

# ***Valley Rail Program***

## ***Accessibility Compliance with USDOT Level Boarding Regulation***

***Prepared by: RailPros  
September 25, 2023  
Report for Public Comment***



United States Department of Transportation  
Federal Transit Administration



United States Department of Transportation  
Federal Transit Administration

Subject: Valley Rail Program - Accessibility Compliance with USDOT Level Boarding Regulation Report

To Whom it May Concern:

The San Joaquin Regional Rail Commission (SJRRRC) is the management agency for the Altamont Corridor Express (ACE) and Amtrak's San Joaquin services. SJRRRC is acting as the lead agency for the Valley Rail Program and is submitting this accessibility compliance report for review to ensure ACE and Amtrak provide safe and reliable transportation to individuals with disabilities in an integrated setting in compliance with the Americans with Disabilities Act (ADA) as amended by 49CFR Parts 37 and 38 "Transportation for Individuals with Disabilities at Intercity, Commuter, and High Speed Passenger Railroad Station Platforms: Miscellaneous Amendments."

The Valley Rail Program will provide enhanced connectivity with thirty-six (36) new or enhanced station platforms and new passenger equipment. SJRRRC is developing designs at the stations discussed in this report to enlarge existing platforms, add new platforms, and improve pedestrian accessibility. The completion of the program will allow additional frequencies daily along the corridors. The improvements are located along Union Pacific Railroad (UPRR) and BNSF Railway mainlines.

This report discusses the approach to level boarding compliance for the expanded operations. This report is built upon the best practices, learned from previous projects in southern California including Van Nuys Station and Redlands Passenger Rail Project, that have similar characteristics and host Railroads, and were approved by both the FRA and FTA.

If you or your staff have any questions, please contact me at (209) 649-6395, or by email at [stacey@acerail.com](mailto:stacey@acerail.com). The contact person for the project is:

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Best Regards,

Stacey Mortenson

## Accessibility Compliance with USDOT Level Boarding Regulation



Submitted: \_\_\_\_\_ Date: \_\_\_\_\_

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RailPros Inc.  
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Revision	Author	Organization	Date	Description
Revision 0	Danielle Peña	RailPros	06/09/2023	Draft Issued
Revision 1	Danielle Peña	RailPros	09/25/2023	Report for Public Comment



## QUALITY ASSURANCE STATEMENT

<b>Client/Owner:</b>	San Joaquin Regional Rail Commission	<b>Contract No.:</b>	22-R-05-30-4-00
<b>Project Name:</b>	Valley Rail Program	<b>Date:</b>	06/09/2023
<b>Progress Submittal:</b>	Accessibility Compliance with USDOT Level Boarding Regulation – Draft		

*"The design documents included in this submittal have been reviewed in accordance with the project Quality Management Plan and have been found to meet the quality objectives set forth therein."*

**This submittal contains the following design documents (check all that apply):**

	Design Document
	Drawings
	Project-Specific Specifications
	Engineer's Estimate
	Design Calculations
X	Study or Report

Remarks:

A handwritten signature in blue ink that reads "Danielle Peña".

06/09/2023

RailPros Project Manager

Date

A handwritten signature in blue ink, likely belonging to the RailPros QA Manager.

06/09/2023

RailPros QA Manager

Date



## REPORT REVIEW CHECKLIST

<b>Client/Owner:</b>	San Joaquin Regional Rail Commission	<b>Contract No.:</b>	22-R-05-30-4-00
<b>Project Name:</b>	Valley Rail Program	<b>Date:</b>	06/09/2023
<b>Progress Submittal:</b>	Accessibility Compliance with USDOT Level Boarding Regulation – Draft		
<b>Originator:</b>	Danielle Peña	<b>Reviewer:</b>	Kelly Giblin

DISCIPLINE REVIEW				
	TYPICAL ITEMS TO REVIEW:	Yes	No	NA
1.	Does the report satisfy the requirements of the project?	X		
2.	Has information requiring calculations been verified?	X		
3.	Has supporting material been referenced and verified?	X		
4.	Have attached drawings, figures and tables been checked?	X		
5.	Are conclusions and/or recommendations clearly expressed?	X		
Reviewer signature:				
Comments: Comments as noted herein.				

OVERALL REVIEW				
<i>To be completed on lead discipline checklist only</i>				
	TYPICAL ITEMS TO REVIEW:	Yes	No	NA
1.	Is the report consistent with the Client standard format?	X		
2.	Has the table of contents been checked?	X		
3.	Has the report been signed and dated?	X		
4.	Has grammar and spelling been checked?	X		
5.	Is the scope of the report satisfactory for this submission level?	X		
6.	Have previous internal comments been incorporated?	X		
7.	Have previous client and stakeholder review comments been verified?	X		
Manager signature:				
Comments:				

Reviewer: Kelly Giblin Date: 06/09/2023 RailPros Manager:  Date: 06/09/2023

Follow Up Action Required? ☐ Yes ☒ No If Yes, Date of Follow Up Review: \_\_\_\_\_

06/09/2023

RailPros QA Manager

Date

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## List of Acronyms

ACE	Altamont Corridor Express
ADA	Americans with Disabilities Act
AREMA	American Railway Engineering and Maintenance-of-Way Association
ATR	Above Top of Rail
BNSF	Burlington Northern Santa Fe Railway
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CPUC	California Public Utilities Commission
CTC	California Transportation Commission/Centralized Train Control
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GCOR	General Code of Operating Rules
HSR	High Speed Rail / California High Speed Rail
MT	Main Track
NOE	Notice of Exemption
PCJPB	Peninsula Corridor Joint Powers Board
PDT	Project Development Team
PE	Preliminary Engineering
PS&E	Plans, Specifications, and Estimate
PWP	Project Work Plan
QA/QC	Quality Assurance and Quality Control
ROW	Right-of-Way
SacRT	Sacramento Regional Transit
SJJPA	San Joaquin Joint Powers Authority
SJRRRC	San Joaquin Regional Rail Commission
TOR	Top of Rail
UPRR	Union Pacific Railroad
USDOT	U.S. Department of Transportation

# 1 INTRODUCTION

This Accessibility Compliance Report (Report) is submitted by the San Joaquin Regional Rail Commission (SJRRRC) and San Joaquin Joint Powers Authority (SJJPA) for rail infrastructure improvements planned for the Valley Rail Program (Program).

In accordance with the amended Americans with Disability Act of 1990 (ADA) (42 U.S.C. 1201 et seq.) (49 CFR 37.42), “individuals with disabilities, including individuals who use wheelchairs, must have access to all accessible cars available to passengers without disabilities in each train using a station”. This regulation applies to projects that include new and/or altered station platforms. Given that SJRRRC/SJJPA is proposing the development of 16 new stations and the retrofit of 21 platforms at existing stations, SJRRRC/SJJPA is complying with the amended act by preparing this report to outline the analysis conducted for accessibility options for the new station platforms for the Program.

The information provided in this Report constitutes SJRRRC/SJJPA’s site-specific “Rail Accessibility Plan” for USDOT stakeholder agencies to assess the Project’s compliance with performance standards established in 49 CFR Parts 37 and 38.

## 1.1 Program Overview

All program details can be found online here: <https://www.sjrrc.com/valley-rail/>. The Valley Rail Program improves geographic equity by connecting key locations in the Central Valley including Sacramento, San Joaquin, Stanislaus, Merced, Madera, and Fresno Counties to each other and beyond to the Bay Area and the greater California rail network via three future high-speed rail (HSR) connections in Merced, Madera and San Jose. This transformative, megaregional project helps further the State’s vision for an integrated rail network and provides direct mobility and air quality benefits to citizens in nine counties, including over 30% of the disadvantaged communities in California. Pre-pandemic, the existing Altamont Corridor Express (ACE) and San Joaquins combined to carry over 2.5 million passengers across California.

The Program is a progressive regional transportation project designed to connect residents, businesses, and visitors to a variety of employment, leisure, education, healthcare and other destinations. It is a joint program that includes improvements and expansions of both ACE and Amtrak San Joaquins that is focused on improvements between Sacramento and the San Joaquin Valley. Valley Rail implements two new daily round-trips for the Amtrak San Joaquins service to better connect San Joaquin Valley travelers with the Sacramento Area and extends ACE service between Sacramento and Merced. In addition, Valley Rail will convert the entire fleet including the thruway bus network to renewable diesel fuel, providing greenhouse gas (GHG) benefits across the entire existing (449 track miles) and proposed expanded (119 track miles) San Joaquins and ACE services.

Based on environmental clearance and funding, the Valley Rail Program consists of two segments one south and one north of Stockton. Valley Rail will consist of shared ACE and San Joaquins stations between Stockton and Natomas, ACE stations for the extension from Lathrop to Ceres/Merced, and San Joaquins stations at Oakley and Madera.

The Valley Rail Program consists of several project segments that together improve rail service on ACE and the San Joaquins for the San Joaquin Valley, Sacramento, and the Bay Area. The project segments include: Lathrop to Ceres Extension, Sacramento Extension, Ceres-Merced Extension, Stockton Diamond

Grade Separation, Madera Station Relocation, and the Oakley Station Project. The Program includes the construction of 16 new stations: Ceres, Modesto, Manteca, North Lathrop, Ripon, Lodi, City College, Midtown, Old North Sacramento, Elk Grove, Natomas/Sacramento Airport, Merced, Livingston, Turlock, Oakley, and Madera. The Program also includes the modification of 20 existing stations: Stockton Cabral, Stockton San Joaquin, Modesto (Briggsmore), Turlock-Denair, Merced (Existing), Madera (Existing), Fresno, Hanford, Corcoran, Wasco, Bakersfield, Lathrop/Manteca, Tracy, Vasco, Livermore, Pleasanton, Fremont, Great America, Santa Clara and San Jose Diridon.



Figure 1. Program Highlights



Figure 2. Valley Rail Program Stations

## **1.2 Agency Overviews**

### **1.2.1 San Joaquin Regional Rail Commission (SJRRRC)**

The Altamont Commuter Express rail service began operations on October 19, 1998. SJRRRC owns and operates the ACE commuter rail service from Stockton to San Jose. In April 1995, the seven cities and the County of San Joaquin approved a joint powers agreement that created the SJRRRC. The purpose of the SJRRRC was to improve existing rail service and implement a rail system in San Joaquin County. This included pursuing the participation and agreements for commuter rail service with both Santa Clara and Alameda counties. The SJRRRC JPA established a five-person board of directors with board members appointed by the San Joaquin Council of Governments.

### **1.2.2 San Joaquin Joint Powers Authority (SJJPA)**

To protect the existing San Joaquin Rail Service and to promote its improvement, in 2012, local and regional agencies throughout most of the San Joaquin Corridor (Bakersfield-Fresno-Modesto-Stockton-Sacramento-Oakland) sponsored and supported Assembly Bill 1779 (AB 1779). This bill enabled regional government agencies to form the San Joaquin Joint Powers Authority (SJJPA) to take over the administration and management of the existing San Joaquin Rail Service from the state. The ten Member Agencies that make up the SJJPA are: Alameda County, Contra Costa Transportation Authority, Fresno Council of Governments, Kings County Association of Governments, Madera County Transportation Commission, Merced County Association of Governments, Sacramento Regional Transit, San Joaquin Regional Rail Commission, Stanislaus Council of Governments, and Tulare County Association of Governments. The SJRRRC was selected by the SJJPA Board to be the Managing Agency at the July 26, 2013, SJJPA Board Meeting in Fresno. As Managing Agency of the SJJPA, the SJRRRC provides all necessary administrative support for the SJJPA. Amtrak San Joaquins travels over 365 miles of track and stops at 18 stations. The train system today serves over one million riders per year on its route from Bakersfield to Oakland and Sacramento. Amtrak San Joaquins is Amtrak's 6th busiest route with stations throughout the Central Valley and Bay Area, providing a safe, comfortable, and reliable way to travel throughout California. Amtrak San Joaquins is currently running six (6) daily round-trips. In addition to the train service, Amtrak San Joaquins Thruway buses provide connecting service to 135 destinations in California and Nevada including Los Angeles, Santa Barbara, San Diego, Napa Valley, Las Vegas and Reno.

## **1.3 Program Location**

The Program is located throughout the counties of Contra Costa, Kings, Kern, Santa Clara, Sacramento, San Joaquin, Stanislaus, Merced, Madera, and Alameda along the UPRR and BNSF host railroads.



Figure 3. California Freight Rail Map

(Source: 2018 California State Rail Plan <https://dot.ca.gov/-/media/dot-media/programs/rail-mass-transportation/documents/rail-plan/2-chapter-2csrpfinal.pdf>)

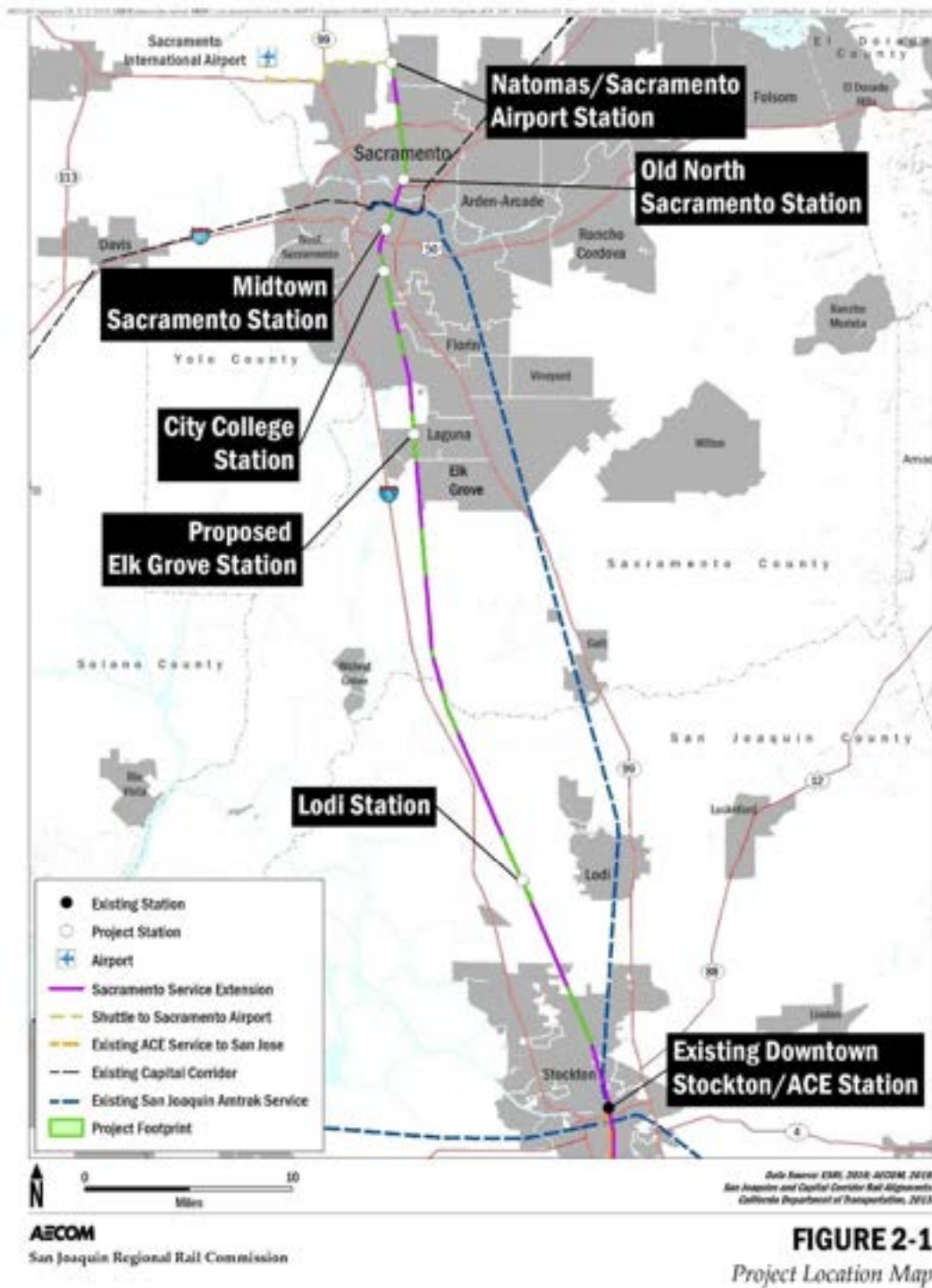


Figure 4. Valley Rail Program Map – North Segment

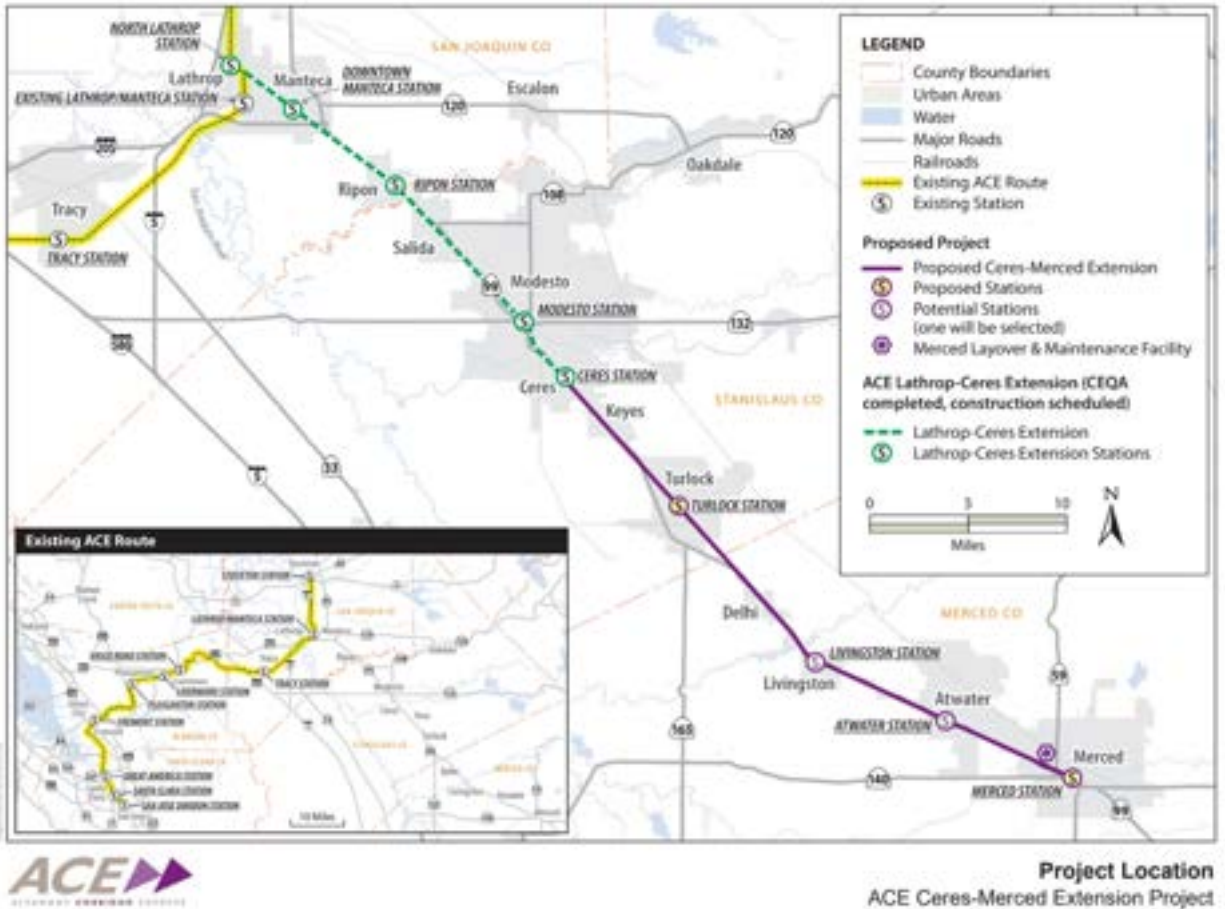


Figure 5. Valley Rail Program Map – South Segment

## 1.4 Stations

For this program, we are introducing 16 new stations, as well as retrofitting 21 platforms at existing stations for the ACE, San Joaquins and a few platforms shared by Capital Corridor and CalTrain Services. This Report focuses on ACE and Amtrak Service and those stations under the responsibility of SJJPA. All other Agencies and commuter Rail Services are provided as a reference, as some stations may be shared with other commuter rail services, such as Caltrain which is owned and operated by the Peninsula Corridor Joint Power Board (PCJPB).

Standard station amenities to be provided include: canopies, railings, lighting, benches, lighting, signage, cameras, landscaping, ticket vending machines, and trash receptacles. Landscape planters or other features may be used to separate stations from open areas, adjacent uses, and walkways. Bicycle storage lockers may also be provided at certain locations.

The ADA pathway locations vary depending on the station. Most at grade stations provide ADA pathways from the back of the platform(s) will then connect to the station parking lot(s) and any plaza areas. In some cases, vehicular grade crossings also provide connectivity to the station and platform(s), while other stations provide under- or overcrossing access to the various center and side platforms via an underpass or pedestrian bridge over the tracks from the parking lots and/or transit centers.

**Table 1 – Measurement Summary**

	ACE	San Joaquins
Platform Height above Top of Rail (ATR)	8" ATR	8" ATR
Platform edge horizontal distance from centerline of track	5'4" from Track Centerline	5'4" from Track Centerline
Vehicle floor height ATR	First step is 10" above platform (18" ATR)	California Cars & Superliner: 17.5" ATR Single Level Intercity: 51" ATR Venture Cars: 48" ATR Future Amtrak San Joaquin Cars: 48" ATR
Vehicle outside horizontal extents from centerline of vehicle	59"	California Cars & Superliner: 61" ATR Single Level Intercity: 30" ATR Venture Cars: 33" ATR Future Amtrak San Joaquin Cars: TBD"

**Table 2 – Station Summary**


No.	Station	Existing or Future	Host RR	Subdivision	Existing Service(s)	Future Service(s)
1	Natomas/ Sacramento Airport	Future	UPRR	Sacramento	None	ACE & San Joaquins
2	Old North Sacramento	Future	UPRR	Sacramento	None	ACE & San Joaquins
3	Midtown Sacramento	Future	UPRR	Sacramento	None	ACE & San Joaquins
4	City College	Future	UPRR	Sacramento	None	ACE & San Joaquins
5	Elk Grove	Future	UPRR	Sacramento	None	ACE & San Joaquins
6	Lodi	Future	UPRR	Sacramento	None	ACE & San Joaquins
7	Oakley	Future	BNSF	Stockton	None	San Joaquins
8	Stockton (Cabral)	Existing	UPRR	Fresno	ACE & San Joaquins	ACE & San Joaquins
9	Stockton (San Joaquin Street)	Existing	BNSF	Stockton	San Joaquins	San Joaquins
10	North Lathrop	Future	UPRR	Fresno	None	ACE
11	Manteca	Future	UPRR	Fresno	None	ACE
12	Ripon	Future	UPRR	Fresno	None	ACE
13	Modesto (Briggsmore)	Existing	BNSF	Stockton	San Joaquins	San Joaquins
14	Modesto	Future	UPRR	Fresno	None	ACE
15	Ceres	Future	UPRR	Fresno	None	ACE
16	Turlock-Denair	Existing	BNSF	Stockton	San Joaquins	San Joaquins
17	Turlock	Future	UPRR	Fresno	None	ACE
18	Livingston	Future	UPRR	Fresno	None	ACE
19	Merced	Existing	BNSF	Stockton	San Joaquins	San Joaquins
20	Merced	Future	UPRR	Fresno	None	ACE, HSR*, San Joaquins
21	Madera	Existing	BNSF	Stockton	San Joaquins	San Joaquins
22	Madera	Future	BNSF	Stockton	San Joaquins	San Joaquins
23	Fresno	Existing	BNSF	Stockton	San Joaquins	San Joaquins
24	Hanford	Existing	BNSF	Bakersfield	San Joaquins	San Joaquins
25	Corcoran	Existing	BNSF	Bakersfield	San Joaquins	San Joaquins
26	Wasco	Existing	BNSF	Bakersfield	San Joaquins	San Joaquins
27	Bakersfield	Existing	BNSF	Mojave	San Joaquins	San Joaquins
28	Lathrop/Manteca	Existing	UPRR	Oakland	ACE	ACE
29	Tracy	Existing	UPRR	Oakland	ACE	ACE
30	Vasco Road	Existing	UPRR	Oakland	ACE	ACE
31	Livermore	Existing	UPRR	Oakland	ACE	ACE
32	Pleasanton	Existing	UPRR	Oakland	ACE	ACE
33	Fremont / Centerville	Existing	UPRR	Niles	ACE & Capitol Corridor*	ACE & Capitol Corridor*
34	Great America	Existing	UPRR	Coast	ACE & Capitol Corridor*	ACE & Capitol Corridor*
35	Santa Clara	Existing	UPRR	Coast	ACE, Capitol Corridor* & Caltrain*	ACE, Capitol Corridor* & Caltrain*
36	San Jose Diridon	Existing	UPRR / Caltrain	Coast	ACE, Capitol Corridor*, Caltrain*, Coast Starlight*	ACE, Capitol Corridor* & Caltrain*, Coast Starlight*

\*NOTE: The Valley Rail Program Level Boarding ADA Compliance Report is not clearing ADA accessibility and level boarding for other railroad operators who may share the same train stations (e.g. Caltrain, Capital Corridor, Coast Starlight, HSR). Other Railroad operators are included to show existing and future services provided at Valley Rail Program stations.

#### 1.4.1 Natomas/Sacramento Airport

The platform will be located in the city of Rio Linda on an industrial plot of land to be purchased by SJRRC. The station is approximately six miles east of Sacramento Airport, near the Natomas neighborhood in northern Sacramento with a standard single platform design. ADA access to the platform will be through the parking lot and Elkhorn Blvd. The conceptual station layout and site plan are shown herein. The specific data for the Natomas/Sacramento Airport station is in the below table.

**Table 3 – Natomas/ Sacramento Airport Station Data**

Data	Natomas/Sacramento Airport Station
City:	Rio Linda
County:	Sacramento
Community Location or Address:	6400 Blacktop Road Rio Linda, CA 95673
Railroad, Subdivision and MP:	UPRR, Sacramento Sub, MP 146.2
Key Nearby Features:	Natomas Community, Sacramento International Airport
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	79/70 MPH
Future Trains/Day:	12 (freight)
Tracks:	1 existing mainline, 1 future station track
Mini high's:	Three mini-highs: two 48" ATR at each end of the platform, one 21" ATR centrally located on the platform

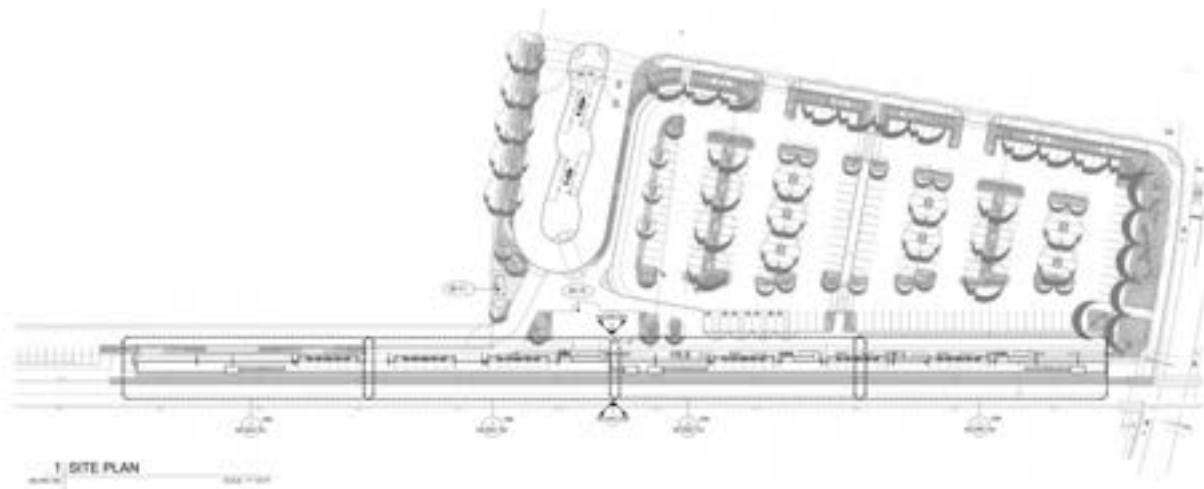


Figure 6. Natomas/Sacramento Airport Station – Concept Layout



Figure 7. Natomas/Sacramento Airport Station – Site Map

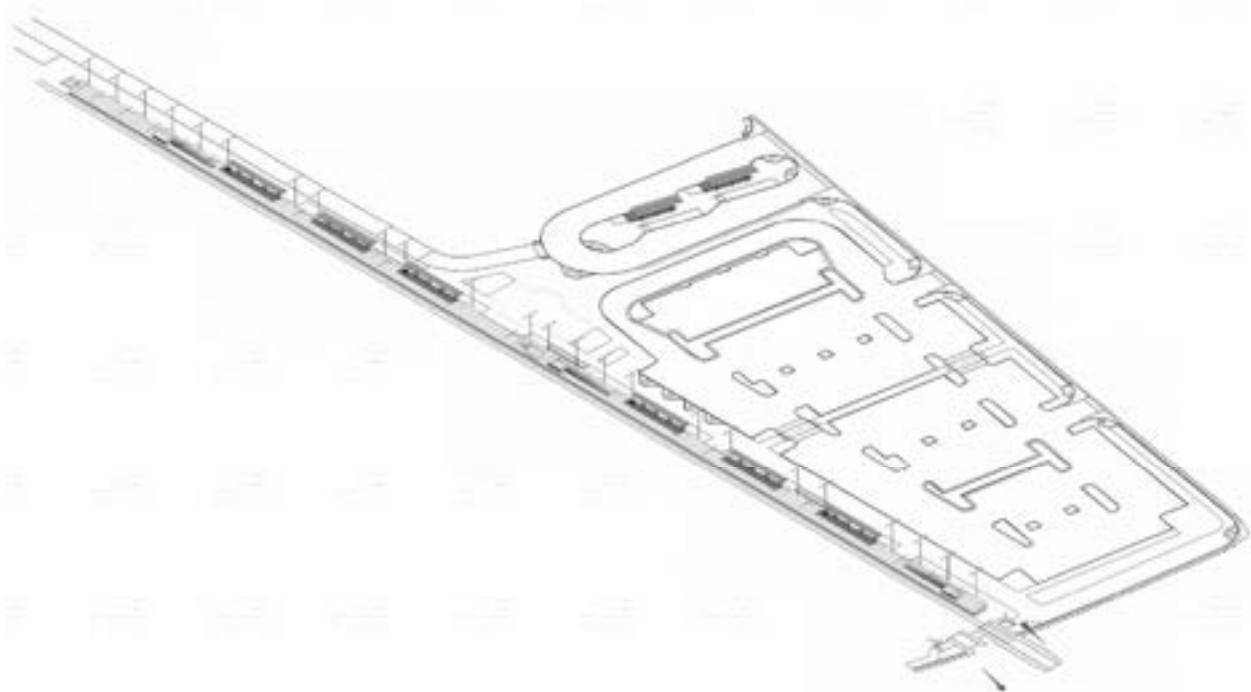



Figure 8. Natomas/Sacramento Airport Station – Rendering

#### 1.4.2 Old North Sacramento

The new platform will be located in the Old North Sacramento community in a mixed industrial, downtown and residential area and utilizing existing UPRR ROW. Two new tracks will be installed as part of the station with primary access to the platform via an underground passageway. A standard center platform design with ADA ramps and tunnels is planned for this station. 6 total mini-high platforms will provide ADA access to trains serving this station. The specific data for the Old North Sacramento station is in the below table.

**Table 4 – Old North Sacramento Station Data**

Data	Old North Sacramento Station
City:	Sacramento
County:	Sacramento
Community Location or Address:	Old North Sacramento
Railroad, Subdivision and MP:	UPRR, Sacramento Sub, MP 140.5
Key Nearby Features:	Pell/Main Industrial Park, Oak Knoll Community, Department of Human Assistance
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	20 (freight)
Tracks:	1 existing mainline, 2 future mainline tracks
Mini high's:	Three mini-highs serving each side of the platform: two mini-highs 48" ATR at each end of the platform, one mini-high 21" ATR centrally located on the platform

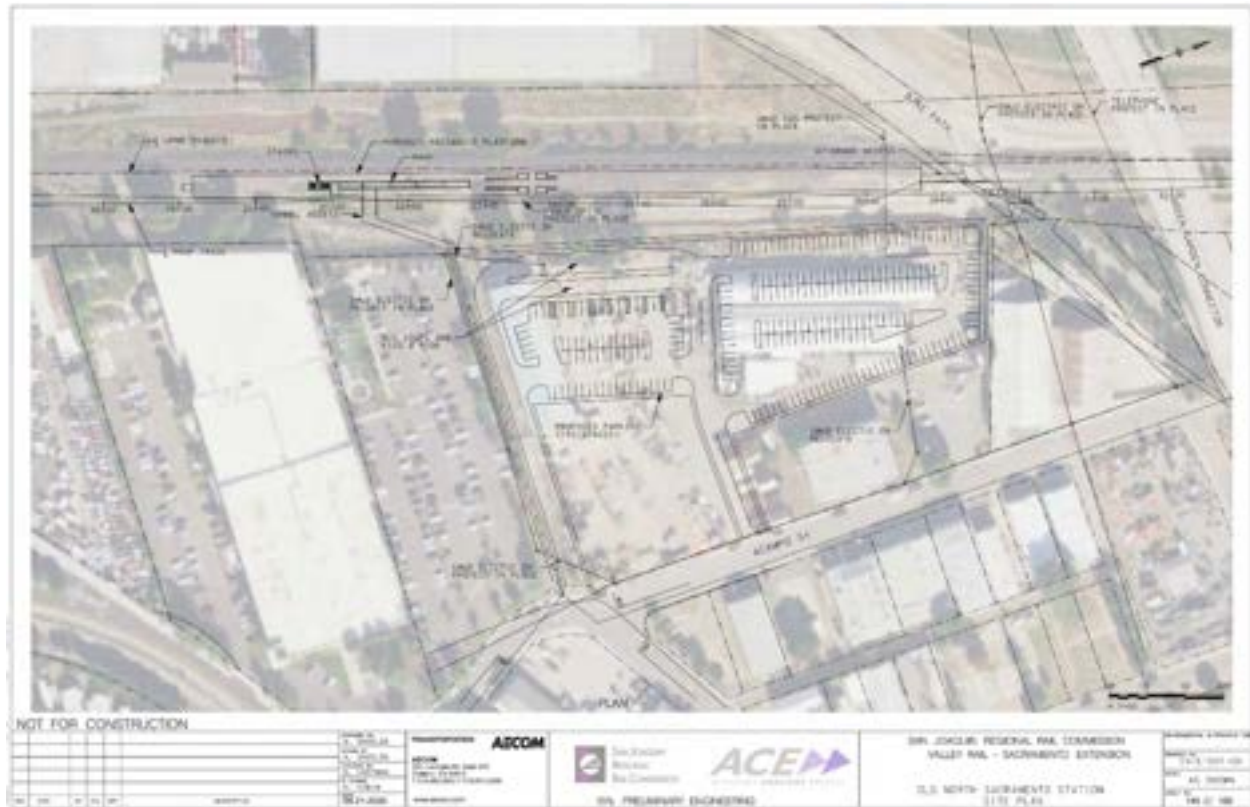


Figure 9. Old North Sacramento Station – Site Map



Figure 10. Old North Sacramento Station – Concept Layout

### 1.4.3 Midtown Sacramento

The platform will be located in dense downtown environment and constrained by many adjacent buildings. There is a proposed plaza with many amenities and micro-mobility features which is located adjacent to the railroad right-of-way on SacRT and City of Sacramento properties. The plaza and a separate accessway behind the platform connects to two adjacent grade crossings, 19<sup>th</sup> Street & Q Street. The conceptual layout is shown herein. The specific data for the Midtown Sacramento station is located in the below table.

**Table 5 – Midtown Sacramento Station Data**


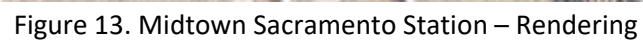
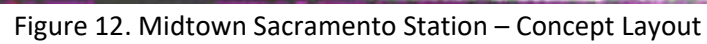
Data	Midtown Sacramento Station
City:	Sacramento
County:	Sacramento
Community Location or Address:	Midtown Community
Railroad, Subdivision and MP:	UPRR, Sacramento Sub, MP 138.0
Key Nearby Features:	State Capitol
Pedestrian Access Type/Typology:	
Platform Length:	565'
Train Speeds:	25 MPH
Existing Trains/Day:	12 (freight)
Tracks:	1 existing mainline, 1 siding
Mini high's:	Three mini-high platforms: one at 21", two at 48"



Figure 11. Midtown Sacramento Station – Site Map



#### 1.4.4 City College

City College Station will build a new platform to be shared with SacRT service for cross platform transfers. Pedestrian bridge access will provide access to both center platforms. The cross-platform transfer and existing station provides connections to the City College and downtown areas. The station will use a standard 975' long, side platform with 2 low level mini-highs and 1 centrally location high mini-high. Multiple amenities are available in close proximity to the station, but no new parking is planned for the area due to existing facilities. The specific data for the City College station is located in the below table.

**Table 6 – City College Station Data**


Data	City College Station
City:	Sacramento
County:	Sacramento
Community Location or Address:	Land Park, Near Sacramento City College
Railroad, Subdivision and MP:	UPRR, Sacramento Sub, MP 136.20
Key Nearby Features:	Sacramento City College, SacRT Connection
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	30 MPH
Future Trains/Day:	8 (freight)
Tracks:	2 existing mainline tracks, 4 station tracks adjacent to mainlines.
Mini high's:	Three mini-highs: two 48" ATR at each end of the platform, one 21" ATR centrally located on the platform



Figure 14. City College Station – Site Map



Figure 15. City College Station – Concept Layout

#### 1.4.5 Elk Grove

The platform is located in the city of Elk Grove and accessed via overcrossing and pedestrian bridge. The station is in UPRR right-of-way bounded by industrial warehouses to the west and a residential neighborhood to the east. Three mini-highs serve each side of the central platform. A station parking lot and drop off is located to the west of the station. The specific data for the Elk Grove station is in the below table.

**Table 7 – Elk Grove Station Data**


Data	Elk Grove Station
City:	Elk Grove
County:	Sacramento
Community Location or Address:	Northeast corner of Laguna Blvd and Dwight Road
Railroad, Subdivision and MP:	UPRR, Sacramento Sub, MP 128.0
Key Nearby Features:	Bartholomew Park, Laguna Town Hall, John L. Zehnder Park
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	20 (freight)
Tracks:	1 existing mainline, 1 Future Station Track
Mini high's:	Six total mini-highs: Three mini-highs for each platform side: two 48" ATR at each end of the platform, one 21" ATR centrally located on the platform



Figure 16. Elk Grove Station – Site Map

### Elk Grove Station Concept

- 30 x 955 foot center loading platform
- Surface parking lot
- New traffic signal for better flow and safety
- Pedestrian bridge linking platform to parking lot
- Up to two-mile long rail siding (second main track)
- Bus parking



Figure 17. Elk Grove Station – Concept Layout

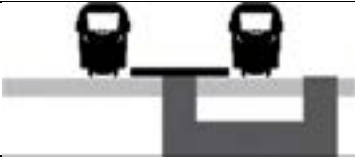


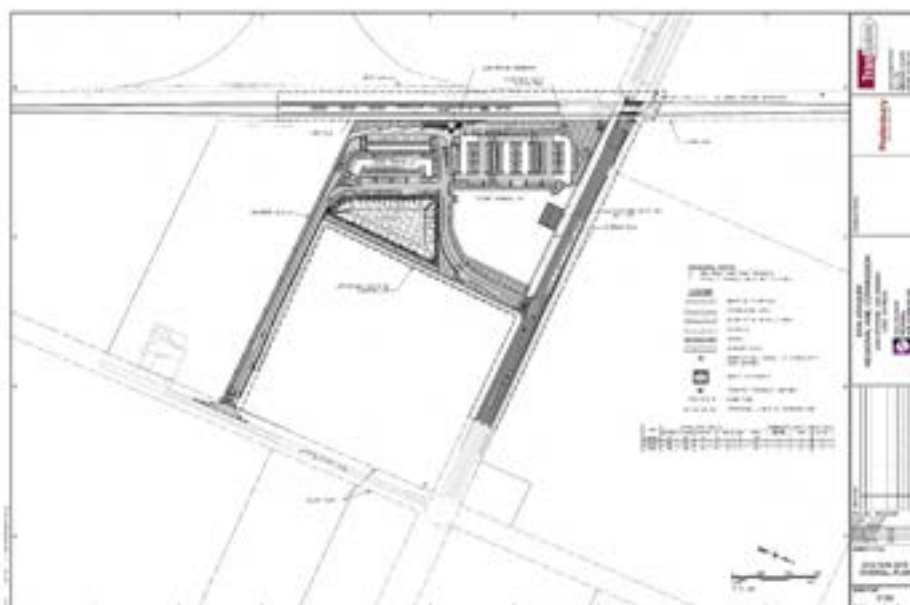
Figure 18. Elk Grove Station – Rendering  
(Source: San Joaquin JPA)

#### 1.4.6 Lodi

The station is located on the southeast corner of Highway 12 and the UPRR Railroad Right-of-way in the City of Lodi. A new 975' center platform will be installed with ADA access through an underground tunnel and walkways. The existing UPRR Mainline track will be shifted to make room for the platform and a new siding track will be installed. The station will include 2 high-level mini-high platforms at either end of the platform and a centrally located low-level mini-high. The specific data for Lodi Station is in the table below.

**Table 8 – Lodi Station Data**

Data	Lodi Station
City:	Lodi
County:	San Joaquin
Community Location or Address:	Highway 12
Railroad, Subdivision and MP:	UPRR, Sacramento Sub, MP 105.6
Key Nearby Features:	Michael David Winery
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	60 MPH
Future Trains/Day:	6 (freight)
Tracks:	1 existing mainline, 1 new siding
Mini high's:	Six total mini-highs: Three mini-highs for each platform side: two 48" ATR at each end of the platform, one 21" ATR centrally located on the platform



**Figure 19. Lodi Station – Site Map**

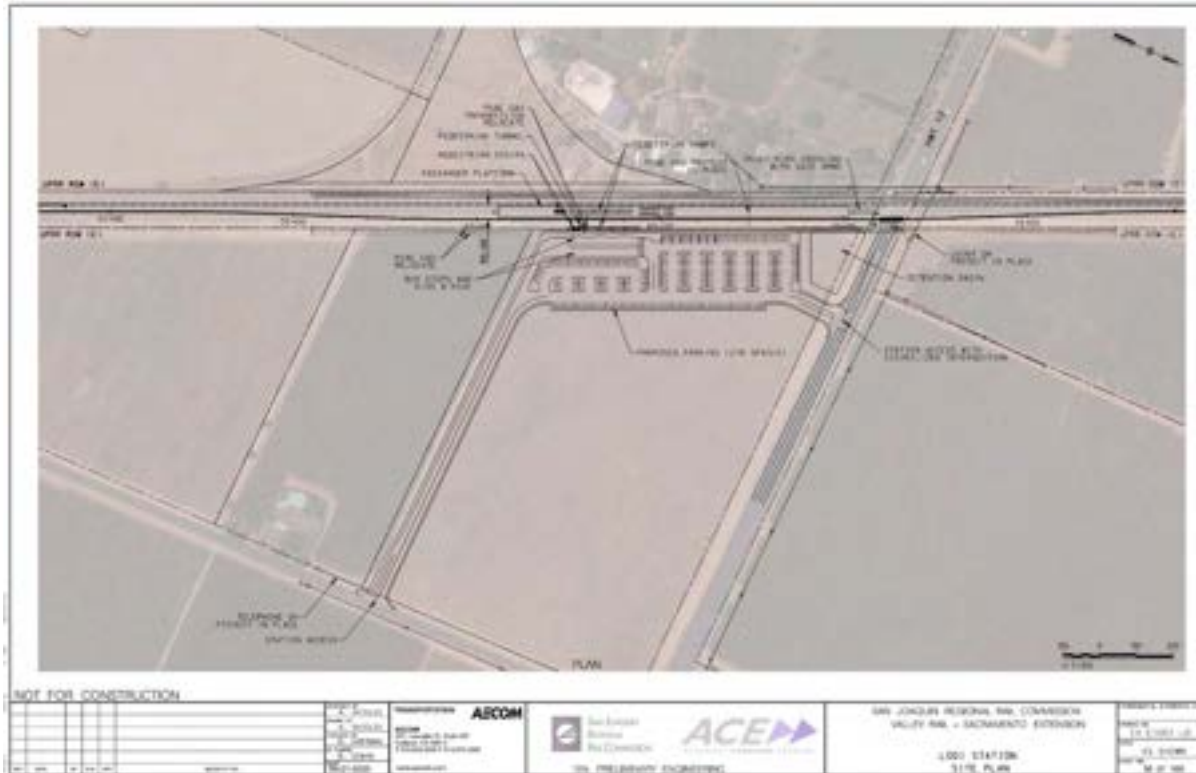


Figure 20. Lodi Station – Concept Layout

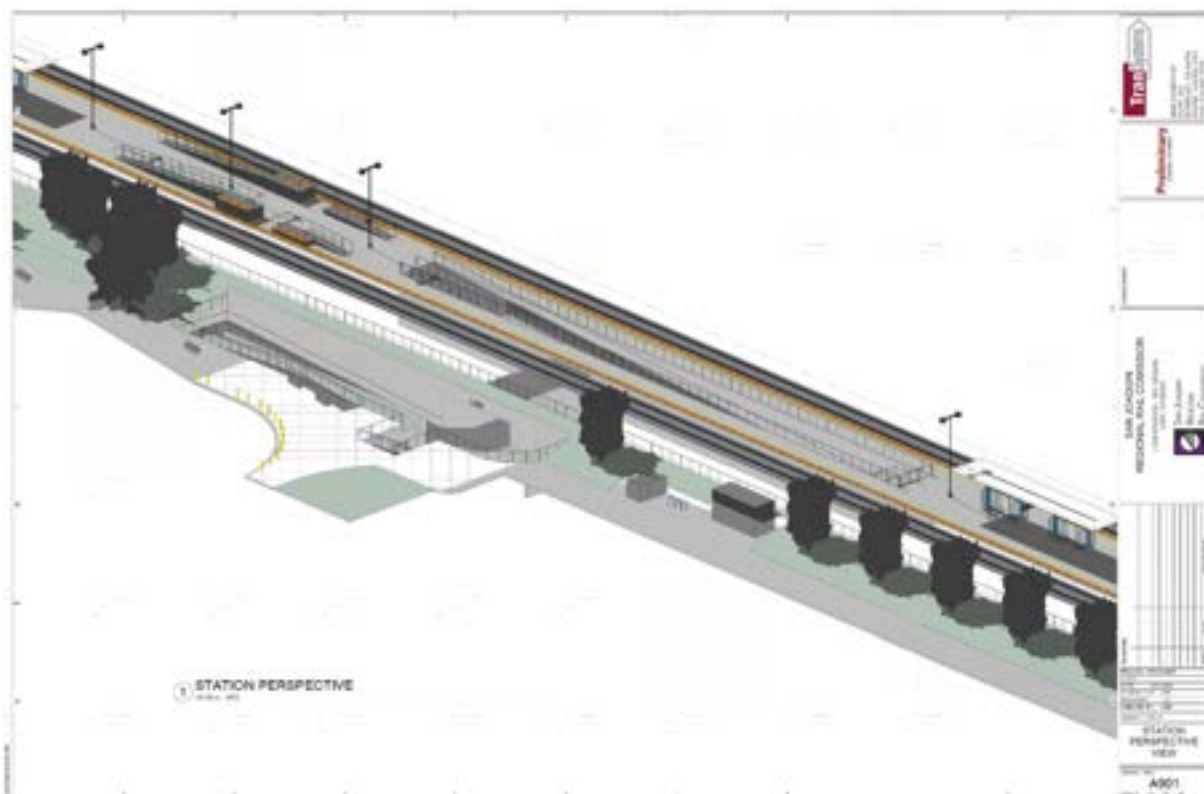


Figure 21. Lodi Station – Rendering

#### 1.4.7 Oakley

The Oakley station and 975' long single-side platform will be located in the city of Oakley. ADA access will be provided from multiple locations on the back of the platform. New parking will be added across a new station street and within close proximity to the downtown Oakley area. Two high-level mini-highs will be located in the center and east end of the platform to provide access to the San Joaquin rail service. The specific data for Oakley Station is in the table below.

**Table 9 – Oakley Station Data**

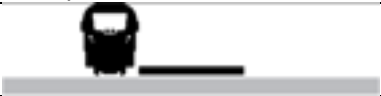
Data	Oakley Station
City:	Oakley
County:	Contra Costa
Community Location or Address:	Downtown Oakley
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 1145.9
Key Nearby Features:	Oakley Civic Center
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	79/70 MPH
Future Trains/Day:	18 (freight)
Tracks:	2 existing mainlines
Mini high's:	Two mini-highs at 48" ATR: one in the center and one at the east end



Figure 22. Oakley Station – Site Map  
(Source: Google Earth)



Figure 23. Oakley Station – Concept Layout  
(Source: Amtrak)



Figure 24. Oakley Station – Rendering

#### 1.4.8 Stockton Cabral

The Stockton Cabral Station is located in the middle of an industrial and residential area in the city of Stockton. This station can be found approximately one mile north of the Stockton San Joaquin Station. Two UPRR Mainlines run adjacent to the station while a Siding track serves the station platform. The platform includes one existing low level mini-high at east end of the station and a new bolt down low-level mini-high installed at the center of the platform. The specific data for Stockton Cabral Station is in the table below.

**Table 11 – Stockton Cabral Station Data**


Data	Stockton Cabral Station
City:	Stockton
County:	San Joaquin
Community Location or Address:	949 East Channel Street Stockton, CA 95202
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 83.90
Key Nearby Features:	Stockton Arena, Stanislaus State Stockton Campus, Stockton Civic Center
Pedestrian Access Type/Typology:	
Platform Length:	920'
Train Speeds:	40 MPH
Future Trains/Day:	52
Tracks:	2 existing mainlines and 1 Siding
Mini high's:	Two mini-highs: one 21" ATR centrally located and one existing low level mini-high at the east end of the platform



Figure 27. Stockton Cabral Station – Site Map

*(Source: Google)*



Image 2. Stockton Cabral Station – Existing  
*(Source: Amtrak)*



Image 3. Stockton Cabral Station – Existing  
*(Source: Jeremiah Cox/SubwayNut.com)*

#### 1.4.9 Stockton San Joaquin

The Stockton San Joaquin Station is located in the city of Stockton. The station consists of two 48" mini-highs that are located in the center and west end of the platform, one of which is not currently included in the Program. This station is served by two mainlines on the BNSF ROW. The station is in the middle of industrial and residential areas. The specific data for Stockton San Joaquin Station is in the table below.

**Table 12 – Stockton San Joaquin Station Data**

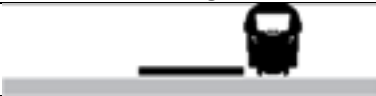
Data	Stockton San Joaquin Station
City:	Stockton
County:	San Joaquin
Community Location or Address:	735 South San Joaquin Street Stockton, CA 95203
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 1121.17
Key Nearby Features:	Lafayette Square, Greyhound Bus Station, Edison High School
Pedestrian Access Type/Typology:	
Platform Length:	505'
Train Speeds:	60/55 MPH
Future Trains/Day:	24
Tracks:	2 existing mainlines
Mini high's:	Two mini-highs at 48" ATR: one in the center and one at the east end



Figure 28. Stockton San Joaquin Station – Site Map  
(Source: Google)



Image 4. Stockton San Joaquin Station – Existing  
(Source: Amtrak)

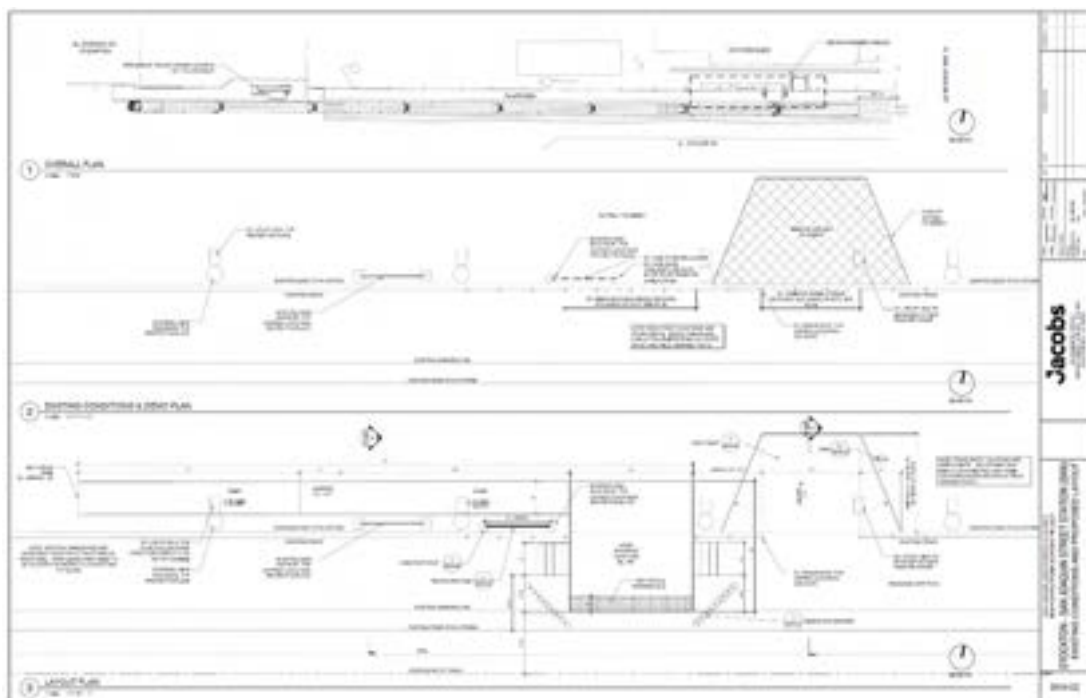



Figure 29. Stockton San Joaquin Station – Site Plan and Mini-high layout

#### 1.4.10 North Lathrop

The station is proposed just north of the Lathrop Rd Overpass of UPRR Fresno sub Mainline. The area is light industrial to the east and residential to the west of the station and the platform is a center platform with ADA access via a pedestrian bridge. One centrally located low-level mini-high will provide level boarding to each track on the 975' long platform. The specific data for North Lathrop Station is in the table below.

**Table 13 – North Lathrop Station Data**

Data	North Lathrop Station
City:	Lathrop
County:	San Joaquin
Community Location or Address:	Southwest corner of Sharp Army Depot
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 92.7
Key Nearby Features:	Defense Depot San Joaquin Sharpe
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	79/70 MPH
Future Trains/Day:	12
Tracks:	2 existing mainlines, 2 future station tracks
Mini high's:	Two mini-highs total: One mini-high 21" ATR centrally serving each station track

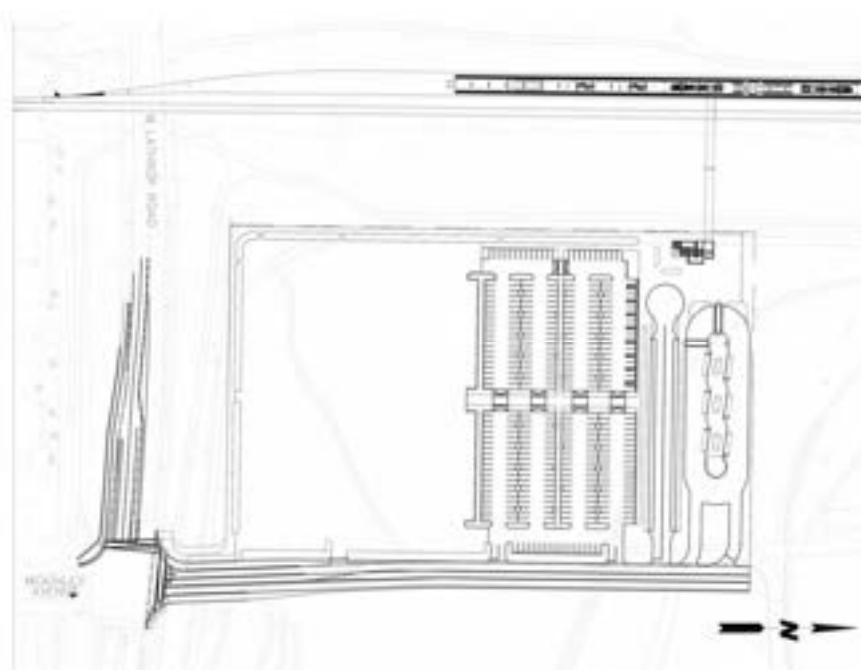


Figure 30. North Lathrop Station – Site Plan



Figure 31. North Lathrop Station Site Map  
(Source: Google Maps)

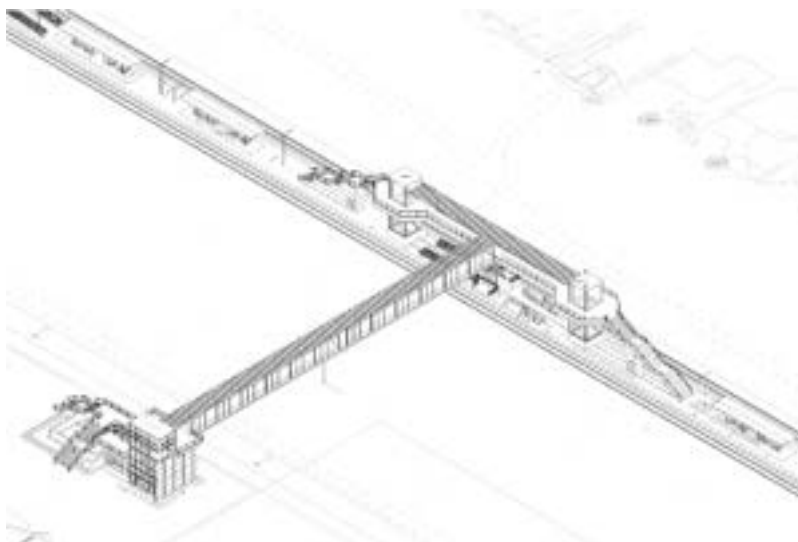



Figure 32. North Lathrop Station – Rendering

#### 1.4.11 Manteca

The 975' long platform is located within existing UPRR ROW and adjacent to the existing Manteca Transit Center. The platform provides two centrally located, low-level mini-highs for level boarding on each track. The station plans to service ACE and is located in a mixed-use industrial and residential neighborhood with Manteca High School nearby. The specific data for Manteca Station is in the table below.

**Table 14 – Manteca Station Data**

Data	Manteca Station
City:	Manteca
County:	San Joaquin
Community Location or Address:	220 Moffat Blvd. Manteca, CA 95336
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 97.0
Key Nearby Features:	Manteca High School, Manteca Transit Center
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	18 (freight)
Tracks:	1 existing mainline, 1 new mainline
Mini high's:	Two mini-highs total: One mini-high 21" ATR centrally serving each track

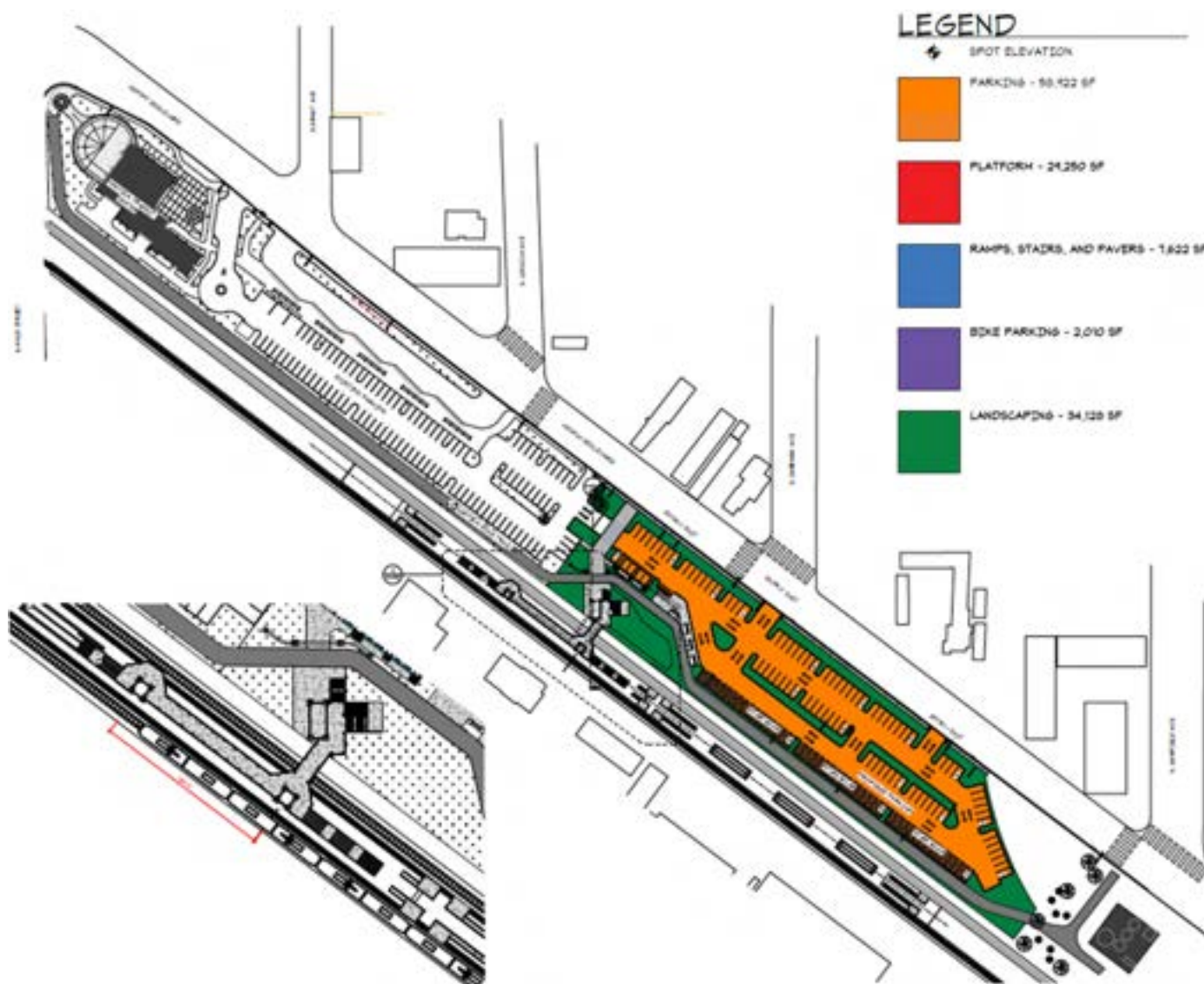


Figure 33. Manteca Station – Site Plan

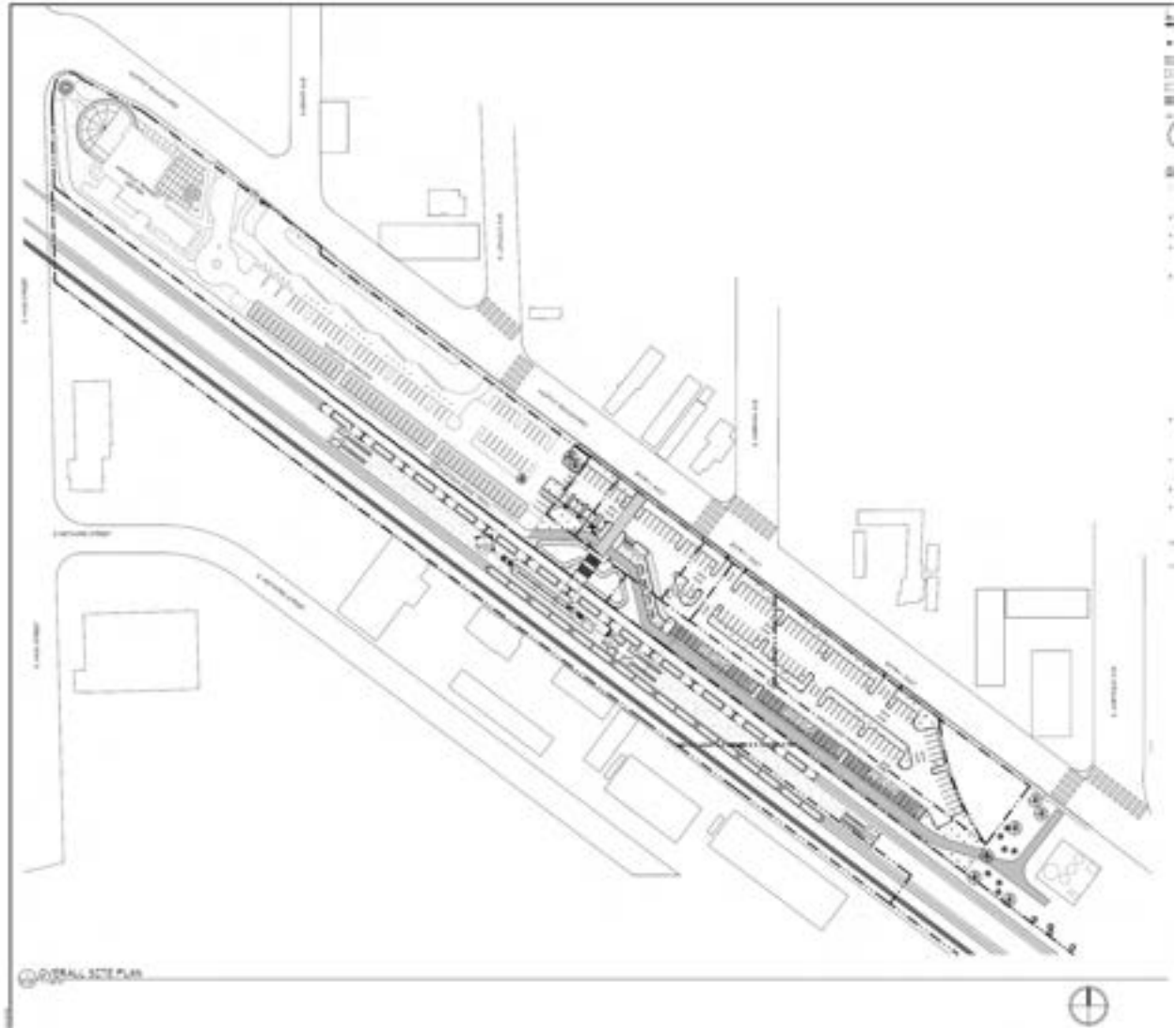


Figure 34. Manteca Station – Site Map  
(Source : Google Earth)

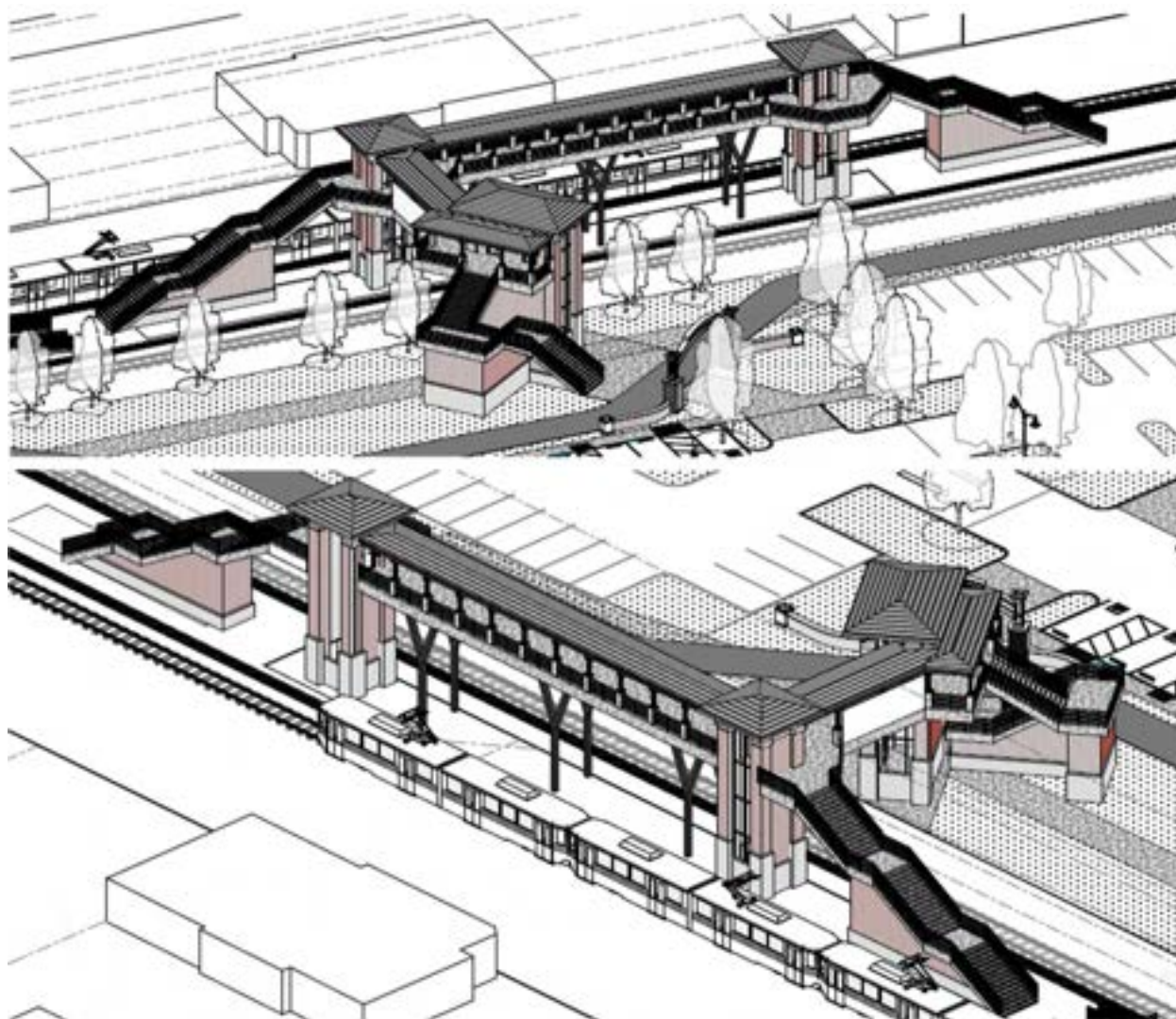



Figure 35. Manteca Station – Rendering

#### 1.4.12 Ripon

The platform is located in a primarily industrial area adjacent to Main Street Overpass located in the City of Ripon. The station is located west of the existing tracks and a new siding track will be installed to support the center platform. ADA access is provided via overhead pedestrian bridge with elevators, ADA walkways to the adjacent parking and centrally located, low-level, mini-highs. The specific data for Ripon Station is in the table below.

**Table 15 – Ripon Station Data**

Data	Ripon Station
City:	Ripon
County:	San Joaquin
Community Location or Address:	Industrial Ave., Downtown
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 103.40
Key Nearby Features:	Ripon Chamber of Commerce, Ripon Community Center, Mavis Stouffer Park
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	18 (freight)
Tracks:	1 existing mainline, 1 new siding
Mini high's:	Two mini-highs total: One mini-high 21" ATR centrally serving each track

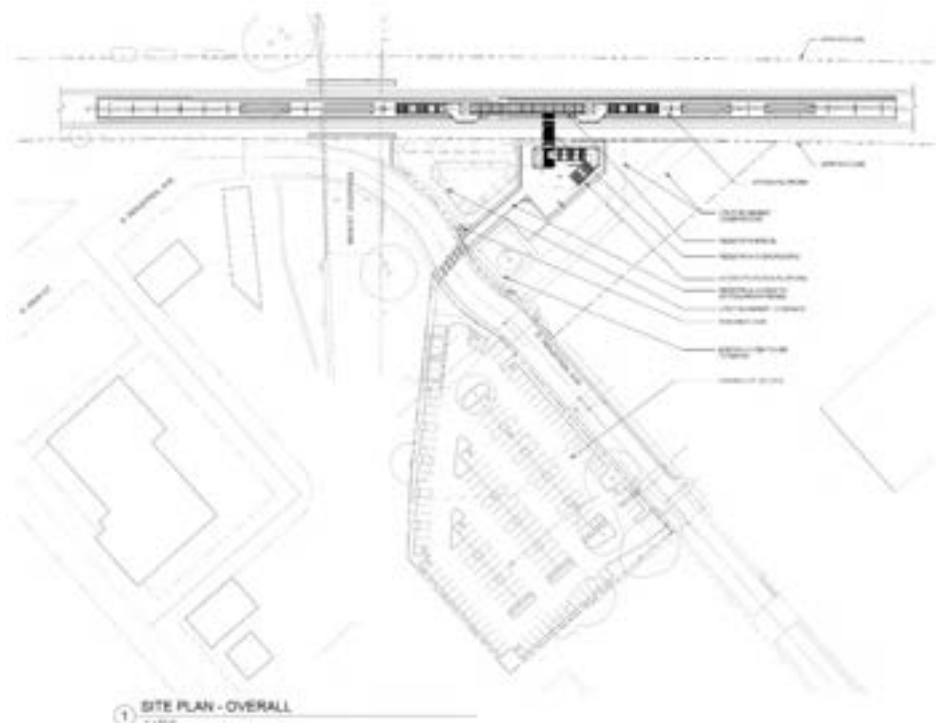


Figure 36. Ripon Station – Site Map

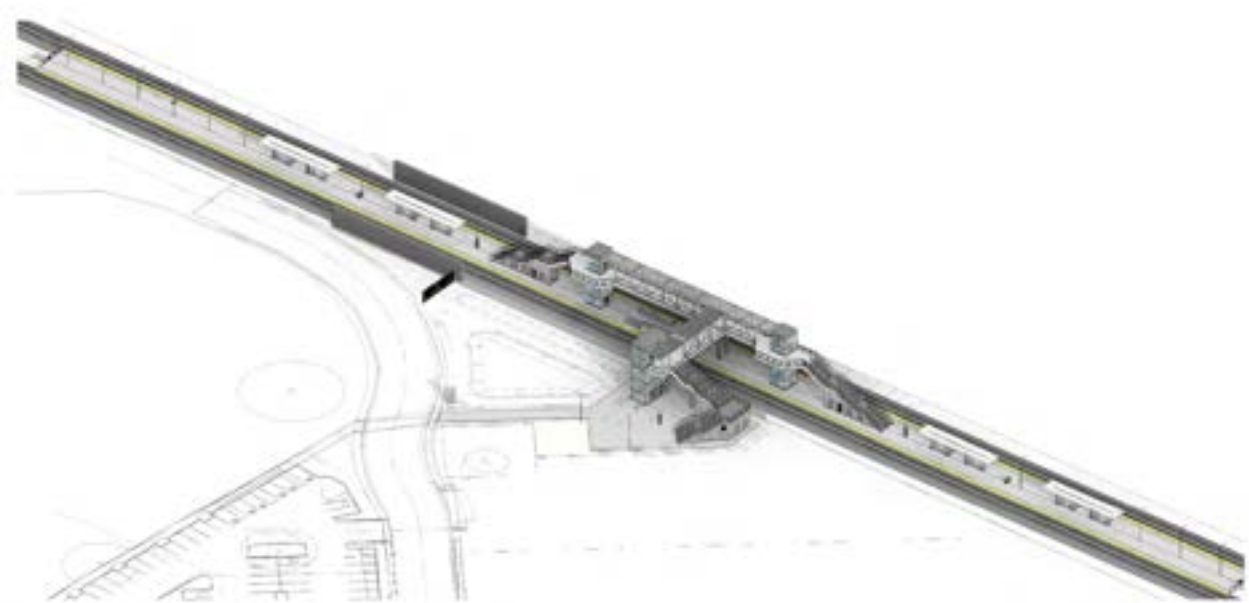


Figure 37. Ripon Station – Rendering

#### 1.4.13 Modesto (Briggsmore)

The 700' platform is in the middle of agricultural area, but a dense residential area can be found further south of the station. The existing station is approximately 5.4 miles from the future Modesto Station. The current station includes an existing BNSF Mainline, with an additional mainline yet to be installed. The platform consists of adding two high-level, mini-high's that are located in the center of the platform and at the East end of the station, where the east end is not currently included in the program. The specific data for the Modesto (Briggsmore) station is found in the table below.

**Table 16 – Modesto (Briggsmore) Station Data**


Data	Modesto (Briggsmore) Station
City:	Modesto
County:	Stanislaus
Community Location or Address:	1700 Held Drive Modesto, CA 95355
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 1091.5
Key Nearby Features:	Freedom Park Playground, multiple farms and various houses of worship
Pedestrian Access Type/Typology:	
Platform Length:	700'
Train Speeds:	79/70 MPH
Future Trains/Day:	46
Tracks:	1 existing mainline
Mini high's:	Two mini-highs 48" ATR centrally located on the platform and at the east end of the platform



Figure 38. Modesto (Briggsmore) Station – Site Map  
(Source: Google)



Image 5. Modesto (Briggsmore) Station – Existing  
(Source: Amtrak)

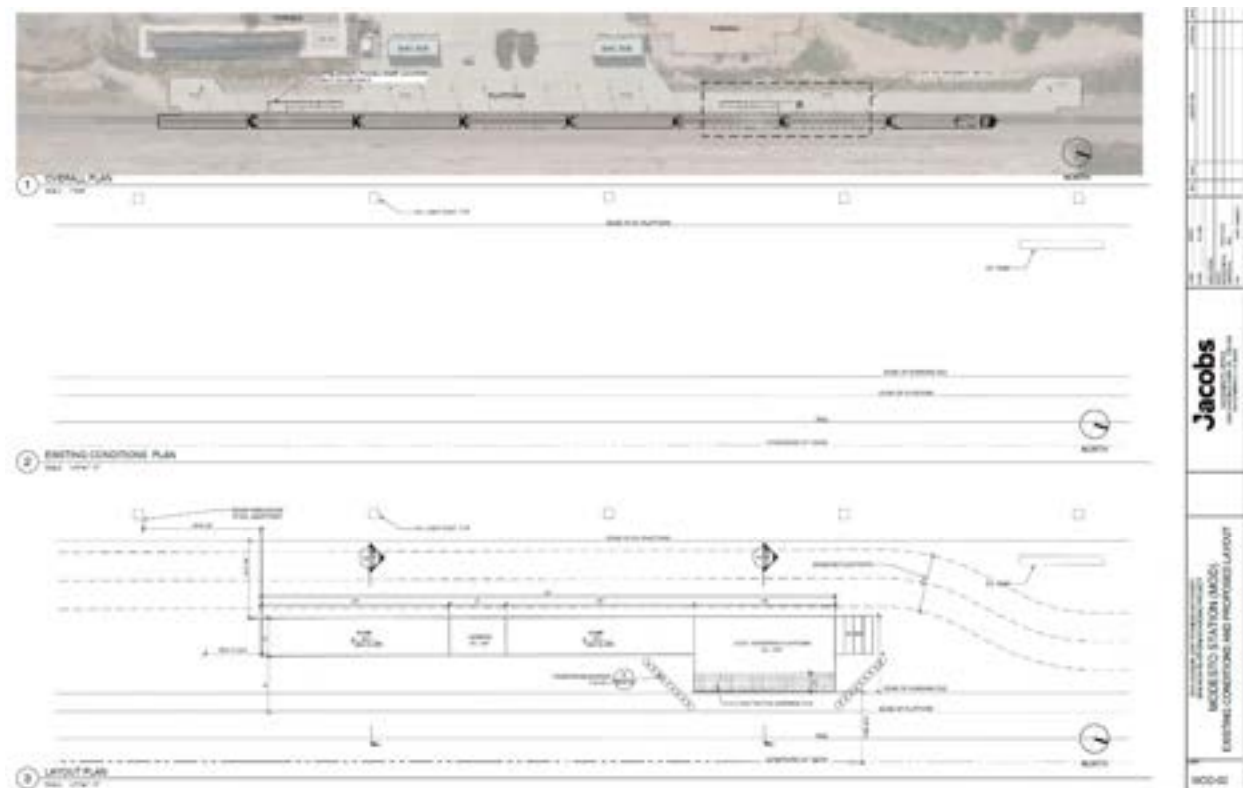



Figure 39. Modesto (Briggsmore) Station – Site Plan and Mini-high Layout Plan

#### 1.4.14 Modesto

Modesto Station is adjacent to the existing Modest Transit Center. Currently a single mainline track runs south of the Transit center. A second mainline is proposed with pedestrian and ADA access provided via elevations and a pedestrian overpass. The two single-sided platforms will provide level boarding each with a centrally located mini-high platform 21" above top of rail. At-grade access will be provided to the station platform at both I and K streets and multiple points through the parking lot and transit center. The specific data for the Modesto station is found in the table below.

**Table 17 – Modesto Station Data**

Data	Modesto Station
City:	Modesto
County:	Stanislaus
Community Location or Address:	1001 9th Street
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 113.0
Key Nearby Features:	Downtown Modesto, Modesto Transit Center, Gallo Center of the Arts
Pedestrian Access Type/Typology:	
Platform Length:	880'
Train Speeds:	40 MPH
Future Trains/Day:	18 (freight)
Tracks:	1 existing mainline, 1 new mainline
Mini high's:	Two total mini-highs, One mini-high 21" ATR centrally located on each side platform

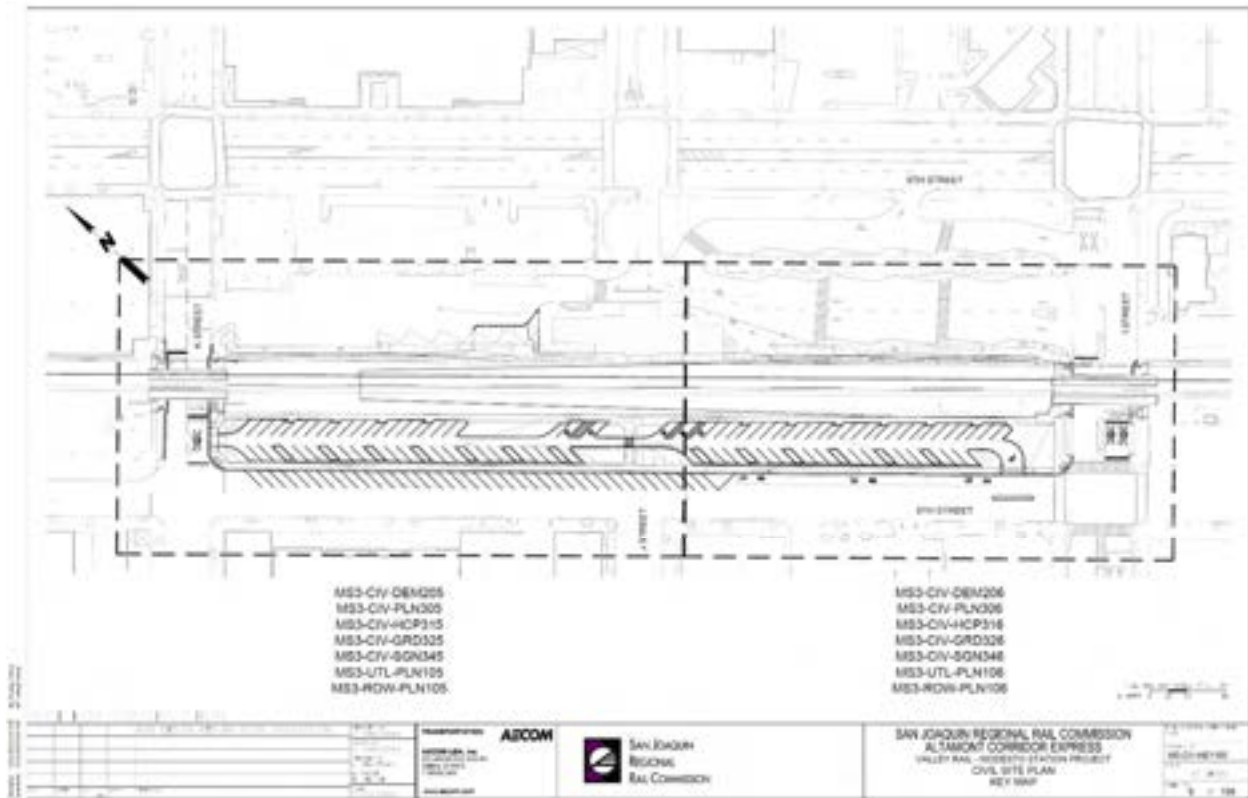


Figure 40. Modesto Station – Site Map

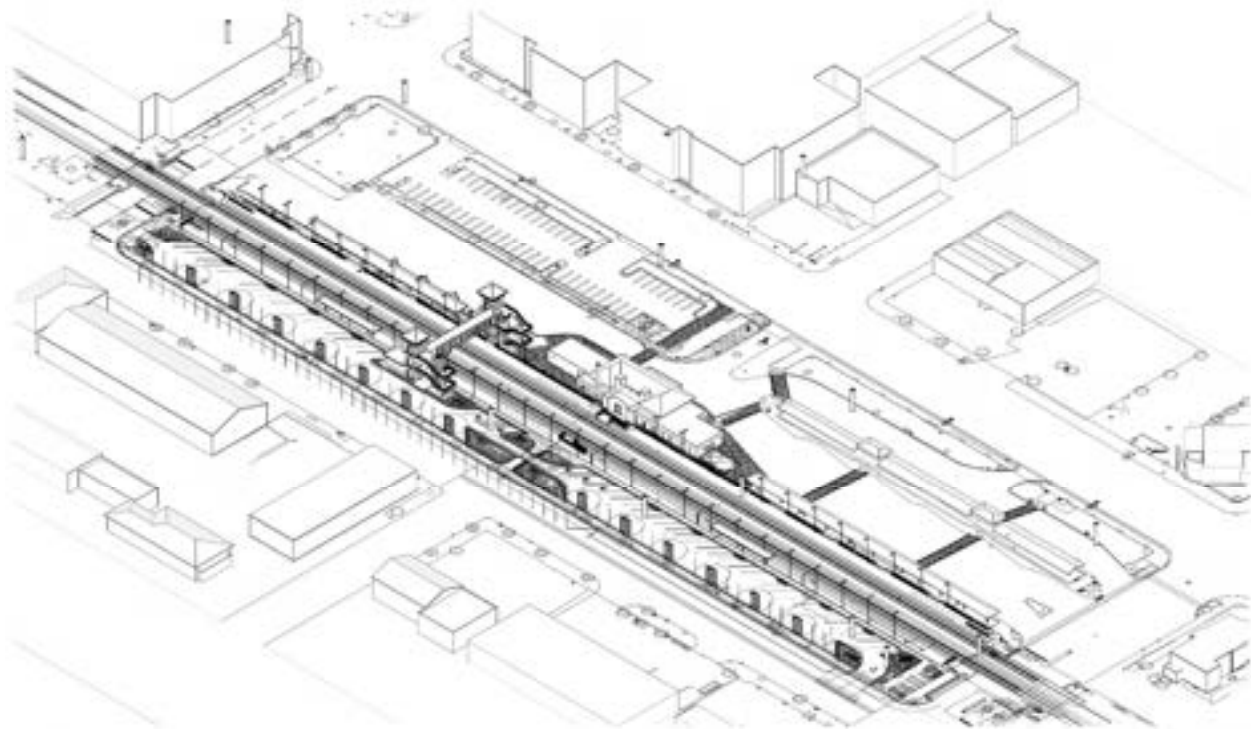


Figure 41. Modesto Station – Rendering




Image 6. Modesto Station Transit Center – Existing  
(Source: Andy Alfaro [aalfaro@modbee.com](mailto:aalfaro@modbee.com))

#### 1.4.15 Ceres

The Ceres Station platform is located in the City of Ceres directly west of the 99 freeway. Pedestrian and ADA access to the station will be provided with ADA walkways along the freeway off- and on-ramps and an underground pedestrian tunnel leading to the center platform. A single, low-level mini-high platform will provide level boarding to ACE trains. The specific data for the Ceres station is found in the table below.

**Table 18 – Ceres Station Data**

Data	Ceres Station
City:	Ceres
County:	Stanislaus
Community Location or Address:	El Camino, North Street and 2nd Street
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 117.18
Key Nearby Features:	Ceres Civic Center, Ceres High School, Ceres Memorial Park
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	18 (freight)
Tracks:	1 existing mainline, 1 new mainline
Mini high's:	Two mini-highs total: One mini-high 21" ATR centrally serving each platform side

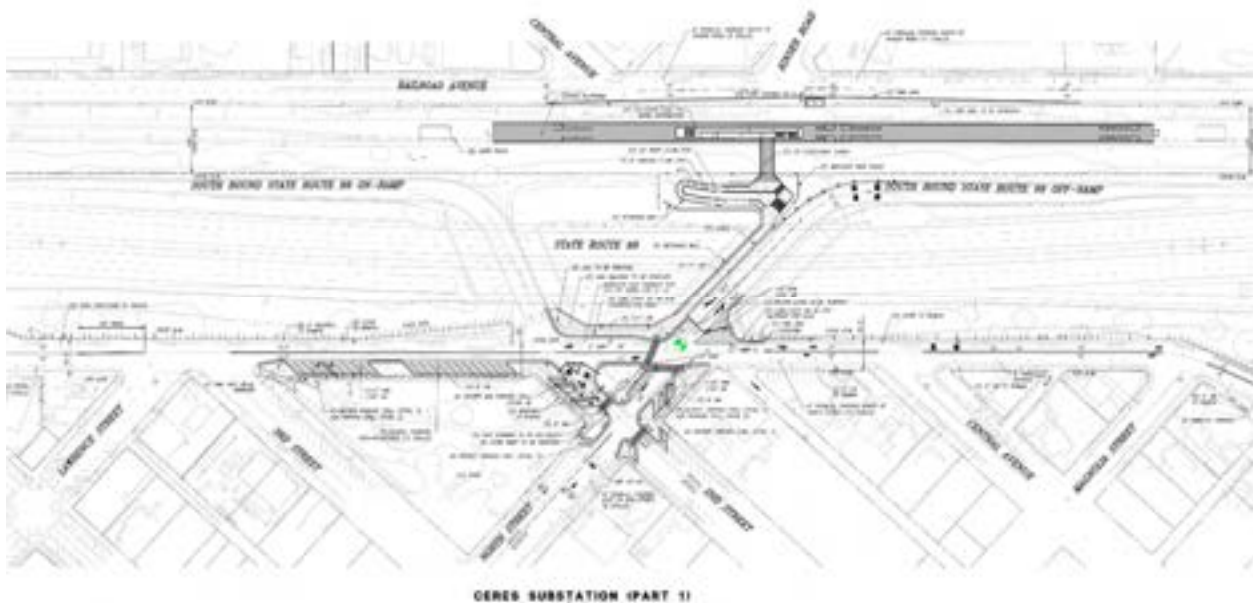


Figure 42. Ceres Station – Site Map

#### 1.4.16 Turlock-Denair

The platform is located in the city of Denair. This location is 3.7 miles from the future Turlock Station. A 48" high mini-high is located in the center of the 300' long platform, while a platform extension and second mini-high will be added at the east end of the new platform in a separate contract. Currently, one BNSF Mainline track and two siding tracks run through this station. The specific data for the Turlock-Denair station is found in the table below.

**Table 19 – Turlock-Denair Station Data**


Data	Turlock-Denair Station
City:	Denair
County:	Stanislaus
Community Location or Address:	3800 Santa Fe Avenue Denair, CA 95316
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 1078.5
Key Nearby Features:	Denair High School, Denair Community Center
Pedestrian Access Type/Typology:	
Platform Length:	300' (with future platform extension)
Train Speeds:	79/70 MPH
Future Trains/Day:	28 (freight)
Tracks:	1 existing mainline, 2 Siding Tracks
Mini high's:	One mini-high 48" ATR centrally located on the platform, and second mini-high at the east end of the new platform extension.



Figure 43. Turlock-Denair Station – Site Map  
(Source: Google)



Image 7. Turlock-Denair Station – Existing  
(Source: Amtrak)



Figure 44. Turlock-Denair Station – Overall plan

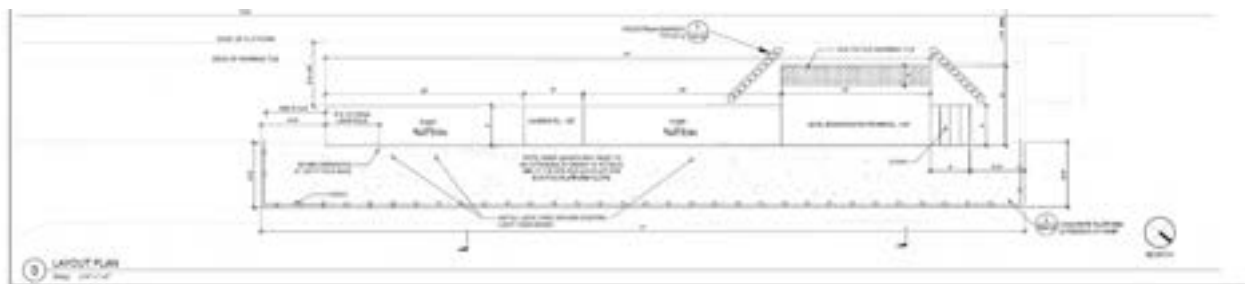



Figure 45. Mini-high Layout plan (Phase 1)

#### 1.4.17 Turlock

The platform will be located near the Turlock Transit center with pedestrian and ADA access provided via elevators from the parking lot and N. Golden State Blvd. a 975' long center platform allows station patrons to board trains and one centrally located mini-high provides level boarding to ACE trains in either direction. The specific data for the Turlock station is found in the table below.

**Table 20 – Turlock Station Data**

Data	Turlock Station
City:	Turlock
County:	Stanislaus
Community Location or Address:	Downtown
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 124.90
Key Nearby Features:	Turlock Transit Center
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	18 (freight)
Tracks:	1 existing mainline, 1 future mainline
Mini high's:	Two mini-highs total: One mini-high 21" ATR centrally serving each platform side

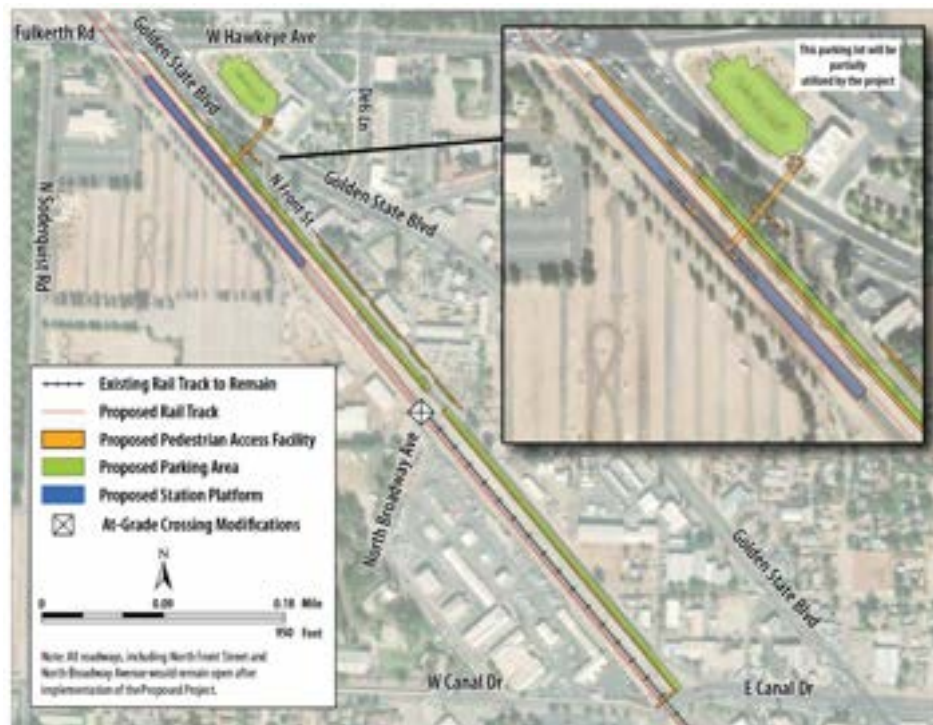


Figure 46. Turlock Station – Site Map



Figure 47. Turlock Station – Concept Layout

#### 1.4.18 Livingston

The platform is located in the city of Livingston on the UPRR right of way. The 975' platform will have two 21" ATR mini-highs in the center each serving one side of the platform. A second track along with a center platform and pedestrian underpass will be added as part of the Valley Rail program. The specific data for the Livingston station is found in the table below.

**Table 21 – Livingston Station Data**

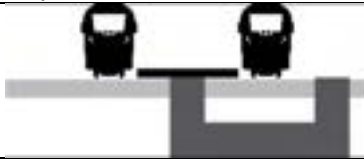
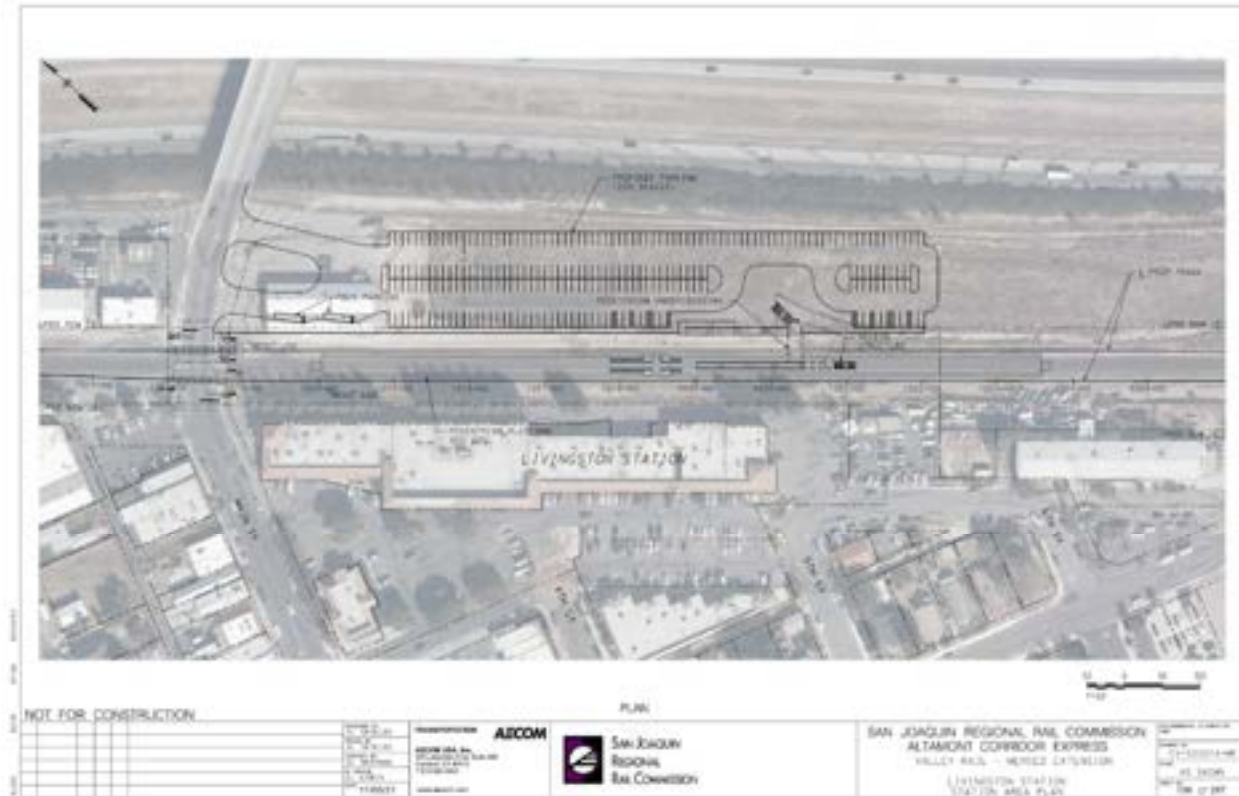
Data	Livingston Station
City:	Livingston
County:	Merced
Community Location or Address:	Southeast corner of Main Street and East Avenue
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 136.15
Key Nearby Features:	Livingston Historic Museum, Livingston City Hall
Pedestrian Access Type/Typology:	
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	16 (freight)
Tracks:	1 existing mainline, 1 future mainline
Mini high's:	Two mini-highs total: One mini-high 21" ATR centrally serving each platform side



Figure 48. Livingston Station – Site Map



#### 1.4.19 Merced (Existing)

The existing Merced Station is approximately 0.7 miles from the future site of the new Merced Station. The station sits in the middle of a dense residential area in the city of Merced. The two Mainline Tracks are located on the BNSF ROW. Additionally, two 48" mini-highs are located in the center of the platform. There is also one new 48" mini-high planned at the east end of the south platform in a future phase. The specific data for the Merced (Existing) station is found in the table below.

**Table 22 – Merced (Existing) Station Data**


Data	Merced (Existing) Station
City:	Merced
County:	Merced
Community Location or Address:	Downtown Merced
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 1055.93
Key Nearby Features:	Downtown Merced, Merced County Fair, Applegate Park
Pedestrian Access Type/Typology:	
Platform Length:	560' (North Platform), 575' (South Platform)
Train Speeds:	50 MPH
Future Trains/Day:	28 (freight)
Tracks:	2 Existing Mainline Tracks
Mini high's:	Two 48" ATR mini-high centrally located on the platforms and one future 48" mini high at the east end of the south platform.



Figure 50. Merced Station – Site Map  
(Source: Google)



Figure 51. Merced Station – Site Plan

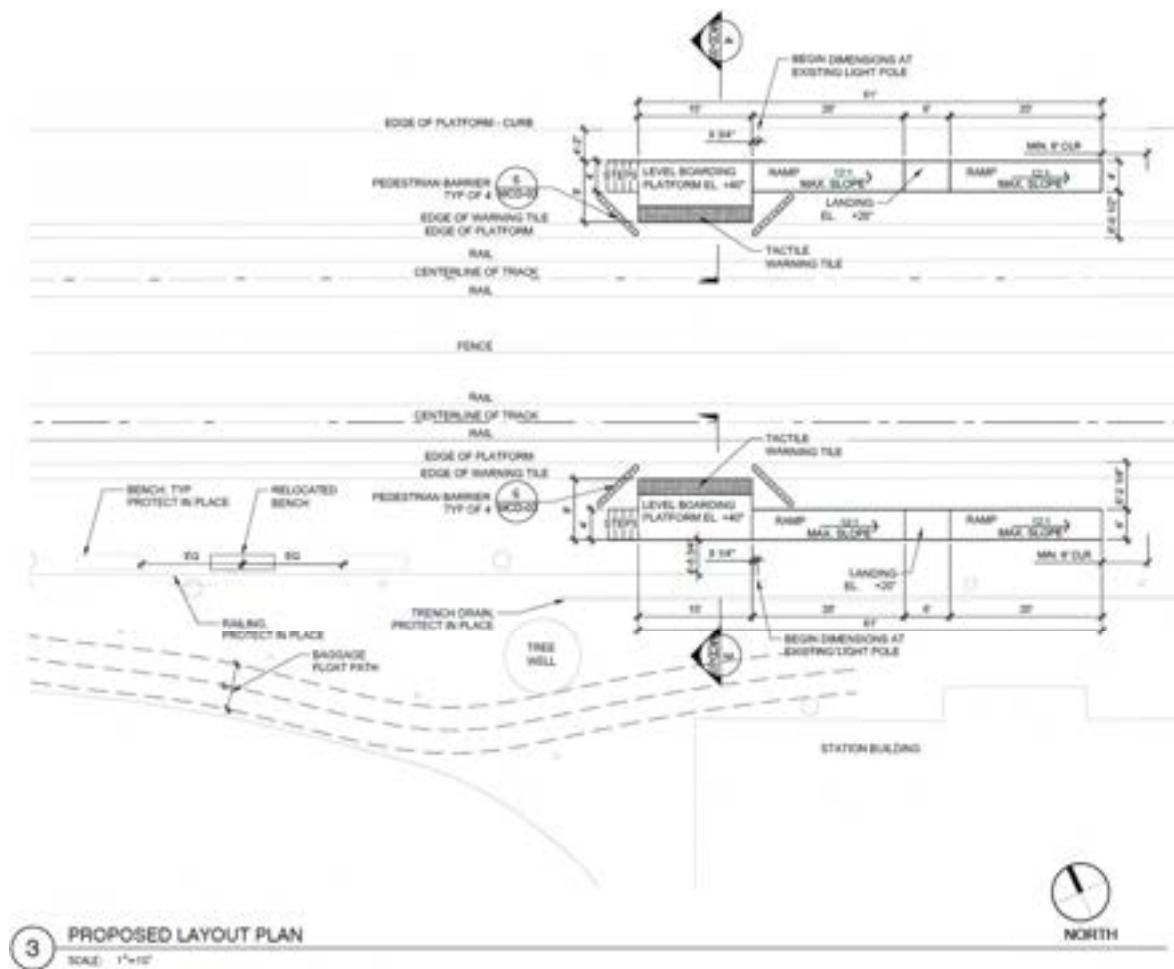


Figure 52. Merced Station – Proposed Bolt Down Mini-High Layout Plan



Image 9. Merced Station – Existing  
(Source: Amtrak)

#### 1.4.20 Merced

The Merced station is located on the UPRR mainline northeast of the city center. The side platform will have a 21" mini high positioned in the center. A standard 975' side platform is planned during the Valley Rail work. In addition, a second track, pedestrian underpass and center platform will be constructed for access to California HSR. The specific data for the Merced station is found in the table below.

**Table 23 – Merced Station Data**

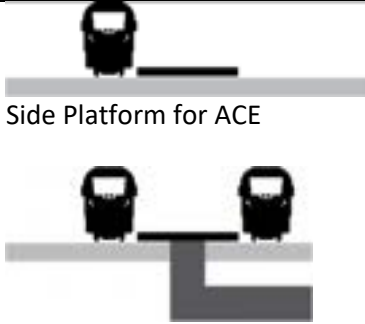
Data	Merced Station
City:	Merced
County:	Merced
Community Location or Address:	Downtown Merced
Railroad, Subdivision and MP:	UPRR, Fresno Sub, MP 150.25
Key Nearby Features:	Downtown Merced, Merced County Fair
Pedestrian Access Type/Typology:	 <p>Side Platform for ACE</p> <p>Elevated platform with Grade-Separated Center platform to the Center for San Joaquins/HSR Center Platform.</p>
Platform Length:	975'
Train Speeds:	70 MPH
Future Trains/Day:	16 (freight)
Tracks:	1 existing mainline, 1 future station track
Mini high's:	Three mini-highs: two 48" ATR at each end of the platform, one 21" ATR centrally located on the platform



Figure 2-5  
Merced Station

Figure 53. Merced Station – Site Plan




Figure 54. Merced Station – Rendering

#### 1.4.21 Madera (Existing)

The platform is located approximately 9 miles Northeast of the future Madera Station on the BNSF ROW in the Stockton Subdivision. The station is in the middle of a residential area and nearby to the Madera Golf and Country Club. On the east end of the 380' platform, a bolt down mini-high will be installed with ADA accessibility built into the design. The specific data for the Madera (Existing) station is found in the table below.

**Table 24 – Madera (Existing) Station Data**

Data	Madera (Existing) Station
City:	Madera
County:	Madera
Community Location or Address:	18770 Road 26 Madera, CA 93638
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 1023.97
Key Nearby Features:	Madera Golf and Country Club
Pedestrian Access Type/Typology:	
Platform Length:	380'
Train Speeds:	79/70 MPH
Future Trains/Day:	46
Tracks:	1 existing mainline track
Mini high's:	No Current mini-high installed, a bolt down mini-high 48" ATR will be installed at east end of the platform



**Figure 55. Madera (Existing) Station – Site Map**

(Source: Google Earth)



Image 10. Madera (Existing) Station  
(Source: Amtrak)



Figure 56. Madera (Existing) Station – Platform Site Plan and Mini High Locations

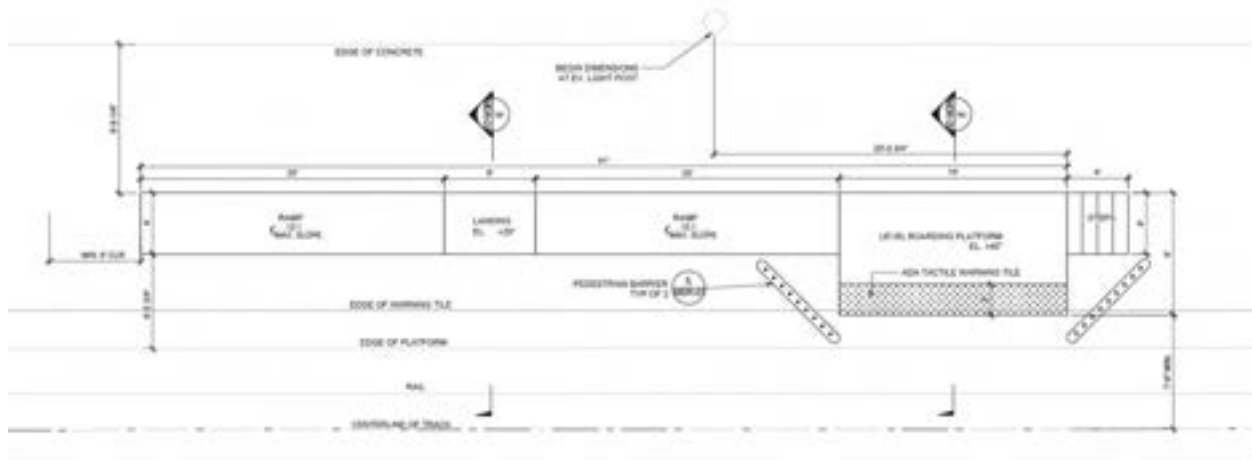



Figure 57. Madera (Existing) Station – Proposed Bolt Down Mini-High Layout

#### 1.4.22 Madera (New)

The platform is located along the BNSF mainline with the California HSR alignment to the north. The location is east of the city center in an area of predominately single-family homes. One 48" mini-high platform will be added at the center of the single side platform. The specific data for the Madera station is found in the table below.

**Table 25 – Madera Station Data**

Data	Madera Station
City:	Madera
County:	Madera
Community Location or Address:	North of Ave 12 between BNSF and HSR
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 1016.26
Key Nearby Features:	Madera Community College
Pedestrian Access Type/Typology:	
Platform Length:	600'
Train Speeds:	79/70 MPH
Future Trains/Day:	14 (freight)
Tracks:	1 Existing Mainline, 1 Future Station Track
Mini high's:	One mini-high 48" ATR, centrally located on the platform

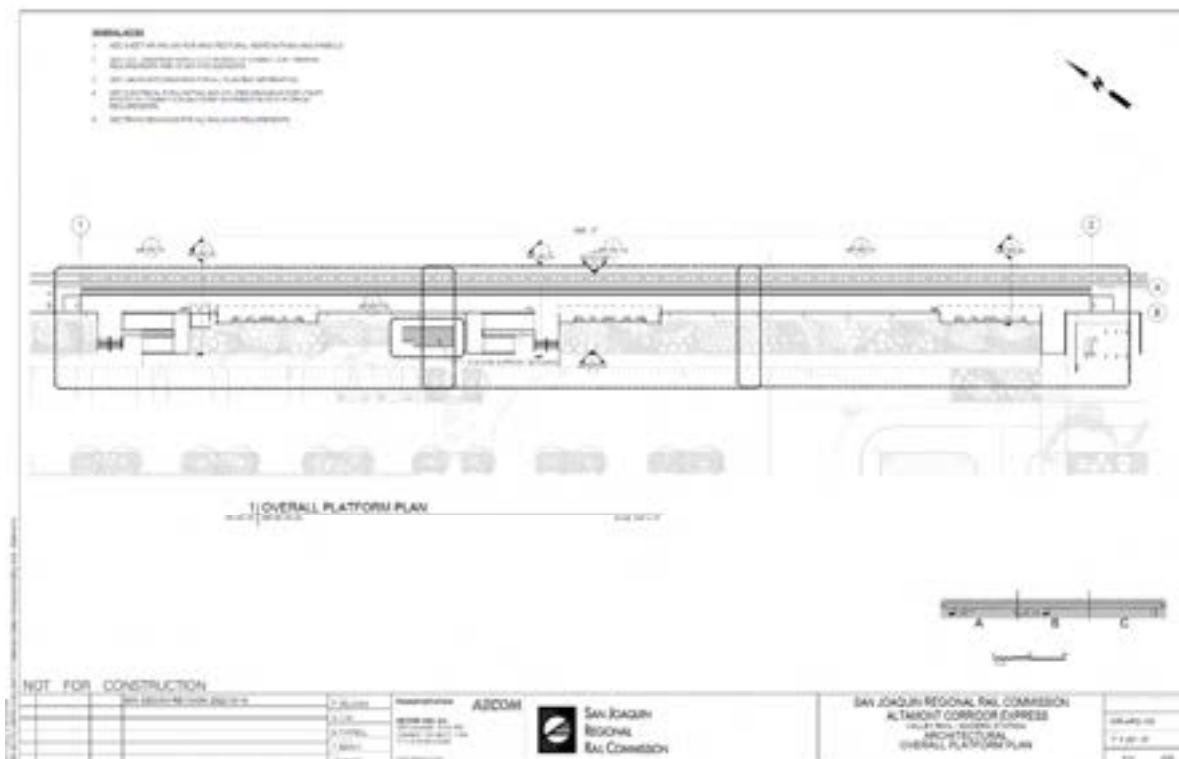


Figure 58. Madera Station – Layout

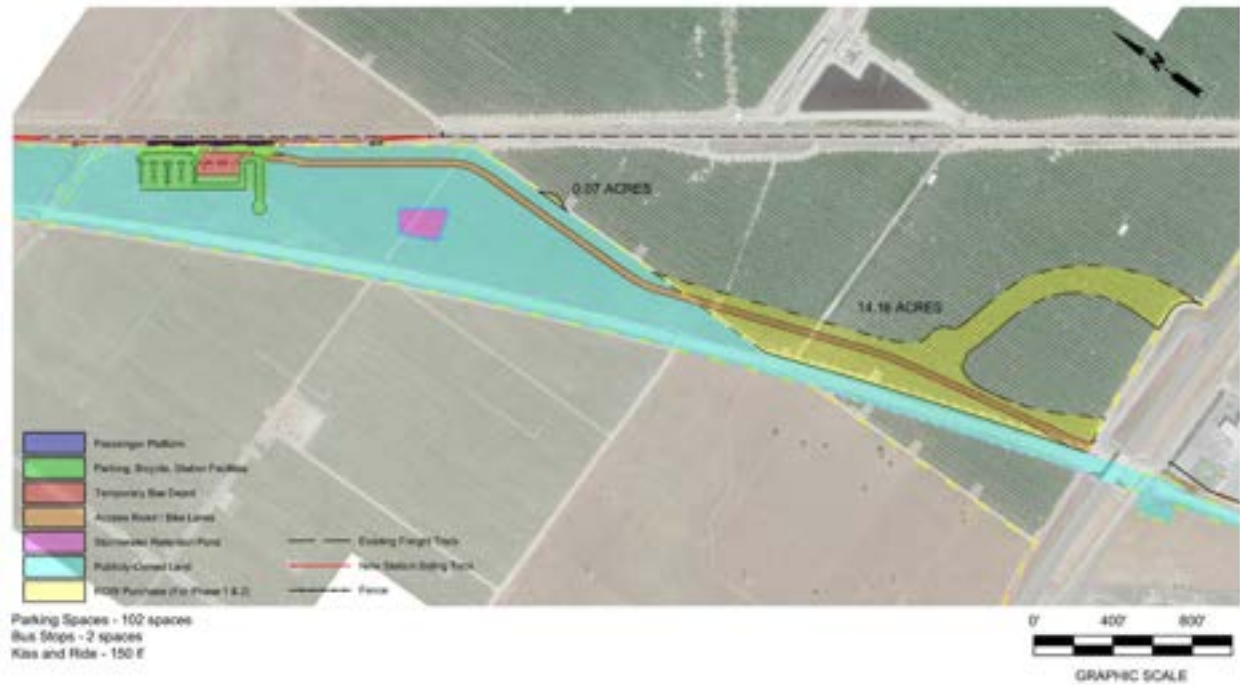


Figure 59. Madera Station – Concept Layout and Location Map

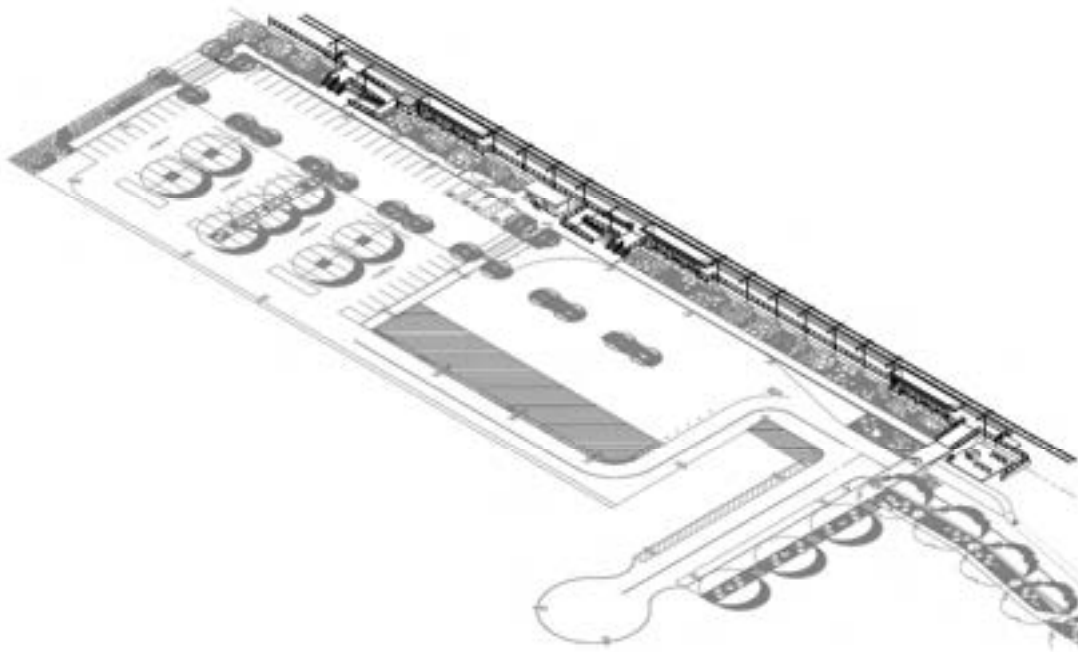


Figure 60. Madera Station – Rendering

### 1.4.23 Fresno

The 400' platform is located within a commercial area in the east end of Downtown Fresno. This station provides service to one mainline and one siding track on the BNSF ROW, but only the siding track serves the platform. The station is ADA compliant with new mini-high platforms that will be installed at the station. A new 48" ATR bolt-down mini-high will be located at the center of the platform, while a platform extension is required to install a second 48" mini-high platform at the east end of the future platform. The specific data for the Fresno station is found in the table below.

**Table 26 – Fresno Station Data**


Data	Fresno Station
City:	Fresno
County:	Fresno
Community Location or Address:	2650 Tulare Street Fresno, CA
Railroad, Subdivision and MP:	BNSF, Stockton Sub, MP 997.97
Key Nearby Features:	Fresno City Hall, Downtown Fresno
Pedestrian Access Type/Typology:	
Platform Length:	400'
Train Speeds:	40/35 MPH
Future Trains/Day:	34 (freight)
Tracks:	1 Mainline and 1 siding track
Mini high's:	New 48" ATR bolt-down mini-high at the center of the platform



Figure 61. Fresno Station – Site Map  
(Source: Google Earth)



Image 11. Fresno Station – Existing  
(Source: Amtrak)



Figure 62. Fresno Station – Mini-High Platform Site Plan

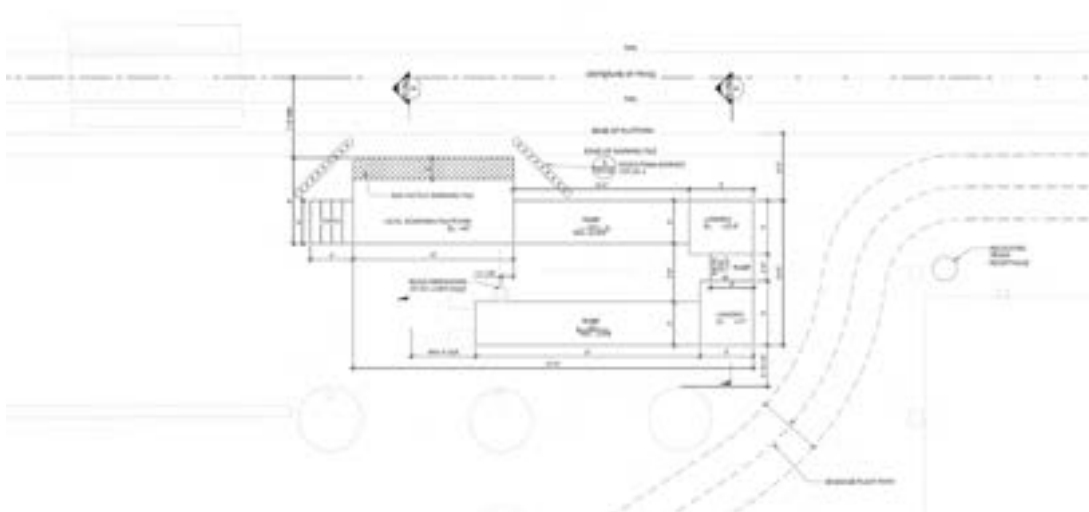


Figure 63. Fresno Station Mini-High Layout

#### 1.4.24 Hanford

The platforms are located in the middle of a commercial area in the city of Hanford and is approximately 1.2 miles from Kings Speedway. This Amtrak station provides services to two Mainline Tracks on the BNSF ROW. On both 560' platforms, 48" ATR bolt down mini-highs will be installed on the east end of the station. The specific data for the Hanford station is found in the table below.

**Table 27 – Hanford Station Data**


Data	Hanford Station
City:	Hanford
County:	Kings
Community Location or Address:	200 Santa Fe Avenue #A Hanford, CA 93230
Railroad, Subdivision and MP:	BNSF, Bakersfield Sub, MP 967.92
Key Nearby Features:	Hanford Towne Center, Hanford City Hall
Pedestrian Access Type/Typology:	
Platform Length:	560'
Train Speeds:	40 MPH
Future Trains/Day:	40
Tracks:	2 Existing Mainline Tracks
Mini high's:	New 48" ATR bolt-down mini-high on each station platform



Figure 64. Hanford Station – Site Map  
(Source: Google)



Figure 65. Hanford Station – Site Plan

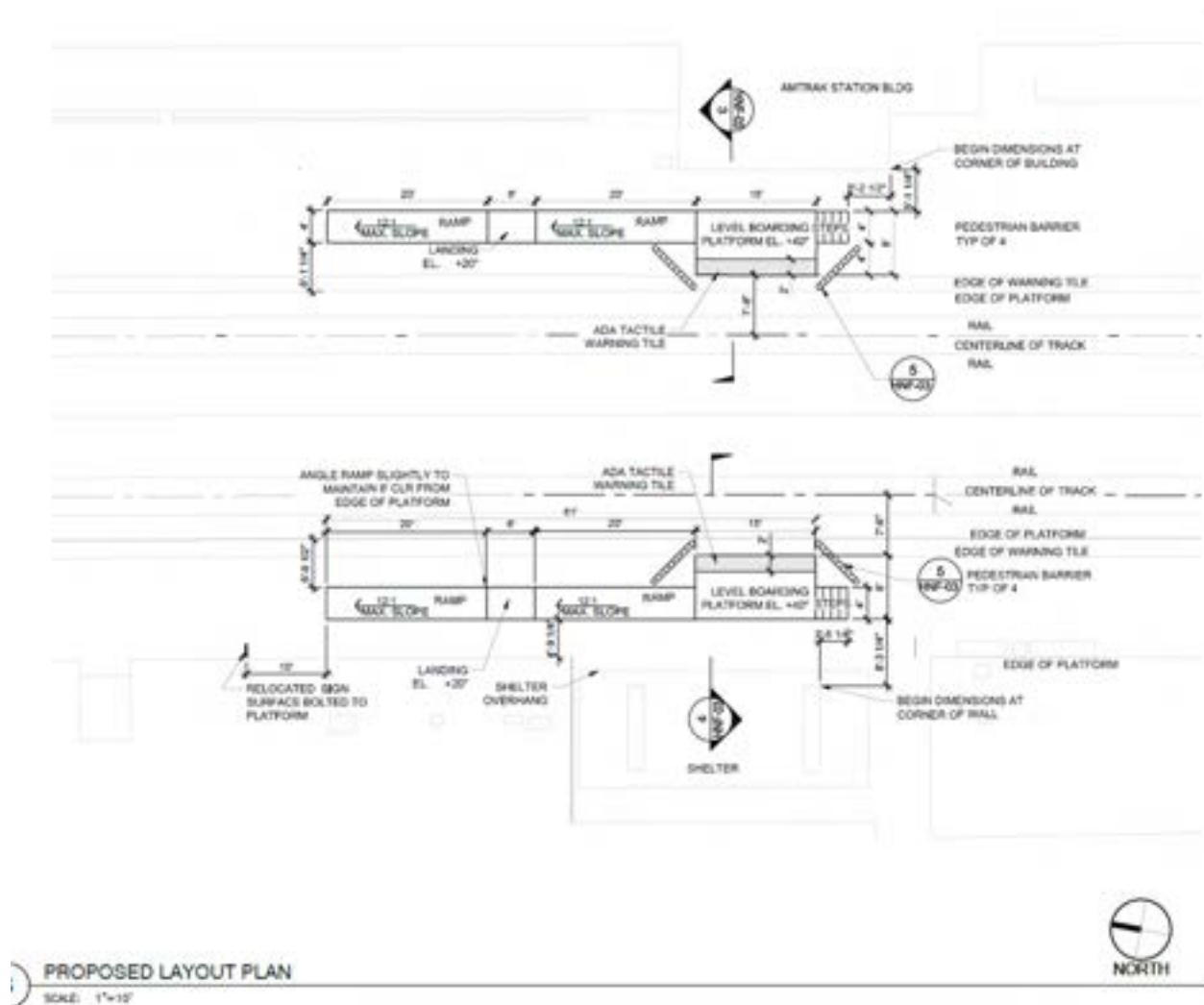


Figure 66. Hanford Station – Mini-High Layout




Image 12. Hanford Station – Existing  
(Source: Amtrak)

#### 1.4.25 Corcoran

The Corcoran Station consists of one Mainline Track and 2 siding tracks on the BNSF ROW. The Corcoran Police Department and Kings County Fire Station can directly be found west of the station. The station is in the middle of residential and agricultural areas. A new 48" bolt-down mini-high will be installed at the east end of the platform and a second 48" mini-high is planned at the west end in the second phase of station expansion. The specific data for the Corcoran station is found in the table below.

**Table 28 – Corcoran Station Data**

Data	Corcoran Station
City:	Corcoran
County:	Kings
Community Location or Address:	1099 Otis Avenue Corcoran, CA 93212
Railroad, Subdivision and MP:	BNSF, Bakersfield Sub, MP 950.85
Key Nearby Features:	Corcoran City Hall, Downtown Area, Corcoran High School
Pedestrian Access Type/Typology:	
Platform Length:	400'
Train Speeds:	30 MPH Main / 79/70 MPH Siding
Future Trains/Day:	34 (freight)
Tracks:	1 Existing Mainline, 2 existing Siding Tracks
Mini high's:	One mini-high 48" ATR at the east end of the station.

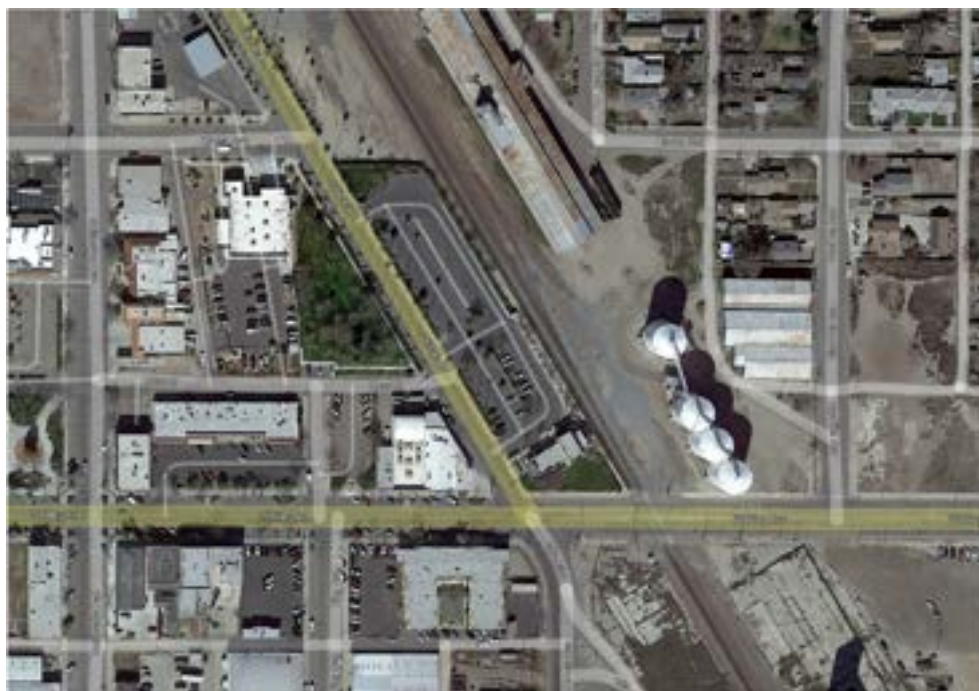


Figure 67. Corcoran Station – Site Map  
(Source: Google)



Image 13. Corcoran Station – Existing  
(Source: Amtrak)



Figure 68. Corcoran Station - Overall Site Plan

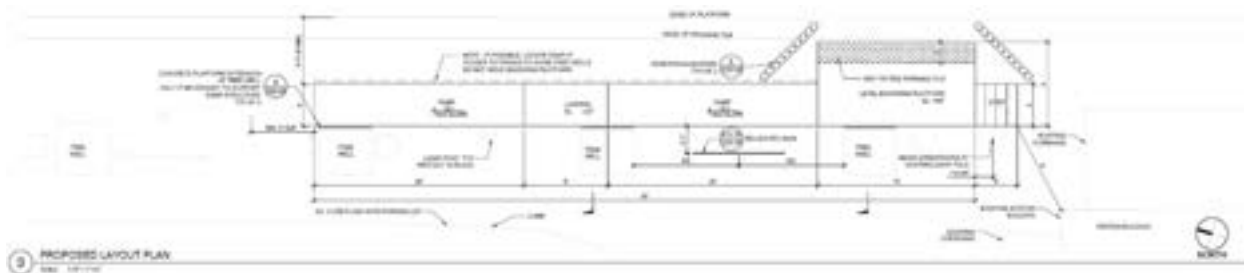


Figure 69. Corcoran Station – Mini-High Proposed Layout Plan

#### 1.4.26 Wasco

The platform is located in the city of Wasco. Adjacent to the Mainline track are several yard tracks and a siding track. The platform consists of two 48" mini-highs located at each end of the platform. The station sits in the middle of agricultural, commercial, and residential areas. The Wasco-Kern County Airport is located approximately two miles from the station. The specific data for the Wasco station is found in the table below.

**Table 29 – Wasco Station Data**


Data	Wasco Station
City:	Wasco
County:	Kern
Community Location or Address:	700 G Street Wasco, CA 93280
Railroad, Subdivision and MP:	BNSF, Bakersfield Sub, MP 912.95
Key Nearby Features:	Wasco City Hall, Wasco High School, Cormack Park
Pedestrian Access Type/Typology:	
Platform Length:	330' (with future platform extension)
Train Speeds:	79/70 MPH
Future Trains/Day:	34 (freight)
Tracks:	1 existing mainline, 1 Siding Track, Multiple Yard Tracks
Mini high's:	One mini-high 48" ATR at the east end of the station and a future 48" Mini-high installed in a later phase.



Figure 70. Wasco Station – Site Map  
(Source: Google)



Figure 71. Wasco Station - Overall Site Plan



Figure 72. Wasco Station – Mini-High Proposed Layout Plan



Image 14. Wasco Station – Existing  
(Source: Amtrak)

#### 1.4.27 Bakersfield

Bakersfield Station is an existing Amtrak station providing service to the San Joaquins, 2 platforms provide access to three tracks via a single side platform and central platform. ADA and pedestrian access to the Center platform is provided with four at-grade crossings. 1 new high-level mini-high 48" above top of rail will be added to each platform. The specific data for the Bakersfield station is found in the table below.

**Table 30 – Bakersfield Station Data**


Data	Bakersfield Station
City:	Bakersfield
County:	Kern
Community Location or Address:	601 Truxtun Avenue, Bakersfield, CA 93301
Railroad, Subdivision and MP:	BNSF, Mojave Sub, MP 886.90
Key Nearby Features:	Downtown Bakersfield, Bakersfield Museum of Art, Bakersfield Convention Center
Pedestrian Access Type/Typology:	
Platform Length:	700'
Train Speeds:	20 MPH
Future Trains/Day:	34
Tracks:	3 Station Tracks, 2 existing mainline tracks
Mini high's:	One mini-high 48" ATR for each platform at the east end of the station.



Figure 73. Bakersfield Station – Site Map  
(Source: Google)



Figure 74. Bakersfield Station – Overall Site Plan

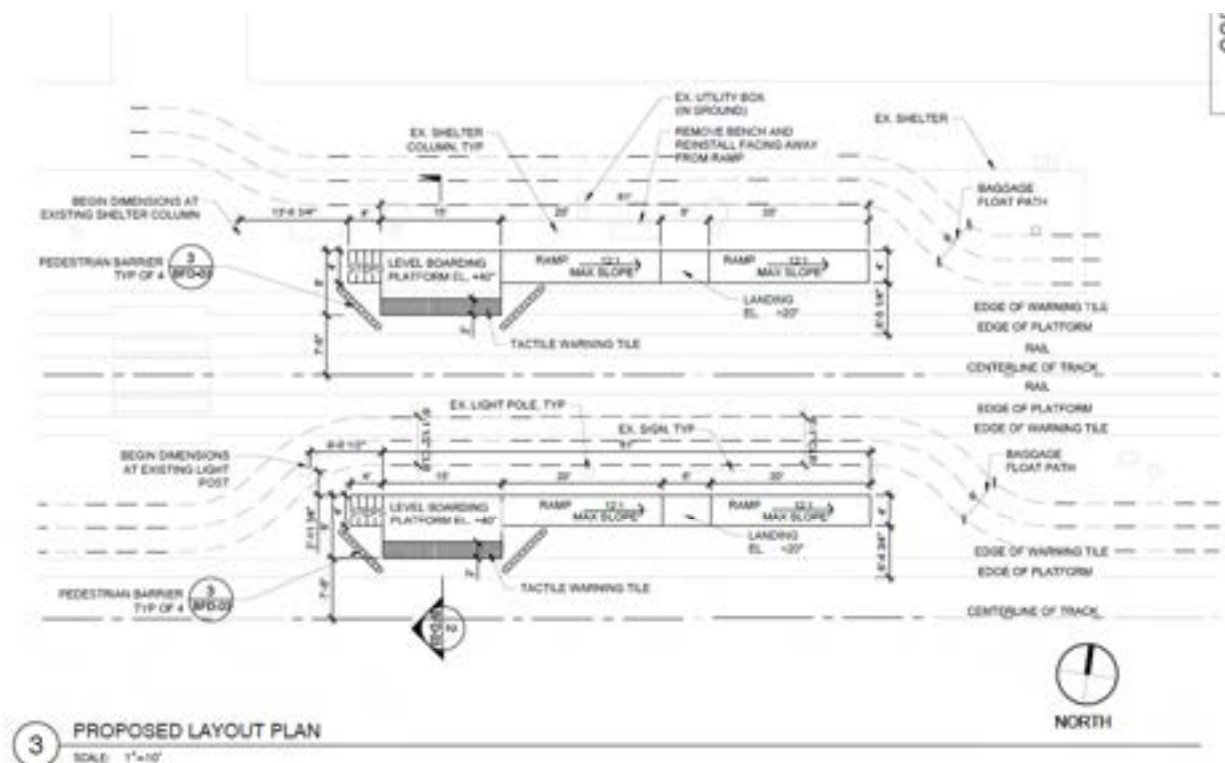


Figure 75. Bakersfield Station – Proposed Layout Plan




Image 15. Bakersfield Station - Existing  
(Source: Amtrak)

#### 1.4.28 Lathrop/Manteca

The station is located approximately three (3) miles south of Lathrop and one and a half (1.5) miles west of Manteca in an industrial/agricultural area. This station will be a major transfer site for passengers traveling to San Jose and Natomas from Ceres and Modesto. The specific data for Lathrop/Manteca Station is found in the table below.

**Table 31 – Lathrop/Manteca Station Data**

Data	Lathrop/Manteca Station
City:	Manteca
County:	San Joaquin
Community Location or Address:	17800 Shideler Parkway Lathrop, CA 95330
Railroad, Subdivision and MP:	UPRR, Oakland Sub, MP 82.8
Key Nearby Features:	Sierra High School, Multiple Warehouse Distribution Centers
Pedestrian Access Type/Typology:	
Platform Length:	607' extended to 780'
Train Speeds:	79/70 MPH
Future Trains/Day:	12 (freight)
Tracks:	1 existing mainline
Mini high's:	One existing Mini-high at 21" ATR at the east end of the platform, one new bolt down mini-high 21" ATR will be added to the center of the platform.

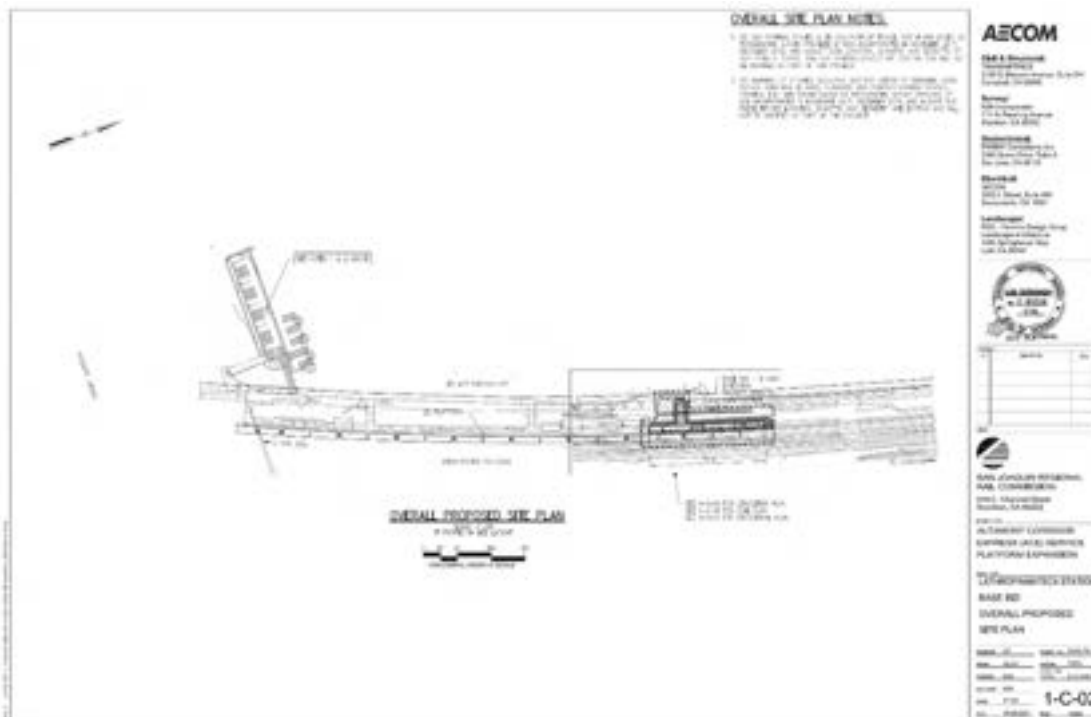


Figure 76. Lathrop/Manteca Station – Site Map

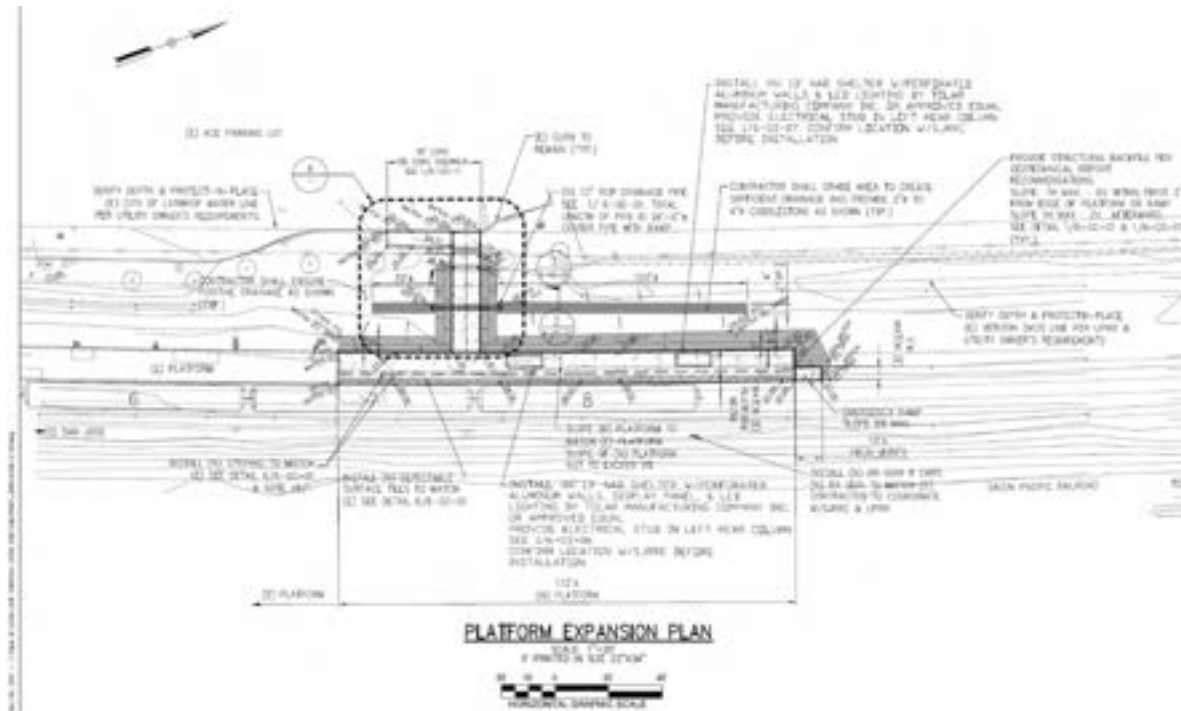


Figure 77. Lathrop/Manteca Station – Platform Extension Plan




Image 16. Lathrop/Manteca Station – Existing  
(Source: Jeremiah Cox/SubwayNut.com)

#### 1.4.29 Tracy

The station platform is located on a single-track section in a predominately residential area and within walking distance of Tracy Municipal Airport. The station is currently used for ACE Service with a platform length of 410'. The platform is planned for extension up to 910' with three mini highs with multiple access points from the parking at the back of the platform. The specific data for the Tracy station is found in the table below.

**Table 32 – Tracy Station Data**

Data	Tracy Station
City:	Tracy
County:	Alameda
Community Location or Address:	4800 Tracy Blvd Tracy, CA 95377
Railroad, Subdivision and MP:	UPRR, Oakland Sub, MP 70.7
Key Nearby Features:	Tracy Municipal Airport
Pedestrian Access Type/Typology:	
Platform Length:	600' extended to 772'
Train Speeds:	79/70 MPH
Future Trains/Day:	12 (freight)
Tracks:	1 existing mainline
Mini high's:	One existing mini-high at 21" ATR at the east end of the platform, one new bolt down mini-high 21" ATR will be added to the center of the platform.



**Figure 78. Tracy Station – Site Map**

(Source: Google)

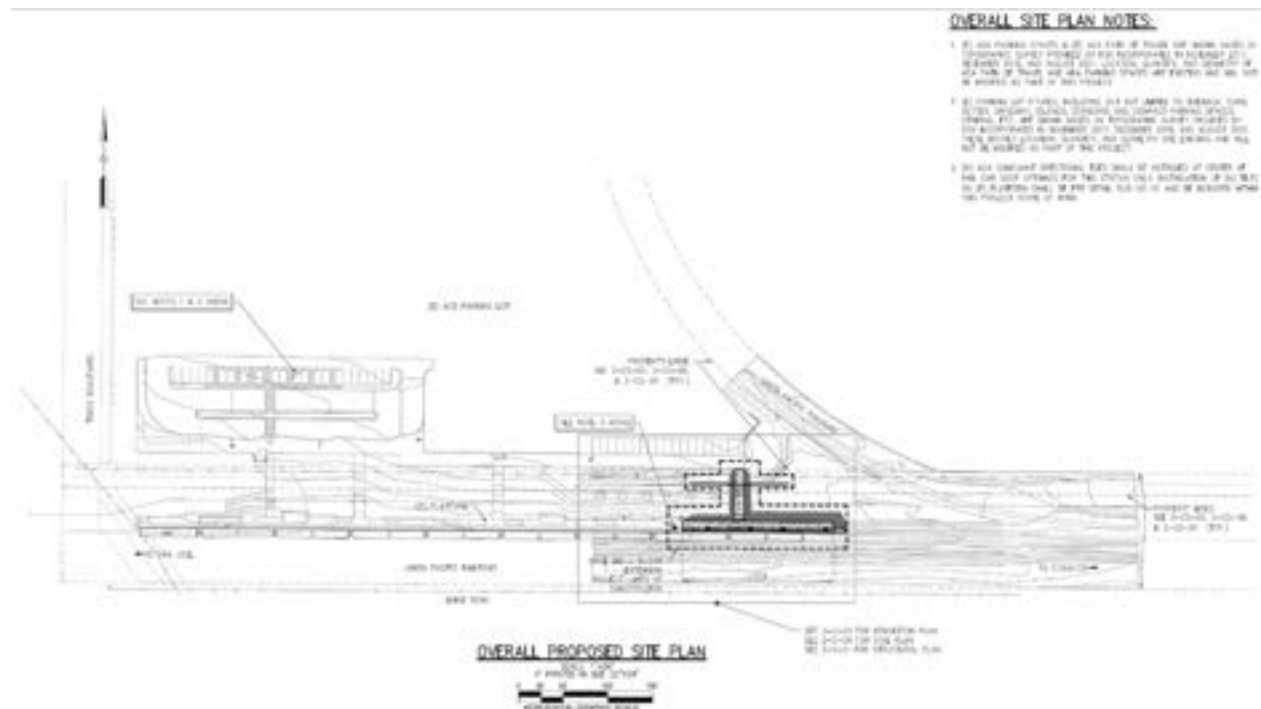


Figure 79. Tracy Station – Site Plan

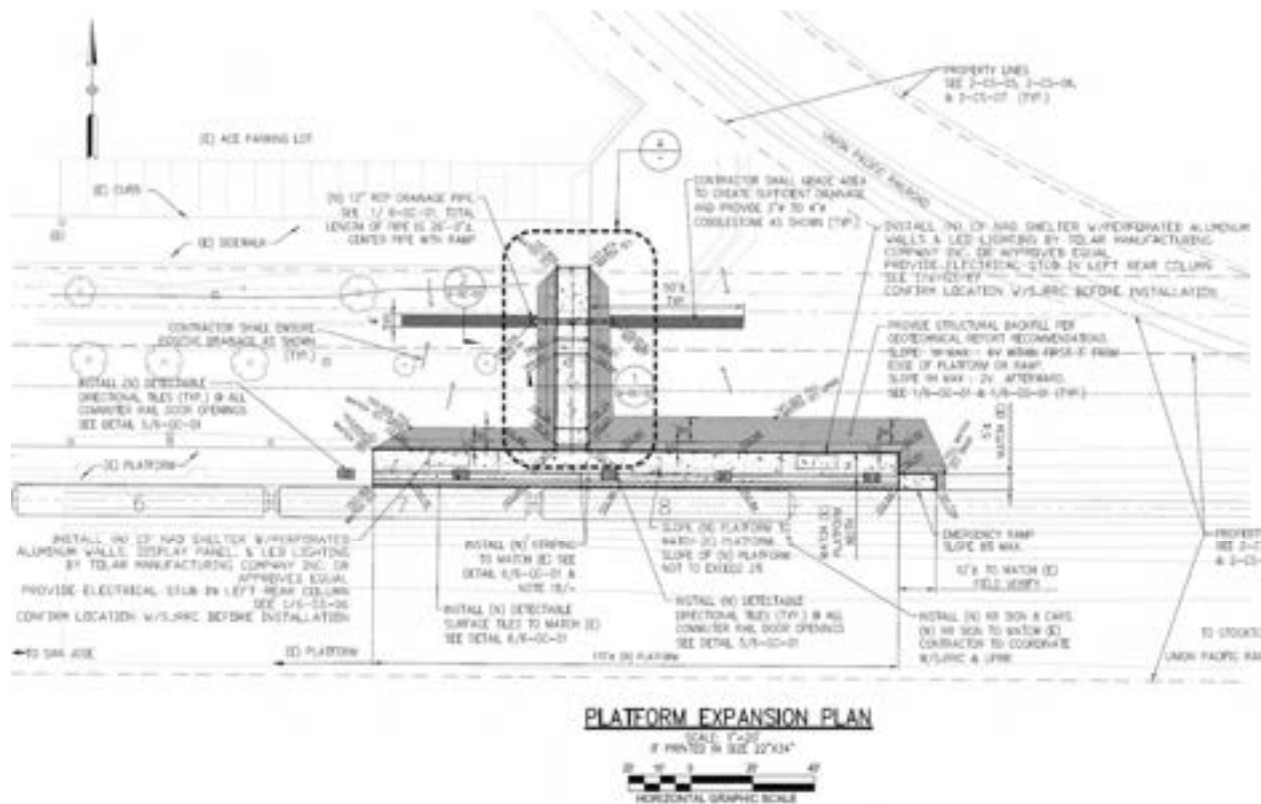


Figure 80. Tracy Station – Platform Expansion Plan




Image 17. Tracy Station – Existing Platform  
(Source: Wikipedia, Author: [Pi.1415926535](#))

### 1.4.30 Vasco Road

The platform is located on a single-track section, adjacent to the Laurance Livermore National Laboratory, a major employment center. An extension of the platform is proposed to accommodate a new center platform mounted, bolt down, high level mini-high. The ADA path will use the existing separate walkway just behind the platform. The specific data for the Vasco station is in the table below.

### Table 33 – Vasco Road Station Data

Data	<b>Vasco Road Station</b>
City:	Livermore
County:	Alameda
Community Location or Address:	575 S Vasco Road Livermore, CA 94550
Railroad, Subdivision and MP:	UPRR, Oakland Sub, MP 50.7
Key Nearby Features:	Laurence Livermore National Laboratory, Sandia National Laboratories
Pedestrian Access Type/Typology:	
Platform Length:	450' extended to 870'
Train Speeds:	60 MPH
Future Trains/Day:	12 (freight)
Tracks:	1 existing mainline
Mini high's:	One existing mini-high at 21" ATR at the east end of the platform, one new bolt down mini-high 21" ATR will be added to the center of the platform.

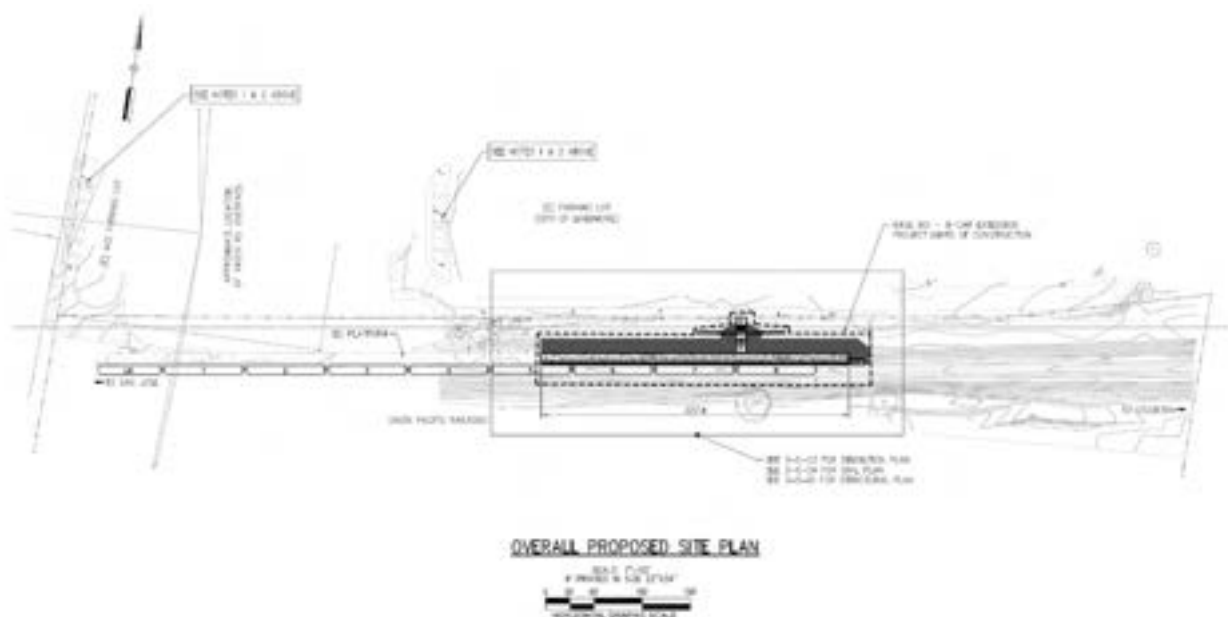


Figure 81. Vasco Road Station – Site Map

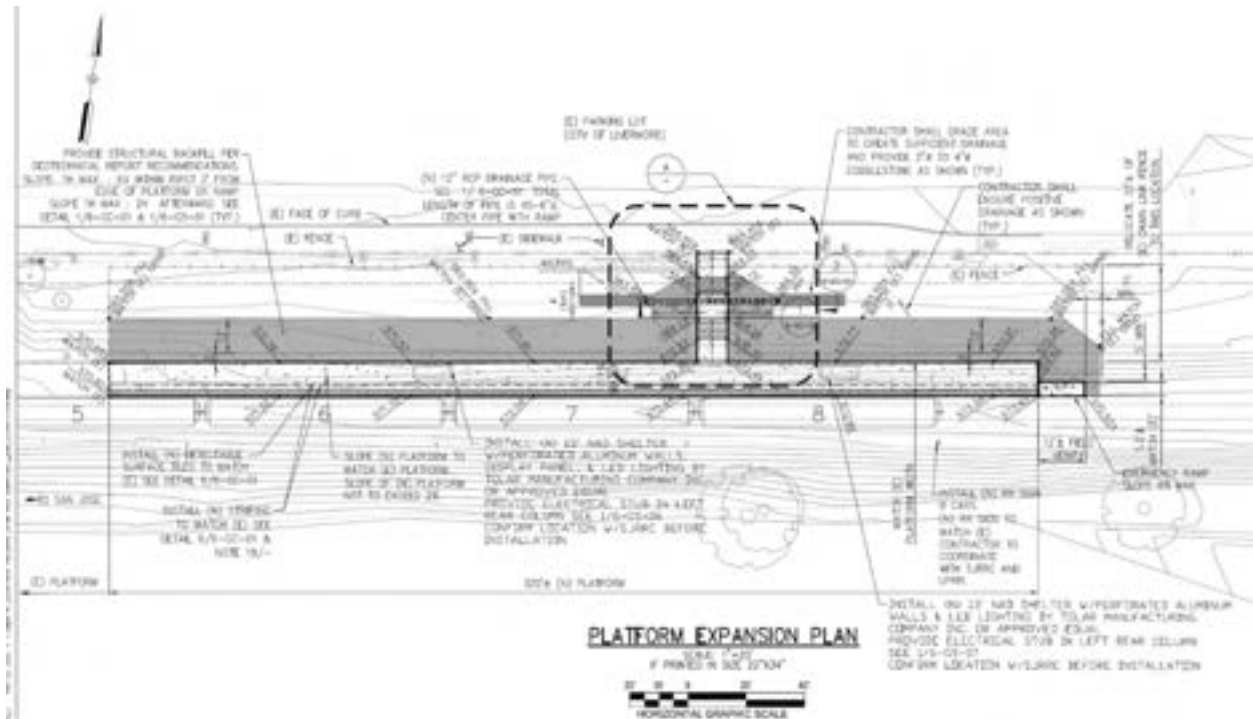


Figure 82. Vasco Road Station – Platform Extension Plan




Image 18. Vasco Road Station – Existing  
(Source: Jeremiah Cox/SubwayNut.com)

#### 1.4.31 Livermore

The platform is in a multi-family residential area approximately 2.8 miles from the major employer in the area, the Laurence Livermore National Laboratory. The station is integrated with the Livermore Transit Center. Two mainlines pass by the station, but only the #2 track has a platform. The specific data for the Livermore station is located in the table below.

**Table 34 – Livermore Station Data**

Data	Livermore Station
City:	Livermore
County:	Alameda
Community Location or Address:	2500 Railroad Avenue Livermore, CA 94550
Railroad, Subdivision and MP:	UPRR, Oakland Sub, MP 47.9
Key Nearby Features:	Laurence Livermore National Laboratories, Livermore Transit Center, Downtown Livermore
Pedestrian Access Type/Typology:	
Platform Length:	450' extended to 870'
Train Speeds:	60/50 MPH
Future Trains/Day:	12 (freight)
Tracks:	2 existing mainlines, platform on #2 track
Mini high's:	One existing mini-high at 21" ATR at the east end of the platform, one new bolt down mini-high 21" ATR will be added to the center of the platform.

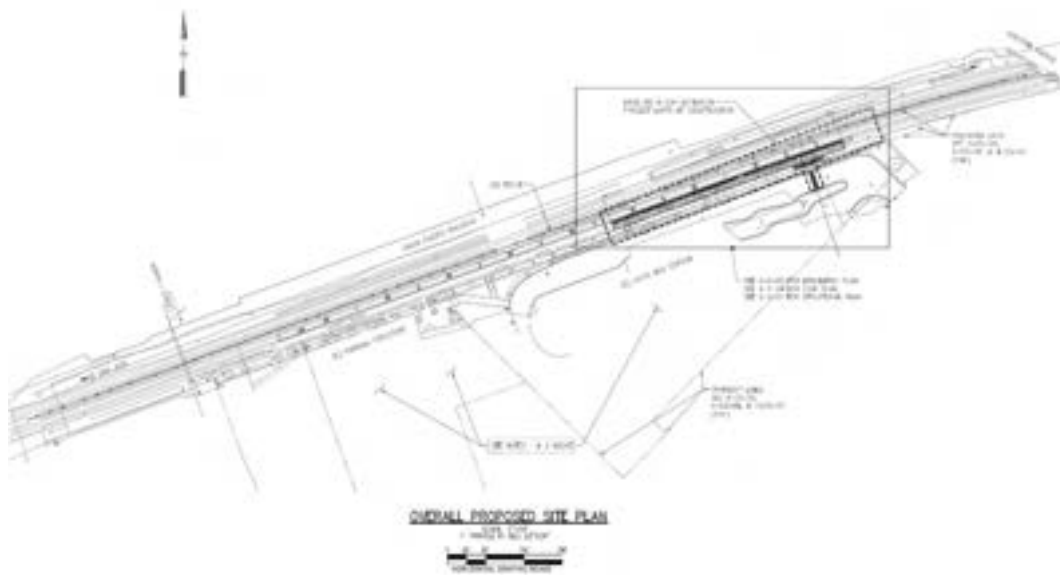


Figure 83. Livermore Station – Site Map

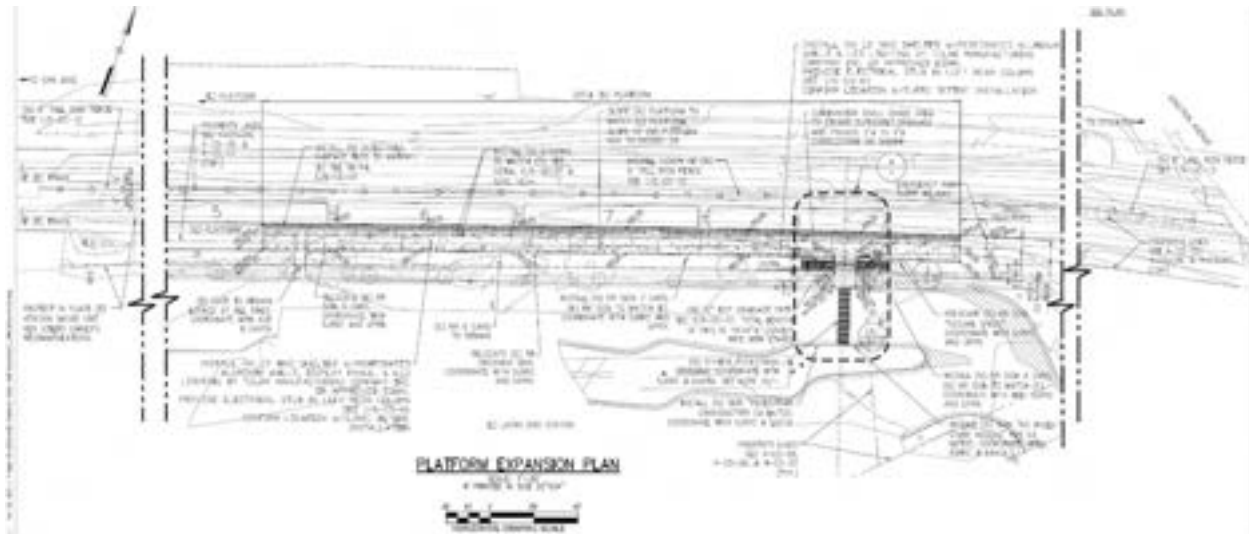


Figure 84. Livermore Station – Platform Extension Plan




Image 19. Livermore Station – Existing  
(Source: Jeremiah Cox/SubwayNut.com)

### 1.4.32 Pleasanton

The platform is located adjacent to the Alameda County Fairgrounds, on the northwest corner of the central business district. On a tight curve in dense downtown environment and constrained by many adjacent buildings. The specific data for the Pleasanton station is in the table below.

### Table 35 – Pleasanton Station Data

Data	Pleasanton Station
City:	Pleasanton
County:	Alameda
Community Location or Address:	4950 Pleasanton Avenue Pleasanton, CA 94566
Railroad, Subdivision and MP:	UPRR, Oakland Sub, MP 41.2
Key Nearby Features:	Pleasanton BART Station
Pedestrian Access Type/Typology:	
Platform Length:	450' extended to 870'
Train Speeds:	60/40 MPH
Future Trains/Day:	7 (freight)
Tracks:	1 existing mainline
Mini high's:	One existing mini-high at 21" ATR at the west end of the platform, one new bolt down mini-high 21" ATR will be added to the center of the platform.

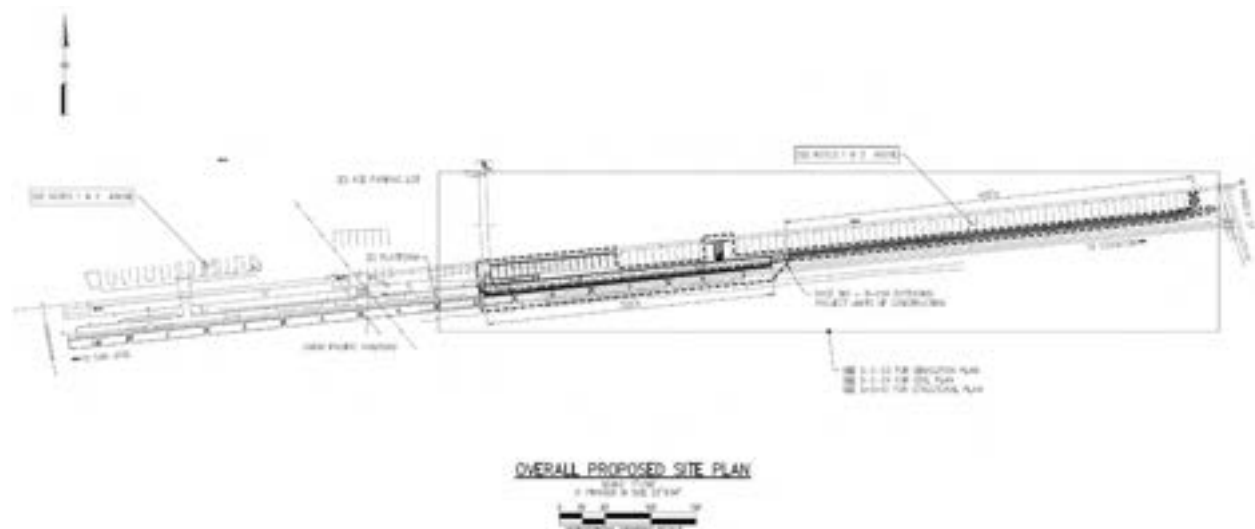


Figure 85. Pleasanton Station – Site Map

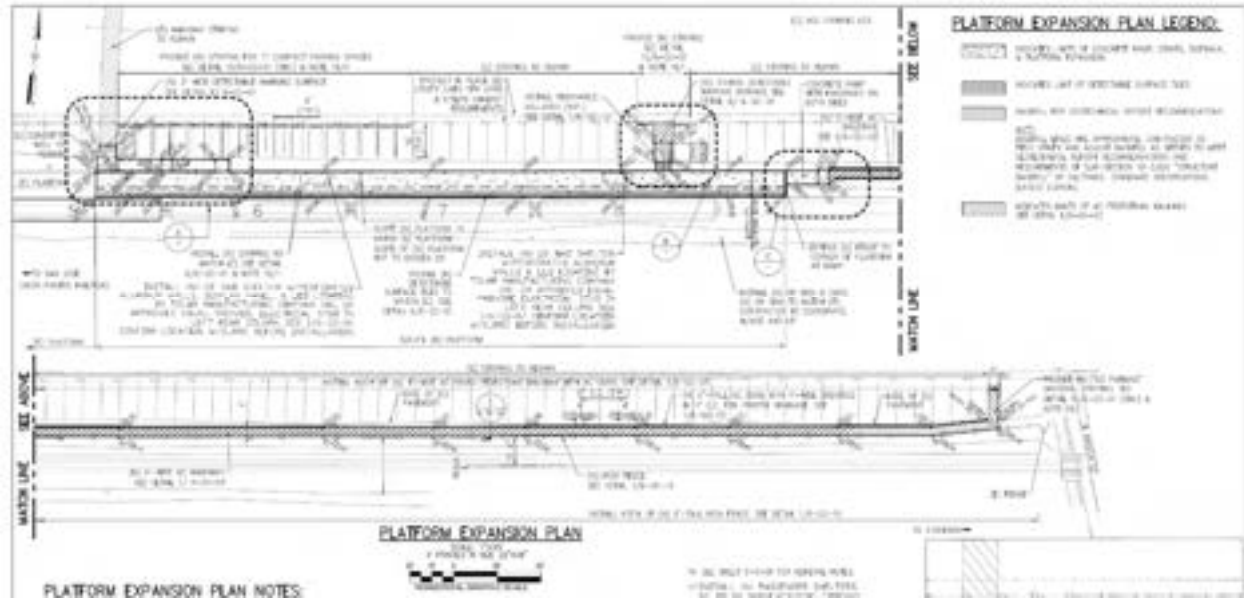


Figure 86. Pleasanton Station – Platform Extension Plan




Image 20. Pleasanton Station – Existing  
(Source: Jeremiah Cox/SubwayNut.com)

### 1.4.33 Fremont/Centerville

The platform is located on a tight curve in dense downtown environment and constrained by many adjacent buildings. The western platform is 1,000' in length, while the shorter eastern platform is approximately 200' long. The two platforms are connected by a sidewalk along Fremont Boulevard at the western end. The open land east of the station site is planned to be developed as transit-oriented projects. The specific data for the Fremont station is in the below table.

**Table 36 – Fremont Station Data**

Data	Fremont Station
City:	Fremont
County:	Alameda
Community Location or Address:	37260 Fremont Boulevard Fremont, CA 94536
Railroad, Subdivision and MP:	UPRR, Niles Sub, MP 32.06
Key Nearby Features:	Washington High School, Fremont DMV
Pedestrian Access Type/Typology:	
Platform Length:	600'
Train Speeds:	45 MPH
Existing Trains/Day:	20 (freight)
Tracks:	2 Existing Mainline Tracks
Mini high's:	No existing mini-highs, and no plans for future mini-high platforms. Station will utilize wheelchair lifts.

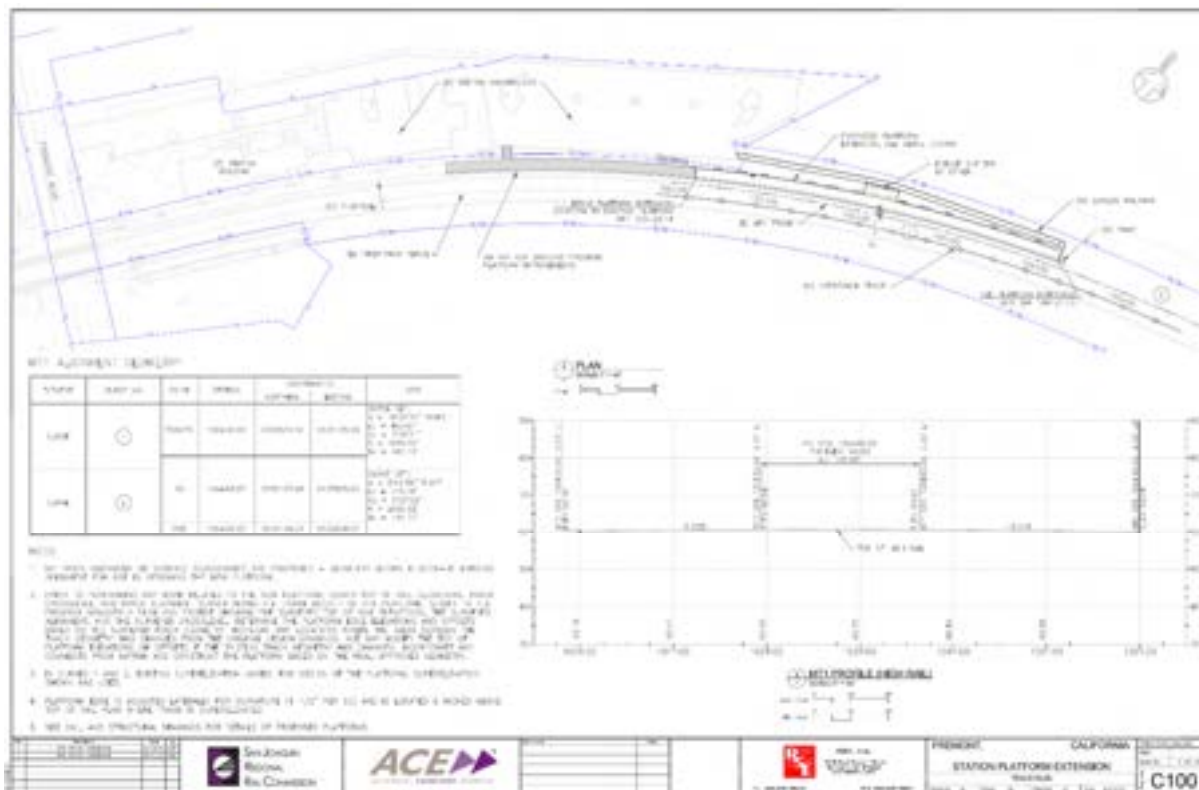


Figure 87. Fremont Station – Platform Extension Site Map



Image 21. Fremont Station – Existing

(Source: Wikipedia, [https://en.wikipedia.org/wiki/Fremont\\_station#/media/File:Platforms\\_at\\_Fremont-Centerville\\_station,\\_July\\_2018.JPG](https://en.wikipedia.org/wiki/Fremont_station#/media/File:Platforms_at_Fremont-Centerville_station,_July_2018.JPG))

#### 1.4.34 Great America

The Great America Station is located in the city of Santa Clara. A new bolt down low-level mini-high will be installed to the center of the 820' platform, while an existing 21" ATR mini-high will remain in place at the west end of the platform. This station provides service to the nearby Levi's Stadium, California's Great America amusement park, and Santa Clara Convention Center. Amtrak and ACE train services operate through this station on UPRR ROW. The specific data for the Great America station is in the below table.

**Table 37 – Great America Station Data**


Data	Great America Station
City:	Santa Clara
County:	Santa Clara
Community Location or Address:	5099 Stars & Stripes Drive Santa Clara, CA 95054
Railroad, Subdivision and MP:	UPRR, Coast Sub, MP 40.74
Key Nearby Features:	Great America Theme Park, Levi's Stadium, VTA Light Rail System.
Pedestrian Access Type/Typology:	
Platform Length:	820'
Train Speeds:	79/60 MPH
Existing Trains/Day:	24 (freight)
Tracks:	1 existing mainline
Mini high's:	One existing 21" ATR mini-high at the west end of the platform, one new 21" ATR bolt down mini-high will be added to the center of platform



Figure 88. Great America Station – Site Map  
(Source: Google)



Image 22. Great America Station – Existing  
(Source: Jeremiah Cox/SubwayNut.com)

#### 1.4.35 Santa Clara

The station is located north of Santa Clara University and south of the San Jose Mineta International Airport. The Santa Clara Station is associated with the Santa Clara Transit Center where a CalTrain commuter rail service connection is also located. Tracks #2 and #3 are owned and operated by Caltrain, while track #1, the siding and yard tracks magnetic east of the station are owned and operated by UPRR. The specific data for the Santa Clara station is in the below table.

**Table 38 – Santa Clara Station Data**


Data	Santa Clara Station
City:	Santa Clara
County:	Santa Clara
Community Location or Address:	1001 Railroad Avenue Santa Clara, CA 95050
Railroad, Subdivision and MP:	UPRR, Coast Sub, MP 45.0 (Track #1, Siding and Yard) Caltrain, MP 44.34 (Track #2 and #3)
Key Nearby Features:	CalTrain connection, Santa Clara University, San Jose Mineta International Airport
Pedestrian Access Type/Typology:	
Platform Length:	900'
Train Speeds:	Track 1: 70/40 MPH Tracks 2 & 3: 60/40 MPH
Existing Trains/Day:	86
Tracks:	3 mainline Station Tracks, 1 Controlled siding track, 2 Yard tracks
Mini high's:	Two Temporary 21" mini highs on Tracks 1 and 2 and permanent 21" mini-high on track #3 near the west end of the platform.



Figure 89. Santa Clara Station – Site Map  
(Source: Google)



Image 23. Santa Clara Station – Existing  
(Source: Google Earth)

#### 1.4.36 San Jose Diridon

The platforms are location in the San Jose thru station, multiple railroads are served at this station in the middle of a dense residential and industrial use area. The station consists of four center platforms and a single side platform and include several tracks. This station provides pedestrian and ADA access through the underground pedestrian tunnels. However, mini-high platforms are only located on platforms 1, 2, and 4. Similar to Santa Clara Station, the majority of the tracks in the station are owned and operated by Peninsula Corridor Joint Powers Board who operate Caltrain Service, while track #1 is owned and operated by UPRR. The specific data for the San Jose Diridon station is in the below table.

**Table 39 – San Jose Diridon Station Data**


Data	San Jose Diridon Station
City:	San Jose
County:	Santa Clara
Community Location or Address:	65 Cahill Street San Jose, CA 95110
Railroad, Subdivision and MP:	UPRR, Coast Sub, MP 47.40 (Track #1) CalTrain, MP 46.91 (all other Tracks)
Key Nearby Features:	Downtown San Jose, Connections to VTA, Amtrak, Caltrain, Santa Cruz Metro, SAP Center, San Jose State University
Pedestrian Access Type/Typology:	
Platform Length:	Four platforms at 1200' and one at 800'
Train Speeds:	Track 1: 15/15 MPH Tracks 2 & 3: 20/10 MPH
Existing Trains/Day:	86
Tracks:	3 Main Tracks, 9 existing Station Tracks, 2 Light Rail Tracks
Mini high's:	Mini High platforms located on platforms 1, 2 and 4.



Figure 90. San Jose Diridon Station – Site Map  
(Source: Google)



Image 24. San Jose Diridon Station – Existing  
(Source: <https://tsgmultimedia.com/product/ace-stockton-san-jose/>)

## 2 RAILROAD OPERATIONS

### 2.1 Passenger and Freight Service

All stations for these proposed service extensions or platform modifications are located on freight railroad's right-of-way along eight different subdivisions between UPRR and BNSF (See Table 40). San Jose Diridon Station is an exception, where UPRR and Caltrain share the ROW.

The method of operation on the UPRR and BNSF routes that the ACE and San Joaquins operate over is Centralized Traffic Control or CTC. The CTC system relies on remotely controlled signals and turnouts under the control of a control operator (a.k.a. train dispatcher). The trains that operate on UPRR tracks are currently dispatched out of the UPRR Harriman Dispatch Center in Omaha, NE. The San Joaquins trains, when operating on BNSF tracks, are currently dispatched out of the BNSF Network Operations Center in Fort Worth, TX. Positive Train Control (PTC) has already been implemented on all eight subdivisions referenced herein.

UPRR designates operations for the ACE and San Joaquins on the Valley Rail corridor as an east-west route, with eastbound as the direction towards Stockton and westbound the direction towards San Jose. Similarly, BNSF operates the current San Joaquins and ACE Valley Rail Corridor as an East-West Route with eastbound as the direction to Bakersfield and westbound direction to Stockton and Oakley.

**Table 40 – Trains Per Day Overview by Subdivision**

Host RR	Subdivision	Existing Freight trains/day	Future ACE Trains/Day	Future San Joaquins Trains/Day	Existing Capital Corridor Trains/Day	Future HSR Trains/Day	Future Total Estimated Trains/Day
UPRR	Sacramento	12	10	10	24	N/A	56
UPRR	Oakland	10	10	10	24	N/A	54
UPRR	Fresno	12	10	4	N/A	N/A	26
UPRR	Niles	8	10	N/A	12	N/A	30
UPRR	Coast	24	10	10	12	N/A	46
BNSF	Bakersfield	28	N/A	14	N/A	N/A	42
BNSF	Stockton	34	N/A	12	N/A	N/A	46
BNSF	Mojave	22	N/A	12	N/A	N/A	34

**Table 41 – Speeds Overview by Subdivision**

Host RR	Subdivision	Existing Freight Maximum Speed (exact speeds through stations may vary)	Existing Passenger Maximum Speed	Future Passenger Maximum Speed
UPRR	Sacramento	70 mph	n/a	79 mph
UPRR	Oakland	60 mph	79 mph	79 mph
UPRR	Fresno	70 mph	79 mph	79 mph
UPRR	Niles	60 mph	79 mph	79 mph
UPRR	Coast	60 mph	79 mph	79 mph
BNSF	Bakersfield	55 mph	79 mph	79 mph
BNSF	Stockton	55 mph	79 mph	79 mph
BNSF	Mojave	70 mph	70 mph	70 mph

## **2.2 Passenger Train Operations**

ACE provides train service on weekdays with 4 roundtrips (8 trains/day). The arrival times are currently focused on peak commuter hours each direction. The ACE timetable is included in Appendix A.

Amtrak San Joaquins provide train service seven days a week with 12 trains/day. The arrival times are roughly staggered throughout the day. The Amtrak timetable for San Joaquins is included in Appendix B.

For the future ACE extension of service, no hold-out rules are planned.

For the existing San Joaquins service, some hold-out rules exist at these stations: Fresno, Stockton San Joaquin, Martinez and Oakland due to the platform and access configuration. These stations are not being touched as part of the current Program. For the future San Joaquins extension of service, no hold-out rules are planned at the stations along the route. With a hold-out rule, approaching passenger train(s) will need to wait for the current train to vacate station and clear the platform limits. Only one train may stop at the station at a time.

The two westernmost stations, San Jose Diridon and Santa Clara stations, are shared with Caltrain. Caltrain operates a commuter rail service between San Francisco and Tamien Station in San Jose, with 104 weekday trips. Eight of these weekday trips extend to Gilroy.

## **2.3 Freight Train Operations**

UPRR and BNSF own, operate, and maintain the corridors that the future ACE and San Joaquins extensions are proposed to run on. They average 8 to 40 trains/day on the eight different subdivisions encompassed by this Report. UPRR and BNSF have many customers along these corridors and operational days/times vary depending on demand.

## **2.4 Freight Railroad Right of Way and Operating Easement**

On August 21, 1997, SJRRC and the UPRR entered into a trackage rights agreement known as the “Altamont Pass Trackage Rights Agreement”. Excerpts from this agreement are provided in Appendix D. The agreement allows SJRRC trains to operate over the UPRR between Stockton and San Jose. Further, the trackage rights agreement requires the UPRR to share the tracks with SJRRC trains equally.

The Altamont Pass Trackage Rights Agreement, Section 3(a) states:

*“The management, operation and maintenance of the Operating Land and the Tracks shall, at all times, be under the exclusive direction and control of UP, and the movement of any and all Trains, cars, locomotives and other equipment over and along the Tracks shall, at all times, be subject to the exclusive direction and control of UP’s superintendent, train dispatchers and other authorized officers and agents, and in accordance with the General Code of Operating Rules and with such additional reasonable operating rules as UP shall from time to time, institute for the safe and efficient operation of UP Trains and the [SJRRC commuter rail] Service. UP shall schedule and dispatch train along the Tracks in a manner that minimizes disruption of SJRRC’s Service and in a manner that complies with all applicable laws, regulations or rules, state or federal.”*

Section 4(c) of the agreement further provides that “UP shall require that any such stations, platforms and ticketing facilities and parking or any such other construction not interfere with UP’s freight train operations” (emphasis added). This Section also stipulates that the passenger loading facilities constructed adjacent to shared use facilities shall not unreasonably interfere with Rail Freight Service.

#### 2.4.1 Future Trackage Rights Agreement

The service improvements and line extensions will require negotiating new agreements with the host railroads. The existing Altamont Pass Trackage Rights agreement is limited to those portions of the of UPRR Niles and Oakland subdivisions that are between Stockton and San Jose. The extension to Modesto will require a new agreement with the BNSF Railway for access to the Stockton subdivision. A separate agreement will be necessary with the UPRR Fresno subdivision. The new service to Natomas will require an agreement for access to the UPRR Sacramento subdivision. These agreements, regardless of the host railroad, will be similar to the existing trackage rights agreement. The agreement will define the tracks that the passenger services may operate on, the number of daily trains, and times in which trains may be scheduled. The agreements will further include the amount of access fees. The access fees normally are based on either train miles (a train operating one mile) or car miles (a locomotive or car traveling one mile) along with the capital improvements and annual maintenance contributions.

### 2.5 Over-Dimensional Freight Operations

UPRR and BNSF will occasionally operate freight service that exceeds typical clearance dimensions. This type of freight is known as over-dimensional (OD) freight. All eight subdivisions that the ACE and San Joaquins services will operate over are considered national “Strategic Corridors” with OD Loads.

UPRR and BNSF, as part of their common carrier obligations, ship OD freight cars as requested by their freight customers. OD cars are allowed on any portion of a common carrier railroad unless the railroad declares an embargo, which occurs when an impairment to track or bridge facilities exists that would restrict OD freight movements. Railroads publish embargo notices to shippers online at <https://embargo.railinc.com/#/home>. As of the date of this report, there are no published embargoes on any of these eight subdivisions. Therefore, OD permitted loads are allowed on the routes within the limits of this Program.

OD freight is assessed on a case-by-case basis by BNSF and UPRR as there are no standard maximum dimensions defined. UPRR and BNSF examine the corridors to be used for possible conflicts with the customer’s requested OD outline. Each station proposed as part of this program would be considered when UPRR/BNSF examine requests for OD movement. Any increase in the dimensions of the new center platforms, and associated reduction in the clearance at the platforms, will diminish UPRR /BNSF capability to move OD freight on these corridors. Note: As of the writing of this Report, the operating railroads will not provide logs of OD freight trains, dimensions or their loads for confidentiality reasons; therefore, it is assumed that all stations will need to meet the clearance requirements of any current or future OD loads.

### 3 ACE ADA ACCESSIBILITY COMPLIANCE

In 1998, as part of the initiation of the new service, ACE complied with the Americans with Disabilities Act (ADA) and set forth areas of compliance and actions to be taken to ensure accessibility to the system by persons with disabilities. ACE employs the use of a mini-high platform at each station to allow riders with disabilities to fully access their cars. All ACE cars have ADA compliant doors, wheelchair securement facilities, and ADA compliant restrooms. Riders with mobility limitations are accommodated starting with the first car on each train. If the wheelchair or other ADA compliant features of the car become fully occupied, then the train crew will begin filling those spaces on the adjacent cars as needed to accommodate all riders with mobility limitations.

The following sections describe ADA compliant features of ACE equipment and the procedures relating to ADA accessibility. These features, combined with operational procedures to make multiple stops at each platform as necessary to board any or all cars at the mini-high platforms, provide full ADA compliant accessibility on all cars on every train.

#### **3.1 Existing ACE Accessibility Procedures**

The basic ACE station configuration is a platform situated 8-inches above the rail, and 5-feet 4-inches from centerline of track. This provides for one car-based step up to the ACE car floors. The first step is about 10-inches above the platform. This two-step access provides very flexible, quick access for most riders. It is supplemented by an elevated portion of the passenger platform, the “mini-high platform” used with a bridge plate, which provides fully compliant ADA access to riders with mobility limitations.

As a matter of consistency and predictability, ACE’s policy is to provide riders with mobility limitations access to the train starting with the first (cab) car on each train. If the wheelchair or other ADA features of the cab car become fully occupied, then the train crew will begin filling those spaces on the cars behind as needed to accommodate all riders with mobility limitations. In addition, a passenger can request to board any car in a train consist and the train crew will reposition the train at the request of the customer.

ACE positions the cab car to be on the railroad west end of the train closest to San Jose. As a result, when the train stops, the mini-high platform is at the second door of the car, at the end of the platform closest to the railroad east end of the platform. The second door is the one closest to the ADA compliant restroom and the wheelchair securement locations. Therefore, using this door for ADA access provides the best access to accommodate the needs of mobility impaired passengers. Access routes from station accessible parking and intermodal connections to the mini-high platforms on the station platform have also been optimized to facilitate their use by riders with mobility limitations.

The new platforms will be configured to be consistent with the other ACE stations. The dimensions of the mini-high platform results in a stopping precision requirement of about +/- 5 feet. This spotting accuracy has proven to be routinely achievable in normal train operations.

As part of the Program, SJRRC is moving the ACE accessible car to the center of the consist to install high-level mini-high platforms at the east and west ends of the station and accommodate San Joaquins Amtrak service. Existing low-level mini-high platforms serving the cab car will be blocked off or removed once the new low-level mini-highs across the corridor are installed and placed into service. SJRRC Station Standards allow both low floor and high floor Mini-highs platform edges to unlock and rotate up when not in use to provide additional horizontal clearance.

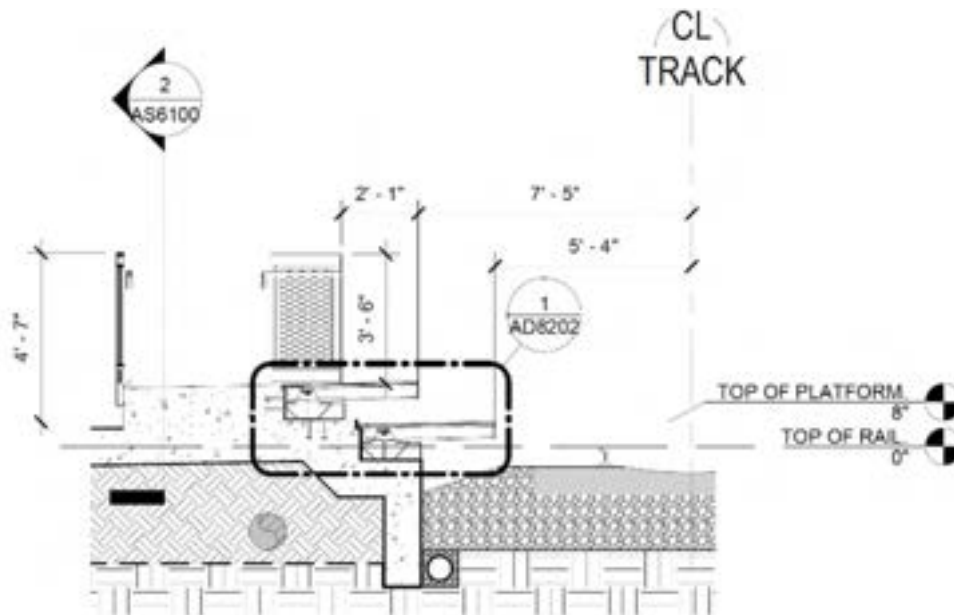


Figure 91. Low Floor Mini-High Platform Design

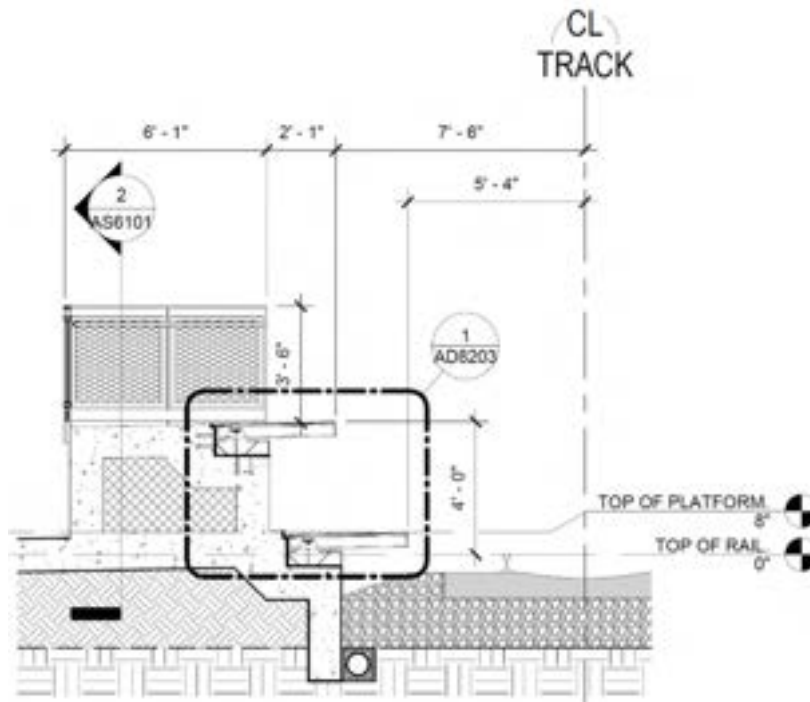


Figure 92. High Floor Mini-High Platform Design

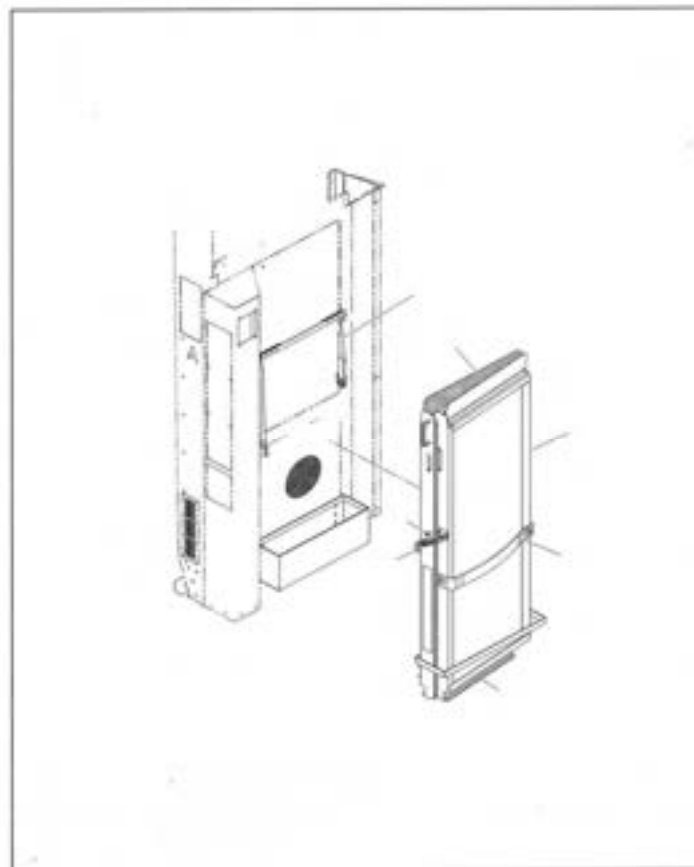


Figure 93. ACE standard mini-high portable ramp

The platform configurations with the mini-high platform(s) will promote the safe and efficient movement of passengers. ACE usually performs station stops with a 30-45 second duration, during which time passengers both board and disembark each of the cars. Deployment of the bridge plate and boarding or disembarking of riders with mobility limitations at the mini-high platform can normally be accommodated during the 30-45 second station stops.

In the rare event that the riders with mobility limitations cannot be accommodated in the first car (e.g., all the wheelchair securement locations are in use or the non-ambulatory passenger requests to ride in a different car) the train is moved to position the second door of the selected car at the mini-high platform. This does delay the train slightly; however, it is such a rare event that it has had no practical effect on system train performance or service quality.

The ADA regulation regarding the limits of an acceptable gap is based on a fixed car floor coming within an acceptable "gap" dimension to a fixed high-level platform as is common on urban mass transit systems. At most of the proposed stations, the ACE operation is shared with Amtrak (which uses a fleet of cars with different floor heights) and freight trains (with wider clearance requirements than passenger cars). Therefore, the opportunity to use a single platform height and a platform located very close to the cars is not attainable. The solution is to use a manually positioned bridge plate (shown in Images 32 and 36) to provide access from the floor of the ACE car to the mini-high platform and to use mobile wheelchair lifts for Amtrak cars.

### **3.2 ACE Passenger Train Equipment**

ACE commuter rail train service is provided with a locomotive and a series of passenger cars including a cab car. Existing ACE trains typically consist of 6-8 passenger cars, including the cab car, and one (1) locomotive. Future ACE trains will consist of ten (10) passenger cars, including the cab car, and one (1) locomotive. A cab car is located at the opposite end of the train from the locomotive. The lower-level passenger accommodations of the cab car are very similar to the other passenger cars in the train. ACE trains operate in a push-pull formation; that is, the train can run with the locomotive at the "front" or "rear" of the train. With the locomotive at the front of the train, it is in pull-mode. When the cab-car is leading, the train is in push-mode. The remaining passenger cars, called trailer cars, are located between the cab car and the locomotive. The cab in the cab-car is occupied by the train engineer while the trains are in push-mode.

The ACE train fleet includes one model of bi-level passenger rail cars, known by their manufacturer, Bombardier. Alstom acquired Bombardier in 2021 and each reference to Bombardier should be understood to also include Alstom. The Bombardier cars are the original railcar model on the ACE System. Additional procurements of Bombardier cars were completed between 1998-2023. A cab car has four wheelchair spaces, and a trailer car has two wheelchair spaces. Every car has an accessible restroom. The overall car-body width for both cars is 9-feet 10-inches. The first step into the car is 17" above top of rail. The second step to the car floor elevation is approximately 7".

### 3.2.1 Bombardier Cars

The lateral width of the opening at the doors is 52 inches for Bombardier cars. Figure 94 shows the floor plan and seating layout for the Bombardier bi-level commuter rail cars, while Image 25 shows a photo of the recessed doors on a Bombardier car.

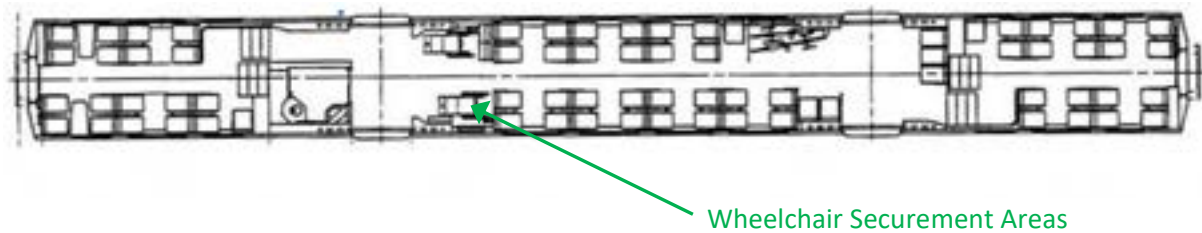


Figure 94. Bombardier Bi-Level Commuter Rail Car Seating Layout



Image 25. Recessed Doors on Bombardier Commuter Rail Cars at Mini-High  
(Photo Courtesy of SJRRC)

## 4 AMTRAK ADA ACCESSIBILITY COMPLIANCE

Amtrak provides ADA accessibility compliance through the use of mobile wheelchair lifts. This equipment is used throughout the Amtrak system to provide passengers with access to multiple equipment heights.

While on board, passengers may choose to remain in accessible wheelchair spaces or move to accessible seating. If a passenger chooses to transfer to an accessible seat, they may stow their wheelchair nearby, or onboard Amtrak personnel will assist with stowing the device. The new Venture equipment that will be introduced in 2023 (see Section 4.1.4 below) provides wider aisles and doorways, allowing mobility challenged passengers free access to every car on the train, including passage between cars.



Image 26. ADA accessible passageways on new Venture equipment

(Photo Courtesy [www.trains.com](http://www.trains.com) from Trains News Wire April 14, 2023)

### 4.1 Amtrak Passenger Train Equipment

Amtrak uses several types of cars on this route: bi-level Superliner and California Cars, and single level Venture/Horizon/Comet/Amfleet cars as needed. The bi-level California Car and Superliners, along with the new single level Venture cars, are the primary equipment for the Central Valley services. The single level Horizon/Comet/Amfleet cars are used for additional capacity during peak ridership periods such as holidays and special events.

The California Cars and Superliner cars are closely related with identical floor heights. The primary difference between the cars is in the number of side doors, two per side for California Cars and one per side for the Superliner. The Superliner cars have a variety of interior configurations ranging from vending machine, baggage, sleeping compartments to coach seating, while the California cars contain primarily coach seating, but also come equipped with small baggage areas and operator cabs.

Caltrans is in the process of introducing the Siemens Venture equipment. These new single level cars have a lower floor elevation than the Amfleet or Horizon cars, but higher than the California or Superliner cars. The cars are arranged into seven (7) car semi-permanently coupled consists of seven (7) cars each. ADA boarding is accomplished via passenger lifts on the vending machine cars, eliminating the need for mini-highs on the platforms, but bolt-down mini-high retrofits will remain in the event the passenger lifts are out of order. Venture cars feature full accessibility between cars, which is not possible on the legacy ACE and Amtrak equipment. Once a passenger is on the train, they can travel to any car, eliminating the need to respot the train to accommodate passengers wishing to travel in a specific car.

The Horizon and Amfleet cars are single level with a higher floor elevation, relative to the other three car types. A portable lift on the platform is used to aid boarding of mobility impaired passengers. These single level cars do not allow for wheelchair passage between cars. These cars are used for added capacity as needed on the Amtrak routes.

Caltrans is also exploring converting the San Joaquin's fleet to Zero-Emission vehicle technology. The new technology is related to the locomotives only, thus additional mini-highs or other ADA compliance measures will not be required.

#### 4.1.1 California Cars



Image 27. California Cars at Fresno Station  
(Source: Photo downloaded from Flickr 4/29/2023)

San Joaquin inter-city train service is provided with a locomotive and a series of passenger cars. Trains typically consist of six (6) passenger cars, including the cab car, vending machine car, and one (1) locomotive and may grow to seven (7) passenger cars. The passenger car opposite the locomotive includes lights and an operator cab, but the car is otherwise identical to the other passenger cars. Similar to the ACE trains, the San Joaquin trains operate in a push-pull formation. With the locomotive at the front of the train, it is in pull-mode. When the locomotive is trailing, the train is in push-mode. This arrangement eliminates the need to turn the equipment at the end of a run, permitting any station to be used as a terminal.

The Amtrak San Joaquin service utilizes cars from two generations of the Proposition 116 funded California bi-level railcars manufactured by AMERAIL and Alstom. The rolling stock is owned jointly by Amtrak and Caltrans. The two generations of Amtrak bi-level cars include variations such as upper business class and lower vending machine cars. Despite the variations, access to each car is identical. All cars include wheelchair spaces and accessible restrooms. The overall car-body width is 10-feet 2-inches.

The lateral width of the opening at the doors is 52 inches for the California cars. The floor of the cars is 17 ½" above top of rail. There is no second step. Figure 95 shows the floor plan and seating layout, while Image 28 shows a photo of the recessed doors.

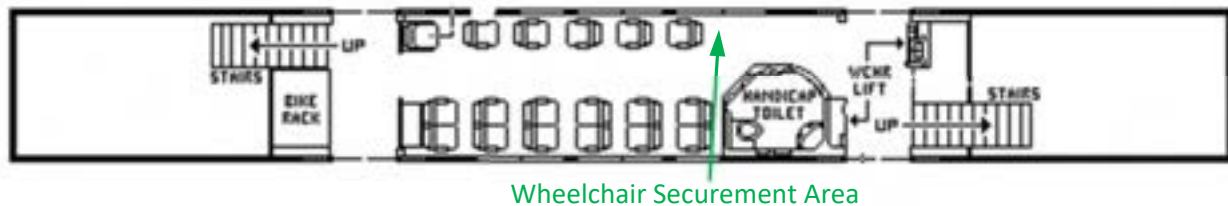


Figure 95. Amtrak California Car Seating Layout



Image 28. Recessed Doors on Amtrak Surfliner Cars

#### 4.1.2 Superliner Cars

Superliner cars in all configurations have single sets of doors on each side of the lower level of the car. These doors are similar in dimensions and height to those found on the California cars with the floor elevation at 17 ½" above top of rail. The typical layout of sleeping cars and coach cars are shown in Figures 96 and 97 respectively.

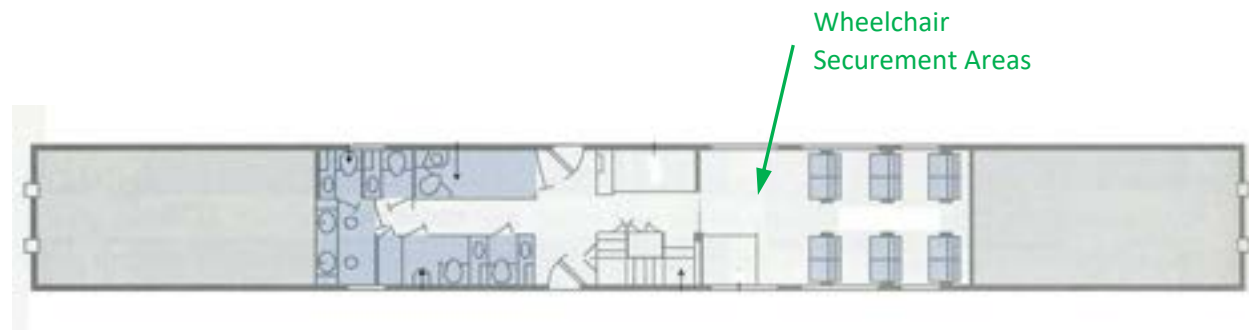


Figure 96. Amtrak Superliner Coach Seating Layout



Figure 97. Amtrak Superliner Sleeper Car Layout

#### 4.1.3 Single Level Intercity Cars (Horizon/Amfleet/Comet)

Horizon/Amfleet/Comet inter-city cars are used for added passenger capacity as needed. The single level cars do not permit a passenger to move between cars. Not all trains use the single level cars as they are only added to more heavily booked routes. The three types of single level cars are very similar to the layout shown in Figure 98. The floor elevation of the cars is approximately 51" above top of rail. Passengers must alight by steps into the vestibule at either end of the car similar to the ones shown in Image 29. ADA compliant access is provided by the use of a portable wheelchair lift. The lift is stored on the passenger platform and is deployed as needed by Amtrak personnel to assist with alighting and departing passengers.



Figure 98. Amtrak Single Level Inter-city Car Layout



Image 29. Amtrak Single Level Inter-city Car Steps

(Source: Matt' Johnson, <https://www.flickr.com/photos/39017545@N02/5622976489>)

#### 4.1.4 Venture Cars (Summer 2023)

Future San Joaquin cars are scheduled to enter the service soon. Starting in summer of 2023, Amtrak will begin replacing the existing fleet of California cars with next generation Venture single level cars.

The California and Superliner cars differ significantly in outward appearance and interior design from the Venture Cars. The California and Superliner cars are double level and do not allow for the passage through the train of wheelchairs, the boarding is via a bridge plate and mini high platforms. The Venture cars allow for the passage of wheelchairs between cars, accessible restrooms in every car and boarding lifts in the vending machine cars. The coaches and vending machine cars have two wheelchair spaces.

The new cars will be arranged into seven (consists) of 7 cars each. The consists will include a cab car, a vending machine car with integrated wheelchair lifts, and pure seating coaches. The floor elevation of the new cars will be 48" ATR, higher than the 17.5" of the California or Superliner cars, but lower than the 51" of the Horizon and Amfleet cars. The Venture cars are 10'6" wide and 85' in length. The wider aisles and doorways between the cars will allow for wheelchairs to move between cars. The wheelchair lifts on the vending machine cars will eliminate the need for the manually placed bridge plates and mini-high platforms. However, mini-high ramps will still be used at stations in case of mechanical failures for the lifts.

California Venture cars have been stored at the Altamont Commuter Express facility in Stockton, California since June 14, 2021. The San Joaquin Joint Powers Authority and ACE share management and maintenance functions, and Herzog Contract Services, Inc. has been tapped to maintain the new Siemens fleet at Stockton and at Amtrak's Oakland, California maintenance shop.



Image 30. Upcoming Amtrak San Joaquin Venture Cars  
(Photo from Bob Johnston (Trains.com October 5, 2022))



Image 31. Upcoming Amtrak San Joaquin Venture Cars  
(Photo from Bob Johnston, Trains.com October 5, 2022)

#### 4.1.5 Future Amtrak San Joaquin Cars

Caltrans is exploring the use of zero emission locomotives and multiple unit trainsets. After a decision is made on the type of vehicle/technology, they will need to then be manufactured and accepted/commissioned into the fleet. SJRRRC will need to evaluate the method of ADA when a determination is made to deploy the future equipment along the service corridors.

### 4.2 Existing Amtrak Accessibility Procedures

The Amtrak Horizon/Comet/Amfleet, California, Superliner cars do not have the same floor between the different San Joaquins equipment and all of which vary from the ACE floor height. Because Amtrak utilizes equipment with three different floor heights, there is not a single platform or mini-high platform height that is compatible with all sets of equipment. The different types of equipment require different procedures and apparatus to provide ADA compliant access to all cars. The thresholds on the existing fleet do not allow for standard wheelchairs to pass between cars.

#### 4.2.1 Bridge Plates

Amtrak uses manually deployed bridge plates to provide compliant access to the bi-level California and Superliner cars. The plates are deployed similarly to the ACE equipment. However, the plates do not require the use of mini-high platforms due to the lower floor height of the Amtrak cars. This simplifies spotting of the cars. The plates must still be deployed by the train conductor at the cars to be accessed.

#### 4.2.2 Portable Wheelchair Lifts

Amtrak single level inter-city cars require the use of portable wheelchair lifts to provide ADA compliant access. Amtrak Intercity services (such as the San Joaquins) rely on portable wheelchair lift equipment in order to assist passengers with mobility limitations. The wheelchair lift will be stored on the passenger

platform. Amtrak employees position the lift as needed to assist passengers alighting and detraining. The lift can be positioned at any door to the train excepting a door positioned adjacent to the SJPA mini high platform. Should a passenger require assistance accessing a car positioned near the mini high platform, the Amtrak conductor will reposition the train to clear the ramp.

#### **4.3 Future Amtrak Accessibility Procedures**

The soon to be deployed Siemens Venture trainsets were designed with accessibility taken into consideration. The seven (7) train sets include vending machine cars with on-board lifts that will eliminate the need for mini-highs and bridge plates. However, the legacy equipment types will still remain in service, and thus any new station must also include a portable lift stored on the platform. The Venture cars are the first coaches designed to be fully ADA complaint.

## **5 CLEARANCE REQUIREMENTS**

As discussed in the Railroad Operations section of this report, the proposed platforms of the Valley Rail Program stations will accommodate the safe passage of both freight and passenger train equipment. This section reviews the clearance requirements and regulations as context to accessibility options.

### **5.1 Dynamic Clearance Requirements**

Dynamic clearance refers to the largest possible envelope in which the moving rail car is likely to operate, given a number of factors including sway of the vehicle due to wind, vehicle suspension tolerances, track alignment variances, and other factors. The dynamic clearance envelope is generally considered in the design and construction of track, station, and appurtenant facilities. In addition to the dynamic clearance envelope, a variety of other factors are typically added to design clearances to account for such things as track construction and maintenance tolerances, running clearances and safety walkways.

For transit systems where only one type of vehicle operates on the system, it is possible to design the platforms and other support facilities based upon the dynamic clearance envelope of a single vehicle. However, with commuter rail systems, such as ACE, that operate on track shared with both Amtrak and freight trains, there are other types of train cars that operate over the system. Therefore, a more comprehensive accommodation for rail vehicles of differing dynamic clearance requirements must be considered. To that end, ACE is required to meet clearance requirements developed by the California Public Utilities Commission. These requirements are described in more detail in the following sections.

Generally, construction and maintenance tolerances are built into the minimum legal clearance requirements prescribed by the CPUC.

### **5.2 UPRR & BNSF Clearance Requirements**

UPRR and BNSF have stated that continued freight operations over their rails on all corridors will require sufficient clearance to the passage of standard and OD freight equipment. All tracks must remain

accessible for freight movements.

### **5.3 Freight Train Normal-Widths**

The Association of American Railroads (AAR) provides clearance diagrams for different types of freight vehicles. Appendix E, Page 1 shows the clearance diagrams for AAR plates F, H and K, which when combined, represent the widest and tallest types of normally-wide freight rail vehicles that would be operated on the Valley Rail routes. The dimensions for each of these plates are as follows:

- Plate F – 17'-0" high and 10'-8" wide at 3'-4" above top of rail (T/R)
- Plate H – 20'-2" high and 10'-1" wide at 2'-7" above T/R (Double Stacks)
- Plate K – 20'-2" high and 10'-8" wide at 2'-7" above T/R (Autorack)

### **5.4 UPRR and BNSF Clearance Standards**

The host railroads, UPRR and BNSF, maintain a common set of Engineering Standard plans that set the requirements for design, construction and maintenance of their stations and facilities. However, they defer to the host railroad (UPRR or BNSF) for track clearances. The key relevant standards relating to clearance requirements are included in Appendix E. It is important to note that the UPRR/BNSF standards related to clearance requirements are based upon meeting legal minimum requirements prescribed by the CPUC and the AAR. It should also be noted that the ACE commuter rail locomotive is larger and extends further into the clearance envelope than the commuter rail cars. Appendix E shows the ACE commuter rail locomotive and commuter rail car clearance requirements.

### **5.5 California Public Utilities Commission (CPUC) Standards**

The CPUC has published legal minimum requirements for clearances along railroad tracks that are subject to freight rail service. These clearance requirements are defined in CPUC General Order 26-D: Regulations Governing Clearances on Railroads and Street Railroads with Reference to Side and Overhead Structures, Parallel Tracks, Crossings of Public Roads, Highways and Streets.

General Order 26-D states that the legal minimum clearance from centerline of track to any permanent structure is 8-feet, 6-inches on tangent track and 9-feet, 6-inches+ on curved track. This dimension is intended to account for the dynamic clearance envelope of the train, including all construction and maintenance tolerances and a walkway for railroad personnel. Station platforms are addressed as a special case. Low-level platforms (8-inches or less above top of rail) can be located within 4-feet, 8-inches of track centerline. High-level platforms (4-feet, 0-inches or less above top of rail) can be located within 7-feet, 6-inches of track centerline. The ACE standards for platforms and mini-high platforms meet these requirements.

## 6 ACCESSIBILITY OPTIONS

The new Valley Rail Program station platforms must provide accessibility in compliance with the amended level boarding language of the United States Department of Transportation's (USDOT) Americans with Disabilities Act (ADA) regulations. Level boarding refers to one means of providing integrated access for all passengers by locating the platform at the same level as the entry doors of the railcars.

The USDOT provides guidance on the means by which passenger railroads can comply with the amended regulations. At stations where a track adjacent to a platform is not shared with existing freight service, railroads must provide level-entry boarding. None of the stations in the Valley Rail Program meet this criteria, as all Valley Rail stations will be located on tracks also utilized by freight trains. The center and side platforms of the Valley Rail Program will be adjacent to tracks that are shared with freight trains; therefore, the selected means of providing level boarding must be compatible with both freight operations and the USDOT requirements.

### 6.1 Regulations for Platforms Shared with Freight Service

The USDOT also recognizes in its regulations that level boarding may not be feasible for railroads that share tracks with existing freight service. As a result, the USDOT indicates that where track adjacent to platforms is shared with freight railroads, passenger railroads can meet the performance standard through a variety of means, including:

- Deploying bridge-plates at every door,
- Gauntlet or bypass tracks,
- Car-borne lifts,
- Retractable platform edges
- Mini-high platforms (with trains making multiple stops at such platforms when necessary)
- Portable wheelchair lifts

Passenger railroads are able to choose among a variety of methods to ensure that each train car is accessible, as long as the railroad provides an *"integrated, safe, timely, reliable, and effective means of access for people with disabilities,"* and that they demonstrate that the selected option works.

### 6.2 Overview of Boarding Methods for Freight-Adjacent Platforms

This section of the report provides a comparative analysis of different boarding methods for stations that are adjacent to shared freight/passenger tracks.

In order to ensure that the best and safest practical means for boarding the train is provided to all passengers, including riders with mobility limitations, other potential platform configurations were evaluated based on the DOT guidance. USDOT ADA guidelines define level boarding as having a horizontal gap of no more than three inches and a vertical gap of no more than 5/8 inches

As discussed above, the configuration of the ACE car doors presents challenges with alternative approaches. The car doors (and interior floors) are recessed into the sides of the train, which creates a five-inch gap (for Bombardier cars) between the platform and the edge of the car body, depending on which passenger car is being used. Therefore, simply moving the train closer to the platform or moving the platform edge closer to the train does not provide for level boarding. Any station-based device must “intrude” into the clearance envelope of the train cars to effectively bridge the gap.

Of the six methods available to accommodate both freight and passenger trains, only the mini-high platform is compatible with ACE trains and operations; and only portable wheelchair lifts are compatible with existing Amtrak trains and operations. Therefore, both mini high platforms and portable wheelchair lifts will be used at the proposed Valley Rail Program platforms. As previously described, the soon to be deployed Amtrak Venture cars contain on-board ramps that can drop directly onto the 8” ATR platform.

#### 6.2.1 Method 1: Deploy Bridge Plates at Every Door

ACE and Amtrak railcars have a three-to-five-inch gap between the edge of the step (or entry threshold) and the edge of the car body. The federal provision for a full-length level platform of 15” above top of rail (ATR) at 5’5” between the face of the platform and the track centerline would create a horizontal gap in excess of the maximum of three inches, even if a platform were at 15” in height.

One method of eliminating this gap is to manually deploy a bridge plate, ramp or other appropriate device every time a train stopped. A typical bridge-plate placement is shown in Image 32.



Image 32. Deployed Bridge Plate  
(Photo courtesy of Wikipedia and NJ Transit)

The bridge plate can span from the recessed loading floor of the passenger car to a raised platform outside of the track clearance envelope. The dissimilar ACE/Amtrak equipment heights (as well as the dissimilar door spacing) would require an undulating series of elevated ramps to provide compatible loading elevations. There is no consistent elevation/spacing combination that is compatible with the

variety of train equipment that will be stopping at the Valley Rail Program stations.

A limited number of onboard train personnel are available to deploy bridge plates at every door. The use of bridge plates at every door significantly would reduce operational efficiency and increase staffing costs; therefore, this method is not considered compatible with existing operations.

An added reason to reject the proposed full-length level boarding scheme with bridge plates is the platform configuration required to implement deployment of bridge plates at every car door creates an additional safety hazard for all station users. By placing the mini-high platform outside the freight clearance envelope, a secondary platform “ledge” is required. This poses a safety hazard at those locations where passengers may attempt to access a door where a bridge plate is not deployed. This also encourages passenger circulation within the fouling limits of the tracks. A single mini-high ramp at the railroad east end of the platform can be located out of primary passenger circulation paths and will allow passenger movement on the rest of the platform that does not foul the tracks.

#### 6.2.2 Method 2: Gauntlet or Bypass Tracks

A gauntlet track is an arrangement in which railway tracks run parallel on a single-track bed and are overlapped such that only one pair of rails may be used at a time (see Image 19). The intent of using a gauntlet track would be for passenger trains to use the set of gauntlet tracks that provides closer proximity to a passenger station platform while freight trains would utilize the set of gauntlet tracks furthest from the station platform.



Image 33. Gauntlet Tracks

(Source: <http://www.trforum.org/journal/2005spr/article10.php>)

A bypass track is an approach that utilizes a separate set of tracks that diverges from the main line to serve a train station (or vice versa). Freight trains would operate over the tracks that do not serve the passenger station, and therefore, would not create clearance issues at the platform edge.

The use of both gauntlet and bypass tracks at the Valley Rail Program stations is not feasible because even if passenger trains are moved closer to the platform edge, the resulting gap would be 12 inches, larger than the three-inch maximum, due to the recessed doors and floor edges and the lateral

clearance needed for the cars and locomotives. For this reason, a track that places the cars close to the platform edge does not result in an acceptable gap of three inches or less.

The dissimilar floor elevations of the ACE commuter, San Joaquin corridor and intercity Amtrak fleets would also be incompatible with a gauntlet track configuration. There is not a single platform height that matches all equipment types.

Additionally, railroads desire to minimize the number of turnouts, as each turnout carries with it increased maintenance costs and a derailment potential resulting from an inadvertent diversion of a high-speed train onto a gauntlet or station track. Generally, moving trains from one track to another, carries with it an inherent and independent potential for safety hazards, including, but not limited to, malfunction, derailment, cessation of service, and death. (Comments by the National Association of Railroad Passengers to USDOT's NPRM, published February 27, 2006, at 71 FR 9761 found at [www.narprail.org](http://www.narprail.org)).

Moreover, when the Legislature drafted and passed the ADA, it recognized the inherent challenges of shared passenger and freight use of railways, and specifically stated in House Report 101-495 that it was not their intent to require track modifications and recognized mini-high platforms and other means of access as acceptable alternatives.

### 6.2.3 Method 3: Car-Borne Ramps

In the car-borne ramp approach, a mechanized ramp is installed at a minimum of two doors (one door on each side to serve station platforms that exist on different sides of the train) of every rail car. The car-borne ramp is generally kept retracted and out of the way of the car doorway, and then operated manually by a conductor when needed to facilitate boarding of riders with mobility limitations. When placed into position, the ramp would extend outward through the car door and would bridge the gap to the platform edge. Image 34 shows car-borne ramps aboard Northstar's commuter railcars in Minneapolis.



Image 34. Car-borne Conductor Deployed Automated Ramps  
(Source: Metro Transit, 2010)

The entire current ACE and San Joaquin train fleets would require modifications to use car borne lifts to provide compliant accessibility at the Valley Rail platforms. As discussed earlier, the new Venture car consists are equipped with this type of lift in the vending machine cars. The cost impacts to retrofit the legacy ACE and Amtrak equipment with this option are further discussed in Section 8.1.2.

#### 6.2.4 Method 4: Retractable Platform Edges

Station-based approaches include alternatives implemented at stations (other than full-length level boarding) to facilitate the boarding of riders with mobility limitations. Retractable (Flip-up) Platform Edges in combination with an additional projecting ramp element could be used at the Valley Rail platforms. However, use of retractable edges is not feasible due to differences in door spacing and floor height between the ACE, San Joaquin and Amtrak railcars.

Due to differences in car door spacing and floor elevations between the ACE, San Joaquin, and Amtrak railcars cars, there would have to be three complete sets of flip up platform edges on both sides of the platform. Furthermore, the ramps spaced for Amtrak Comet and Horizon cars would have to be elevated to account for the higher floor elevations. These groupings would not allow retractable edges.

Image 35 shows station-based retractable (flip-up) platform edges utilized for the North County Transit District's (NCTD) *Sprinter* in the San Diego area. The concept behind this approach is that the main platform edge is built outside the CPUC clearance envelope, while moveable flip-up edges are only put into boarding position when the rail line is closed to freight trains. In the *Sprinter* example, the freight and passenger services are time separated (with freight operating only at night). The retractable platform edges are only put in place during passenger train operations and retracted during freight train operations.



Image 35. Station-based Retractable (Flip-up) Platform Edges  
(Source: North County Transit District, 2010)

The ramps also include an extending plate to bridge the remaining gap to the interior car floor. In order for a retractable platform edge ramp to effectively bridge the gap to the car floor, it would have to operate after the train had stopped and the car doors were opened, and it would have to project into the door opening.

For the Valley Rail Program stations, the use of a retractable flip-up platform edge, to meet the rail car without the use of a bridge plate, is not feasible for the following reasons:

- The door spacing and floor elevation is different between the Superliner, Horizon, California and Amfleet Amtrak and ACE cars. This requires several complete sets of retractable ramps on both sides of the platform. The ramps would have to be at different elevations with the associated grade transitions to provide compliant approaches to the ramps.
- In order for the flip-up/retractable platform edge to be effective and provide an acceptably small gap (or no gap), the train would have to be stopped with all doors positioned very precisely oriented to the projecting/retracting ramps. This is impractical using conventional railroad train brakes and power and control systems. Also, the slack in couplers could make car doors at one end of a train out of position with the ramps even if the cars on the other end of the train were in correct position.
- The host freight railroads would not approve a platform extending into their operating envelope (5'-4") as this goes against their standards, criteria and operational needs. A malfunction of the ramp system would block the track until the ramp could be repaired, creating an unacceptable risk to their freight operation.
- Due to the extending plate needing to encroach into the envelope of the car to fill the gap, the projecting ramp would have to be interlocked with the train operating controls and the railroad signal system so that it would not activate until the train was correctly positioned and stopped

and so that the train could not be moved unless and until all ramps were fully retracted and locked. Due to its complex nature, and all the moving parts in use at all train doors (e.g. total of 10 doors on a 5-car train), this system would be less reliable than the manually operated ramp presently used on ACE and San Joaquin services. Reliability issues could occur if ramps are inoperable or become “locked”; both are intolerable situations for passenger service.

- All passengers would experience delay when the ramp is deployed, while the conductor ensures that the platform is clear and for retraction of the ramp. These combined actions could take up to approximately two minutes, much greater than the current 30-40 seconds per station stop.
- The complexity and number of ramps would not allow any future changes in the train makeup for ACE or the San Joaquins.

In addition to these operating and reliability challenges, a set of 20 or more moving ramps for each side of the center platform is a substantial increase of project cost with resulting impacts to the cost-effectiveness of the program and local agency funding resources. Further, the expected maintenance expense of moving ramps would increase the cost of providing service by an unknown, but potential substantial amount.

#### 6.2.5 Method 5: Mini-High Platforms

Mini-High platforms consist of an elevated concrete surface with ADA compliant ramp approaches. The mini-high platform is set back from the face of the platform to comply with CPUC clearance requirements.

As shown in Figures 91 and 92, the ACE standard mini-high platform is located as close to the tracks as is permitted by the CPUC to minimize the length of the manually positioned bridge plate. The bridge plate spans from the mini-high platform to the car floor of the train (see Image 36). This placement does not interfere with the movement of regular or oversize freight cars. It is consistent throughout the Valley Rail network so that employees of the freight railroads are familiar with the clearances and can work safely within these limits.



Image 36. Deployed Bridge Plate at mini-high platform  
(Photo courtesy ACE)

This report concludes that the only feasible means of providing “integrated, safe, timely, reliable, and effective access” to ACE passengers at the proposed Valley Rail Program passenger platforms is to provide a mini-high platform on the station platform.

#### 6.2.6 Method 6: Portable Wheelchair Lifts

Portable wheelchair lifts are used at numerous Amtrak stations across the country to assist with the needs of the movement impaired (see Image 37).

The portable wheelchair lifts are stowed at either end of the passenger platform when not in use. When the need arises, the lift is maneuvered into place in front of the car door. The rear side of the lift deploys as a ramp into the passenger compartment. Passengers departing the train travel forward into the space at the top of the lift. The ramp is folded up and the platform is lowered. The passenger then rotates 90° to exit the side of the lift. The lift is then released and removed to its storage. This equipment is used throughout the Amtrak system in the US. The lifts are relatively easy to maintain and are also quite resilient to weather and vandalism.



Image 37. Portable Wheelchair Lift for Horizon and California Car Access  
*(Photo courtesy of Adaptive Engineering Inc.)*

## 7 OPERATIONAL ISSUES SPECIFIC TO MINI-HIGH PLATFORMS

With the selection of use of a mini-high platform as the preferred method of complying with the level boarding regulation, several operational issues need consideration. If a car other than the cab car is used by a person with a disability, the engineer must re-spot the accessible car at the mini-high platform. All stakeholders must be aware of this intention and agree that re-spotting the train is a feasible and operationally acceptable means of providing access. Furthermore, there should be no conflict between stakeholder consensus and existing agreements or regulations.

### 7.1 *Train Reversal*

All the railroads in California are operated in accordance with the General Code of Operating Rules (GCOR). GCOR Rule 6.4 governs the reversal of direction of a train and requires that it be done only within the limits for which the train has track authority. The practical effect of this is that a train can stop and reverse direction provided that the train crew operates with precautions to not move too fast or too far, as indicated by the crew observing the track to the rear for any hazard.

Special precautions are required if the reverse movement would pass a block signal. If the reverse movement would require passing a control signal, the train dispatcher must authorize the movement. With these precautions in place, CPUC does not discourage reversing a train in order to re-spot.

### 7.2 *Train Crew Communications*

When using mini-high platforms as the selected method of level boarding, it is also important to ensure that train crew communications are thorough, and all eventualities are considered. For example, it is important to know how a conductor will communicate to the rest of the train crew at which station a passenger with disabilities wishes to disembark, and which car other than the cab car the passenger is in, and whether there is or is not a need for double-stopping. Also, it is important that policies are in place to respond if a passenger misses his or her station stop because the passenger's car is not aligned with the mini-high platform.

A passenger train crew consists of an Engineer and one (or more) Conductor(s). ACE and Amtrak's Train Crew Supplemental Instructions require communication of any specific operating condition, including spotting particular doors at station stops. Most of these communications are by railroad radio. However, the conductor may be face-to-face with the Engineer on occasion and not need the radio to accomplish these communications. The Conductor supervises and assists (by placing the bridge plate) all passengers that are boarding the train from the mini-high platform. Therefore, the Conductor is aware of cars in which the passengers needing assistance are riding. The normal operating procedure is to align the cab car with the mini-high platform at a station. The Conductor then bridges the car floor and the mini-high platform with a bridge plate at one door of the cab car assisting passengers across the bridge plate to the mini-high platform.

However, if a person needing assistance is riding in a coach car and not the cab car, the Conductor

would communicate to the Engineer the need to spot the car to the mini-high platform on approach to the station. After the appropriate car is spotted at the mini-high platform, the Conductor would proceed to assist the passenger per the normal procedures.

If the Engineer misses spotting the car with the mini-high platform, the Conductor would communicate this to the Engineer who would then either pull forward or reverse the train to realign the car with the mini-high platform. If the station stop is missed completely, communication between the Conductor and the passenger would determine whether the passenger would get off at the next stop and wait for a train in the opposite direction or a taxi would be called to transport them to their stop. Therefore, if in the event that a station is missed, it is passenger railroad policy to ensure that a passenger is not stranded and that accommodations are made to get them to their proper station stop in the most expeditious manner.

## 8 COST COMPARISON

In accordance with 49 CFR 37.42(d)(1), a cost comparison was prepared to compare the costs of mini-high platforms versus platform or car-borne lifts. 49 CFR 37.42(d)(1) states:

- (d) Before constructing or altering a platform at a station covered by paragraph (c) of this section, at which a railroad proposes to use a means other than level-entry boarding, the railroad must meet the following requirements:
  - (1) If the railroad operator not using level-entry boarding chooses a means of meeting the performance standard other than using car-borne lifts, it must perform a comparison of the costs (capital, operating, and life-cycle costs) of car-borne lifts and the means chosen by the railroad operator, as well as a comparison of the relative ability of each of these alternatives to provide service to individuals with disabilities in an integrated, safe, timely, and reliable manner. The railroad operator must submit a copy of this analysis to FTA or FRA at the time it submits the plan required by paragraph (d)(2) of this section.

Therefore, this analysis will compare capital, operating and maintenance and overall life cycle costs for the platform or car-borne lifts and the mini-high platforms to serve San Joaquin and ACE passengers.

### 8.1 Capital Costs

#### 8.1.1 Capital Costs for Mini-High Platform

Based on SJRRC (ACE/San Joaquin) engineering standard plans, the capital costs associated with a standard side mini-high platform are estimated to be between \$25,000 and \$40,000, depending on whether the mini-high level platform provides low-level or high-level access (these costs include the concrete, railings, detectable warning tiles, flip up platform edges and ramp floor finish for one mini-high platform per station platform). Center platform mini-highs would be split in the middle to service each platform edge. A cost estimate for platform based mini-high platforms is shown in Appendix G. However, the Program is proposing to employ both side and center platforms. Center platforms are planned at Ceres, Manteca, North Lathrop, Ripon, Lodi, Old North Sacramento, Elk Grove, Livingston, and Turlock. Single-side platforms are proposed for Modesto (two tracks), City College, Midtown, Natomas, Merced, Oakley and Madera. For stations that are currently in operation and will be modified as part of the Program, steel bolt-down mini-highs for both low-level and high-level access will be deployed. Typically, low-level mini-highs (21" ATR) will be installed in the center of the platform, while high-level mini-highs (48" ATR) will be installed at either end of the platform. A future project, not captured by this Program, will also extend station platforms and add additional mini-high platforms to existing stations.

#### 8.1.2 Capital Costs for Car-Borne Lifts

The capital cost for car-borne lifts was based on several factors. The new San Joaquin's Venture fleet will be delivered with car-borne ramps. New ACE train cars are not anticipated as part of the construction of

the new platforms. SJRRC and Amtrak equipment are used on a system-wide level and therefore it is not possible to buy rail cars solely for the Valley Rail route. Rather, the current passenger cars would need to be retrofitted with the car-borne lifts. This is the case for the current ACE and San Joaquin services.

Theoretically, a very conservative cost estimate for retrofitting cars with car-borne lifts would include the cost to retrofit the entire ACE and San Joaquin equipment fleet rail car. The justification for retrofitting every car is explained through the ACE and Amtrak operations and maintenance process, which cycles cars throughout the system or along certain lines, as opposed to dedicating only specific cars to specific lines.

ACE's fleet currently has 30 rail cars including spares in their roster. All of these cars have already been procured by ACE as part of a larger fleet expansion and enhancement process; therefore, it is not feasible to order new commuter cars with lifts pre-installed.

Amtrak currently utilizes approximately 65 passenger cars in the San Joaquin service. There are no near-term plans to replace the existing fleet cars. Although the seven (7) new Venture train sets have lifts, the existing train sets will remain in service. The existing sets will continue to provide ADA access via a moveable platform lift.

To operate all equipment interchangeably, the entire Northern California Fleet including cars for Capital Corridor, ACE and San Joaquin services would have to be retrofitted for car-borne lifts. The entire 95-car fleet of bi-level equipment, 14 single level cars and 30-car fleet of ACE equipment would be required to be retrofitted with car borne lifts. The combined fleets would require a retrofit to a total of 94 cars.

The Riverside County Transportation Commission (RCTC), in preparing their level boarding report for the Perris Valley Line, developed a cost estimate to retrofit train cars with car-borne lifts. Given that the Metrolink system uses the same type of bi-level equipment as ACE, it is understood that the RCTC estimate is comparable to what it would cost to retrofit the trains serving the Valley Rail expansion. RCTC developed an estimated cost of \$150,000 to retrofit each car with a pair of car-borne lifts in 2014. Adjusted for inflation (per Consumer Price Index calculator), the 2023 cost per car-borne lift is \$190,617. Therefore, based on the need for 155 cars to be retrofitted, the total capital cost for retrofitting these cars with car-borne lifts is estimated at **\$29,545,542**.

The cost estimate developed by RCTC was based on several sources. Minnesota Metro Transit provided an estimate of \$150,000 per car to install the lifts (two per car) on their Northstar commuter rail service system. The installation of the lifts for the Northstar system would likely be quite different from installation of similar lifts on the ACE and Amtrak cars.

First, on the Northstar system, the lifts were installed during manufacture of the cars, while the lifts for the Valley Rail would need to be retrofitted into existing cars. This could cause a number of installation complications that were not present for the Northstar installation.

Second, the parts of the frame around the doors could be structurally different between the newer Northstar cars and the older ACE and Amtrak cars, which may necessitate additional reinforcement in the door area in order to install the lifts. In older cars, portions of the doorframe in the area where the

lifts would typically be attached used lighter aluminum, while newer cars use stronger steel in those areas.

Due to the difference in the Northstar and RCTC equipment, RCTC undertook an independent cost evaluation. The RCTC cost estimate came to \$150,000 per car (\$190,617 adjusted for inflation) to install the lifts. This being the same cost as was provided by Northstar, arrived at independently, RCTC believed this is a justifiable number to use, even though it is acknowledged that the installation for their project would likely be more difficult due to having to retrofit existing rail cars. These cost estimates appear in Appendix F: Car-Borne Based Level Boarding Cost Analysis.

## 8.2 Operating and Maintenance Costs

Mini-high platforms at the Station would have a negligible operating and maintenance cost. There is no additional operating cost associated with mini-high platforms since the existing single conductors on each ACE and Amtrak train assists riders with mobility limitations to board and exit the train at the mini-high platform as part of his/her existing duties. The same conductors are available to assist riders with mobility limitations wanting to board any car in a train consist by repositioning the car to the mini-high platform. The mini-high platforms are essentially maintenance-free, only needing occasional cleaning that is done at the same time as the remainder of the concrete platform.

Car-borne lifts would have negligible operating costs as well. The existing conductors on each train should be able to assist riders with mobility limitations as they board using the car-borne lifts, given the small number of existing riders with mobility limitations that board at each station. However, if the future number of passengers with mobility limitations is significantly higher than at present, additional conductors may be needed. Car-borne lifts would increase annual maintenance costs due to the need for additional maintenance of the lift-equipped cars. Appendix F contains the estimated cost information for the maintenance of Car-borne based level boarding for the Program. Based on a 25-year life-cycle, and an annual maintenance cost of \$1,906 in 2023 dollars per car, the annual cost of maintenance for a 155-car Northern California-dedicated fleet would be \$299,242 per year.

Life Cycle costs for the two options - mini-high platform and car-borne lift - over 50 years are shown below. Over 50 years, car-borne lifts are projected to cost over \$39 million more to install and operate than mini-high platforms. Mini-high platforms are the most cost-effective means of providing level boarding access for the Station.

**Table 42 – Life Cycle Cost Comparison – Mini-High Platform and Car-Borne Lifts**

Type	Capital Cost	Annual O&M Cost	25-Year Maintenance Cost	50-Year Maintenance Cost	Total Cost
Mini-High Platform	\$ 2,005,000	NA	NA	NA	\$ 2,005,000
Installing Car-Borne Lifts	\$ 4,774,613	\$ 299,242	\$ 12,255,663	\$ 24,430,466	\$ 41,260,743

### 8.3 Operational Delays

This analysis does not anticipate higher frequency of use for the car-borne lifts as compared to the mini-high platforms by riders with mobility limitations. However, because the car-borne lifts allow riders to enter any of the six cars of the train when it pulls up to a platform, it is anticipated that riders needing assistance would likely be dispersed along the length of the platform, rather than uniformly directed to the mini-high platform. This could result in potentially significant delays caused by the conductor having to assist passengers using the car-borne lifts at multiple cars at a given station. While operation of the car-borne lifts would likely cause more frequent minor delays (just due to the time it takes to operate the lift) than for the mini-high platform system, the delays would be small enough that they could be absorbed by the schedule float built into the schedules in the vast majority of cases. Therefore, operational delays are not attributed to the use of car-borne lifts.

Passengers with mobility limitations currently have the right to board any car of a train using mini-high platforms. However, there are no records of a passenger with mobility limitations asking to board any car other than the rear car (at the mini-high platform). If multiple passengers request to board or alight at the same stop, SJRRC experience shows that they will generally all board or alight at the mini-high platform location during the initial spotting of the train. However, if a double- or triple-stop is required due to passengers requesting to enter a particular car, then a delay would be encountered (7.5 to 11.5 minutes on average for each additional stop, depending on orientation of the train). Because of the rarity of this potential occurrence, operational delays are not attributed to the use of mini-high platforms.

SJRRC does not keep a record of how many passengers with mobility limitations board their trains. Nor do they keep a record of the frequency of having more than one passenger with mobility limitations boarding or alighting a train at any given stop, but based on the experience at other agencies, ACE has indicated that the occurrence is very low. Operational delays related to car-borne lifts or mini-high platforms may become more prevalent in the future if the number of passengers with mobility limitations increases significantly.

## 9 CONCLUSIONS

The foregoing analysis of accessibility options for the platform at the Valley Rail stations considered and evaluated options to provide equal access to ambulatory and non-ambulatory passengers to comply with the USDOT Level Boarding Regulation. This report reaches the following conclusions regarding level boarding options at the Station:

***Rejected Level Boarding Methods*** – gauntlet tracks, bypass tracks, retro-fitting existing equipment by installing car-borne lifts and retractable platform edges were evaluated and rejected. Also, the use of bridge-plates at every door was explored but deemed impractical based on the inherent problems this method poses for both ambulatory and non-ambulatory passengers. Freight traffic on the Valley Rail line, including over-dimensional freight cars, precludes the placement of platforms higher than 8” above top-of-rail thus conformance with clearance standards.

***Feasible Method of Level Boarding of Amtrak Venture Cars*** – the use of mobile wheelchair lifts installed during the construction of the cars provides a feasible option for loading Amtrak cars to comply with the Level Boarding Regulation.

***Feasible Method of Level Boarding of Amtrak California, Horizon/Amfleet/Comet and Superliner Cars*** – the use of mobile wheelchair lifts provides a feasible option for loading Amtrak cars to comply with the Level Boarding Regulation. Also, the use of mini-high platforms also provide a feasible option for loading Amtrak Cars to comply with the Level Boarding Regulation. The wheelchair lifts would be considered a backup method to the mini-highs and used for the Horizon/Amfleet/Comet cars.

***Feasible Method of Level Boarding of ACE Bombardier Cars*** – the use of mini-high platforms provides a feasible option for loading ACE Bombardier Cars to comply with the Level Boarding Regulation.

***Mini-High Platforms Require Additional Assurances to be enforced as Operational Procedures***

The provision of a mini-high on the platform at the Station comes with the assurance that ACE will afford access to every car for every passenger, including non-ambulatory passengers. Certain operating procedures are implemented in compliance with this policy. These rules are already detailed in the operating rules:

- Train crews will reposition the train consist to comply with passenger requests.
- Reversing of trains to reposition cars is operationally permitted, with dispatcher approval, and not discouraged.
- Operational agreements with freight railroads do not prohibit double-stopping of passenger trains.
- Train personnel will communicate by radio in the event that a passenger who needs the mini-high platform and is riding in a car other than the cab-car will not miss his/her stop.

***UPRR Operational Track Rights*** – As shown in the Altamont Pass Trackage Rights Agreement, the UPRR freight rights and SJRRC passenger rights are identical for any main track. Per the agreement, UPRR must be able to maintain their operations which would include oversized freight loads. An 8" platform is therefore required to meet the terms of the agreement.

***BNSF Operational Track Rights*** – A future BNSF Shared Use Agreement will show the Railroad's freight rights are identical for any main track. Per the common passenger shared use agreement, BNSF must be able to maintain their operations which would include oversized freight loads. An 8" platform will therefore be required to meet the terms of the agreement.

# Appendix A

## ACE Timetable



# ACE

## INFORMATION

### INFORMACIÓN

SCHEDULE / HORARIO					
Westbound / AM Trains Trenes en Dirección Oeste	Station / Estaciones	ACE 01	ACE 03	ACE 05	ACE 07
	Mon-Fri / Lunes a Viernes				
	STOCKTON	4:10 AM	5:35 AM	6:40 AM	7:32 AM
	LATHROP	4:29 AM	5:54 AM	6:59 AM	7:51 AM
	TRACY	4:41 AM	6:06 AM	7:11 AM	8:03 AM
	VASCO	5:10 AM	6:35 AM	7:40 AM	8:32 AM
	LIVERMORE	5:15 AM	6:40 AM	7:45 AM	8:37 AM
	PLEASANTON	5:23 AM	6:48 AM	7:53 AM	8:45 AM
	FREMONT	5:45 AM	7:10 AM	8:15 AM	9:07 AM
	GREAT AMERICA	6:03 AM <sup>L</sup>	7:28 AM <sup>L</sup>	8:33 AM <sup>L</sup>	9:25 AM
Eastbound / PM Trains Trenes en Dirección Este	Station / Estaciones	ACE 04	ACE 06	ACE 08	ACE 10
	Mon-Fri / Lunes a Viernes				
	SAN JOSE	3:35 PM	4:35 PM	5:35 PM	6:38 PM
	SANTA CLARA	3:40 PM	4:40 PM	5:40 PM	6:43 PM
	GREAT AMERICA	3:49 PM	4:49 PM	5:49 PM	6:52 PM
	FREMONT	4:05 PM	5:05 PM	6:05 PM	7:08 PM
	PLEASANTON	4:28 PM	5:28 PM	6:28 PM	7:31 PM
	LIVERMORE	4:37 PM	5:37 PM	6:37 PM	7:40 PM
	VASCO	4:42 PM	5:42 PM	6:42 PM	7:45 PM
	TRACY	5:11 PM <sup>L</sup>	6:11 PM <sup>L</sup>	7:11 PM <sup>L</sup>	8:14 PM <sup>L</sup>
	LATHROP	5:23 PM <sup>L</sup>	6:23 PM <sup>L</sup>	7:23 PM <sup>L</sup>	8:26 PM <sup>L</sup>
	STOCKTON	5:47 PM	6:47 PM	7:47 PM	8:50 PM
L - Trains may leave early after all riders have boarded / Los trenes pueden salir temprano después de que todos los pasajeros hayan bajado.					



# Appendix B

## AMTRAK San Joaquins Timetable



## NORTHBOUND 7 DAYS A WEEK

LOS ANGELES TO SAN FRANCISCO

TRAIN #	711	713*	715	717	719	721**
CONNECTING TRAIN ON BUS AT LOS ANGELES	5412	5412	741/5415	541/7415/7417	541/7415/7419	671/1571/5412
<b>LOS ANGELES, CA</b> BUS TO BAKERSFIELD	1:00 AM	3:00 AM	9:00 AM	10:10 AM	12:10 PM	2:10 PM
<b>BAKERSFIELD, CA</b> Depart	4:12 AM	6:12 AM	12:12 PM	2:12 PM	4:12 PM	6:12 PM
MARCO, CA	4:39 AM	6:39 AM	12:39 PM	2:39 PM	4:39 PM	6:39 PM
CORCORAN, CA	5:14 AM	7:14 AM	1:14 PM	3:14 PM	5:14 PM	7:14 PM
HARTFORD, CA (Transit/National Park)	5:36 AM	7:36 AM	1:36 PM	3:36 PM	5:36 PM	7:36 PM
FRESNO, CA (Transit/National Park)	6:12 AM	8:12 AM	2:12 PM	4:12 PM	6:12 PM	8:12 PM
MADERA, CA	6:39 AM	8:39 AM	2:42 PM	4:42 PM	6:42 PM	8:42 PM
MERCED, CA (Transit/National Park)	7:24 AM	9:24 AM	3:24 PM	5:24 PM	7:24 PM	9:24 PM
TURLOCK-DENAIR, CA	7:45 AM	9:45 AM	3:45 PM	5:45 PM	7:45 PM	9:45 PM
MCKINLEY, CA	8:03 AM	10:03 PM	4:03 PM	6:03 PM	8:03 PM	9:57 PM
<b>STOCKTON, CA</b> San Joaquin Street Station	8:40 AM	10:40 PM	4:40 PM	6:40 PM	8:40 PM	
Central Station						10:25 PM
LODI, CA						10:44 PM
<b>SACRAMENTO, CA</b> San Joaquin Station	9:00 AM	2:05 PM	6:05 PM	8:05 PM	10:20 PM	11:35 PM
MARYKCH, CA (PITTSBURG)	9:00 AM	3:00 PM	6:05 PM	7:00 PM	9:00 PM	
MARTINEZ, CA	9:15 AM	3:15 PM	6:12 PM	7:12 PM	9:11 PM	
RICHMOND, CA (BART STATION)	9:35 AM	3:35 PM	6:34 PM	7:34 PM	9:17 PM***	
EMERYVILLE, CA (BUS FROM SAN FRANCISCO)	10:10 AM	2:15 PM	6:15 PM	8:14 PM	10:18 PM	
<b>OAKLAND, CA</b>	10:20 AM	2:20 PM	6:20 PM	8:21 PM	10:30 PM	
<b>SAN FRANCISCO, CA</b> Arrive	10:45 AM	2:50 PM	6:55 PM	8:50 PM	10:45 PM	

## SOUTHBOUND 7 DAYS A WEEK

SAN FRANCISCO TO LOS ANGELES

TRAIN #	702**	710	712	714	716	718*
<b>SAN FRANCISCO, CA</b>		1:05 AM	9:00 AM	11:00 AM	12:10 PM	4:40 PM
<b>OAKLAND, CA</b> Depart		1:36 AM	9:36 AM	11:36 AM	1:36 PM	5:10 PM
EMERYVILLE, CA (BUS FROM SAN FRANCISCO)		1:46 AM	9:46 AM	11:46 AM	1:46 PM	5:46 PM
RICHMOND, CA (BART STATION)		1:54 AM	9:54 AM	11:55 AM	1:55 PM	5:54 PM
MARTINEZ, CA		8:25 AM	10:25 AM	12:25 PM	2:25 PM	6:25 PM
MARYKCH, CA (PITTSBURG)		9:10 AM	10:56 AM	12:50 PM	2:50 PM	6:50 PM
<b>SACRAMENTO, CA</b>	6:29 AM	7:15 AM	9:50 AM	12:05 PM	1:50 PM	6:05 PM
LODI, CA	7:04 AM					
<b>STOCKTON, CA</b> Central Station	7:23 AM					
San Joaquin Street Station		8:25 AM	11:25 AM	1:25 PM	3:25 PM	7:25 PM
MCKINLEY, CA	7:54 AM	9:54 AM	11:54 AM	1:54 PM	3:54 PM	7:54 PM
TURLOCK-DENAIR, CA	8:12 AM	10:12 AM	12:12 PM	2:12 PM	4:09 PM	8:09 PM
MERCED, CA (Transit/National Park)	8:41 AM	10:41 AM	12:41 PM	2:41 PM	4:41 PM	8:41 PM
MADERA, CA	9:19 AM	11:19 AM	1:19 PM	3:19 PM	5:19 PM	9:19 PM
FRESNO, CA (Transit/National Park)	9:49 AM	11:49 AM	1:49 PM	3:49 PM	5:49 PM	9:49 PM
HARTFORD, CA (Transit/National Park)	10:24 AM	12:24 PM	2:24 PM	4:24 PM	6:24 PM	10:24 PM
CORCORAN, CA	10:41 AM	12:41 PM	2:41 PM	4:41 PM	6:41 PM	10:41 PM
MARCO, CA	11:29 AM	1:17 PM	3:17 PM	5:17 PM	7:17 PM	11:17 PM
<b>BAKERSFIELD, CA</b> BUS TO LOS ANGELES	11:57 AM	1:57 PM	3:57 PM	5:57 PM	7:57 PM	11:57 PM
<b>LOS ANGELES, CA</b> Arrive	2:05 PM	4:05 PM	6:05 PM	8:05 PM	10:05 PM	2:15 AM
CONNECTING TRAIN ON BUS AT LOS ANGELES	541/1104	104/1104	541/712	714	1016	1018

\*No Cafe Service. Free Snack Boxes and Water Available

\*\*Train Service to/from Stockton

\*\*\* Except Sunday



# Appendix C

## AMTRAK Capital Corridor Timetable



**EFFECTIVE APRIL 3, 2023**

## CAPITOL CORRIDOR® Daily Train Schedule

**WEEKDAY WESTBOUND EFFECTIVE APRIL 3, 2023**

**Auburn-Sacramento-Emeryville/SF-Oakland-San Jose**

LINE	STATION	Train	521	523	525	527	529	531	541	543	545	547	549	551	LINE
COL	Colfax	Depart							9:45a						COL
ARB	Auburn	Depart						10:15a							ARB
RLN	Rocklin	Depart						10:30a							RLN
RVS	Roseville	Depart		8:15a	8:15a			10:45a					4:27p		RVS
SAC	Sacramento	Arrive		8:15a	8:15a			11:15a					5:15p		SAC
DAY	Day	Depart	4:18a	5:18a	6:18a	6:48a	7:18a	8:55a	11:05a	1:50p	3:55p	5:03p	6:53p	7:53p	DAY
FFV	Fairfield/Vacaville	Depart	4:25a	5:25a	6:25a	6:55a	7:45a	9:15a	12:10p	2:10p	4:10p	5:18p	6:58p	8:10p	FFV
SJ	San Jose/Santa Clara	Depart	4:45a	5:45a	6:45a	7:15a	8:05a	9:35a	12:30p	2:30p	4:30p	5:38p	6:58p	8:10p	SJ
MTZ	Marina	Depart	4:51a	5:51a	6:51a	7:21a	8:11a	9:41a	12:36p	2:36p	4:36p	5:44p	6:54p	8:06p	MTZ
RIC	Richmond BART	Depart	5:08a	6:08a	7:08a	7:38a	8:28a	9:58a	12:53p	2:53p	4:53p	6:01p	7:11p	8:23p	RIC
BKLY	Berkeley	Depart	5:44a	6:44a	7:44a	8:14a	9:04a	10:29a	1:29p	3:29p	5:29p	6:37p	7:47p	8:59p	BKLY
EMV	Emeryville	Arrive	5:44a	6:44a	7:44a	8:14a	9:04a	10:29a	1:29p	3:29p	5:29p	6:37p	7:47p	8:59p	EMV
OKL	Oakland Jack London	Arrive	5:44a	6:44a	7:44a	8:14a	9:04a	10:29a	1:29p	3:29p	5:29p	6:37p	7:47p	8:59p	OKL
OKL	Oakland Coliseum BART	Depart	6:01a	7:01a		8:48a	9:42a		1:55p			7:03p			OKL
HWY	Hayward	Depart	6:21a	7:21a		9:08a	10:02a		2:05p			7:13p			HWY
FRM	Fremont/Castroville	Depart	6:37a	7:37a		9:24a	10:18a		2:21p			7:29p			FRM
SCL	Santa Clara/University	Depart	6:54a	7:54a		9:41a	10:35a		2:38p			7:46p			SCL
SJC	Santa Clara/University	Depart	6:54a	7:54a		9:41a	10:35a		2:38p			7:46p			SJC
SJ	San Jose	Arrive	7:51a	8:51a		10:38a	11:32a		3:05p			8:13p			SJ

**Emeryville to San Francisco Bus Connection**

LINE	STATION	Train	521	523	525	527	529	531	541	543	545	547	549	551
EMV	Emeryville - Antak	Arrive	5:44a	6:44a	7:44a	8:14a	9:04a	10:29a	1:29p	3:29p	5:29p	6:37p	7:47p	8:59p
EMV	Emeryville - Antak	Depart	5:50a	6:50a	7:50a	8:20a	9:10a	10:35a	1:35p	3:40p	5:40p	6:48p	7:58p	9:10p
SF	San Francisco Plaza	Depart	6:20a	7:20a	8:20a	9:00a	9:50a	11:05a	2:05p	4:10p	6:10p	7:13p	8:10p	10:00p

**EFFECTIVE APRIL 3, 2023**

## CAPITOL CORRIDOR® Daily Train Schedule

**WEEKDAY EASTBOUND EFFECTIVE APRIL 3, 2023**

**San Francisco - Emeryville Bus Connection**

LINE	STATION	Train	521	523	525	527	529	531	541	543	545	547	549	551
SF	San Francisco Plaza	Depart	6:15a	7:15a	8:15a	9:05a	9:55a	11:10a	2:10p	4:15p	6:15p	7:18p	8:15p	10:05p
EMV	Emeryville - Antak	Arrive	7:25a	8:25a	9:25a	10:15a	11:05a	12:30a	3:30p	5:35p	7:35p	8:43p	9:55p	

**San Jose-Oakland-Emeryville/SF-Sacramento-Auburn**

LINE	STATION	Train	522	524	528	532	534	536	538	540	542	544	546	548
SJ	San Jose	Depart	6:18a	6:48a	7:18a				9:05p		4:05p		6:05p	
SCL	Santa Clara/University	Depart	6:24a	6:54a	7:24a				9:11p		4:11p		6:11p	
GAC	Santa Clara/Great America	Depart	6:31a	7:01a	7:31a				9:18p		4:18p		6:18p	
FRM	Fremont/Castroville	Depart	6:47a	7:17a	7:47a				9:34p		4:34p		6:34p	
HWY	Hayward	Depart	7:03a	7:33a	8:03a				9:50p		4:50p		6:50p	
OKL	Oakland Coliseum BART	Depart	7:13a	7:43a	8:13a				10:00p		5:00p		7:00p	
OKL	Oakland Jack London	Arrive	7:13a	7:43a	8:13a				10:00p		5:00p		7:00p	
EMV	Emeryville	Depart	8:42a	9:12a	9:42a	12:17p	2:17p	3:17p	4:12p	6:42p	8:12p	9:12p	10:12p	11:12p
EMV	Emeryville	Arrive	5:50a	7:04a	10:05a	12:25p	2:25p	3:25p	4:20p	6:50p	8:20p	9:20p	10:20p	11:20p
BKLY	Berkeley	Depart	5:54a	7:08a	10:09a	12:29p	2:29p	3:29p	4:24p	6:54p	8:24p	9:24p	10:24p	11:24p
RIC	Richmond BART	Depart	5:54a	7:08a	10:09a	12:29p	2:29p	3:29p	4:24p	6:54p	8:24p	9:24p	10:24p	11:24p
MTZ	Marina	Depart	6:02a	7:16a	10:17a	12:37p	2:37p	3:37p	4:32p	7:02p	8:32p	9:32p	10:32p	11:32p
SJ	San Jose/Santa Clara	Depart	6:28a	7:32a	10:33a	12:53p	2:53p	3:53p	4:48p	7:18p	8:48p	9:48p	10:48p	11:48p
FFV	Fairfield/Vacaville	Depart	6:47a	7:51a	10:52a	1:31p	3:31p	4:31p	5:26p	7:56p	9:26p	10:26p	11:26p	12:26p
DAY	Day	Depart	6:53a	7:57a	11:00a	1:39p	3:39p	4:39p	5:34p	8:04p	9:34p	10:34p	11:34p	12:34p
SAC	Sacramento	Arrive	7:48a	8:52a	11:55a	2:19p	4:19p	5:19p	6:14p	8:44p	10:14p	11:14p	12:14p	
RVS	Roseville	Depart	8:10a			2:41p			5:41p			8:41p		
RLN	Rocklin	Depart	8:10a			2:41p			5:41p			8:41p		
ARB	Auburn	Depart	8:10a			2:41p			5:41p			8:41p		
COL	Colfax	Arrive	8:10a			2:41p			5:41p			8:41p		



**EFFECTIVE APRIL 3, 2023**

## CAPITOL CORRIDOR® Daily Train Schedule

**WEEKEND WESTBOUND EFFECTIVE APRIL 3, 2023**



**Auburn-Sacramento-Emeryville/SF-Oakland-San Jose**

LINE	STATION	Train	723	727	729	733	737	741	743	745	747	749	751	CODE
CDK	Colfax	Depart					8:45a				No Stop			CDK
AKN	Auburn	Depart			7:55a		9:15a				8:10p			AKN
RLN	Rocklin	Depart			8:18a		9:38a				8:32p			RLN
RTV	Roseville	Depart			8:27a		9:47a				8:40p			RTV
		Arrive			8:54a		10:13a				9:10p			
SAC	Sacramento	Arrive			8:54a		10:13a				9:10p			SAC
DAV	Davis	Depart	8:01a	8:05a	8:55a	9:03a	10:03a	12:03p	2:03p	4:03p	6:33p	7:01p	8:52p	DAV
FFV	Fairfield/Vacaville	Depart	8:10a	7:10a	8:18a	10:18a	11:18a	1:18p	3:18p	5:18p	7:18p	8:10p	9:10p	FFV
SJS	Salinas/Fairfield	Depart	8:30a	7:30a	8:38a	10:38a	11:38a	1:38p	3:38p	5:38p	7:38p	8:30p	9:30p	SJS
MTZ	Marina	Depart	8:54a	7:54a	9:02a	10:52a	11:52a	1:52p	3:52p	5:52p	7:52p	8:54p	9:54p	MTZ
RIC	Richmond BART	Depart	8:54a	7:54a	9:02a	10:52a	11:52a	1:52p	3:52p	5:52p	7:52p	8:54p	9:54p	RIC
BER	Berkeley	Depart	9:21a	8:21a	10:21a	11:21a	12:21p	2:21p	4:21p	6:21p	8:21p	9:21p	10:21p	BER
		Arrive	9:21a	8:21a	10:21a	11:21a	12:21p	2:21p	4:21p	6:21p	8:21p	9:21p	10:21p	
EMV	Emeryville	Arrive	9:21a	8:21a	10:21a	11:21a	12:21p	2:21p	4:21p	6:21p	8:21p	9:21p	10:21p	EMV
		Depart	9:21a	8:21a	10:21a	11:21a	12:21p	2:21p	4:21p	6:21p	8:21p	9:21p	10:21p	
OKJ	Oakland Jack London	Arrive	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	OKJ
		Depart	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	
OAK	Oakland Coliseum BART	Depart	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	OAK
WFO	Wayland	Depart	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	WFO
FMT	Fremont/Contra Costa	Depart	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	FMT
GAC	San Jose/University	Depart	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	GAC
SJC	San Jose/University	Depart	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	SJC
UC	San Jose	Arrive	9:40a	8:40a	10:40a	11:40a	12:40p	2:40p	4:40p	6:40p	8:40p	9:40p	10:40p	UC

**Emeryville to San Francisco Bus Connection**

CONNECTING TRAIN	723	727	729	733	737	741	743	745	747	749	751
EMV Emeryville - BART	Arrive	7:33a	8:33a	10:33a	11:33a	12:33p	2:33p	4:33p	6:33p	8:33p	10:33p
SFC SF Salesforce Plaza	Depart	7:33a	8:33a	10:33a	11:33a	12:33p	2:33p	4:33p	6:33p	8:33p	10:33p
SFC SF Salesforce Plaza	Depart	8:03a	9:03a	11:03a	12:03p	1:03p	3:03p	5:03p	7:03p	9:03p	11:03p

**EFFECTIVE APRIL 3, 2023**

## CAPITOL CORRIDOR® Daily Train Schedule

**WEEKEND EASTBOUND EFFECTIVE APRIL 3, 2023**



**San Francisco - Emeryville Bus Connection**

CONNECTING TRAIN	720	724	728	732	734	736	738	742	744	746	748
EMV Emeryville - BART	Depart	7:21a	8:21a	11:21a	12:21p	2:21p	4:21p	6:21p	8:21p	10:21p	12:21p

**San Jose-Oakland-Emeryville/SF-Sacramento-Auburn**

LINE	STATION	Train	720	724	728	732	734	736	738	742	744	746	748	CODE
UC	San Jose	Depart	8:05a	8:05a	10:05a	1:05p	3:05p	5:05p	7:05p	9:05p				UC
SJC	San Jose/University	Depart	8:11a	8:11a	10:11a	1:11p	3:11p	5:11p	7:11p	9:11p				SJC
GAC	San Jose/University	Depart	8:11a	8:11a	10:11a	1:11p	3:11p	5:11p	7:11p	9:11p				GAC
FMT	Fremont/Contra Costa	Depart	8:24a	8:24a	10:24a	1:24p	3:24p	5:24p	7:24p	9:24p				FMT
WFO	Wayland	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				WFO
OAK	Oakland Coliseum BART	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				OAK
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
OKJ	Oakland Jack London	Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				OKJ
		Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
EMV	Emeryville	Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				EMV
		Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
BER	Berkeley	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				BER
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
RIC	Richmond BART	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				RIC
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
MTZ	Marina	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				MTZ
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
SJS	Salinas/Fairfield	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				SJS
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
FFV	Fairfield/Vacaville	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				FFV
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
DAV	Davis	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				DAV
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
SAC	Sacramento	Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				SAC
		Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
RTV	Roseville	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				RTV
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
RLN	Rocklin	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				RLN
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
AKN	Auburn	Depart	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				AKN
		Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				
CDK	Colfax	Arrive	8:40a	8:40a	10:40a	1:40p	3:40p	5:40p	7:40p	9:40p				CDK



# Appendix D

Excerpts – Altamont Pass Trackage Rights Agreement

August 11, 1997



A-97-07

ALTAMONT PASS TRACKAGE RIGHTS AGREEMENT

This TRACKAGE RIGHTS AGREEMENT (this "Agreement") is entered into the 11th day of August (see note), 1997, by and between Union Pacific Railroad Company ("UP"), a Utah corporation, and San Joaquin Regional Rail Commission ("SJRRRC") with reference to the following facts:

RECITALS

A. UP owns the railroad right-of-way ("Right-of-Way") and Tracks (as hereinafter defined) from Stockton, California, to San Jose, California, more particularly described in Exhibit A attached hereto.

B. SJRRRC is a joint-powers agency created under California law by the cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton and Tracy, and the County of San Joaquin.

C. In order to reduce the burden on public highways and impacts on the environment, SJRRRC desires to make a contribution of capital in the amount described in Section 2(c) of this Agreement for improvements made to UP property in order, among other things, to accommodate commuter rail service.

D. In addition, SJRRRC desires to acquire from UP, and UP desires to grant to SJRRRC, trackage rights (subject to termination as set forth below) on UP's Tracks running along such Right-of-Way, based on the consideration set forth in Section 6 and also upon the terms and conditions contained in this Agreement.

341679.8

\*Effective date of Agreement is August 21, 1997 - date of execution by Union Pacific Railroad Company. Per agreement with Union Pacific, 04/01/98.



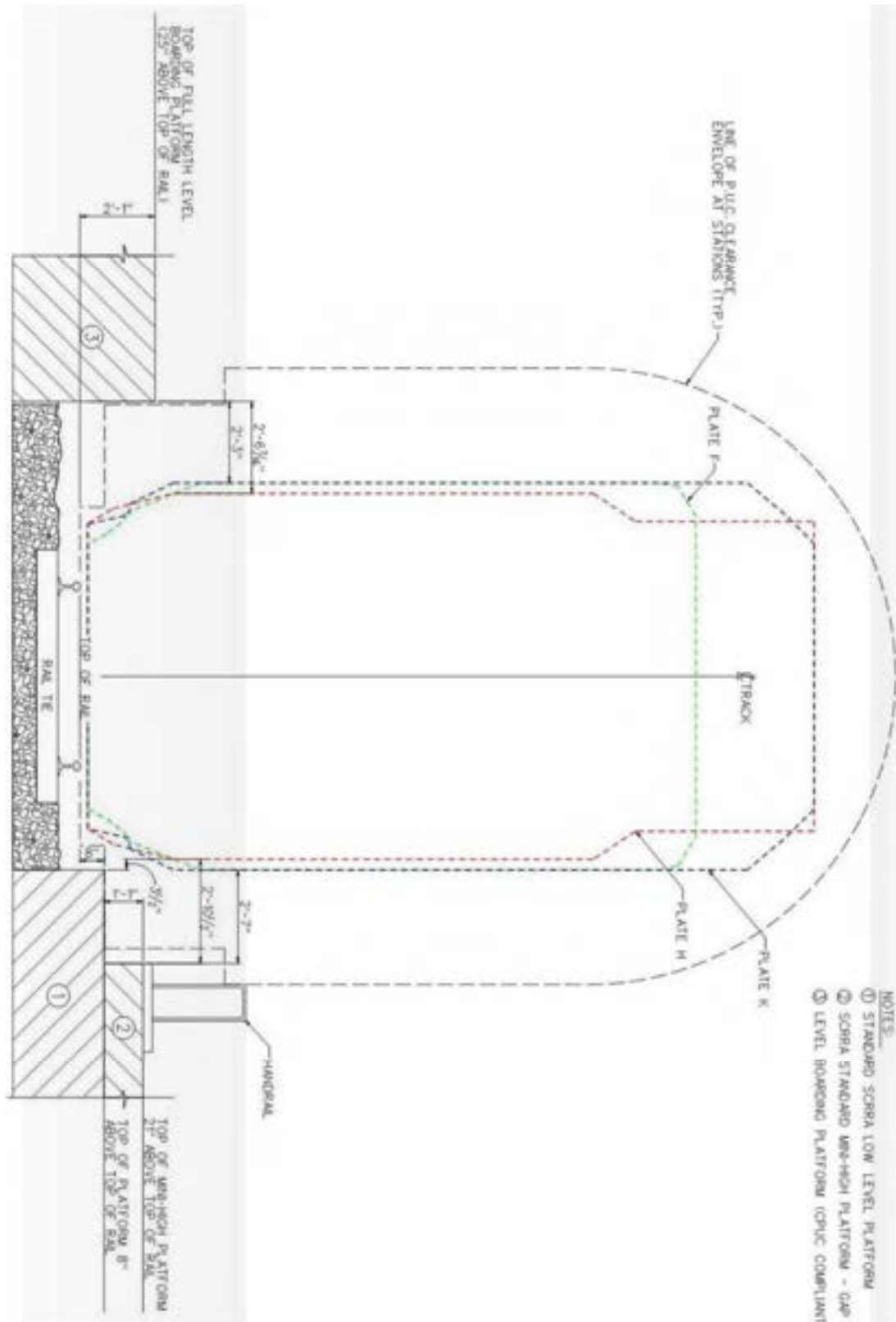
4(c) Stations; Platforms; Ticketing Facilities; Parking. SJRRC shall be responsible for providing, operating and maintaining station, platform and ticketing facilities and parking to serve SJRRC's passengers and any and all security for such station, platform and ticketing facilities and parking. No passenger stations or ticketing facilities or parking therefor shall be located on the Operating Land without the prior mutual agreement of UP and SJRRC. Any station or platforms for passenger loading and unloading shall be at such locations as proposed by SJRRC and approved by UP and shall be subject to a lease agreement by UP as lessor and SJRRC as tenant, substantially in the form of Exhibit C attached hereto. Notwithstanding the foregoing, SJRRC shall be entitled to stations or platforms at eight (8) locations and one (1) additional location at Livermore-Vasco Road (for the initial two year startup period, which station may remain and be used by SJRRC thereafter if required improvements thereat as described in Section 21(a) are built) along the Tracks or such larger number of platforms as UP may approve. Subject to the nine (9) station limitation, SJRRC may, at its discretion and without prior approval by UP, select one or more of the following existing platforms or stations as a station or platform location to which it is entitled under the previous sentence: Centerville (Fremont), Great America (Santa Clara) and Diridon Station (San Jose). Any such stations, platforms and ticketing facilities and parking and any other construction performed under this Agreement shall comply with all standards of the CPUC and of the city and county with jurisdiction. UP shall require that any



# Appendix E

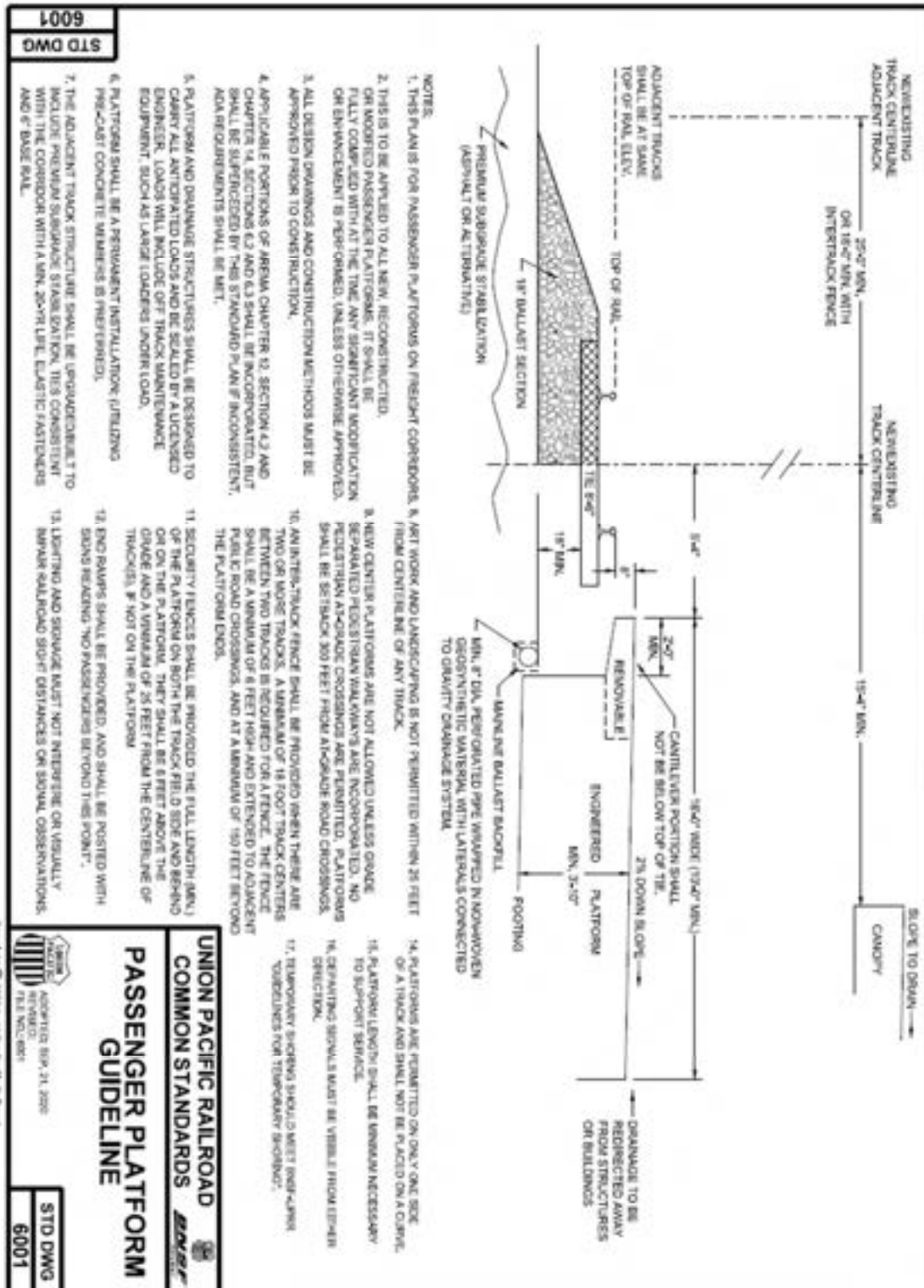
## Clearance Standards





## Freight Railcar Clearance Requirements – AAR Plates F, H and K





Freight Railcar Clearance Requirements – UPRR Platform Clearances

## Freight Railcar Clearance Requirements – BNSF Standard Minimum Operating Clearances



# Appendix F

## Car-Borne Based Level Boarding Cost Analysis



Northern California Passenger Fleets					
	Current Fleet	Future Fleet	Length	Floor Height	Width from Centerline of track
<b>ACE - Bombardier BiLevel</b>					
Coaches	30		85'	25"	58"
<b>SJRRR/CCJPA California Cars</b>					
Coach	78		85'	51"	62"
Baggage	6		85'	51"	62"
Cab	13		85'	51"	62"
Café	14		85'	51"	62"
<b>SJRRR/CCJPA Single level Cars</b>					
Horizon/Comet	14			51"	60"
<b>SJRRR/CCJPA Venture Cars</b>					
Venture		49	85'	48"	66"
Total	155				

Notes:

*Capital Corridor and San Joaquins fleets are maintained and operated as a single pool of equipment*  
*Northern California (Amtrak) fleet is jointly used by the Capital Corridor and San Joaquins*

Bill Farquhar, RailPros, 5/11/2023

## Number and Types of Equipment on the Valley Rail Program



Car-Borne Based Solutions (Methods 1 and 3)										
Equipment Type	Boarding Method 1					Boarding Method 3				
	Maintenance	Operating	Capital	25 year	50 year	Total	Maintenance	Operating	Capital	Total
ACE (Jalisco Bi-level)	N/A	N/A	\$ 9,450.00	There are minimal operating and maintenance costs associated with deploying manual bridge plates	\$ 8,400.00	\$ 97,180.00	N/A	\$ 280,859.60	\$ 1,710,159.60	\$ 3,119,078.60
Northern California Equipment Pool Superferry/California (Bi-level)	N/A	N/A	\$ 34,965.00	There are minimal operating and maintenance costs associated with deploying manual bridge plates	\$ 34,965.00	\$ 121,984.00	N/A	\$ 280,859.60	\$ 3,350,459.60	\$ 6,460,919.20
Harvey/Centel (Borcherdt Single level)	N/A	N/A	\$ 4,410.00	There are minimal operating and maintenance costs associated with deploying manual bridge plates	\$ 4,410.00	\$ 26,664.00	N/A	\$ 3,912,034.40	\$ 4,599,134.40	\$ 9,179,368.80
Northern California Equipment Pool Venture (Picture Siemens Single level)	N/A	N/A	\$ 13,435.00	There are minimal operating and maintenance costs associated with deploying manual bridge plates	\$ 13,435.00	\$ 91,394.00	N/A	\$ 280,859.60	\$ 2,615,309.60	\$ 5,201,419.20
Comments:										
Method 1: Cost per bridge plate	\$ 500.00									
Method 3: Cost per Car-borne ramp	\$ 150,000.00					Two lifts per car, no preliminary cost estimate, updated from 2013 using US inflation calculator, Citi News Media Group Company				
Bill Fungshar, Balfour, 5/11/2023										

# Appendix G

## Platform Based Level Boarding Cost Analysis



Mini-High Platform Based Solutions (Methods 2, 4, 5, 6)											
Boarding Method 2						Boarding Method 4					
Gauglet or Bypass Track (One per platform)						Retractable Platform Edges (estimate)					
Maintenance	Operating	Capital	25 year	50 year	Total	Maintenance	Operating	Capital	25 year	50 year	Total
\$80,000	N/A	\$44,140,800.00	\$46,140,800.00	\$48,140,800.00	\$48,140,800.00	\$ 13,000.00	N/A	\$45,990,000	\$45,825,000.00	\$46,150,000.00	\$46,150,000.00
Boarding Method 5											
Mini High Platforms (One per platform edge)											
Maintenance	Operating	Capital	25 year	50 year	Total	Maintenance	Operating	Capital	25 year	50 year	Total
N/A	N/A	\$ 2,005,000.00	There are minimal operating and maintenance costs associated with Mini High Platforms			\$ 2,000.00	N/A	\$ 411,320.00	\$ 478,320.00	\$ 541,320.00	\$ 541,320.00
Boarding Method 6											
Portable Wheelchair Lifts (1 per platform)											
Maintenance	Operating	Capital	25 year	50 year	Total	Maintenance	Operating	Capital	25 year	50 year	Total
N/A	N/A	\$ 2,005,000.00	There are minimal operating and maintenance costs associated with Mini High Platforms			\$ 2,000.00	N/A	\$ 411,320.00	\$ 478,320.00	\$ 541,320.00	\$ 541,320.00

Notes: Assumptions:  
Method 2: Cost per Gauglet Track \$ 2,754,800.00 Comments:

Method 4: Retractable Platform Edges (estimate below) NCTO Preliminary Cost estimate, up-dated from 2007 using US inflation calculator, Cash News Media Group Company

Assumptions: 28' wide (2 NCTO ramps) 190' of ramp per platform  
7 ramps per platform  
Cost per foot \$ 350.00  
Total per platform \$ 68,600.00 NCTO Preliminary Cost estimate, updated from 2007 using US inflation calculator, Cash News Media Group Company

Method 6: Cost per Wheelchair Lift \$ 15,820.00 Telephone conversation with Graham Smith, Adaptive Fabrication, 3-31-2023

Bill Farquhar, RailPro, 6/27/2023

Mini-High Platform Based Solution - Boarding Method 5

Number	Name	Existing or Future Station	Existing Rail Services	Future Rail Services	Concrete		Bolt-Down		Cost Per Station
					21" Mini-High	48" Mini-High	21" Mini-High	48" Mini-High	
1	Natomas/ Sacramento Airport	Future	None	ACE & San Joaquins	1	2			\$105,000
2	Old North Sacramento	Future	None	ACE & San Joaquins	2	4			\$210,000
3	Midtown Sacramento	Future	None	ACE & San Joaquins	1	2			\$105,000
4	City College	Future	None	ACE & San Joaquins	1	2			\$105,000
5	Elk Grove	Future	None	ACE & San Joaquins	2	4			\$210,000
6	Lodi	Future	None	ACE & San Joaquins	2	4			\$210,000
7	Oakley	Future	None	San Joaquins		2			\$80,000
8	Stockton (Cabral)	Existing	ACE & San Joaquins	ACE & San Joaquins			1		\$15,000
9	Stockton (San Joaquin Street)	Existing	San Joaquins	San Joaquins				1	\$30,000
10	North Lathrop	Future	None	ACE	2				\$50,000
11	Manitoba	Future	None	ACE	2				\$50,000
12	Ripon	Future	None	ACE	2				\$50,000
13	Modesto (Briggsmore)	Existing	San Joaquins	San Joaquins				1	\$30,000
14	Modesto (New)	Future	None	ACE	2				\$50,000
15	Ceres	Future	None	ACE	2				\$50,000
16	Turlock-Denair	Existing	San Joaquins	San Joaquins				1	\$30,000
17	Turlock	Future	None	ACE	2				\$50,000
18	Livingston	Future	None	ACE	2				\$50,000
19	Merced	Existing	San Joaquins	San Joaquins				1	\$30,000
20	Merced	Future	None	ACE, HSR, San Joaquins	1	2			\$105,000
21	Madera	Existing	San Joaquins	San Joaquins				1	\$30,000
22	Madera (Relocated elsewhere)	Future	San Joaquins	San Joaquins				1	\$30,000
23	Fresno	Existing	San Joaquins	San Joaquins				1	\$30,000
24	Hanford	Existing	San Joaquins	San Joaquins				2	\$60,000
25	Corcoran	Existing	San Joaquins	San Joaquins				1	\$30,000
26	Wasco	Existing	San Joaquins	San Joaquins				1	\$30,000
27	Bakersfield	Existing	San Joaquins	San Joaquins				2	\$60,000
28	Lathrop/Manitoba	Existing	ACE	ACE			1		\$15,000
29	Tracy	Existing	ACE	ACE			1		\$15,000
30	Vasco Road	Existing	ACE	ACE			1		\$15,000
31	Livermore	Existing	ACE	ACE			1		\$15,000
32	Pleasanton	Existing	ACE	ACE			1		\$15,000
33	Fremont / Centerville	Existing	ACE & Capitol Corridor	ACE & Capitol Corridor					\$0
34	Great America	Existing	ACE & Capitol Corridor	ACE & Capitol Corridor			1		\$15,000
35	Santa Clara	Existing	ACE, Capitol Corridor and Caltrain	ACE, Capitol Corridor and Caltrain			1		\$15,000
36	San Jose Diridon	Existing	ACE, Coast Starlight, Capitol Corridor and Caltrain	ACE, Coast Starlight, Capitol Corridor and Caltrain			1		\$15,000
Per mini-high cost					\$25,000	\$40,000	\$15,000	\$30,000	
Number Required					24	22	9	13	
Total Cost by Type					\$600,000	\$880,000	\$135,000	\$390,000	
Project Cost					\$2,005,000				

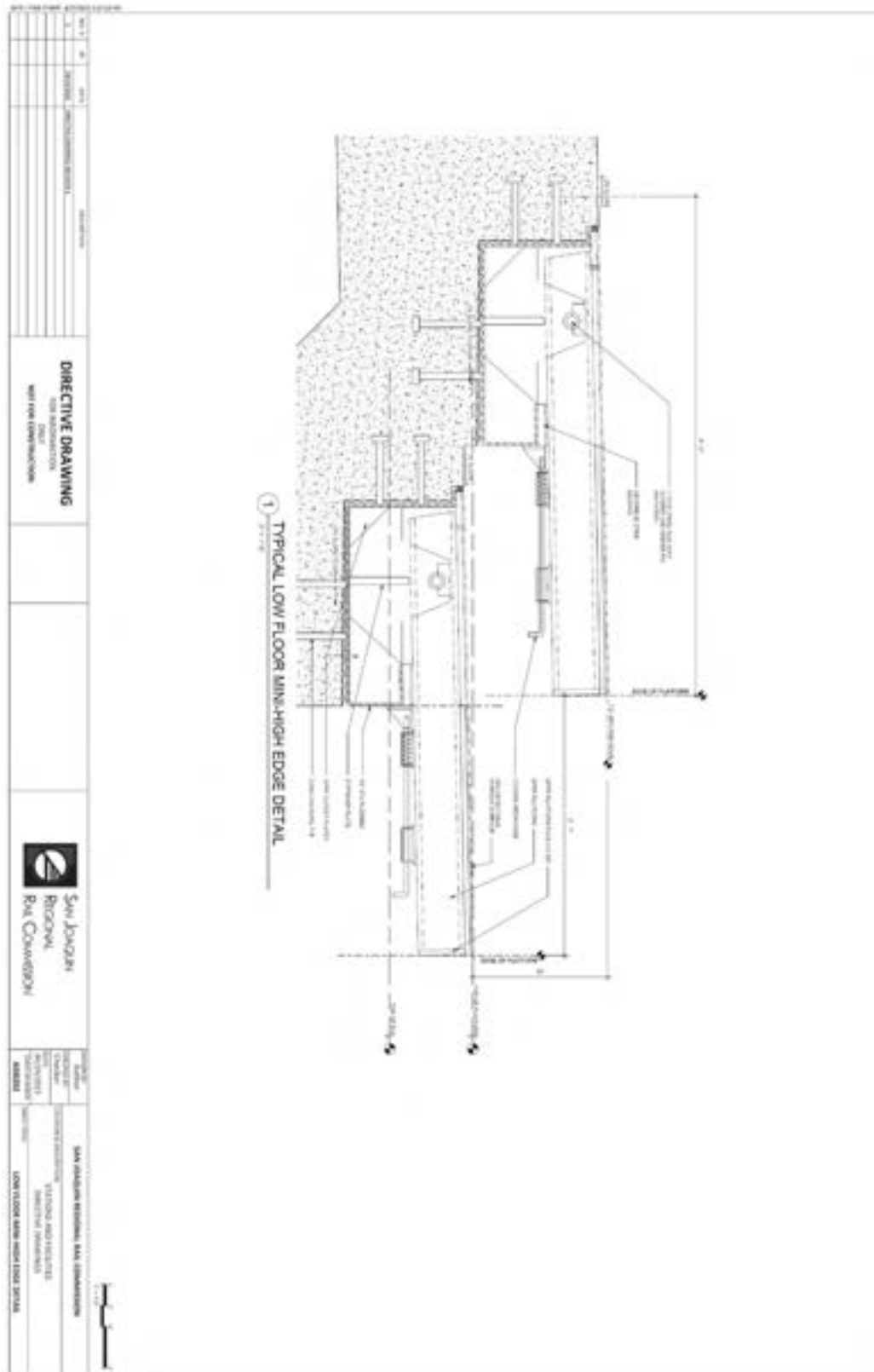


# Appendix H

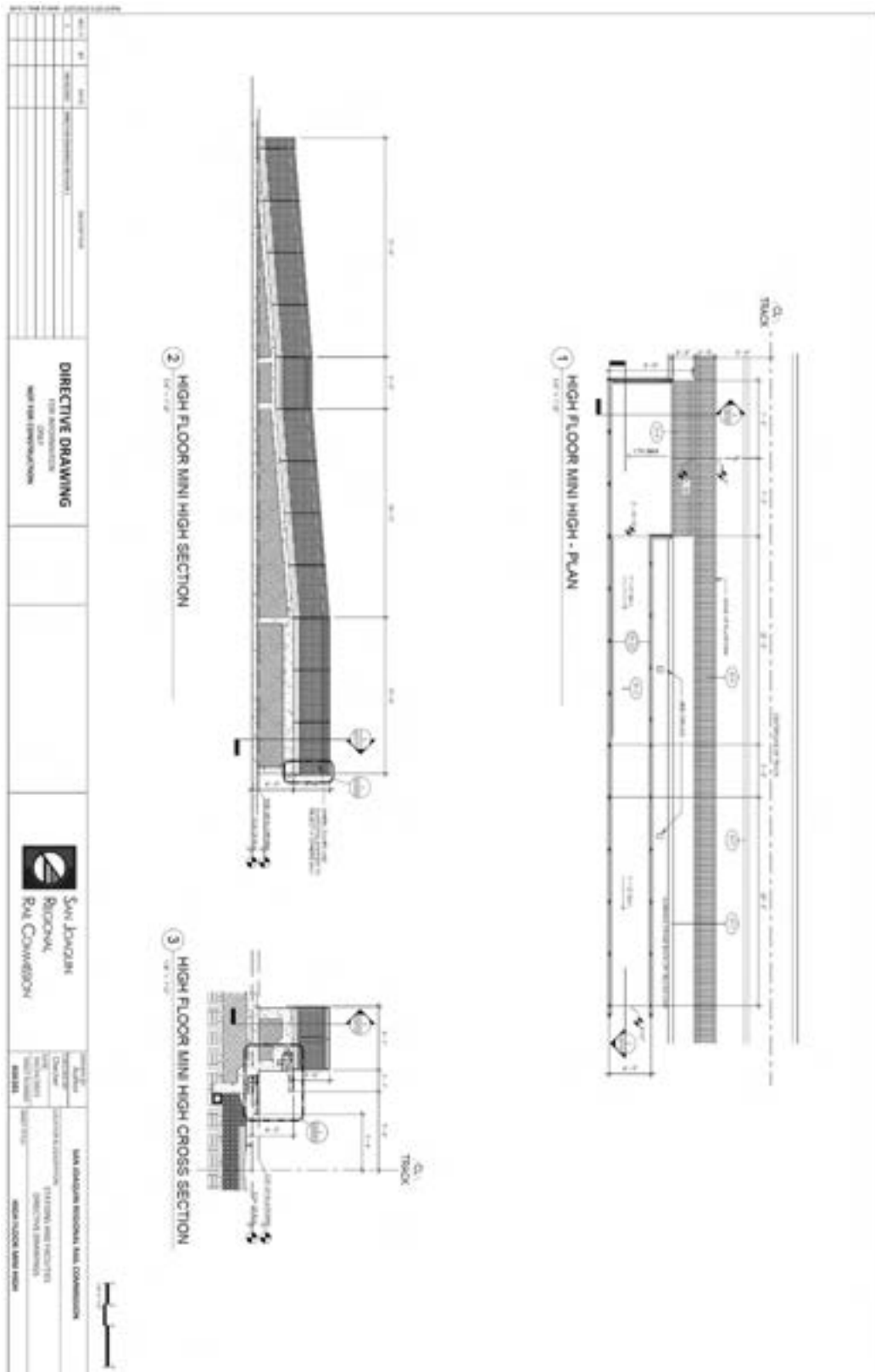
## SJRRC Mini-High Platform Standards







Typical Low Floor Mini-High Edge Detail



Typical High Floor Mini-High



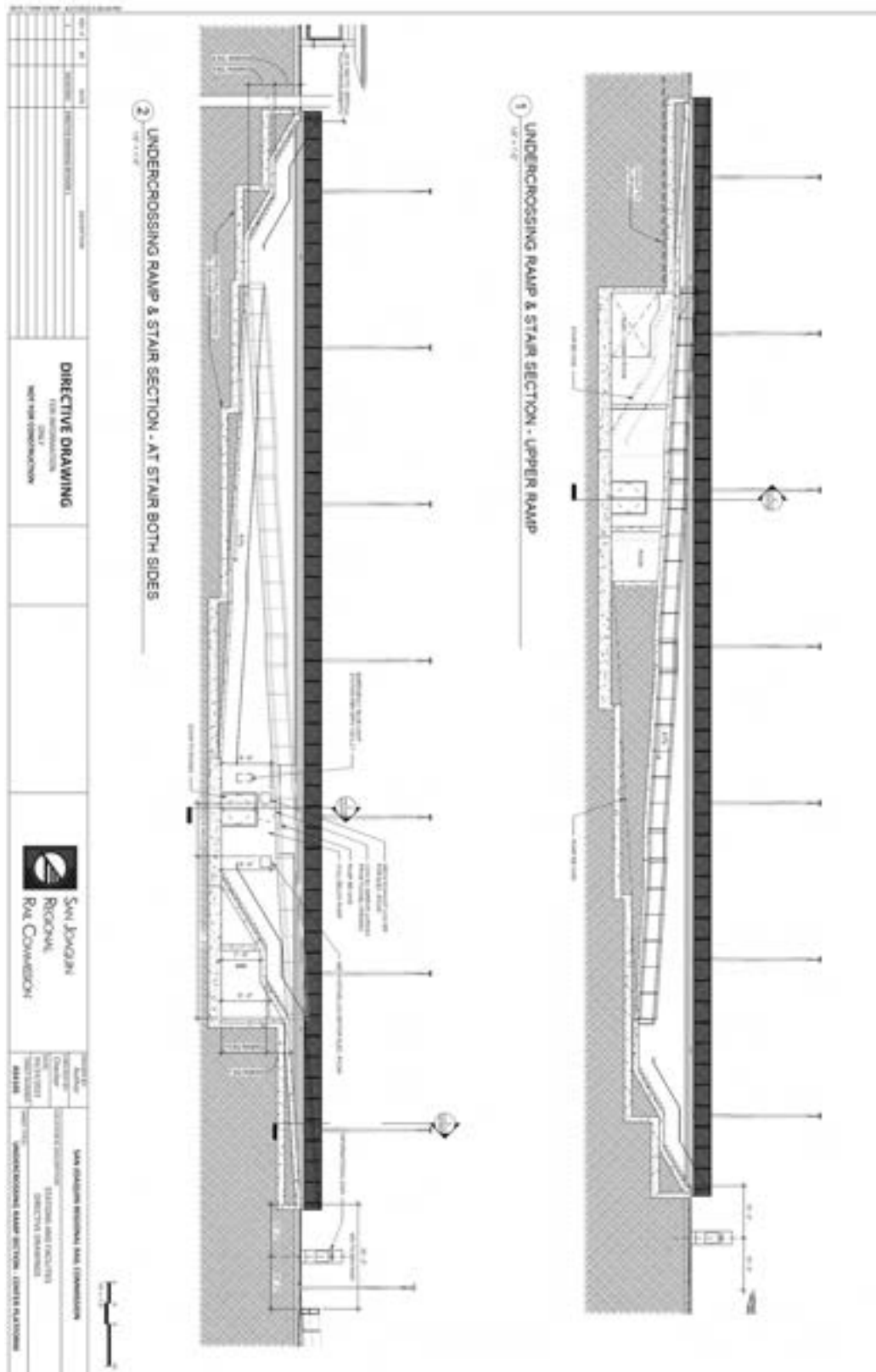
# Appendix I

## SJRRC Station Standards

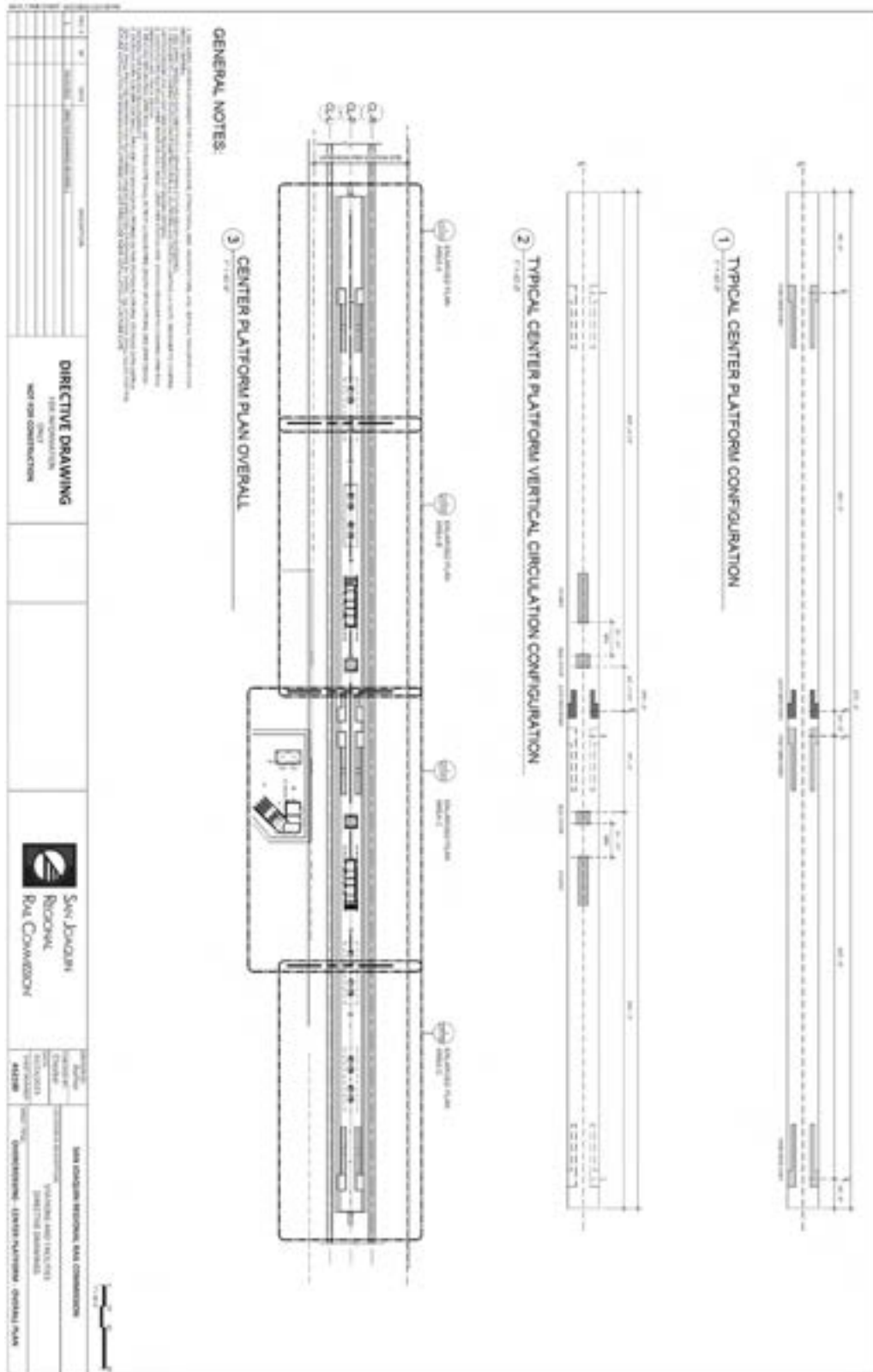




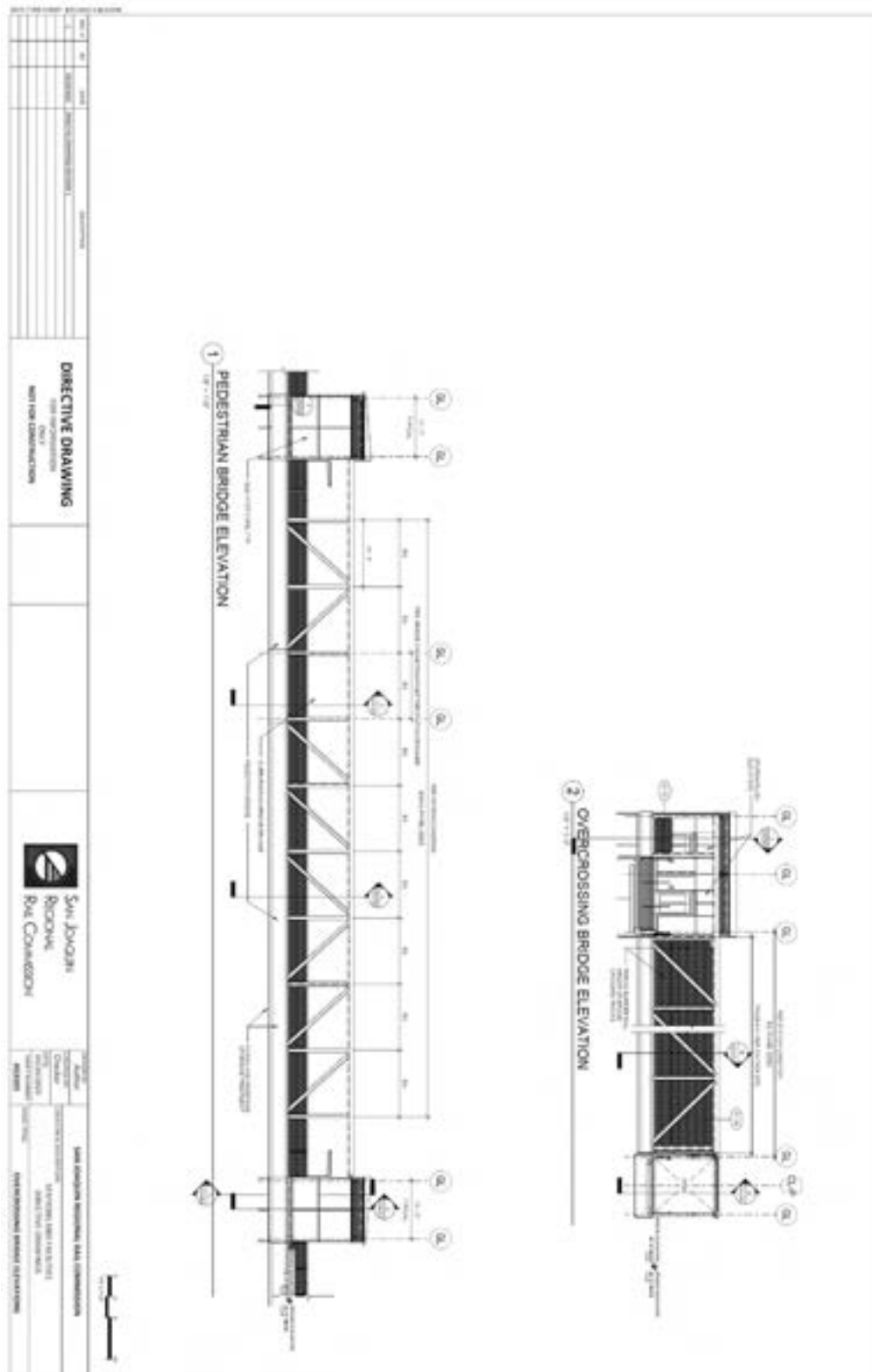




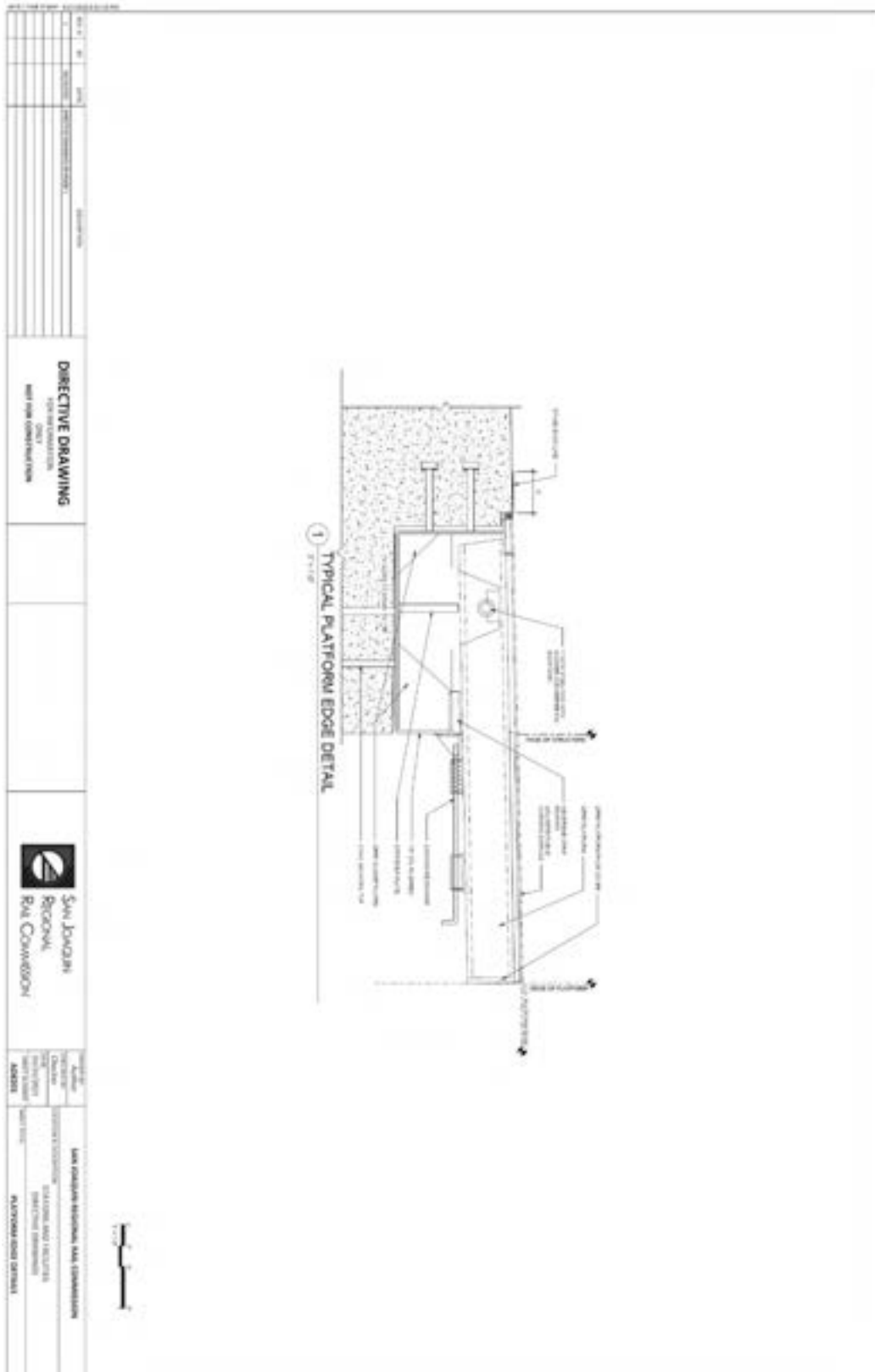
Typical Undercrossing - Ramp and Stair Section



Typical Overcrossing – Center Platform



Typical Overcrossing – Bridge Section



Typical Platform Edge Detail

# Appendix J

## Typical Bolt Down Platform Extension



