 in Section 6.2. Several community members recognized that a viaduct would create more negative impacts – visual and noise – to additional neighborhoods (including disadvantaged communities such as Washington-Guadalupe).



Section 7

7. LAYOUT OPTIMIZATION AND ADVANCEMENT

THE PARTNER AGENCIES' EVALUATION PROCESS was a first step in identifying the preferred placement of the elements within the intermodal hub based on key objectives, design standards, and operations. Following the evaluation, the Partner Agencies began the optimization process to further refine the design of the three previously described layouts and to mix and match elements between the layouts.

The optimization process relied heavily on input from the community, ongoing technical work with the Partner Agencies, as well as collaboration with adjacent planning efforts including the City of San José's Diridon Station Area Plan (DSAP) update, Downtown Transportation Plan (DTP), and corresponding Mixed-Use Development proposal. This process resulted in the development of a fourth layout, the Concept Layout, which

is illustrated on Figures 16 and 17. The Partner Agencies believe the Concept Layout holds the most promise in fulfilling the design objectives and reflects the majority of the community's preferences.

As with the three other layouts, the design process was executed first by placing the heavy rail ("Big Moves") and filling in the other elements around this design. As previously noted, the elements are interdependent – that is, that the placement of one element influences that of all other elements. The heavy rail optimization required the optimization of the other elements within the intermodal hub, which ultimately led to the creation of the Concept Layout. The Partner Agencies recognize that the placement of many of these elements, such as the VTA bus stops and bike parking, is flexible and is subject to further refinement and coordination with other ongoing processes in subsequent phases.

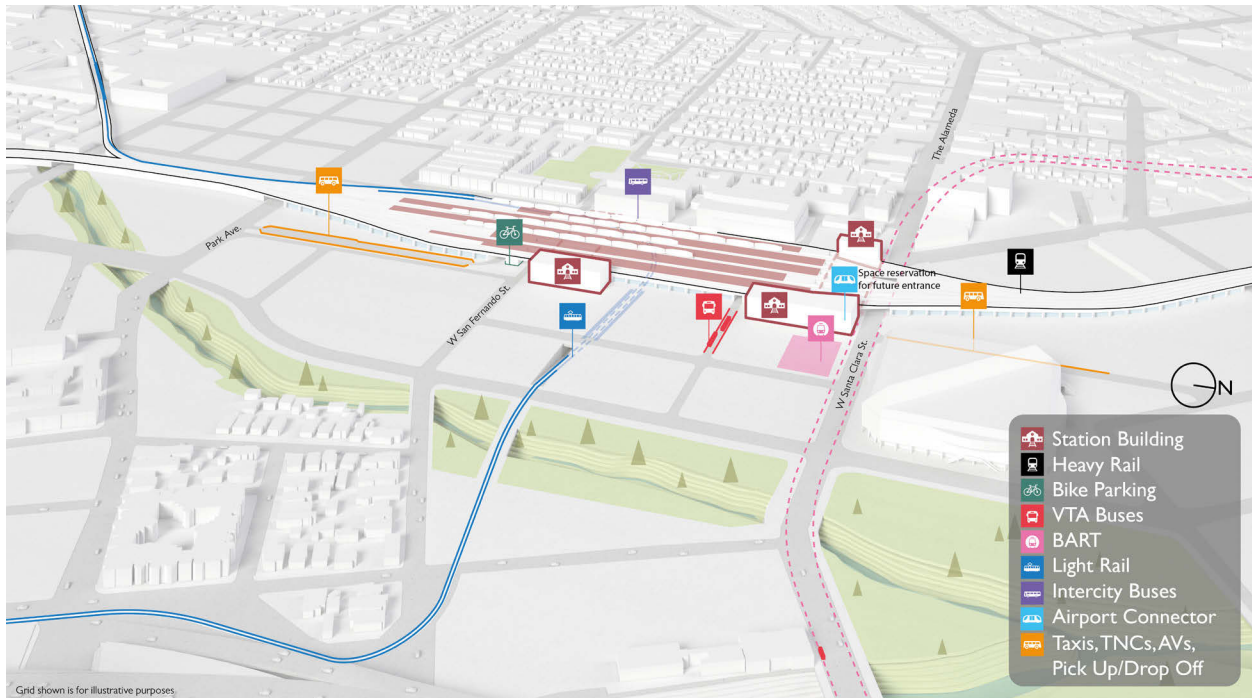


Figure 16: Proposed Intermodal Hub – Concept Layout



Figure 17: Proposed Rail Corridor – Concept Layout

7.1 Heavy Rail

As previously noted, the Partner Agencies began the optimization process with the heavy rail element, including the vertical and horizontal placement of the platforms, and the northern and southern track alignment. The primary purpose of optimizing the heavy rail corridor was to balance the operational needs for heavy rail operators with the surrounding development opportunities along the corridor. The optimization process resulted in a configuration in which the proposed tracks are elevated, the general position of the platforms is between West Santa Clara Street and West San Fernando Street, and the northern and southern alignment generally follow the existing corridor. It is important to note that the proposed design for the rail corridor is still preliminary and subject to further development in future phases.

To maximize opportunity for transit-oriented development along the heavy rail corridor, the Partner Agencies proposed to maintain the general alignment of the northern corridor, which requires the platforms to be located south of West Santa Clara Street. The position of the platforms results in limited impacts to the northern heavy rail corridor. To best create an optimal passenger experience at the station with this platform position, two

Heavy Rail Options

- Vertical platform position: *Elevated*
- Horizontal platform position: *Between West San Fernando Street & West Santa Clara Street*
- Primary station position: *West Santa Clara Street*
- North track alignment: *Existing*
- South track alignment: *Existing*

Elevating the tracks allows for increased visibility and convenient east-west connections for pedestrians, bicyclists, and scooterists – ranked at the top of the access hierarchy.

concourses are proposed in this design (further discussed in Section 7.2).

To support future expansion of rail service at the station, an additional track and platform are proposed – for a total of 10 tracks and five platforms. As a result of the additional track and platform and the two concourses, the station footprint would widen to the east rather than the west due to existing structures west of the station. This eastward expansion would have implications for the existing streets and developable plots within and around the intermodal hub. To accommodate this eastward expansion and achieve the objective of creating a human-centered intermodal hub, this layout would require the section of Cahill Street between West Santa Clara and West San Fernando Streets to be restricted to non-motorized travel. The eastward expansion of the station could also have an impact on developable plots between Cahill and Montgomery Streets.

While the Partner Agencies recognized that heavy rail operations are feasible either at grade or elevated, both the Partner Agencies and the community prefer the tracks to be elevated, given the connectivity and urban integration benefits. Elevating the tracks allows for increased visibility and convenient east-west connections for pedestrians and bicyclists – ranked at the top of the

access hierarchy – as these modes would not be required to make grade changes to travel east-west. Additionally, elevating the tracks allows for better integration with surrounding land uses and better connections between neighborhoods, as compared to at grade tracks and platforms, and creates space beneath the tracks for other uses such as bicycle parking, retail, office space, station facilities, etc. As a result of elevating the tracks, CEMOF would need to be relocated.

For the southern heavy rail alignment, the Partner Agencies propose to maintain the existing alignment, rather than add the I-280 alignment due to considerable impacts associated with the creation of a new viaduct. The effects of an I-280 alignment in the southern corridor would require the construction of a large viaduct approximately spanning three miles south of the station and an elevated heavy rail flyover north of the station. This new infrastructure would result in visual and noise impacts south of the station to neighborhoods not previously impacted and decrease the amount of land available for transit-oriented development north of the station. Additionally, the I-280 alignment would divert only a portion of trains from passing through the Gardner neighborhood, as diesel trains (at a minimum) and Caltrain trains would continue to use the existing southern alignment. Further, if CHSRA and Caltrain both utilize the I-280 alignment, the tracks at Tamien Station would need to be elevated.

The Partner Agencies believe that community concerns relating to safety, noise, vibration, and visual impacts, among others would be better addressed through tangible improvements to the existing southern corridor, rather than the creation of a new rail corridor that would be expensive to build and maintain. With these tangible improvements, the Partner Agencies believe that the rail corridor can coexist with the communities along the corridor, including Gregory, Gardner, and North Willow Glen,

and accommodate increasing train traffic without having a negative impact on the quality of life in those neighborhoods. To this end, the Partner Agencies recommend evaluation of the following strategies, plans and associated measurements, in close consultation with the affected communities, in the next phases of planning:

- Grade separations keeping people and vehicles away from train traffic while maintaining good local connectivity and access;
- Sound and vibration dampening treatments for tracks;
- Aesthetic and functional treatments like sound walls with added landscaping (“green walls”) or other attractive, maintainable coverings;
- Optimize design to minimize the need to acquire land; and
- Fuller Park as a permanent, city-owned park with high-quality landscaping and other amenities to be determined through a community-based process.

In addition, the Partner Agencies will work to develop appropriate metrics that will enable tracking and monitoring of these goals and conditions over time.

7.2 Station Hall, Concourses, and Public Square

During their evaluation, the Partner Agencies indicated that a station hall and concourse at Stover

The dual concourse design creates a short, direct connection with BART and facilitates balanced passenger circulation throughout the station.

Street were preferred for urban integration and visibility benefits. However, with the heavy rail platforms positioned between West Santa Clara Street and West San Fernando Street, a concourse located at Stover Street is not preferred due to the adverse effects on the functionality of the station and potential passenger circulation issues. To remedy this, the Partner Agencies proposed creating two concourses: a primary concourse in the north, oriented toward West Santa Clara Street, as well as a southern concourse oriented toward West San Fernando Street.

This design optimization creates a short, direct connection with BART and facilitates balanced passenger circulation throughout the station. The dual concourse design also proposes east and west entrances to both concourses, for a total of four station entrances. While the community expressed interest in a single grand station entrance, they also recognize that two concourses provide multiple access points for passengers. Based on a preliminary passenger flow analysis, approximately 60% of passengers are projected to use the West Santa Clara Street entrance, and the remaining 40% would use the West San Fernando Street entrance. Another preliminary estimate of the area for the four station entrances indicates that the total footprint of the four entrances is equivalent to the size of the station halls proposed in the previous three layouts.

The primary station hall would be located on the east side of the heavy rail platforms oriented at West Santa Clara Street, which creates a center of gravity and would promote pedestrian activity. This location allows for highly visible and easily identifiable station along a highly activated corridor that serves as a direct connection to downtown San José. Additionally, the proposed station entrance is within proximity to the BART and VTA bus service, which will facilitate a convenient experience for the large number of passengers pro-

The public square is an important component of the intermodal hub, as it provides a transition area between the surrounding urban area and the station area.

jected to transfer between heavy rail, BART, and VTA buses (refer to Figure 6).

The design also proposes public squares directly in front of three of the four station entrances. The public square is an important component of the intermodal hub, as it provides a transition area between the surrounding urban area and the station area. First and foremost, the square creates a space for passengers to orient themselves within the intermodal hub and locate their destination. Additionally, the square provides space for passengers and visitors to congregate and contributes to establishing the station as a destination. Converting the section of Cahill Street within the intermodal hub to a non-motorized street is not only necessary due to the width of the station, but also to create this transition space and a human-centered station for the primary station hall. A smaller station hall and public square to the west of the heavy rail platforms would provide access to the primary concourse for passengers arriving from The Alameda.

The area around West San Fernando Street would serve as another major activity center within the intermodal hub, given its proximity to light rail and the number of passengers projected to access the station from the south. To accommodate these passengers and support this activity center, a second station concourse is proposed. The concourse would be accessible via an entrance

on both the east and west sides of the heavy rail tracks. The eastern entrance would be comparable to the primary station entrance, with a station hall and public square, while the western entrance would not have a public square.

7.3 Bike Parking

Given that West San Fernando is projected to be a major connection for bikes to the intermodal hub, the Concept Layout proposes a bike parking facility beneath the heavy rail tracks, south of West San Fernando Street, and would be accessible from both the east and west. This location reflects the rank of bikes in the access hierarchy, providing a convenient, close connection to other modes in the intermodal hub. The Partner Agencies recognize that additional locations for the bike parking facility are feasible (e.g., underground in the intermodal hub or at a more northern location beneath the heavy rail tracks) and will be further analyzed in future phases.

7.4 Light Rail

The three layouts described previously in the report propose for the light rail tracks and platforms to be located on the same level as the station hall and concourse. While placing the light rail at grade facilitates an ideal passenger experience, this placement would also dissect the intermodal hub, including West San Fernando Street, the southern concourse, and a primary bike route. For that reason, the Concept Layout proposes for the light rail tracks and platforms to be below grade with an east-west orientation, approximately between Cahill and Montgomery streets.

By placing the light rail tracks and platforms underground, conflict points between light rail and pedestrian and bicyclist traffic in the intermodal hub is significantly minimized. Additionally, this placement accommodates space within the intermodal hub for transit supportive uses, such as

communal gather spaces and development.

South of Diridon Station, the light rail tracks are proposed to be elevated to the north of Sunol Street and follow the heavy rail alignment. Between Park Avenue and West San Fernando Street, the light rail tracks would transition underground to slope beneath West San Fernando Street on the western side of the station. Beneath the station, the alignment would curve to the east and connect to an underground platform in the center of the intermodal hub (approximately between Cahill and Montgomery streets). As the light rail travels east from Diridon Station toward downtown, the light rail surfaces back to grade via the existing tunnel entrance and connects to the existing at grade alignment. This proposed design would facilitate operational improvements, as it would eliminate the existing tight underground curve (improve speeds) and consolidate the existing Diridon light rail stop to the west of the station and the West San Fernando Stop to the east of the station.

7.5 VTA Bus

Through the evaluation process, the Partner Agencies indicated that a VTA bus facility along West Santa Clara Street was preferred from an operational perspective. Through the design optimization process and as a result of the placement of the station hall on West Santa Clara Street, a VTA bus facility on West Santa Clara Street was

The proposed VTA bus stop area is designed to maximize space efficiency, as it utilizes a first in, first out design, which allows for dynamic bus bays.

no longer feasible. Alternatively, the Concept Layout proposes the VTA bus stops to be located south of the primary station hall along a bus-only street to the east of the heavy rail tracks. This location creates a direct passenger connection to the primary station hall.

The bus stops would be oriented to the east and west, which reflects the direction of travel for the bus routes that serve Diridon Station. This design facilitates intuitive wayfinding for passengers navigating to their bus stop. The proposed bus stop area is designed to maximize space efficiency, as it utilizes a first in, first out design, which allows for dynamic bus bays. Dynamic bus bays eliminate the need for a dedicated bay for each route; rather, the buses stop at the first available bay in their direction of travel. This results in a fewer number of bus stops in the intermodal hub – a total of six are proposed – which, in turn, maximizes the space for other uses within the intermodal hub.

VTA buses would access the stops in the east from one block south of West Santa Clara Street and in the west from both White Street and one block south of The Alameda. This results in a minimal detour for the bus routes serving the station. Additionally, a layover space for VTA buses would be located at grade beneath the heavy rail tracks.

7.6 Intercity Buses

To reserve space within the intermodal hub for modes higher on the access hierarchy and for transit-oriented development, the intercity buses are proposed to be located to the west of the heavy rail tracks on White Street. Passengers arriving and departing the station via intercity buses would be in proximity to the heavy rail platforms via either western station entrance.

7.7 BART

Both the Partner Agencies and the public indicated that a short, direct, and intuitive connection to and from BART was a top priority for the spatial layout. As such, the Concept Layout proposes a direct, at grade connection to the BART station from the primary station hall. The Partner Agencies recognize the potential phasing challenges between the two projects, as BART is projected to be in operation before the station and intermodal hub are constructed. Given the projects would be physically separated, it is assumed there will be no phasing issues.

7.8 Curb Space for Pick up/Drop off modes

Dedicated curb space for pick up/drop off modes, including taxis, TNCs, AVs, company shuttles, and private vehicles, would be reserved to the north and south of the station. North of West Santa Clara Street, a two-way street between the heavy rail tracks and the SAP Center would be dedicated for passengers arriving and departing from the primary station hall. Similarly, for passengers arriving and departing from the southern station hall via pick up/drop off, there is dedicated curb space along a one-way loop south of West San Fernando Street. This proposed placement would create a close connection to the station halls, increase the safety for passengers in the intermodal hub by minimizing conflict points, and reserve space within the intermodal hub for other modes and purposes, enhancing the passenger experience.

Both the Partner Agencies and the public indicated that a short, direct, and intuitive connection to and from BART was a top priority for the spatial layout.



Section 8

8. NEXT STEPS

A KEY FOCUS OF THIS PHASE OF WORK WAS

to organize the necessary elements for an iconic, integrated intermodal transit center into a spatial layout. The Partner Agencies first had to organize the elements physically to understand potential impacts to the functionality of the station. This is a foundation for the Partner Agencies to now build on. The next step to advance the Concept Layout is to continue planning, analysis of rail operations, and conceptual design work on the rail corridor and station facilities to better understand and refine the benefits and tradeoffs of each component of the layout. Some elements, including but not limited to, the bus and VTA light rail layouts, may evolve during the continued planning and design process. The Partner Agencies recognize that the development of the future Diridon Station is a long-term, multi-year program.

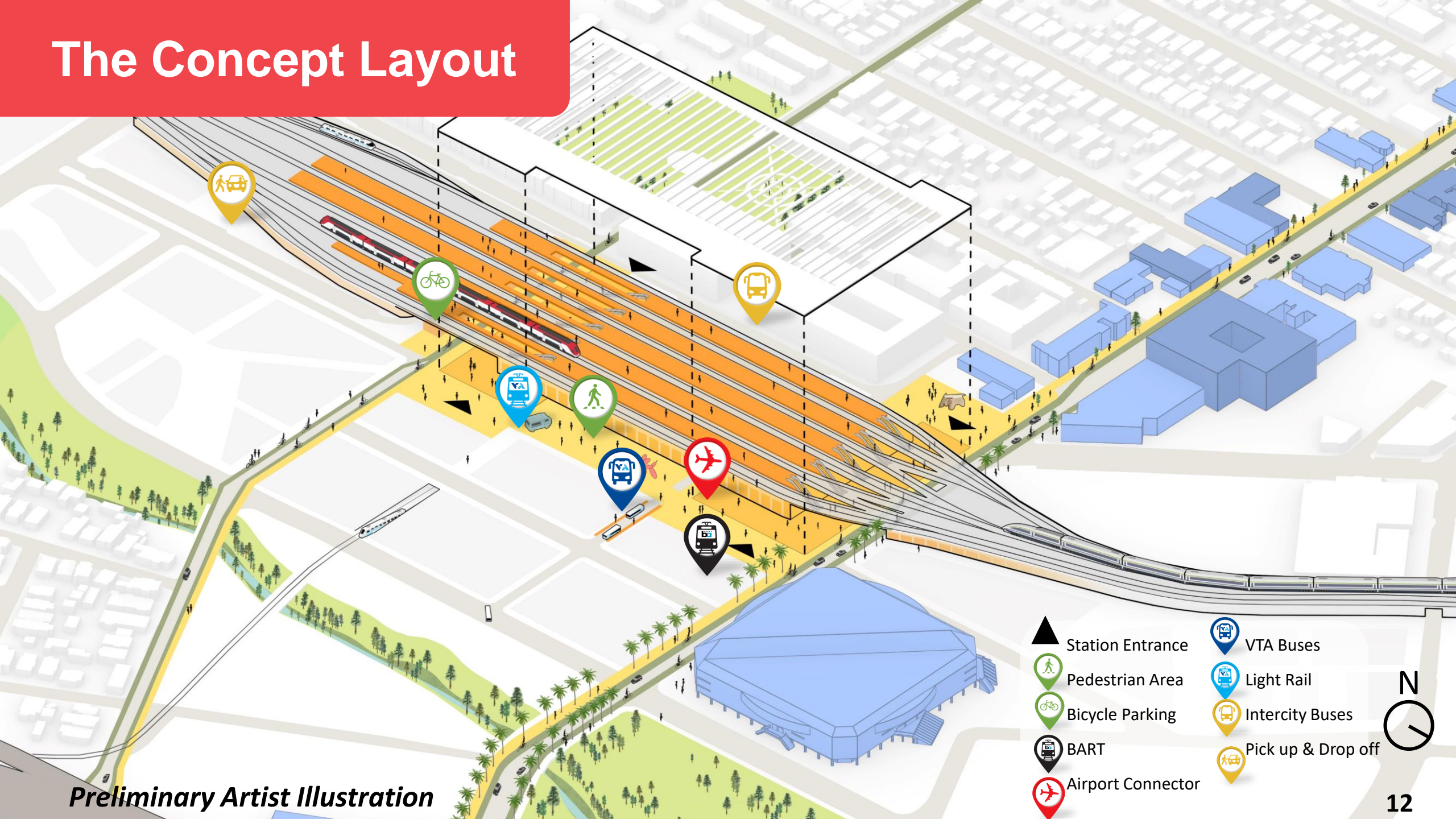
Over the next year, a critical planning focus will be on studying the best options to organize the Partner Agencies and technical expert teams, building a viable financial plan, developing environmental strategies, and designing an implementation path

to build and govern the future station. The conceptual design work will result in updated conceptual engineering drawings to define the Concept Layout, capital cost estimates, conceptual construction sequencing passenger flow analysis, and refined station footprint. There are many critical decisions ahead and the next course of work will focus on how to take the spatial vision of the Concept Layout forward through project development sufficient for environmental evaluation, and eventually implementation.

In addition to the technical work on the layout, the Partner Agencies plan to continue community and stakeholder engagement. The design and implementation strategy work will be conducted in close coordination with interdependent project efforts happening around the station area, including the Diridon Station Area Plan (DSAP) and Google's proposed "Downtown West" mixed-use development project.

The Partner Agencies continue to be committed to the partnership set forth by the Cooperative Agreement.

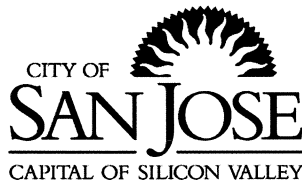
The Concept Layout



Preliminary Artist Illustration

- Station Entrance
- Pedestrian Area
- Bicycle Parking
- BART
- Airport Connector
- VTA Buses
- Light Rail
- Intercity Buses
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Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: John Ristow

**SUBJECT: DIRIDON INTEGRATED STATION
CONCEPT PLAN – RAIL ALIGNMENT**

DATE: January 17, 2020

Approved

Date

1/17/2020

COUNCIL DISTRICTS: 3 & 6

OUTCOME

Improved understanding of the rail alignment options associated with an expanded and redesigned San José Diridon Station (Diridon Station).

BACKGROUND

When BART, commuter rail, high-speed rail, light rail, and supporting bus services converge, Diridon Station will support more high-capacity transit connections than any other place in the Bay Area. In order to plan for the substantial growth of Diridon Station, the City of San José, the Peninsula Corridor Joint Powers Board (PCJPB), Santa Clara Valley Transportation Authority (VTA), and the California High-Speed Rail Authority (CHSRA) (the “Partner Agencies”) formed a public agency partnership via a Cooperative Agreement in July 2018.

The Partner Agencies have been working together with a consultant team led by Arcadis Design & Consultancy and Benthem Crouwel Architects (“Team ABC”) since September 2018 to develop a spatial vision for a new and expanded station. The Layout Development Report completed by the Partner Agencies and Team ABC is included in the December 3, 2019 agenda packet to the City Council.

After considerable evaluation and interaction with the community, Team ABC and the Partner Agencies developed a fourth spatial layout (the “Concept Layout”) that optimizes transit and passenger needs, while supporting future development potential and balancing city and neighborhood impacts. The project staff of the four Partner Agencies jointly authored a memo in December 2019 that put forward three decisions related to the Concept Layout for consideration by the Mayor and City Council. This included the following:

- **Decision #1: Elevated Station Platforms.** Elevating the tracks and platforms will allow for street-level east/west connections through the station area, knit together neighborhoods on either side of the tracks, and facilitate connections for people walking,

bicycling, and driving.

- **Decision #2: Station Entrances at Santa Clara Street and San Fernando Street.** The Partner Agencies recommend two main concourses with four station entrances. One concourse is oriented toward Santa Clara Street and will be close to BART, light rail, bus, and other connecting modes to allow for quick transfers. The other concourse will be located near San Fernando Street and allow for easy connections to the bike network, creeks, existing neighborhoods, and future office and housing development.
- **Decision #3: Existing Track Approaches into the Future Station.** The Partner Agencies recommend maintaining track approaches that generally stay within the existing northern and southern corridors in order to leverage existing rail infrastructure, minimize overall community impact, and minimize the need to acquire significant land.

Previous Action and Direction

The San José City Council and Caltrain Board of Directors (JPB) accepted the first two staff-recommended decisions in December 2019. The San José City Council deferred weighing in on Decision #3 and scheduled a study session on January 28, 2020 to better understand the possible track approaches into the future station. The VTA Board of Directors received the plan update as an information item on their Consent Agenda, and CHSRA Board of Directors elected to defer making decisions on all three items until after City Council consideration. The study session will specifically assess the different track approaches to the south of the station and the relative benefits and tradeoffs of having trains run in the existing corridor as recommended by the staff of the Partner Agencies or on a viaduct structure over the I-280/SR-87 freeway interchange.

In their November 27 memorandum to City Council, Mayor Liccardo and Councilmembers Davis and Peralez asked staff to further investigate the following items during the January 28 study session:

1. What are the infrastructure requirements for the northern and southern corridor flyovers? What environmental concerns might these generate?
2. What are the property impacts of an I-280/SR-87 viaduct, both north and south of the Diridon Station, including impacts to future transit-oriented housing development?
3. What are the impacts of a viaduct to the Tamien Station, planned transit-oriented development in Tamien, and surrounding amenities like Tamien Park?
4. Is it possible to shift Caltrain, High-Speed Rail, and other heavy rail operators onto a viaduct?
5. From a track design perspective, the Union Pacific Railroad (UPRR) requires that freight tracks not exceed a one percent grade. Can the Partner Agencies request a variance that would support UPRR service on a viaduct? What is UPRR's response?
6. What are the potential visual impacts of the viaduct option?
7. What can the community anticipate in terms of the number of tracks and trains to support the Caltrain Service Vision, and High-Speed Rail service, in the Gardner/Gregory/North

Willow Glen neighborhoods? What potential corridor and track treatments and best practices are being considered for the existing corridor at this time?

8. What are the likely impacts to Fuller Park in the existing corridor scenario? What are the likely property impacts in the Gardner/Gregory/North Willow Glen neighborhoods?
9. What specific commitments can the City and the Diridon Integrated Station Concept Plan (DISC) Partner Agencies make to the surrounding community regarding mitigations of noise, vibration, visual impact, air quality, and safety?

Additionally, during the December 3 City Council meeting, the Mayor and Councilmembers asked for additional information on the following items to be presented in the study session:

1. What is the relative effectiveness of different techniques to mitigate noise and vibration impacts of train travel such as rubber bearings and track slabs?
2. What are the maintenance considerations for each of these techniques?
3. What are the impacts of each alternative track approach on different types of development, whether housing, office, open space, or other?
4. What land is made permanently undevelopable, and what land is undevelopable until reconstruction of the station and related track infrastructure is complete?
5. What are the environmental considerations associated with each track approach, particularly on the Los Gatos Creek, the Guadalupe River, and the trails that line these waterways?
6. What are order-of-magnitude cost differences for each track approach?

This memorandum has been prepared for the January 28, 2020 Study Session to more thoroughly explain Decision #3 and respond to related additional requests for information.

ANALYSIS

To facilitate the decision-making process for the track approaches (Decision #3), the Partner Agencies have prepared detailed information on the following topics. The memorandum is organized as follows:

- A. Potential Long-term Train Volumes & Track Needs (Diridon Station to Tamien Station)
- B. I-280/SR-87 Viaduct Alignment & Options
- C. Existing Southern Corridor Alignment
- D. Noise & Vibration
- E. Property & Development Opportunity Sites
- F. Capital Cost Comparison
- G. Alignment Option Comparison

The memo will present and discuss two distinct alignments for the southern rail corridor, and multiple options within those alignments. These include all trains on a four-track viaduct, two tracks through the existing alignment and two tracks on a viaduct, and a four-track option

through the existing alignment. Although there will be additional analysis in future phases of work to determine whether three or four tracks would be necessary if the existing corridor was used, this analysis compares a four-track option because the impacts of a three-track option would only reduce the critical impacts evaluated here.

The design decisions made at the station influence the track approaches into and out of the station and vice versa. Depending on the choice of heavy rail corridor alignment, the impacts could span as far north as the Caltrain Centralized Equipment Maintenance and Operations Facility (CEMOF) and as far south as Communications Hill, shown in Figure 1.

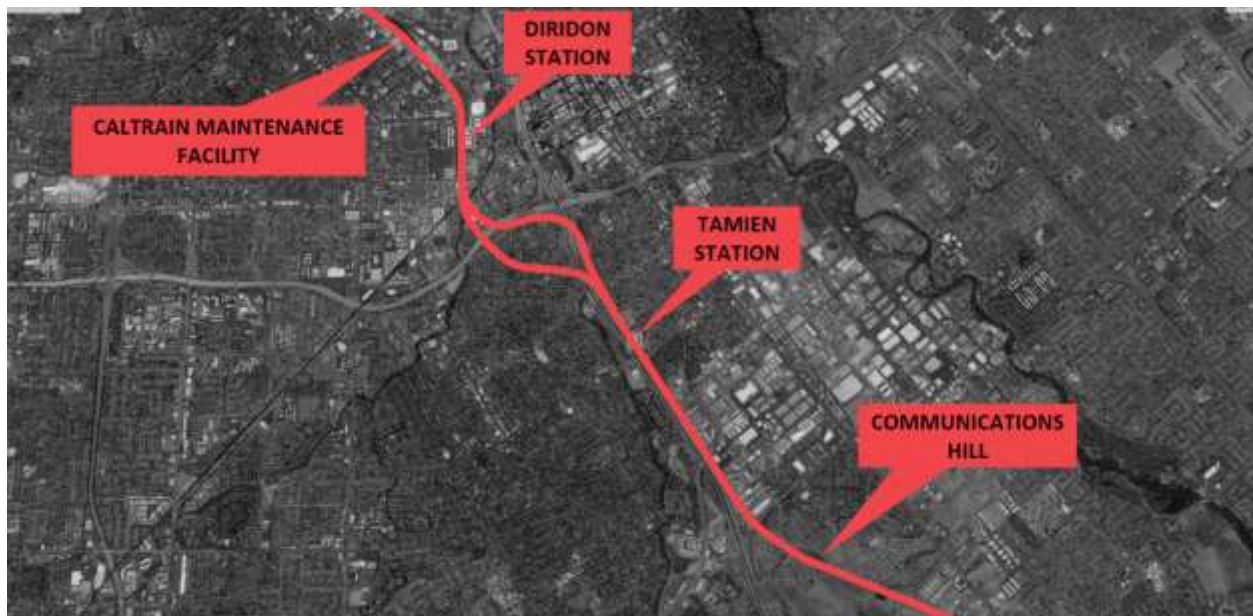


Figure 1 – Approximate Project Study Boundaries

A. Long-Term Train Volumes and Track Needs

Currently, five passenger and freight rail operators utilize the corridor within the above-mentioned scope boundaries. These operators are Caltrain, the Altamont Corridor Express (ACE), Capitol Corridor (CC), Amtrak, and Union Pacific Railroad (UPRR). In the future, the California High-Speed Rail Authority (CHSRA) is expected to begin service on the corridor, for a total of six anticipated operators.

Caltrain owns and manages the overall rail corridor running through Diridon Station and south to Tamien Station. However, UPRR owns a single track (Main Track 1) within this larger corridor. South of Tamien Station, the UPRR owns and manages the entire corridor. Various “trackage rights” agreements govern the use of the corridor and its tracks by individual operators. These agreements specify the rights of individual rail operators to operate different levels of service. They also detail the responsibility of the infrastructure owner (either Caltrain or UPRR) to dispatch and maintain the railroad for collective use.

Today, on a typical weekday, approximately 52 trains travel between Diridon and Tamien Stations (the daily number of freight trains varies). Train volumes south of Diridon today are shown in Table 1. They are significantly lower than potential future volumes for two reasons. First, CHSRA trains are not yet operating between Gilroy and San José and Caltrain’s current service volumes in the same corridor are limited by the existing infrastructure, funding availability and current, restrictive, trackage agreements with UPRR.

Second, Diridon Station is not currently a “through running” station – meaning that most trains using the station (including the majority of Caltrain trains and all CC trains) “turn” in the station (trains come into the station from the north, stop at Diridon Station and then return back northward.) Today, UPRR freight trains, Amtrak, ACE and a subset of Caltrain trains run “through” Diridon to Tamien and points further south before “turning” and heading north – these trains make up the 52 cited in Table 1. Turning trains at the station takes up space that could otherwise be utilized by through-running trains operating from Gilroy to San Francisco, which allows for increased service capacity south of Diridon Station. In addition, this increased capacity at Diridon Station can be accomplished without significantly increasing the overall footprint of the station and tracks.

Table 1 – Typical Train Volumes Today (2020)

Operator	Typical Weekday Train Volume
Caltrain	34
ACE	8
Capitol Corridor	0
Union Pacific	Up to 8
Amtrak	2
Total	Up to 52

Future Service Levels

Caltrain, CHSRA, ACE and CC have all adopted operator-specific, long range business plans or vision documents that describe their individual aspirations to grow rail service over the medium and long-term (some at a 50+ year horizon). When summed together, the individual long-range plans of each operator result in the daily train volumes shown in Table 2.

In the period after 2040, the collective train volumes contemplated by each operator could result in daily train volumes on the portion of corridor between Diridon and Tamien stations of up to 480 passenger trains per day (UPRR currently runs up to 8 trains daily; future growth or decline is unknown and not reflected in future totals). Caltrain’s adopted service vision aims to achieve robust service through and to south San José, with a goal of up to 268 trains per day. The ACE Forward Plan has a defined goal of up to 20 daily trains and CC’s Vision Plan specifies a goal of up to 30 daily trains. UPRR freight service has been variable in recent years and the long term trend is unclear. It is expected that Amtrak will maintain current service levels of two trains per

day. Finally, per CHSRA's 2018 Business Plan, CHSRA expects to run up to 160 trains each day at full buildout of the statewide system.

These potential future train volumes should be caveated:

1. First, plans have been developed individually and independently by each operator and have not yet been fully harmonized with each other. The 2018 State Rail Plan began this process of harmonization and further coordination of individual operator plans will occur over the coming year and ultimately through the development of the next State Rail Plan.
2. Similarly, the plans from which these potential train volumes are derived are aspirational, and their achievement is contingent on major, multi-decades-long investments in rail infrastructure around the region and the state. Their implementation will be incremental and will occur gradually over many years.

As suggested above, rail service on the corridor will increase gradually, rather than all at once. For illustrative purposes, the Partner Agencies have also estimated the potential interim service levels for a 2030 horizon year, also listed in Table 2.

Table 2 – Estimated Interim (2030) and Long-Range Train Volumes

Operator	Example Interim Train Volume (2030)	Long-Range Service Goal (2040+)
Caltrain	116 to 166	268 (Adopted Service Vision)
ACE	20	20 (ACE Forward, non-electric service)
Capitol Corridor	30	30 (CC Vision Plan, non-electric service)
Union Pacific	Unknown	Unknown
Amtrak	2	2
High-Speed Rail	44	160 (2018 Business Plan)
Total	212 to 262	480*

**Note: UPRR currently runs up to 8 trains daily; future growth or decline is unknown and not reflected in future totals.*

Infrastructure Needs

The Partner Agencies have determined that no more than four tracks would be necessary and feasible along the existing southern corridor adjacent to the Gregory, Gardner, and North Willow Glen neighborhoods. Of these four tracks, there is a need for both electrified and non-electrified (diesel) tracks. For Caltrain and CHSRA to operate at both their interim and long-range service levels, two electrified tracks would be required. Determining whether diesel operators (ACE, CC, Amtrak, and UPRR) would require one or two non-electrified tracks depends on the following factors:

1. Further refinement of both the overall number of future trains planned as well as the details of schedules and service patterns;

2. The details of ongoing and future negotiations with the UPRR regarding the extent to which diesel passenger and freight services may share tracks; and
3. The long-term potential for ACE or CC to electrify their service or adopt performance-equivalent rolling stock that might allow them to utilize the electrified tracks.

The potential future train volumes suggest that the corridor will look and feel significantly different from today; as such, the corridor will need to be redeveloped to ensure that community concerns and issues are appropriately addressed and ensure that conditions for residents are as good as or better than today. Through the Concept Plan, the Partner Agencies aim to grade separate the existing at-grade crossings in the corridor through these neighborhoods with various treatments to comprehensively address noise, vibration, and visual concerns. This responds to both the projected train volumes and the potential need for four tracks in the segment of the corridor between Diridon and Tamien stations.

B. I-280/SR-87 Viaduct Alignment & Options

In public meetings relating to the Concept Plan, community members and elected officials expressed interest in re-routing some or all train traffic onto a new, estimated three-mile long viaduct structure that would follow Interstate 280 (I-280) and State Route 87 (SR-87). The intent of this proposal is to divert train traffic away from the existing corridor and to reduce or eliminate the negative impacts of this train traffic on the Gregory, Gardner, and North Willow Glen neighborhoods—the neighborhoods along the current rail alignment.

The Partner Agencies analyzed the potential for a viaduct, considering the best possible alignment for this phase of the project and the necessary infrastructure to support it. This includes a viaduct that is operationally viable as well as compatible within the community. The analysis focused on the following topics:

1. The viaduct alignment south out of the station;
2. The need and placement for a flyover, which facilitates a separation between electrified and non-electrified (diesel) tracks necessary for electrified service to run along the viaduct; and
3. The feasibility of accommodating additional or all trains on the viaduct and the resulting impact on the infrastructure and service.

Viaduct Alignment

In recent years, both the City and CHSRA have developed options for a potential viaduct along the southern rail corridor. CHSRA spent close to a decade evaluating a viaduct option that fully avoided the Gardner community, which is shown in blue on Figure 2. In 2018, the City conceptually developed an additional viaduct option that aimed to minimize property impacts south of the station. This option, shown in green on Figure 2, is the southern-most viaduct alignment. The Partner Agencies asked Team ABC to analyze the operational effects of these

two alignments and to devise a viaduct option that achieves acceptable train speeds and reliability while minimizing impacts to existing properties and future transit-oriented development. The Concept Layout attaches the viaduct to an elevated, redeveloped station, a distinct difference from the CHSRA work. The result is an optimized alignment that is located between the other proposed alignments, shown in pink on Figure 2.

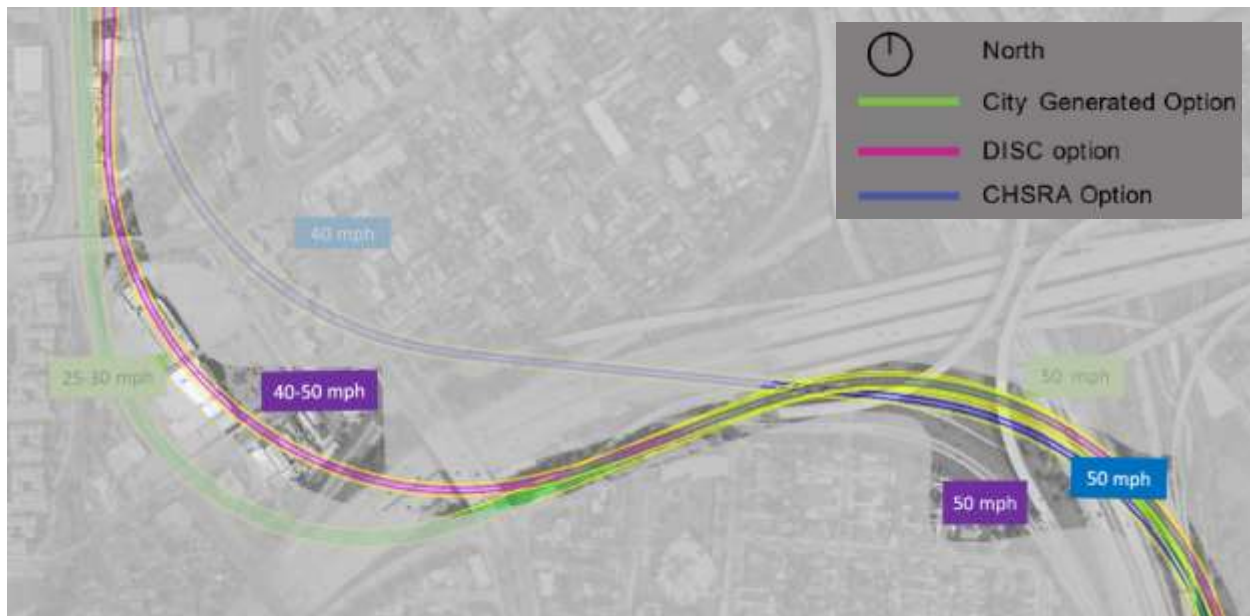


Figure 2 – Partner Agencies' Optimized Viaduct Alignment

Explore All Trains on Viaducts

The Partner Agencies also received a request from both the Diridon Station Joint Policy Advisory Board (JPAB) and the City Council to investigate the possibility of routing all trains (diesel and electrified) on the I-280 viaduct in an effort to altogether remove the tracks within the existing southern rail corridor and thereby eliminate the negative impacts of the rail corridor on surrounding neighborhoods. The Partner Agencies and Team ABC analyzed the feasibility of this arrangement with the Concept Layout design and to Tamien Station.

To accommodate all trains – both electrified and diesel – would require four tracks on two distinct viaducts structures (two tracks on each viaduct). Two viaducts would be necessary because constructing a single viaduct large enough to accommodate all train traffic would require much larger footings that would be difficult to engineer and place. The viaducts are substantial pieces of infrastructure, approximately 45 to 50 feet wide each and built roughly 40 to 50 feet above ground. The doubling of the viaduct footprint to accommodate all trains would result in increased property, environmental, and visual impacts, as well as increased maintenance needs as compared to a single two-track viaduct. In addition, the engineers working for the

Partner Agencies are concerned about the feasibility of a dual viaduct construction since given the difficulty in placing proper footings around I-280, SR-87, and the Guadalupe River.



Figure 3 – Four-Track Viaduct Rendering

Viaduct Grade Challenges for Union Pacific Railroad

Placing all trains on the I-280 viaduct would require the freight tracks to exceed UPRR's one percent grade design standard. UPRR will not use new infrastructure that is designed with more than a one percent grade due to the limitations that steeper grades would place on freight operations when hauling large loads. Moving UPRR service off of the existing rail corridor (where they own Main Track 1 north of Tamien Station and own and maintain the entire corridor south of Tamien Station) and onto a viaduct would require their concurrence, which is unlikely to be received if their design standards are not followed. Design compensation for the horizontal curve would result in a grade equivalent to 1.4 or 1.5 percent. The limited distance within the critical section of the alignment – between the Warm Springs rail corridor and the I-280/SR-87 interchange – is insufficient to accommodate a grade change of one percent or less.

The Partner Agencies reached out to representatives with the UPRR regarding the idea of all trains being routed on a rail viaduct. The UPRR response primarily focused on the following concerns:

1. Overall effect on the UPRR operations.
2. Design standards, which affect rail operations, safety and have cost considerations.
3. Commercial implications to the UPRR's overall operation in California and nationally.
4. Real estate agreements and considerations including trackage rights and property arrangements given that the UPRR owns Main Track 1 on the existing corridor.

The UPRR would require extensive analysis on these topics. This analysis would likely yield outcomes that conflict with UPRR standards. This could cause the UPRR to not agree to the proposal or only agree to it with substantial design, schedule, or financial considerations that may be at odds with the delivery of the overall Diridon Station program.

Again, for this arrangement to be feasible, UPRR would need to make an exception to their one percent grade design standard. This would pose enormous risks to the design, approval, and implementation of the entire rail program, and would be dependent on the concurrence of a third-party with little incentive to cooperate with the Partner Agencies.

Conclusion: *Given all these concerns and considerations, the Partner Agencies have concluded that placing all trains on the I-280 viaduct is a fatally flawed design option. Other potential alignment options are discussed in the following sections.*

All Passenger Trains on Viaducts

Placing all passenger trains – both electrified and diesel, including Caltrain, CHSRA, ACE, CC, and Amtrak – on a new viaduct would also require the construction of a total of four tracks on two distinct viaduct structures (two tracks on each viaduct), even with UPRR remaining on the existing corridor. This would provide two tracks for the electrified services and up to two tracks for the diesel passenger rail. This is because it is most practical to construct the full width needed for future service levels at once. This option would also require a flyover north of Diridon Station and could require adjustments to the platform configuration at the station. It also could mean that there would be little to no mitigation within the existing corridor for the remaining freight train impacts, with all future growth and investment dedicated to the viaduct structures.

Given the potential impacts associated with the viaduct structure and the fact that freight trains would continue service on the existing southern corridor, the Partner Agencies have not further investigated this option.

Electrified Trains Only on a Viaduct Require a “Flyover”

For the southern rail corridor to utilize an I-280 viaduct, a “flyover” either directly north or south of Diridon Station would be required. The purpose of a flyover is to ensure the reliability, capacity, and efficiency of rail operations by removing at grade conflicts between trains needing to cross from one side of tracks to the other. Electrified trains would need to cross diesel services to get to the east side of the station to utilize the viaduct.

Between W. Santa Clara St. and the area just south of Tamien Station, the track organization for the Concept Layout includes an electrified corridor on the west side and a non-electrified corridor on the east side. This is because most diesel service comes from the east and continues to the east, with only the low-volume Vasona Branch on the west. Electrified and non-electrified service cannot operate on the same tracks because of the high volume of electrified services, creating a need for separate tracks for diesel freight and electrified service. The volume of trains

on each corridor will be such that crossing the corridors at grade would significantly disrupt operations for all services. As such, a flyover would be required if the corridors must switch sides (as would be the case if an I-280 viaduct was used).

Southern Flyover

A flyover south of Diridon Station could accommodate all or most electrified service, as electrified trains can travel at much steeper grades than diesel trains. This arrangement is illustrated on Figure 4. From the elevated tracks (approximately 25-30 feet) at the station, the electrified tracks would ascend to approximately 60-70 feet, whereas the non-electrified tracks must descend to grade. The non-electrified tracks must descend quickly to return back to grade by the start of the Vasona Branch in the southwest.



Figure 4 – Longitudinal Section of Southern Flyover

The southern flyover creates a “wall” of infrastructure that presents both functional and visual barriers to east-west connectivity – impeding a key objective of the Concept Plan, which is to better connect neighborhoods on both sides of the tracks. This concerns W. San Carlos St. and Auzerais Ave.; Park Ave. is also affected but is already an underpass currently. W. San Carlos St. and Auzerais Ave. would need to be reconstructed below grade via an underpass and/or roadway tunnel. These roadway tunnels would span an approximate distance of 1,000 feet, roughly located between McEvoy St. west of Diridon Station and S. Montgomery St. toward Downtown. These roadway tunnels would need to clear not only the rail corridor, but also Los Gatos Creek. Figure 5 illustrates an underpass/roadway tunnel cross section at W. San Carlos St.



Figure 5 – Rendering of a Roadway Tunnel at W San Carlos St.

In evaluating the option of a southern flyover, the Partner Agencies have identified and analyzed the following challenges and tradeoffs:

1. Added roadway underpass and/or roadway tunnel infrastructure given the intersection of rail, streets, trails, and the creek, which creates a “spaghetti-like” web of infrastructure;
2. Degraded access and connectivity for motorized and non-motorized travel between and to neighborhoods in the east and west (i.e., driveway access, street parking, etc.);
3. Compromised urban conditions due to a roadway tunnel and/or underpass (i.e., poor lighting, poor lines of sight, as illustrated in Figure 6);
4. Ongoing burden of maintaining the proposed roadway tunnels, including from flooding;
5. Difficulty in obtaining environmental clearance and necessary permits.



Figure 6 – Posey Street Tube, Oakland to Alameda

Additionally, the southern flyover is physically incompatible with the specified concourse locations in the Concept Layout design. To accommodate the southern flyover, the station would need to be shifted north, which would result in significant property impacts, including SAP Center parking lots A, B, and C and land for transit-oriented development north of W. Santa Clara St.

Conclusion: *Considering these factors, the Partner Agencies eliminated the option of a southern flyover from further consideration, as presented to the San José City Council on December 3, 2019.*

Northern Flyover

A flyover north of Diridon Station would be compatible with the Concept Layout design with a very slight shift of the station to the south to allow for the rail flyover north of the station. For a northern flyover, the Caltrain and CHSRA trains would be placed on the flyover, which would be elevated to approximately 60 to 70 feet. This arrangement would allow the electrified tracks to move from the eastern most platforms at the station to the western most tracks north of the station. This northern flyover option has been included in all further analysis of an I-280 viaduct.

Other Considerations in Assessing the Two-Track Viaduct

To fully assess a two-track viaduct for electrified trains, the Partner Agencies explored:

1. The trail system and natural resources;
2. The Tamien Station area;
3. Construction and Maintenance; and
4. New visual impacts.

Trail System and Natural Resources

While the Partner Agencies have not completed extensive work to examine the full breadth of impact the I-280 viaduct would have to the local trail network, the presence of a viaduct would degrade the vitality of the trail system.

The I-280 viaduct would need to cross the Los Gatos Creek Trail and then generally follow the Guadalupe River and trail with footings adjacent to the trail and within the riparian corridor. This enables the viaduct to utilize the space available between the existing tracks and SR-87. The Partner Agencies anticipate that the viaduct structure and footings would cross the planned Three Creeks Trail (also known as the Willow Glen Spur Trail).

Based on the proposed location of the viaduct and associated footings, the Partner Agencies have serious concerns about the likely impacts of building a viaduct structure on the Guadalupe River Trail and on the riparian habitat where the viaduct would cross the Guadalupe River. The viaduct

structure and footings may reduce the width of the Guadalupe River Trail and introduce barriers to visibility and monitoring. The viaduct may also affect design work now underway to extend the Los Gatos Creek Trail from Auzerais to Bird Avenue. Given these likely impacts, the Partner Agencies believe that the environmental review process for approving the viaduct structure would almost certainly be protracted and risky. Ultimately, a host of resource agencies, including federal agencies like the U.S. Army Corps of Engineers and the Department of Fish and Wildlife, and State agencies like California Fish and Game, would need to concur with the proposed design. These agencies may not agree to the placement of the infrastructure and/or proposed design. There is particular concern about environmental impacts during construction, given ample space would be needed during this period.

Tamien Station Area

The construction of an I-280 viaduct would also have implications for Tamien Station and the surrounding neighborhoods. Currently, there are two tracks for Caltrain and one non-electrified track for diesel trains at Tamien Station. To accommodate a Caltrain stop (CHSRA is not planning to stop) at Tamien Station with an I-280 alignment, the electrified tracks and platforms at the station must be elevated. In this scenario, shown in Figure 7, the future platforms would be located directly above the existing platforms. Diesel trains, which also do not stop at the station, would continue to utilize the tracks at the existing grade level at Tamien Station. The Partner Agencies expect that the viaduct would extend south from Tamien Station for approximately 1.75 miles and come back to grade near Communications Hill.

East of the pick-up and drop-off area next to Tamien Station, VTA has an approved TOD project slated to begin construction next year and will be in place well before the start of any potential viaduct construction in this area. The viaduct structure is expected to be approximately the same height as the TOD development. To accommodate the viaduct in this area, a very large straddle bent structure would be necessary to support the viaduct given the width of the SR-87, the freeway on-ramp, and the existing rail. Although this structure has not been designed as part of the Concept Plan, the Partner Agencies believe that the construction period for such a structure would be very significant. Additional implications of this structure could likely include adverse effects on the TOD site, including impacts to circulation, code compliance, and habitability, as well as along the edge of Tamien Park.

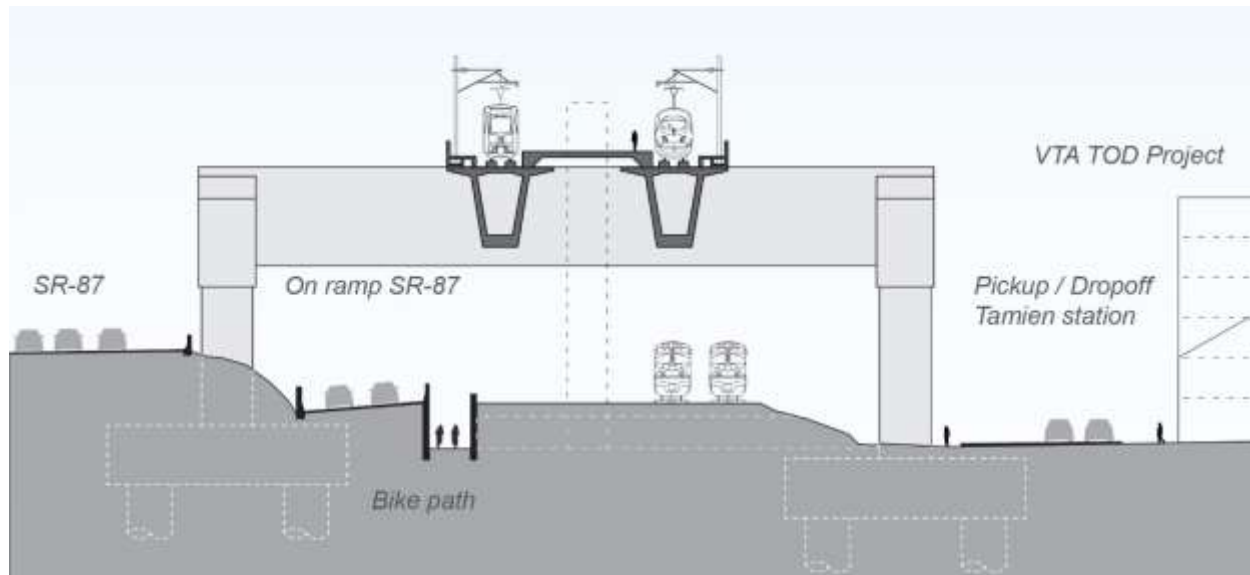


Figure 7 – Cross-section of I-280 Viaduct at Tamien Station

Construction and Maintenance

A key element to consider is how a new viaduct could be constructed. There are significant concerns on how the construction of a new viaduct could impact community. It is likely that the construction duration would be multi-year and construction methods to install new footings and large structures would be complex. Considerations construction impacts are:

1. Staging areas for construction equipment in sensitive areas or within communities
2. Impacts to riparian corridor during construction including potential closure of trails
3. Impacts to SR-87 and to existing rail corridor operations to construct the needed straddle bents for Tamien Station
4. Construction related impacts throughout communities due to noise, dust, traffic, etc.

While maintenance needs for an I-280 viaduct would not be determined until subsequent phases of the project, the Partner Agencies have identified the following considerations and challenges associated with maintaining the structure:

1. A viaduct results in overall increased mileage (approximately 3 miles) of track to maintain.
2. Accessing elevated tracks for maintenance purposes is more difficult than accessing tracks at grade, as there would be limited points of access to the viaduct structure.
3. The viaduct adds more infrastructure (e.g., footings, straddle bent, etc.) to maintain across a substantial distance.
4. The overall cost of maintaining a structure is anticipated to be higher than an at grade corridor due to height, span, and length.

New Visual Impacts

The viaduct would introduce new, permanent visual impacts to the surrounding communities, including the Washington-Guadalupe, Tamien, and Alma-Almaden neighborhoods. Figure 8 illustrates a potential new view of the I-280 viaduct along the Guadalupe River Trail. Additionally, there would likely be visual impacts in several locations adjacent to the rail corridor, including:

1. north of Diridon Station with the addition of a flyover structure, resulting in two levels of elevated tracks.
2. Between Diridon Station and I-280 (Vasona Branch, the existing corridor, and I-280 viaduct) with the construction of three elevated structures.
3. From I-280 to Communications Hill with infrastructure located at an elevation of approximately 40 to 50 feet above grade. More specifically, along the Guadalupe River, at Tamien Station, and the residential area at Communications Hill.



Figure 8 – Possible new view of I-280 Viaduct on Guadalupe River Trail Looking South

Summary of an I-280/SR-87 Viaduct

Although the Partner Agencies assessments of the potential impacts of an I-280 viaduct are preliminary, they have identified the following challenges and tradeoffs that would likely result from the construction of such significant infrastructure:

1. Disrupts the trail system, natural environment, and the riparian corridor.

2. Construction of significant new rail infrastructure within the Tamien Station area, including potential effects on both Tamien Park and on the circulation of VTA's TOD project.
3. Poses environmental clearance, permitting, and constructability challenges, and also would result in increased maintenance needs.
4. Creates permanent visual impacts to multiple neighborhoods, including Washington-Guadalupe, Tamien, and Alma-Almaden.

C. Existing Southern Corridor Alignment

The Partner Agencies have worked to investigate and optimize the existing southern corridor to carry planned additional future levels of service. The goal is to leverage and modernize an existing rail asset in a manner compatible with the surrounding community and with a clear intent to not worsen, and ideally improve, the rail corridor and its interface with the neighborhood.

The Partner Agencies desire to fully grade separate crossings along the rail corridor. Grade separation improves safety, circulation, and eliminates regular train horn noise. With an elevated station and tracks, this goal can be more easily accomplished. In the Concept Layout design, the elevated tracks at the station would descend to be at grade south of West Virginia St., near Bird Ave. Elevating the tracks allows for grade separations between the rail and other traffic while also improving east-west connectivity. The Partner Agencies believe this grade separation is important given the anticipated increase in rail service in this corridor.

The Partner Agencies have determined that no more than four tracks would be necessary and feasible along the southern corridor, through the Gregory, Gardner, and North Willow Glen neighborhoods. Of these four tracks, there is a need for both electrified and non-electrified (diesel) tracks. The previous section on train volumes articulated the various complexities related to the number of tracks needed to support future rail service. For purposes of analysis, the Partner Agencies have focused on a four-track option, which would require an approximate 80-foot wide corridor.

Fuller Park

The Partner Agencies have also evaluated the effects of the expanded rail corridor on Fuller Park. Currently, the northernmost portion of Fuller Park is located in the rail corridor and owned by Caltrain. The City owns and maintains the other portions of the park. The Partner Agencies estimate that much of the park space currently located on rail property would be impacted, while impacts to the City-owned property would be avoided. Most of the loss would likely be behind the current tree line, rather than the widely used portion of the park. Figure 9 is an artist concept of how Fuller Park could look with the addition of a new green wall. Caltrain and the City are committed to working together and with the community to plan for a vibrant Fuller Park.



Figure 9 – Artist concept of Fuller Park with new green wall

D. Noise and Vibration

The Partner Agencies aim to maintain the quality of life in the neighborhoods near the rail corridor. Specifically, the Partner Agencies will work to develop a design that results in noise, vibration, and visual conditions that are no worse and ideally better than today, even with higher future train volumes. As conditions change and growth occurs, it is reasonable to expect that the physical environment will change with respect to noise, vibration, and visual aesthetics. The Partner Agencies recognize the expected increase in train volumes through the southern corridor concerns the surrounding community. In response to the City Council's request, the Partner Agencies have provided more information around these areas for consideration.

It is important to clarify the difference between a “project feature” and a “mitigation measure.” A project feature is a design element or component that is solidified as part of the fundamental design of a project. This becomes part of the project's official description that is subject to environmental review. A “mitigation measure” is defined both by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) guidance as an action to be taken to reduce or avoid a significant impact resulting from a proposed project. Mitigation cannot be proposed or required where there is not impact or less than significant impact.¹ While there is a regulatory environment that guides how transit projects assess and evaluate potential environmental impacts, communities and cities can decide to pursue additional mitigation beyond what is required by legal guidance. These types of measures, sometimes called

¹ Source: *Title 14. California Code of Regulations*, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act, Article 9. Contents of Environmental Impact Reports, 15126.4 Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects

betterments, can be determined through a planning process with communities and factor in multiple areas of focus to address how best to fit new or expanded projects into existing communities. During the environmental review process, the project sponsor would ensure open and transparent dialogue with the community. Often community outreach can help inform and shape project features, betterments or mitigation measures.

The following sections articulate the process, regulation, methodology for the assessment of noise and vibration levels for a rail project, as well as related project experiences.

What generates rail noise or vibration?

Train traffic produces both noise, which is the sound that can be heard, and vibration, which is what can be felt. To begin, noise and vibration results from several factors for rail projects:

1. Noise:
 - a. Generated by the wheels on the tracks, as vehicles travel at different speeds, the condition of the railway track structure, the horns, and some railway equipment such as at-grade crossing bells.
 - b. People are typically more sensitive to intermittent noise than background, constant noise.
 - c. Different types of land use are more or less sensitive to noise such as a residential neighborhood versus a commercial office building.
 - d. The time of day that people are sensitive to noise varies. For example, people in residential areas are more sensitive to noise during overnight hours.
2. Vibration:
 - a. Generated by the weight and type of train as it travels across the tracks.
 - b. Minimized or exacerbated by ground soil conditions, which are very important to how vibration transmits through the ground.

How are noise and vibration assessed for rail projects?

The analysis of impacts resulting from a rail project is completed during the environmental review process. For federally funded projects, this will fall under the guidance of NEPA and in California, CEQA. Often, environmental documents accommodate the requirements of both NEPA and CEQA since federal and state funds and approvals are needed for large transportation projects.

Generally, the following must fall into place to initiate environmental review:

1. A project sponsor has been identified.
2. A project definition is complete.
3. Funding is in place to prepare the environmental analysis and preliminary engineering.

Specific guidance and criteria for both NEPA and CEQA guide how agencies are to conduct the assessment of impact resulting from new or expansion of rail projects. These are:

1. Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment*;
2. Federal Railroad Administration (FRA) *High-speed ground transportation noise and vibration impact assessment manual*; and
3. CEQA guidelines.

Transit noise and vibration assessments will typically include:

1. Assessment of the ambient noise setting that the project will travel through:
 - a. This is to determine the existing noise or vibration conditions
 - b. Completed by conducting field measurements
 - Analysts take measurements for a full day period, as well as specific hourly measurements.
2. Using field measurements, calculate the forecasted new noise or vibration impacts.
 - a. This is done using the FTA, FRA, and State guidelines.
 - b. This determines the severity of the impact: low, moderate, or severe.
3. Assessment and recommendation of the mitigation measures that could be included in a project to reduce the forecasted impact.

Related Projects

In December 2014, Caltrain published a Final Environmental Impact Report (EIR) for the proposed modernization of service between San José and San Francisco which included the electrification of the line and replacement of diesel locomotives with EMU (electric multiple unit) trains. The proposed project, known as the Peninsula Corridor Electrification Project (PCEP), would replace 75 percent of the fleet (the remaining conversion would occur over time and pending funding). The project includes installing the required overhead catenary system to power the new electric trains. The project increases the trains per hour per direction from five today to six with the opening of the electrified service. It also accommodates future high-speed services by installing the same type of power system needed for the CHSRA project. The EIR described the benefits of electric trains services along the Peninsula Corridor to air quality and reduction of greenhouse gas emissions, but also disclosed the potential direct, indirect, and cumulative impacts associated with the project improvements. The Caltrain PCEP has a relatively small footprint to the degree that the physical improvements are largely within the existing Caltrain right-of-way.

Existing ambient noise measurements were taken at multiple locations along the alignment, including three locations in San José, one of which was identified as the highest ambient noise level along the line. There were 92 Caltrain movements on an average weekday in 2014 with a proposal to increase to 114 daily train movements with PCEP. Based on the transition from

diesel operation to EMU operation, including the increase in trains, noise levels were not anticipated to increase significantly. No moderate or severe noise impacts were identified for this study.

It was noted, however, that the analysis did not account for any future noise that could be attributed to additional service, such as high -speed rail operations. The analysis also did not account for any train operations which might be on an elevated structure, which has been suggested in the viaduct scenarios.

Similarly, CHSRA is currently working on the Draft EIR/EIS for the project segment from Merced to San José. The EIR/EIS will evaluate the impacts associated with the construction and operation of the high-speed rail system in this project section. The CHSRA environmental review will evaluate the potential impacts of adding high-speed rail infrastructure and high-speed rail trains, including alternatives with a viaduct over I-280/SR-87 and in the existing rail corridor. It will also articulate the improvements, design features, operational characteristics, and proposed mitigation measures needed to address the incremental addition of CHSRA rail infrastructure and services. The CHSRA Draft EIR/EIS is expected to be out for public review in Spring 2020.

The Partner Agencies have not yet initiated detailed engineering and environmental review work that would shed light on expected future noise and vibration levels in the corridor. However, electrified passenger trains are relatively quiet at the speeds anticipated in the corridor (around 55mph), and generally much quieter than the diesel trains currently using the corridor. Based on analysis by Caltrain for the PCEP and other similar projects, as more trains travel through the corridor it is likely that horn noise at non-grade-separated crossings would be the most significant source of future train noise in this corridor.

What measures can be used to mitigate noise and vibration?

Generally, noise and vibration impacts are best addressed at their source.

Noise dampening measures could include:

1. Installation of barriers, walls, or berms
2. Adjustment to or elimination of honking horns typically via grade separation or creation of FRA-approved quiet zone
3. Improvements to the track itself to eliminate the “click-clack” caused by joints between sticks of rail
4. Insulation of homes or sensitive receptors
5. Quieter vehicles such as electric trains

Vibration mitigation measures could include:

1. Constructing a modern railway structure to strengthen the railbed over which the trains travel
2. Installing vibration absorption materials into the track structure or in the ground

There are different ways to mitigate, and Figures 10 and 11 illustrate some examples of a green wall and modern track railway.



Figure 10 – Sample noise wall mitigation



Figure 11 – Sample modern railway track

It is important to note that vibration measures are highly subject to final design because soil conditions, site conditions, and track design must all be completed to a fairly high level of detail to effectively determine vibration mitigation. This level of detail is typically achieved at 60 to 90 percent design level. (This project is at roughly two percent design.)

There are many important factors to consider in determining the most appropriate noise or vibration mitigation measures to apply. These include the presence of freight trains, the presence and type of ambient noise, and/or existing vibration conditions, as well as project design features.

Some project design features may obviate what would otherwise likely be environmental impacts. For example, in the case of the Concept Plan, the elevated station and tracks facilitate grade separation in the station area; grade separation inherently reduces train noise, particularly from train horns.

What have other cities/agencies done?

Bringing new transit services into communities brings both benefits and impacts. In particular, new transit systems built in the United States in recent years have all faced how best to bring these new systems online in a satisfactory manner to the communities that they serve.

Experiences in Salt Lake City, Utah

The Utah Transit Authority (UTA) operates bus, light rail and commuter rail services in the Salt Lake City area. Between 2006 to 2015, the agency experienced a rapid growth in its rail network by building nearly 70 miles of new transit services. Most of these rail projects were built within existing rail rights-of-way. Two of these projects traveled through residential communities along freight corridors that saw low use by the freight operators for many years, as depicted in Figure 8. The proposed project would add new light rail service with 15-minute headways, or effectively adding trains about every 7.5 minutes. This meant that these residents would experience a significant change to their community and environment. Of particular concern were noise and vibration due to increasing train services from fairly low train movements – maybe one movement per week – to relatively frequent transit services.



Figure 12 – Synthetic Fencing in Salt Lake City, Utah

UTA completed NEPA, including the *Transit Noise and Vibration Assessment*, as well as community outreach on these new rail lines. The change in the conditions did warrant mitigation measures that UTA deployed. Through the NEPA process and as a result of community engagement activities, UTA constructed three types of barriers to address the noise created by the new rail lines:

1. Concrete barrier walls
2. Earthen berms
3. Synthetic fencing

The type of barrier was chosen depending on the particular location and site conditions. For example, earthen berms were built where there was sufficiently wide rail right-of-way to accommodate such a structure. The berms were designed to be at a height that would absorb the

noise from the wheel-to-rail interface of the light rail vehicles. The concrete walls were built in more narrow areas where the barriers were required to be fairly tall due to the difference in height between the rail corridor and residents' backyards. The synthetic fencing was constructed where the height between the rail corridor and resident's backyard was fairly level. Figures 12 and 13 show examples of the synthetic fencing used.

UTA also worked with cities to institute quiet zones on these corridors to help reduce noise at the at-grade crossings. UTA and the local cities did not elect to pursue grade separation projects due to the significant costs associated with these relative to the number of crossings per corridor.

UTA also offered noise insulation to discrete homes that were adjacent to both the rail right-of-way and an at grade crossing. In these locations, the barrier or berm did not extend far enough, for safety reasons, to adequately abate the train noise and the at grade crossing equipment created additional noise issues.

During the final design of the project, vibration mitigation measures initially deployed were deemed ineffective in a several discrete locations. As a result, the agency reconstructed the rail track structure to include concrete rail ties, continuously welded rail, and new sub-surface structure that would firmly hold the track structure in place. In specific locations where the homes were either (1) extremely close to the corridor, (2) near special track work (i.e., cross-overs or turn-outs), and where virtually (3) no freight movements existed, the agency used shredded rubber ties within the track structure to absorb rail vibration. In other cases, vibration testing done during final design demonstrated that mitigation measures would be essentially ineffective. As a result, UTA elected not to construct vibration mitigation measures.



Figure 13 – Synthetic Fencing in Salt Lake City, Utah

E. Property and Development Opportunity Sites

In response to the City Council's request for a better understanding of the relative differences in property impacts for maintaining the existing alignment and the two-track I-280 viaduct, the Partner Agencies have prepared a conceptual estimate of property impacts. The Partner Agencies also assessed the potential impacts to residential and commercial development sites based on

work underway in the Diridon Station Area Plan update and Downtown West development proposal. As previously noted, at this stage of the planning process, the estimates are very conceptual and subject to change based on a variety of factors.

The Partner Agencies determined that, in either alignment option, additional property will be required to expand and modernize the railway. This property is primarily linear strips along and east of the existing rail corridor. The following summarizes how property and TOD implications are expected to differ between the two alignment options.

I-280 Viaduct

North of Diridon Station, slightly more property is required to build the northern flyover. This has relatively minor additional property and TOD effects, other than the visual and noise implications of the flyover.

South of Diridon Station, the viaduct has more significant impacts, primarily within two areas identified for potential TOD:

1. Up to 1,500 new homes are proposed in the area bounded by the existing corridor, W. San Carlos St., Royal Ave., and Auzerai Ave. This property would be bisected by the viaduct structure, significantly reducing the development potential and attractiveness of the site. Without the benefit of site-specific fit analysis, the viaduct is estimated to result in the loss in the approximate range of 800 units. The impact up to and during the construction of the viaduct would likely be even more.
2. Between the existing corridor, Auzerai Ave., Royal Ave., and I-280, over 700,000 square feet of new office/commercial development could be realized, per a capacity analysis performed by Skidmore, Owings and Merrill. This property would also be bisected by the viaduct structure, similarly reducing the development potential and attractiveness of the site. The remnant parcels may restrict the ability to achieve optimal office floorplates, further diminishing the likelihood of redevelopment for commercial use.

According to preliminary evaluation conducted by the Partner Agencies' economic and development experts, the presence of the viaduct would likely reduce the attractiveness of both areas to developers, and could make it more difficult for potential projects to receive financing. In addition, the timing of development would presumably be delayed until after the viaduct is completed.

South of I-280, property impacts from the viaduct are expected primarily within Caltrans right-of-way, the Guadalupe River corridor, and the area between the existing rail corridor and SR-87. Depending on the particular rail services that utilize the viaduct and the length of the viaduct structure, additional property may be required, particularly during construction, near Tamien

Station, including along the edges of VTA's TOD and Tamien Park, and south of Curtner Avenue near Communications Hill.

Existing Corridor

Differential property impacts of the existing corridor lie within the Gardner/North Willow Glen neighborhoods. Preliminary analysis identified portions of properties that may be effected by a four-track corridor. This includes:

1. Estimated up to 13 properties with residential uses; primary residences may not be impacted; rather, property impacts may be limited to portions of backyards, perhaps driveways, secondary structures, etc.
2. A reduction in the size Fuller Park by approximately 30 to 33 percent; this loss would likely be behind the current tree line, rather than the widely used portion of the park.
3. A potentially significantly impact to the San José Word of Faith Church.
4. Up to two parcels with commercial uses; again, main structures may not be impacted.

F. Capital Cost Comparison

In response to the City Council request, the Partner Agencies also prepared preliminary cost comparisons for the two alignments to understand the relative differences between the two. The initial cost estimates only include those costs directly associated with the station, including the station building, tracks, concourses, underpasses, bus facilities, and light rail facilities. Additionally, the estimate for the viaduct alignment includes the costs associated with raising the tracks and platforms at Tamien Station. For both estimates, the relocation of CEMOF and the PG&E Substation is not included.

Given that capital cost estimates are very preliminary, the Partner Agencies have evaluated the costs for the two alignments using an order of magnitude comparison. The Partner Agencies estimate that rebuilding Diridon Station using the Existing Corridor alignment with a four-track alignment will cost billions of dollars, and that the I-280 viaduct alignment would cost roughly double this amount.

G. Comparing Alignment Options

In considering the alignment options, the Partner Agencies looked at several points of comparison. These areas were identified based on ongoing conversations with the community and elected officials. The Partner Agencies acknowledge that the effects of the two rail alignment options differ between neighborhoods: some might experience noise, visual, and vibration impacts with one option and not the other. Table 3 below summarizes the partners overall findings when comparing the alignment options.

Table 3 – Comparing Alignment Options

Points of Comparison	Existing Rail Alignment in 2040	I-280 Rail Viaduct <u>Plus</u> Existing Rail Alignment in 2040
Train Volumes	Overall Increase	Overall Increase
Neighborhoods Affected	Same as Today	Same as Today Plus Additional Neighborhoods
Infrastructure Footprint	Modest Increase	Significantly More
Noise and Vibration	Modest Increase	May Affect Larger Geography/Population
Visual	Modest	Significant Change to Visual Landscape
Environmental	Some	Significantly More (Incl. Guadalupe River)
Maintenance	Modest	High
Flyover Required	No	Yes
Cost	Base/Cost Option	~2x Base Cost
Property	Low to Moderate	Medium to High

EVALUATION AND FOLLOW-UP

The rail alignment for the Diridon Integrated Station Concept Plan is agendized for decision at the February 4, 2020 City Council meeting. Additionally, the decision making bodies of the other three Partner Agencies will make a decision on the Concept Layout on:

- Caltrain Board of Directors, February 6, 2020
- VTA Board of Directors, February 6, 2020
- CHSRA Board of Directors, February 18, 2020

As detailed in the December 3, 2019 staff memorandum and attached Joint Partner Agency Report, in the next phases of planning the Partner Agencies will continue to work on the southern track approach in close consultation with neighboring communities, including:

- Grade separations keeping people and vehicles away from train traffic while maintaining good local connectivity and access;
- Sound and vibration dampening treatments for tracks;
- Aesthetic and functional treatments like sound walls with added landscaping (“green walls”) or other attractive, maintainable coverings;
- Optimize design to minimize the need to demolish existing buildings and/or acquire land; and
- Fuller Park as a permanent, city-owned park with high-quality landscaping and other amenities to be determined through a community-based process.

In addition, the Partner Agencies will work to develop appropriate metrics that will enable tracking and monitoring of these goals and conditions over time.

The Partner Agencies will continue to provide periodic updates to the Transportation and Environment Committee and/or City Council at key milestones in the Concept Plan's development.

CLIMATE SMART SAN JOSÉ

The information in this memo aligns with one or more Climate Smart San José energy, water, or mobility goals.

PUBLIC OUTREACH

The Partner Agencies have conducted five community meetings, including a Spanish-language meeting, three presentations to the City's Station Area Advisory Group (SAAG), three pop-up booths at Diridon Station and community events, an online survey, an online townhall, and additional meetings with stakeholder groups and neighborhood associations. In addition, the Partner Agencies have presented and received important feedback from the Diridon Joint Policy Advisory Board (JPAB) at five meetings. The community input has informed the Partner Agencies' work throughout the Concept Plan process, which has culminated in a single, optimized layout – the Concept Layout.

More information is available at the project website: www.diridonsj.org/disc.

COORDINATION

This memorandum has been coordinated with the City Manager's Office and City Attorney's Office.

COMMISSION RECOMMENDATION/INPUT

No commission recommendation or input is associated with this action.

HONORABLE MAYOR AND CITY COUNCIL

January 17, 2020

Subject: Diridon Integrated Station Concept Plan – Rail Alignment

Page 29

CEQA

Not a Project, File No. PP17-009, Staff Reports, Assessments, Annual Reports, and Informational Memos that involve no approvals of any City action.

/s/

JOHN RISTOW

Director of Transportation

For questions, please contact Eric Eidlin, DOT Station Planning Manager, at (408) 795-1638.

Attachment A – [December 3, 2019 Item City Council Materials](#)

Attachment B – Glossary of Terms

GLOSSARY

- ACE - Altamont Corridor Express. Operator of non-electrified passenger rail service connecting San Jose to Stockton.
- Alignment – Direction and position given to the center line of the railway track on the ground in the horizontal and vertical planes
- Amtrak – non-electrified passenger rail service provider, also known as the National Railroad Passenger Corporation
- BART - Bay Area Rapid Transit
- Berm – a raised barrier constructed of earth or sand
- CC – Capitol Corridor; provider of non-electrified passenger rail service connecting San Jose to Sacramento and Auburn
- CEMOF – Caltrain’s Centralized Equipment Maintenance & Operations Facility
- CEQA - California Environmental Quality Act
- CHSRA - California High-Speed Rail Authority; provider of future electrified high-speed passenger rail service
- Concept Layout - The track and station configuration that holds the most promise to fulfill key project objectives and that the Partner Agencies are therefore recommending for further study.
- Concept Plan – A joint effort of the Diridon Partner Agencies to identify the future spatial layout of Diridon Station, including the arrangement of modes, the way in which the station is integrated into the surrounding community, as well as an organizational framework to deliver the vision.
- Concourse - A large open area inside or in front of a public building, as in an airport or train station, where stairs, elevators, escalators, and other vertical circulation elements are located that allow passengers access the platforms
- Constructability – refers to the ease and efficiency with which something can be built
- EIR – Environmental Impact Report, an environmental document prepared to satisfy California State environmental review requirements under CEQA.
- EIS – Environmental Impact Statement, an environmental document prepared to satisfy federal environmental review requirements under the National Environmental Policy Act (NEPA)
- Electrified tracks – railway track on which electrified trains operate; electrified railway systems operate on electric power supplied via overhead lines
- EMU - Electric Multiple Units
- Fatally flawed design – a design that is certain to fail due to deficiencies in design, difficulties in construction, or other insurmountable challenges
- Flyover - An overpass that crosses over another road or railway to provide a grade separation between different transportation modes
- Footings – concrete shafts that provide the foundation for an elevated structure, like a viaduct
- FRA – Federal Railroad Administration
- FTA – Federal Transit Administration

- Layout - A combination of the physical elements that create a conceptual design for the station and intermodal hub
- NEPA - National Environmental Policy Act
- Non-electrified tracks – railway track on which diesel (or freight) trains operate; trains that operate on non-electrified track are powered by engines
- Northern corridor – The heavy rail corridor between Diridon Station and CEMOF
- Partner Agencies – the four agencies that have entered into a cooperative partnership to complete the Concept Plan; Santa Clara Valley Transportation Authority (VTA), City of San José, Caltrain, and CHSRA.
- Property Impacts – A conceptual estimate of properties or parcels that could potentially be affected by an alignment
- Right-of-way – the land occupied by a railroad
- Rolling Stock – vehicles used on a railroad
- Southern corridor – The heavy rail corridor between Diridon Station to Communications Hill
- Straddle bent – a structure that spans a roadway to support a viaduct
- Team ABC - A Study Team consisting of Arcadis and Bentham Crouwel Architects
- TOD - Transit-Oriented Development
- UPRR - Union Pacific Railroad
- UTA - Utah Transit Authority
- Viaduct – A long bridge-like structure that carries a road or railroad across an area to provide a grade separation between different transportation modes.
- VTA - Santa Clara Valley Transportation Authority