

Richmond Rail Connector Project

Located between Parr Boulevard and Richmond Parkway
City of Richmond, California
Project No. 0000020789

Environmental Assessment With Finding of No Significant Impact



January 2013



General Information About This Document

What's in this document?

This document contains a Finding of No Significant Impact and an Environmental Assessment (EA), which examines the environmental effects of the proposed rail project in Contra Costa County.

The Environmental Assessment was circulated to the public from September 14, 2012 to October 16, 2012. Comment letters were received on the draft document and are shown in the Comments and Responses section of this document, which has been added since the draft document circulation. Elsewhere throughout this document, a line in the margin indicates a change made since the draft document circulation.

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to California Department of Transportation, District 4, Office of Environmental Analysis, Attn: Ms. Valerie Shearer at P.O. Box 23660, Oakland, CA 94623-0660 or by phone at 510-286-5594.

Project No. 0000020789
EA # 75-63304

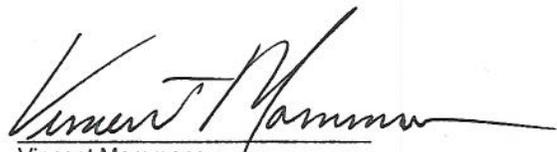
Install a new connector track between the BNSF Railway track and the UPRR tracks in the northern portion of the City of Richmond to facilitate movement of trains between the two tracks and to avoid train movements through downtown Richmond

**RICHMOND RAIL CONNECTOR PROJECT
ENVIRONMENTAL ASSESSMENT**

Submitted Pursuant to: (Federal) 42 U.S. Code 4332(2)(C)

By the
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION
In coordination with
THE STATE OF CALIFORNIA
Department of Transportation

1/30/13
Date of Approval

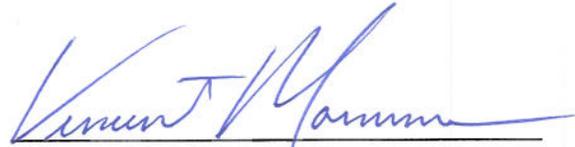


Vincent Mammano
Division Administrator
Federal Highway Administration

**Federal Highway Administration
Finding of No Significant Impact
For
Richmond Rail Connector Project
City of Richmond, California**

The Federal Highway Administration (FHWA) has determined that this project will not have any significant impact on the human environment. This Finding of No Significant Impact is based on the attached Environmental Assessment, which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the Environmental Assessment.

1/30/13
Date



Vincent Mammano
Division Administrator
Federal Highway Administration

Table of Contents

Abbreviations and Acronyms	viii
CHAPTER 1 – Proposed Project	1
1.1 Introduction	1
1.2 Purpose and Need.....	2
1.2.1 Purpose of Project.....	2
1.2.2 Need for Project	2
1.2.3 Logical Termini and Independent Utility	3
1.2.4 Decision Needed	3
1.3 Project Description	3
1.3.1 Alternatives.....	4
1.3.1.1 Build Alternative.....	4
1.3.1.2 No-Build Alternative.....	6
1.3.2 Alternatives Considered But Eliminated from Further Discussion	7
1.3.3 Permits and Approvals Needed	7
 CHAPTER 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures	 18
2.1 Human Environment.....	19
2.1.1 Existing and Future Land Use.....	19
2.1.2 Consistency with State, Regional and Local Plans.....	21
2.1.3 Community Impacts.....	22
2.1.3.1 Community Character and Cohesion	22
2.1.3.2 Environmental Justice.....	24
2.1.3.3 Utilities and Emergency Services	27
2.1.3.4 Traffic and Transportation.....	29
2.1.3.5 Cultural and Historic Resources	32
2.2 Physical Environment	33
2.2.1 Hydrology/Floodplain	33
2.2.2 Water Quality/Stormwater Runoff	36
2.2.3 Hazardous Waste/Materials	41
2.2.4 Air Quality	49
2.2.5 Noise	63
2.3 Biological Environment	74
2.3.1 Natural Communities.....	74
2.3.2 Wetlands and Other Waters.....	76
2.3.3 Plant Species	78
2.3.4 Animal Species.....	79
2.3.5 Threatened and Endangered Species	80
2.3.6 Invasive Species	81
2.4 Cumulative Impacts	82
 CHAPTER 3 – Comments and Coordination	 87
 CHAPTER 4 – List of Preparers	 158

Table of Contents (continued)

CHAPTER 5 – References	160
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CHAPTER 6 – Distribution List	162
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APPENDICES

Appendix 1 – Natural Environmental Study Minimal Impacts (NESMI)	
Appendix 2 – FEMA FIRM Panels	
Appendix 3 – California Department of Transportation’s Title VI Policy Statement	

FIGURES

Figure 1	Regional Location	9
Figure 2	Site Location (Aerial Photo)	10
Figure 3a&b	Location of At-Grade Crossings	11
Figure 4	Aerial View of City of Richmond and Vicinity	13
Figure 5a&b	Conceptual Track Layout	14
Figure 6a&b	Right-of-Way Property Acquisition	16

TABLES

Table 1.3.3-1	Permits Required	8
Table 2.2.3-1	Hazardous Waste History	43
Table 2.2.4-1	State and Federal Ambient Air Quality Stds and Attainment Status	51
Table 2.2.4-2	Local Road and Train Track At-Grade Crossings in Richmond	54
Table 2.2.4-3	Daily Emissions Benefits from On-Road Vehicle Idling Reduction	54
Table 2.2.4-4	Projected Locomotive Emissions Reductions (from Year 2012 Baseline)	56
Table 2.2.4-5	Locomotive Emissions Reduction by 2015	57
Table 2.2.4-6	Typical Construction Equipment	59
Table 2.2.4-7	Daily Off-Road Construction Equipment Emissions	60
Table 2.2.4-8	On-Road Commuting	60
Table 2.2.4-9	Daily Delivery Truck Trips	60
Table 2.2.4-10	Car and Light Truck On-Road Emissions from Crew Commuting	61
Table 2.2.4-11	Heavy Duty Truck On-Road Emissions from Truck Delivery Trips	61
Table 2.2.4-12	Construction, Truck Haul and Employee Commuting Maximum	61
Table 2.2.4-13	On-Track Source Emissions	61
Table 2.2.4-14	Annual Emissions	62

Table of Contents

TABLES (continued)

Table 2.2.5-1	FTA Land Use Categories and Noise Metrics	63
Table 2.2.5-2	Shields-Reid Neighborhood Noise Monitoring.....	66
Table 2.2.5-3	Equipment Noise Reference Levels at 50 Feet	67
Table 2.2.5-4	Project Only Contribution to Noise to Baseline Level	69
Table 2.2.5-5	Day-Night (Ldn) Noise Levels at 60 Feet from Track Centerline.....	69
Table 2.2.5-6	Comparison of Modeled Noise Level With Measured Noise Level	69
Table 2.2.5-7	Typical Ground-Borne Vibration Levels	70
Table 2.2.5-8	Ground-Borne Vibration Impact Levels	71
Table 2.2.5-9	Vibration Level	71
Table 2.2.5-10	Vibration Level During Freight Train Passage at Closest Homes	72

ABBREVIATIONS AND ACROYNMS

ADA	Americans with Disabilities Act
APE	Area of Potential Effect
APN	Assessor Parcel Number
AQMD	Air Quality Management District
BAAB	Bay Area Air Basin
BART	Bay Area Rapid Transit
BMPs	Best Management Practices
BNSF	BNSF Railway Company
BSA	Biological Study Area
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CWR	Continuously Welded Rail
dB	decibel
db(A)	A-weighted decibel
DNL	day-night level
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EO	Executive Order
EBRPD	East Bay Regional Park District
FCAA	Federal Clean Air Act
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FTA	Federal Transit Administration
IS	Initial Study
LEDPA	least environmentally damaging practicable alternative
MP	milepost
Mph	miles per hour
NAAQS	national ambient air quality standards

Abbreviations and Acronyms (continued)

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PA	Programmatic Agreement
POAQC	projects of air quality concern
RCRA	Resources Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SAAQS	state ambient air quality standards
SIP	State Implementation Plan
STB	Surface Transportation Board
SWPPP	Storm Water Pollution Prevention Program
SWRCB	State Water Resources Control Board
TIP	Transportation Implementation Plan
UPRR	Union Pacific Railroad
U.S.	United States
U.S. EPA	U.S. Environmental Protection Agency
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
WDRs	waste discharge requirements

CHAPTER 1 Proposed Project

1.1 Introduction

The proposed project would construct an at-grade connection track and related signal improvements between the BNSF Railway Company's (BNSF) Stockton Subdivision and Union Pacific Railroad's (UPRR) Martinez Subdivision. This approximate 1.25-mile rail track connector would be located in the northern portion of the City of Richmond and an unincorporated portion of Contra Costa County (North Richmond), California (see Figure 1). The two track systems parallel each other in this area and are located approximately one-quarter mile apart. A connector would allow BNSF's intermodal freight trains to access the Port of Oakland without having to travel through downtown Richmond. Refer to an aerial view of the project location on Figure 2.

The proposed site of the Richmond Rail Connector is on the rail corridor that connects the Port of Oakland to all points east of the Port - Northern California, the Central Valley, Southern California and the nation. It encompasses the BNSF rail lines from the Port to Barstow, and the Union Pacific rail lines from the Port south to Mojave or northeast to Nevada.

The corridor also serves as a major passenger corridor. Existing Amtrak passenger service includes the Capitol Corridor and the San Joaquin Corridor routes. The Capitol Corridor provides intercity rail service to eight northern California counties. It had 1.7 million passengers in 2008 and is the third busiest Amtrak-operated route in the nation with 32 daily trains. The San Joaquin intercity passenger rail service operates between Bakersfield, Oakland and Sacramento and has the fifth highest ridership of any Amtrak service in the country. The current operating schedule includes eight daily intercity Amtrak trains. In addition, Amtrak runs four long-distance Amtrak passenger trains over the project alignment. In total, 44 passenger trains use this corridor.

The Federal Highway Administration (FHWA) will serve as the Lead Agency for the National Environmental Policy Act (NEPA) for this project. FHWA is serving as the NEPA lead instead of the Federal Railroad Administration because part of the funding for this project is from the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, which is administered by FHWA. The project sponsor is BNSF Railway Company (BNSF). Separate documents are being prepared to comply with the California Environmental Quality Act (CEQA) and NEPA. This document contains solely the NEPA Environmental Assessment (EA), which evaluates the environmental effects of the proposed project.

The proposed connector track and support infrastructure is a public works project that was originally envisioned to be funded entirely through State funds. However, based on a recently established Memorandum of Understanding between the California Department of Transportation (Caltrans) and BNSF, this project will be funded using State funds, federal funds and BNSF funds. The estimated total cost of the proposed connector track and support infrastructure project is \$21,760,000. Funding has been allocated as follows: \$10,880,000 from the Trade Corridors Improvement Fund; \$5,440,000 from BNSF Railway Company; and \$5,440,000 from federal CMAQ funding through the Metropolitan Transportation Commission.

1.2 Purpose and Need

1.2.1 Purpose of Project

The primary purpose of this project is to provide more efficient operations along the BNSF Stockton Subdivision and UPRR Martinez Subdivision north of downtown Richmond.

Currently, BNSF trains have to travel through downtown Richmond to reach the Port of Oakland because there is no connector to the UPRR tracks, which provide a more direct route to the Port. A connector track allowing BNSF trains to access UPRR's Martinez subdivision without going through downtown Richmond would improve the efficiency and competitiveness of goods movement along this corridor. By substantially reducing the number of slow-moving intermodal trains in the center of the city, a connector would also relieve traffic congestion at fourteen at-grade crossings in downtown Richmond. At-grade crossings over both the BNSF and UPRR tracks for the area of interest are shown on Figures 3a and 3b.

The project would benefit the residents of Richmond by reducing air emissions and noise from train air horns and warning signals at the fourteen at-grade crossings on the BNSF track. The new, shorter route along the UPRR tracks has only three at-grade crossings and no speed restrictions. In addition, it would reduce the need for BNSF trains to use tracks north of Richmond on the Martinez Subdivision, freeing up capacity and reducing conflicts for both UPRR and Amtrak and Capitol Corridor passenger trains.

1.2.2 Need for Project

For the past several years, BNSF voluntarily ran its intermodal freight trains serving the Port of Oakland on the UPRR track between Sacramento and Stege to avoid BNSF's own circuitous route through the center of Richmond. In May 2008, a federal Surface Transportation Board (STB) ruling stated that BNSF does not have the authority to operate its intermodal trains on this segment of the UPRR route. The STB ruling required BNSF intermodal trains to travel through the center of Richmond accessing UPRR's Martinez Subdivision south of Richmond at Stege.

As shown on Figure 3a, the BNSF Stockton Subdivision swings west through downtown Richmond to the BNSF rail yard on the west side of the city. Then, the BNSF tracks swing back east and traverse the length of the city from west to east. At a location called Stege, the BNSF tracks intercept the UPRR Martinez Subdivision, which continues south into the Port of Oakland.

Trains using BNSF tracks through Richmond must travel at low train speeds (less than 20 miles per hour (mph)) that often result in blocking traffic for extended periods of time at the fourteen closely-spaced grade crossings within Richmond. The longer route and slow speeds increase the amount of time it takes BNSF trains to reach the Port of Oakland. The slow-moving BNSF trains accessing the Martinez Subdivision at Stege also impact Capital Corridor and San Joaquin passenger trains and UPRR freight trains, reducing their on-time performance and reliability.

Failure to implement the proposed BNSF and UPRR connection track would have a negative effect because train traffic congestion along this segment would continue to occur. Further, if train operations increase in the future, the slower train movement in this segment from north Richmond to the Port of Oakland would cause greater accumulations of traffic, which would in turn result in related increases in air emissions, noise and congestion on the local circulation system.

1.2.3 Logical Termini and Independent Utility

Both BNSF and UPRR freight rail operations currently serve the Port of Oakland. As a result of the decision by the STB, BNSF was directed to use its own tracks on the Stockton Subdivision from Stege east. The long intermodal freight trains were redirected through the core of the city of Richmond as shown on Figure 3a. With installation of the proposed connector track as shown on Figure 2, the BNSF intermodal freight trains from the Port of Oakland will again be able to avoid the downtown Richmond track alignment and not conflict with UPRR and passenger rail operations on UPRR's Martinez Subdivision north of the proposed connector track. No other improvements are required to achieve the project purpose, which is to avoid intermodal freight train traffic through downtown Richmond. This discrete project fully accomplishes the project purpose.

The specific location for the Richmond Rail Connector was selected based on a review of the alignment of the two railroad tracks. Specifically, once the tracks cross Parr Boulevard in the city of Richmond, the whole alignment to the south is developed and would require displacement of existing development in order to connect the UPRR and BNSF tracks at the desired speed. Also, once north of Richmond Parkway there is no area available with sufficient length (approximately 1.25 miles) to install the rail connector and maintain track speed, before the rails begin to diverge. This is shown on the aerial photo provided in Figure 4. Both railroads conducted an evaluation of alternative locations and the project site located between Richmond Parkway and Parr Boulevard is the only location available that met all of the connector site selection criteria.

1.2.4 Decision Needed

This EA will provide the necessary information to determine if further environmental analyses are needed to fulfill NEPA requirements. This EA evaluates the potential effects on the human environment, physical environment, and biological environment from construction and operation of the proposed improvements in order to support federal funding through FHWA. Once the EA is completed, FHWA will either issue a Finding of No Significant Impact (FONSI) based on the findings in this document, or decide to prepare an Environmental Impact Statement to comply with NEPA. Only after the procedure outlined above is completed can a decision be finalized to proceed with project implementation.

1.3 Project Description

This section describes the proposed action and the design alternatives that were developed by a multi-disciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts.

The proposed project would construct an at-grade connector track and related signal improvements between the BNSF Stockton Subdivision and UPRR's Martinez Subdivision.

BNSF and UPRR identify all points along their tracks by the distance from the point where the track originates. For this project, the installation of the connector track, upgrade of existing siding, and related improvements will begin on the BNSF rail line approximately 364 feet south of the Giant Road-John Road intersection, at about Milepost (MP) 1185.9. The new construction and other proposed improvements will extend southwest, a distance of approximately 1.25 miles, to UPRR MP 14.2, just north of the at-grade intersection of the UPRR tracks and Parr Boulevard, in Richmond.

The project is located within Richmond and an unincorporated portion of Contra Costa County. Figure 1 shows the regional location of the project and it also shows the entire proposed alignment on the pertinent U.S. Geological Survey 7.5' topographic map. Caltrans and BNSF propose to install the rail connector track as part of a program to improve goods movement into the Port of Oakland. In turn this would reduce congestion, air emissions and noise in downtown Richmond.

1.3.1 Alternatives

The alternatives for the project are the Build Alternative and the No-Build Alternative. The Build Alternative has been selected as the Preferred Alternative for this project.

1.3.1.1 Build Alternative

The entire length of railway to be improved as part of the BNSF and UPRR Richmond Connection Track Project is located within Contra Costa County. The project improvements are best illustrated on the aerial photo of the connector track alignment, Figure 2, and the Conceptual Track Alignment Schematic (Track Chart, Figure 5a & b).

The location of the Build Alternative was selected based on the proximity of the two tracks and minimal development along the segment proposed for the rail connector. This will help achieve the purpose of the project, while avoiding or minimizing environmental impacts.

The proposed project features include the following:

- a. Installing a new connection track with 15-foot centers adjacent to both BNSF and UPRR existing tracks
- b. Extending or upgrading existing sidings
- c. Upgrading track structure and special track work
- d. Upgrading signal systems
- e. Improving an at-grade crossing at John Avenue
- f. Constructing a bridge over Rheem Creek
- g. Installing a culvert along the south side of the UPRR and proposed connector track
- h. Realigning the UPRR tracks within the existing right-of-way to accommodate the connector track.

The proposed BNSF and UPRR connection track closely follows the existing BNSF track at the north end of the alignment and closely follows the existing UPRR track at the south end of the alignment. The proposed alignment curves west across several industrial parcels for approximately 0.75 miles from just south of John Avenue and converges with the existing UPRR line at about UPRR MP 14.2. Refer to Figures 6a and 6b for an aerial of the land parcels and the proposed property acquisition. The proposed connection track is being designed for a maximum allowable speed of 50 miles per hour (mph) for passenger trains and 45 mph for freight trains.

All connections to sidings and spur tracks from the new track will be made using minimum No. 24 turnouts. The type #24 turnout is the most durable/heavy duty switch used on BNSF that allows a train to move from one track to another. Speed through the diverging side is 50 mph and is 79 mph on the straight side. The proposed connection track will use BNSF standard mono-block concrete ties with a resilient fastening system. Running rail will be 136 Continuously Welded Rail (CWR, 136 lbs per foot of rail) on tangents and curves flatter than

one degree. Sharper curves will be laid with 141# CWR rail. Cross ties through grade crossings, as well as transition ties, will be 10-foot-long wood ties.

The project will include the upgrade of approximately 0.2 mile of the BNSF siding and the upgrade of approximately 0.3 mile of the UPRR siding. Signal improvements, for train flow on the tracks, and the upgrade of turnouts will be installed along the whole approximate 1.25-mile alignment of the project. A feature required to install the new track within the UPRR alignment is a "Turnout Pad" that will be constructed to allow equipment to lift and move the UPRR tracks to meet the new configuration. The Turnout Pad will be retained after construction is completed to facilitate future maintenance activities.

Other Project Aspects

Land Acquisition

The existing BNSF and UPRR rights-of-way vary between approximately 100 feet and 125 feet in width along the Richmond connector track segment. A segment of the proposed connector track alignment is located outside of the existing BNSF and UPRR rights-of-way, as shown on the Figures 6a and 6b. . Approximately 8.32 acres of industrial land will be acquired for the project.

Utility Crossings

There are utility lines that may be affected by construction of the project. Any utility lines located within the alignment will either be left in place and avoided by construction, or relocated within the BNSF or UPRR right-of-way. In a few instances, a utility line may no longer be in use and it will either be removed within the BNSF right-of-way or it will be closed and left in place. All utility relocations or closures will be implemented after close coordination with the owner of the utility line.

Staging Areas

The proposed project will have a number of staging areas to accommodate storage of equipment and material, and to provide parking for employees. The staging areas will occur along the BNSF and UPRR track rights-of-way at least 25 feet from the closest track. Any needed staging areas outside the railroad's right-of-way will be the responsibility of the contractor and cannot be identified at this time. The Turnout Pad will serve as one staging area and another staging area will be located at the terminus of Collins Road, which parallels Giant Avenue in the project area. The Turnout Pad will also be constructed in order to install the crossover train tracks within the UPRR alignment just prior to placing the new track into operation. Where permits (entitlements or regulatory permits) are required for staging areas, such permits will be obtained by the contractor and any subsequent environmental documentation, if required, will be prepared and processed on a case-by-case basis by the contractor.

Construction Activities

The proposed project will be built in two phases and should be completed within 12 to 18 months. The first phase in the construction process will be to install the fill to elevate the new track surface an average of about 8 feet above existing ground level. Approximately 13,300 cubic yards of fill and aggregate material will be imported to create the fill for the proposed track. Assuming 15 cubic yards per truck delivery, a total of about 900 truck trips will be required to import the required fill material. This equates to an estimated 100 truck trips per day for material import over a 2-week (10-day) period of time. Completion of the engineered fill is expected to require approximately 3 to 6 months from the date construction begins.

During the same period that the fill is being installed, a separate work crew will be installing the proposed bridge over Rheem Creek, drainage pipes, and other support facilities for the track (shown on the Conceptual Track chart, Figures 5a & 5b). In addition, pipelines (such as water, natural gas, etc.) located under the railroad rights-of-way will have to be protected, either by encasement, relocation or other similar measures. It is anticipated that these facilities will be completed within 5 to 9 months. As part of this phase of the project, existing telephone poles within the BNSF and UPRR alignments will be removed by a contractor and the materials removed will be recycled for other uses.

The "Turnout Pad" will require about 4,000 cubic yards of fill material or 270 truck trips. This material will be delivered over a 5-day period, which equates to 54 truck trips per day. Construction of this feature is expected to require about 30 days from start to finish. The "Turnout Pad" will not be constructed concurrent with the new high fill to limit the maximum number of truck trips to 100 per day. It is anticipated that at the end of the project, the "Turnout Pad" will be retained for maintenance purposes.

The second and final phase of construction has been allocated 3 to 5 months for completion. This stage involves laying the new track and installing the new track signal system to ensure safety along the new track. Track laying is carried out by BNSF personnel with material delivered by rail. On top of the fill, concrete rail cross ties and ballast rock will be installed. Then, the new rails will be installed on top of this new base. The new 136 lbs rail (the rail weighs 136 lbs per meter of rail) can be installed at a rate of approximately one mile per day once the track base has been completed. At the same time new signals required for operations and safety will be installed and hooked up to the BNSF and UPRR electrical system that parallels the existing track. Maximum depth of excavation associated with installation of the new signals is approximately 8 feet. Once the new track is installed, the road crossings will be installed. When the track is completed and tested and the signals have been installed and tested, the new track will be available to support operations.

Contracts for construction of new track are typically awarded on an incremental basis. Each construction phase or function may be awarded by separate contracts.

1.3.1.2 No-Build Alternative

In the No-Build Alternative, the existing conditions in the project alignment would remain. No upgrades to the existing rail corridor would occur. No signal or safety improvements would be made and traffic flow would not be improved. The number of trains using the rail corridor segment would remain the same or increase as determined by future economic conditions, but without the addition of the connector track improvements in this segment of the rail corridor to improve efficiency. BNSF intermodal freight trains would continue to travel through downtown Richmond and the benefits of reduced air emissions, elimination of traffic delays, and better overall flow of train traffic through this segment would not be achieved.

IDENTIFICATION OF A PREFERRED ALTERNATIVE

As described in Section 1.2.1, the primary purpose of this project is to provide more efficient operations along the BNSF Stockton Subdivision and UPRR Martinez Subdivision north of downtown Richmond. The project is needed because trains using BNSF tracks through Richmond must travel at low train speeds that often result in blocking traffic for extended periods of time at 14 closely-spaced grade crossings within Richmond. The longer route and slow speeds increase the amount of time it takes BNSF trains to reach the Port of Oakland.

By installing a connector track, the Build Alternative would allow BNSF's freight trains to reach the Port of Oakland without having to travel through downtown Richmond. This would improve train operations and relieve traffic congestion at the 14 at-grade crossings. In addition, the connector would free up capacity and reduce conflicts for both passenger and freight trains.

The project would benefit Richmond residents and businesses by reducing air emissions from traffic bottlenecks caused by slow-moving trains. The shorter route has only three at-grade crossings and no speed restrictions.

The No-Build Alternative does not meet the project's purpose and need. With the No-Build Alternative, trains would continue to travel slowly through downtown Richmond. Rail inefficiency, traffic congestion and air emissions would not be improved and could worsen if there is a future increase in trains on this corridor. Based on these findings and after considering comments from state, regional and local agencies, the Build Alternative has been identified as the Preferred Alternative.

1.3.2 Alternatives Considered But Eliminated From Further Discussion

The project stakeholders (Caltrans, BNSF and UPRR) examined alternative locations for installation of the connector track between the BNSF and UPRR tracks. The primary criterion for selection of the connector track was a location that would allow BNSF intermodal trains to access the UPRR tracks at a location that would allow these trains to avoid traversing downtown Richmond and to not utilize capacity on the UPRR Martinez Subdivision east of the City of Richmond. Other criteria included a site within the urbanized portion of the Bay Area where the two tracks are close together and a site with no occupied structures. Since these three selection criteria for the connector site could not be met at any other location, a decision was made to eliminate alternative locations and limit the analysis to the Build Alternative and the No-Build Alternative in this document. As previously discussed, there are no other locations north of Stege (the location in southeastern Richmond where the BNSF and UPRR tracks converge) where a connector track can be installed that meets the site selection criteria described under the Independent Utility discussion presented above. One additional site was considered north of the proposed site, west of the intersection of Giant Road and Banks Drive. However, a portion of this site is included in the Point Pinole Regional Shoreline Park and it does not have sufficient space to install a connector track. Therefore, this site was rejected from further consideration.

1.3.3 Permits and Approvals Needed

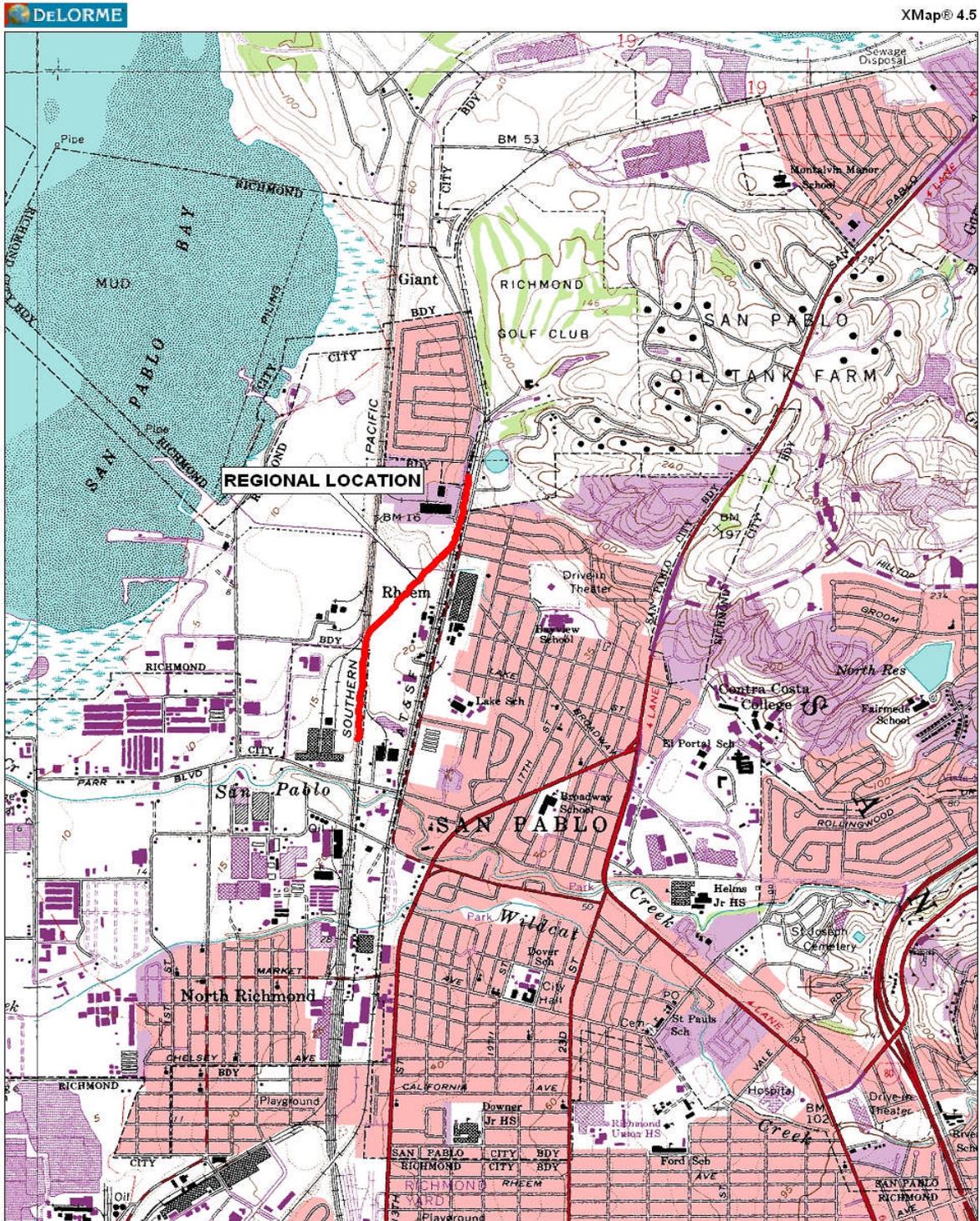
At this stage of the review it is anticipated that the project will be required to obtain several permits including, but not necessarily limited to those shown on Table 1.3.3-1.

**Table 1.3.3-1
PERMITS REQUIRED**

Agency	Permit / Approval
U.S. Army Corps of Engineers	<ul style="list-style-type: none"> • Section 404 Permit
Readiness Branch of the U.S. Army Corps of Engineers, San Francisco Branch	<ul style="list-style-type: none"> • Encroachment permit and approval for activities in the rights of way of Rheem Creek flood control channel
Regional Water Quality Control Board	<ul style="list-style-type: none"> • Section 401 Water Quality Certification • SWPPP Enforcement
California Department of Fish and Game	<ul style="list-style-type: none"> • 1601 Streambed Alteration Agreement
State Water Resources Control Board	<ul style="list-style-type: none"> • Construction NPDES Permit
Contra Costa County Flood Control and Water Conservation District	<ul style="list-style-type: none"> • Drainage Modification Permit • Flood Control Encroachment Permit, Land Transactions, Agreements and Easements involving the Flood Control District's facilities
City of Richmond	<ul style="list-style-type: none"> • Roadway encroachment permit and business licenses

Various encroachment or construction permits from the County, UPRR, BNSF, the City of Richmond, and business licenses in the local jurisdictions may also be required.

FIGURE 1 Regional Location



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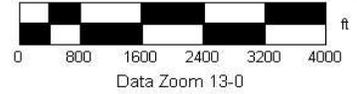


FIGURE 2
Site Location (Aerial Photo)

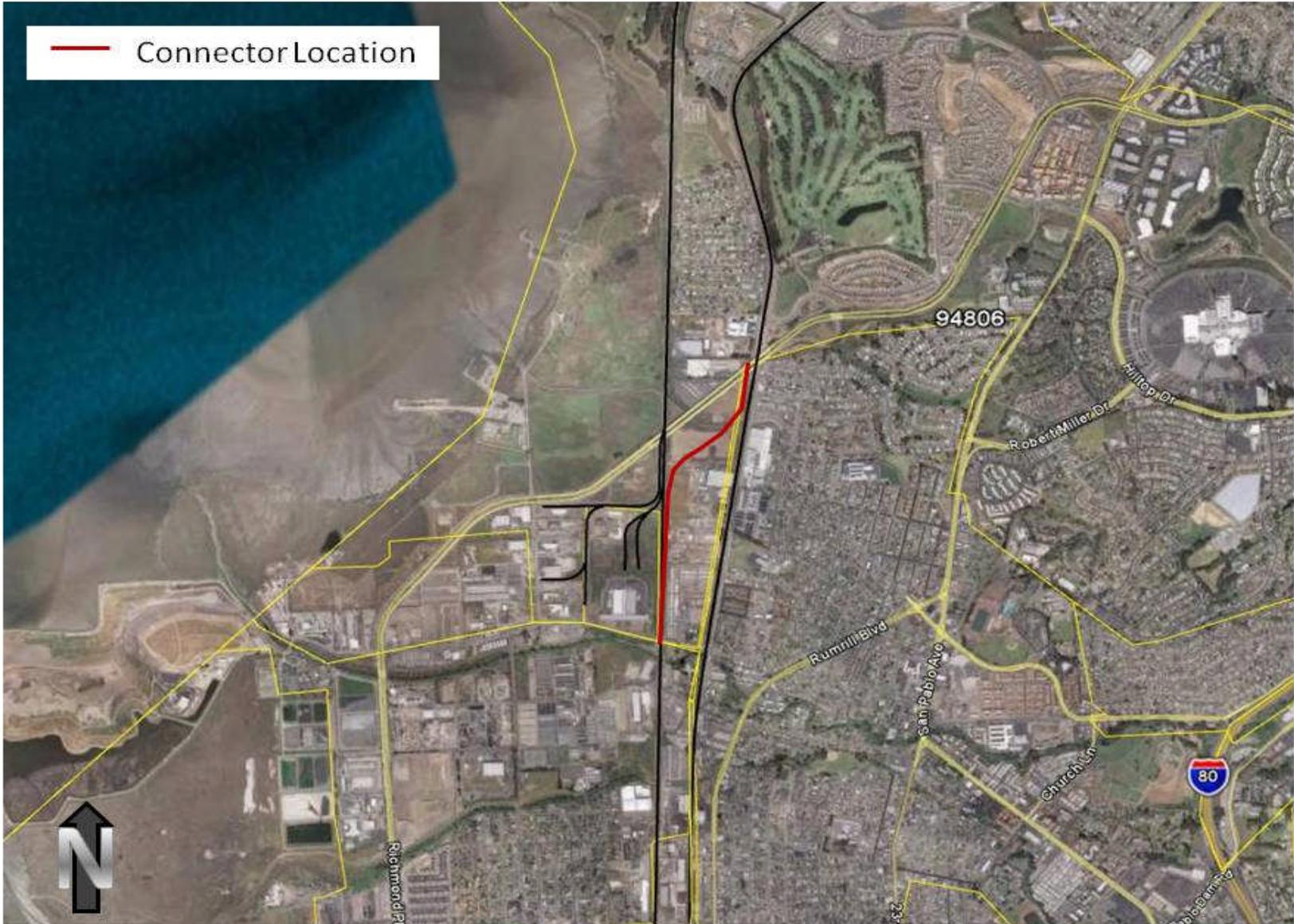
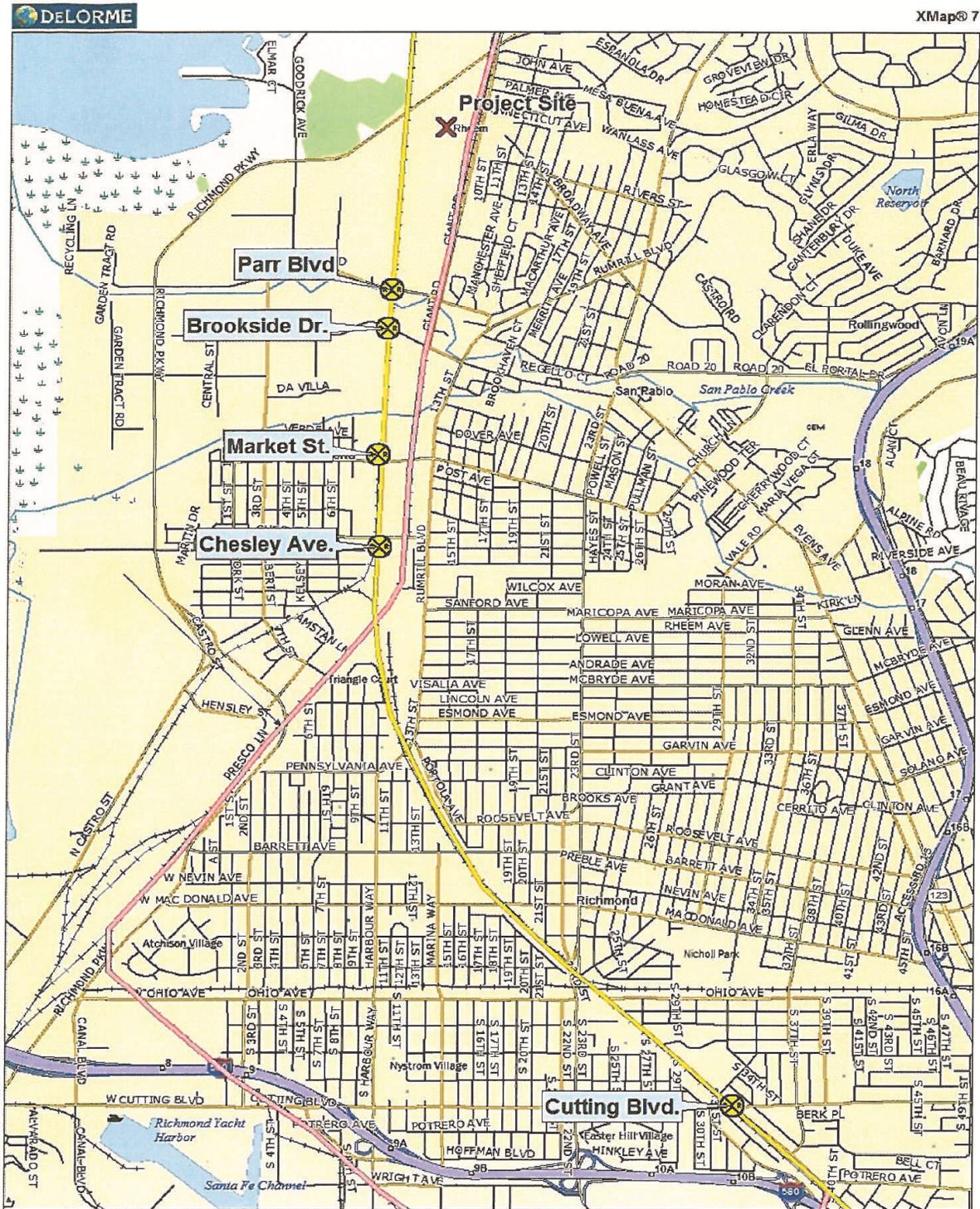


FIGURE 3a
Location of At-Grade Crossings



Data use subject to license.

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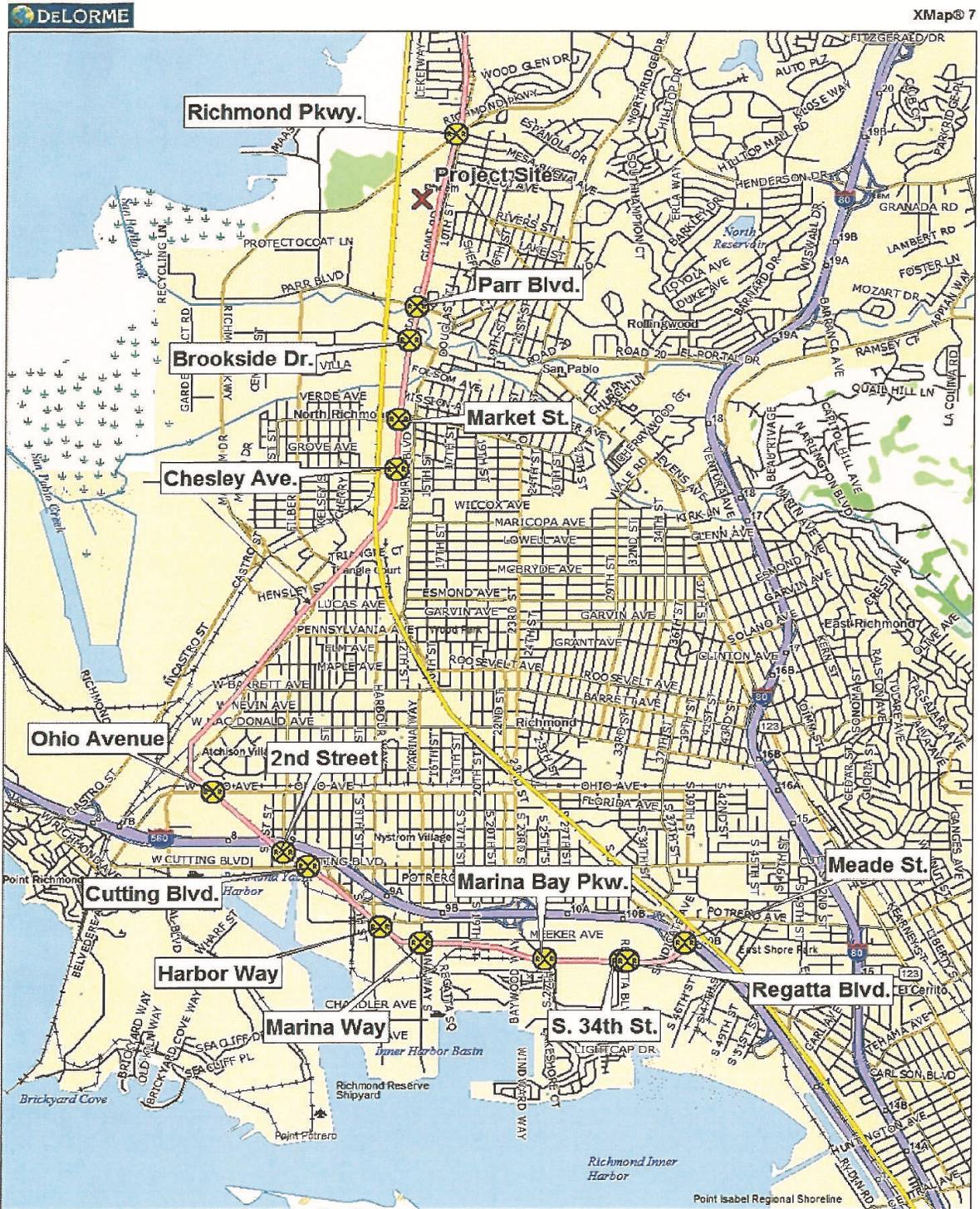


MN (14.1° E)



Data Zoom 12-7

FIGURE 3b
Location of At-Grade Crossings



Data use subject to license.

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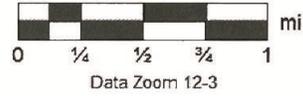
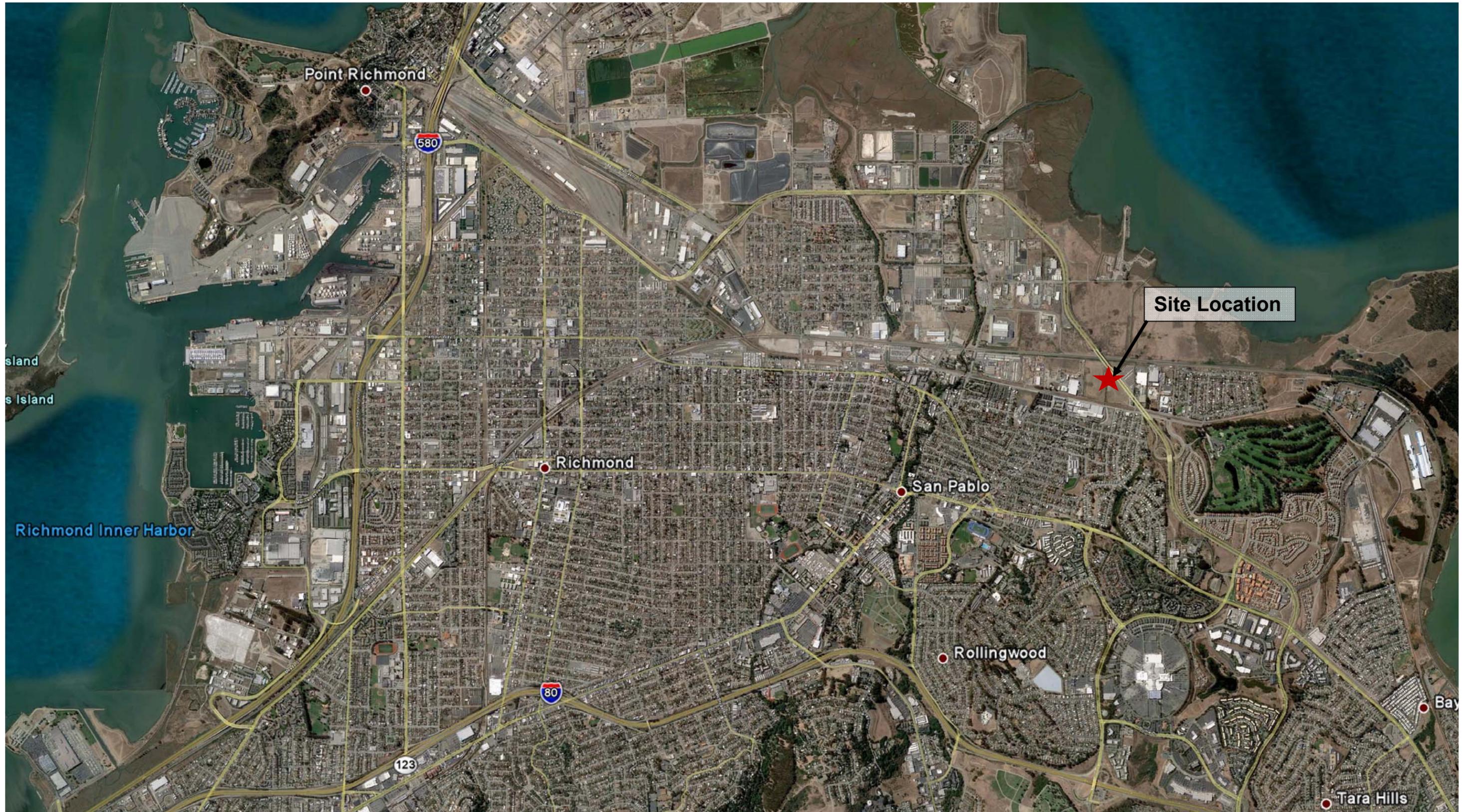


FIGURE 4
Aerial View of City of Richmond and Vicinity



NOT FOR CONSTRUCTION

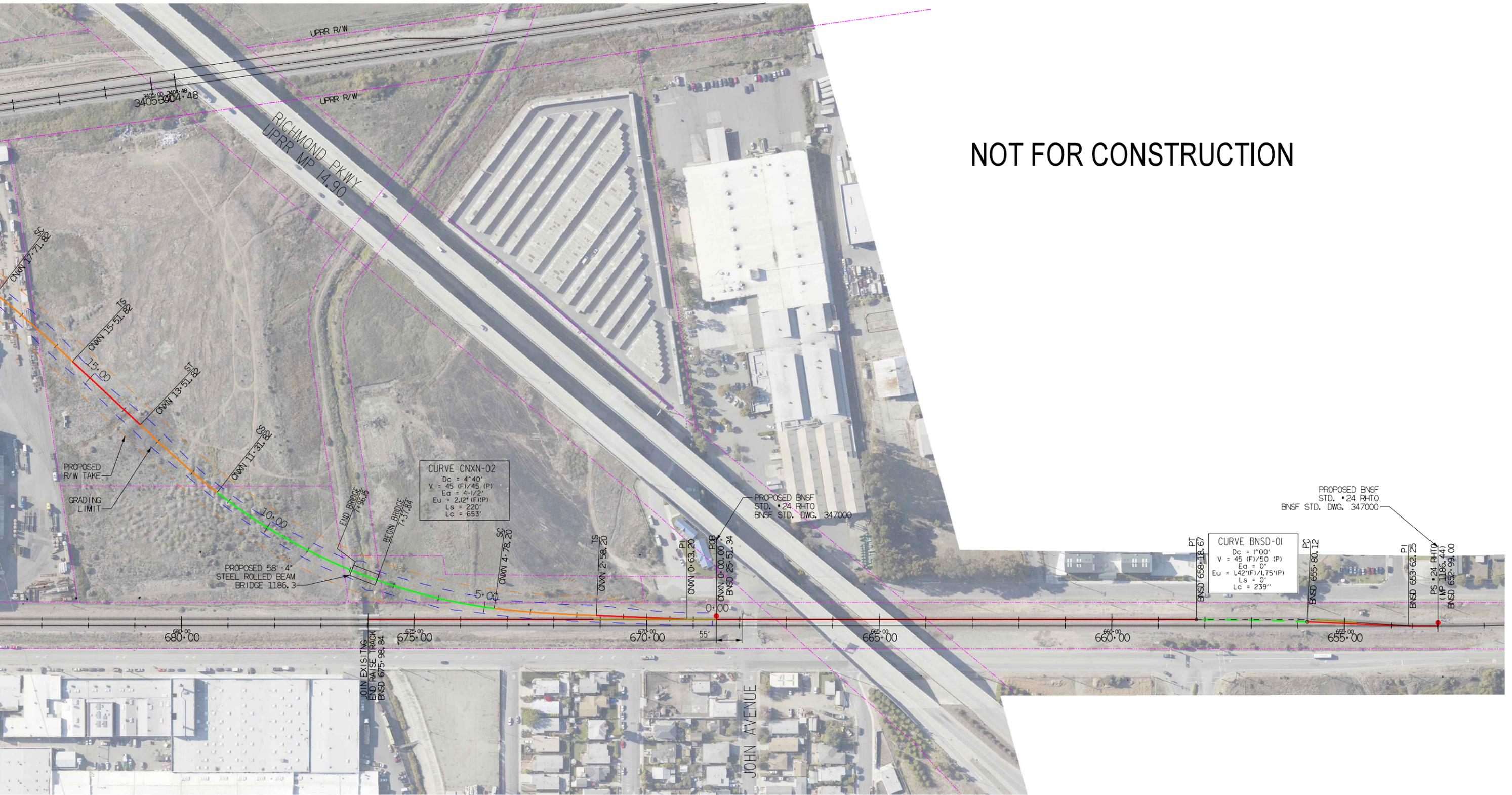


FIGURE 5a

BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 TRACK PLAN
 CONCEPTUAL TRACK LAYOUT
 AND PARCEL IMPACT

CONTRACT NO.	
DRAWING NO.	RP-01
REVISION	SHEET NO.
SCALE	AS SHOWN

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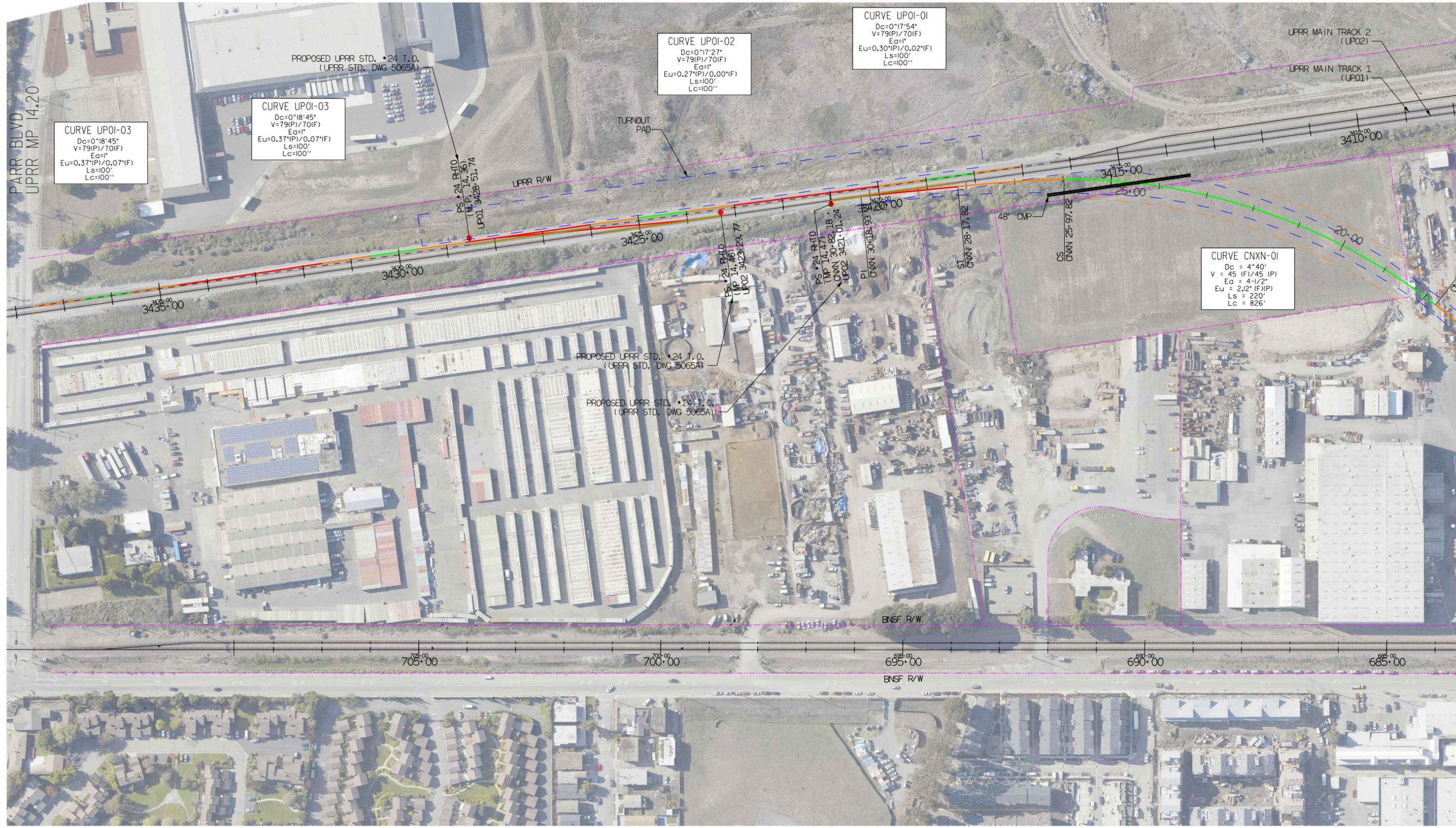


FIGURE 5b

PROJECT NUMBER	DATE	DESCRIPTION	BY	APP
01	10/08	CONCEPTUAL LAYOUT		
02	01/11	PRELIMINARY DESIGN (45 MPH)		
03	02/27	REVISED TURNOUT PAD AND UPRR R/W		
04	09/09	REVISED ALIGNMENT		

Information confidential
 all plans, drawings, specifications, and/or information furnished herewith shall remain the property of the Burlington Northern Santa Fe Railway and shall be held confidentially and shall not be used for any purpose not provided for in agreements with the Burlington Northern Santa Fe Railway.

DESIGNED BY	
DRAWN BY	
CHECKED BY	
APPROVED BY	
DATE	SEPTEMBER 09, 2011


BNSF
 RAILWAY


PATTERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD
 SUITE 300
 ORANGE, CA 92668

APPROVALS	DATE	APPROVALS	DATE
M. J. KIRSCHINGER		D. L. FREEMAN	I-24-II
R. W. LEASE	I-24-II		
R. J. BOILEAU	I-24-II		
S. C. SEXHUS			
R. D. BREDEBERG	I-24-II		

EXHIBIT ONLY
NOT FOR CONSTRUCTION

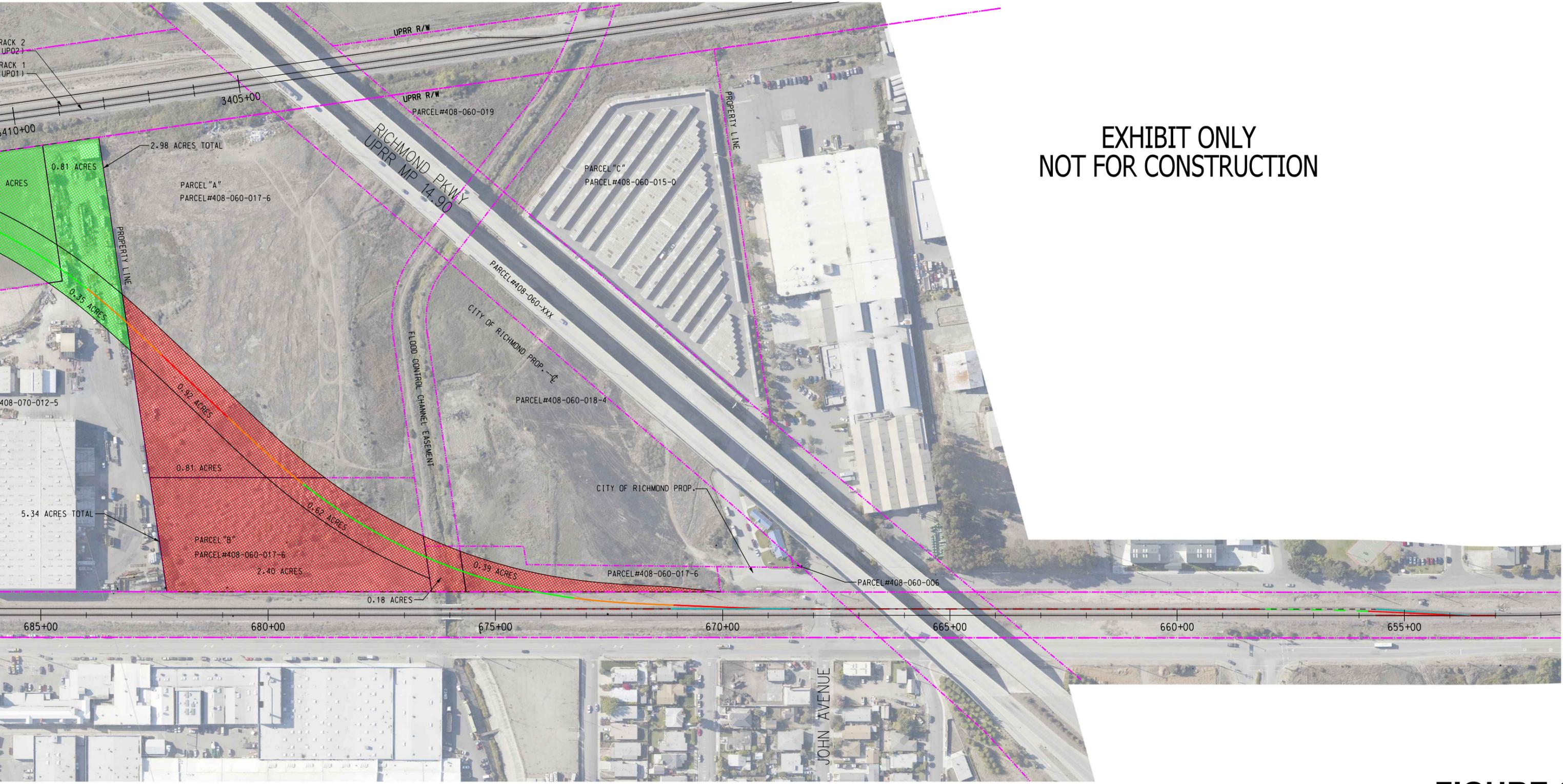


FIGURE 6a

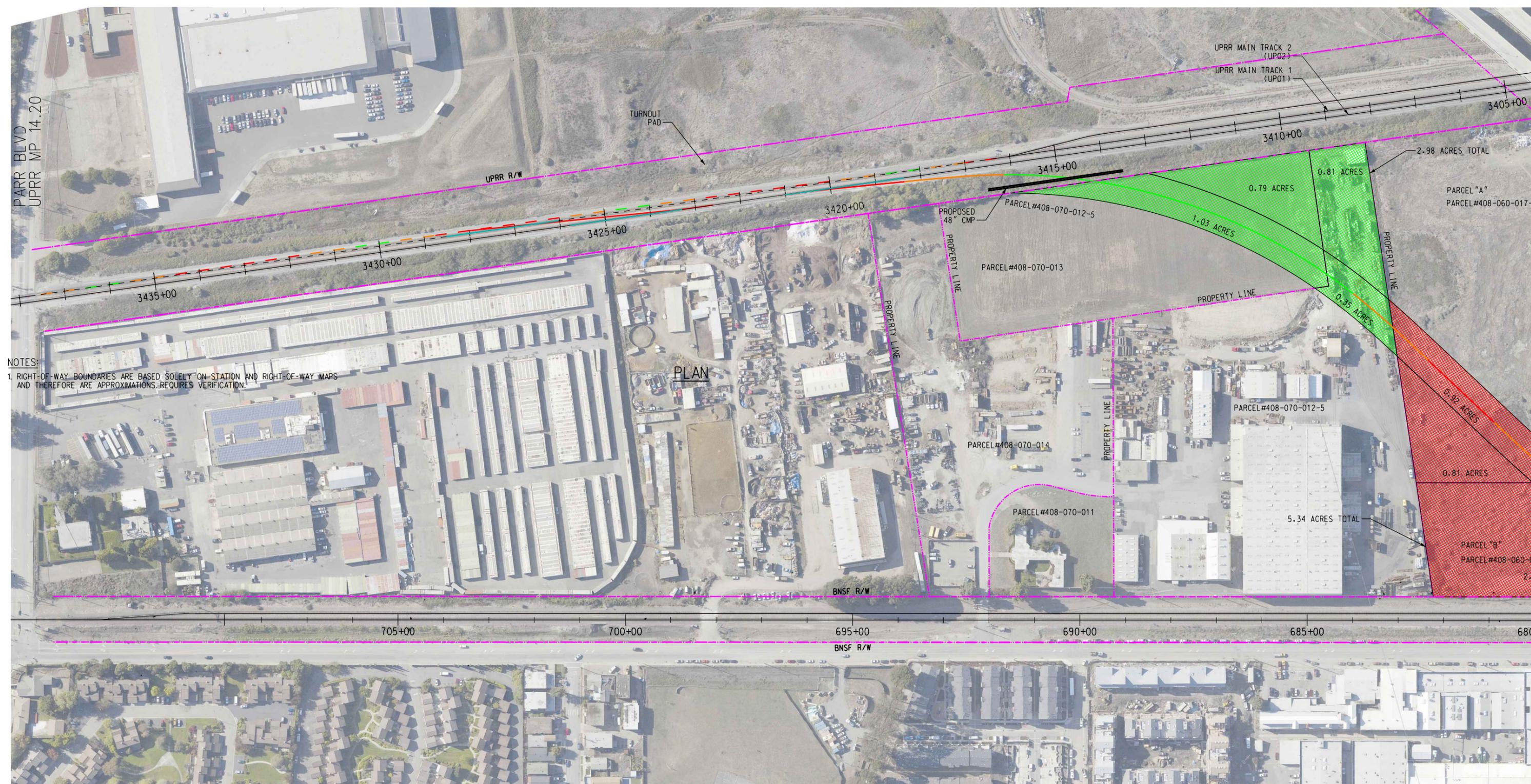
DATE	1-24-11

BNSF RAILWAY
RICHMOND RAIL CONNECTION

RIGHT OF WAY EXHIBIT
CONCEPTUAL TRACK LAYOUT
AND PARCEL IMPACT

CONTRACT NO.	
DRAWING NO.	YA-01
REVISION	SHEET NO.
SCALE	AS SHOWN

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NOTES:
 1. RIGHT-OF-WAY BOUNDARIES ARE BASED SOLELY ON STATION AND RIGHT-OF-WAY MAPS AND THEREFORE ARE APPROXIMATIONS. REQUIRES VERIFICATION.

PROFILE

FIGURE 6b

PROJECT NUMBER	REV	DATE	DESCRIPTION	BY	SUB	APP
04	09/09		REVISED ALIGNMENT			
03	02/27		REVISED TURNOUT PAD AND UPRR R/W			
02	01/11		PRELIMINARY DESIGN (45 MPH)			
01	10/08		CONCEPTUAL LAYOUT			

Information confidential
 all plans, drawings, specifications, and/or information furnished hereafter shall remain the property of the Burlington Northern Santa Fe Railway and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Burlington Northern Santa Fe Railway

DESIGNED BY
 DRAWN BY
 CHECKED BY
 APPROVED BY
 DATE
 FEBRUARY 14, 2012

BNSF RAILWAY

UNION PACIFIC RAILROAD

PATTERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD SUITE 300 ORANGE, CA 92668

APPROVALS	DATE
M. J. KIRSCHINGER	
R. W. LEASE	1-24-11
R. J. BOILEAU	1-24-11
S. C. SEXHUS	
R. D. BREDEBERG	1-24-11

APPROVALS	DATE
D. L. FREEMAN	1-24-11

CHAPTER 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures

This chapter explains the impacts that the project would have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project, potential impacts from each of the alternatives, and proposed avoidance, minimization and/or mitigation measures. Any indirect effects are also included in the general impacts analysis and discussions that follow.

As part of the scoping and environmental analysis conducted for this project, the following environmental issues were considered, but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

Human Environment

- **Land Use/Coastal Zone:** The proposed Richmond Rail Connector track alignment is not located within a coastal zone and therefore it has no potential to adversely affect any coastal zone resources or values. (City of Richmond General Plan)
- **Land Use/Wild and Scenic River:** The proposed track alignment is not located on or near a stream designated as a Wild and Scenic River. Therefore, it has no potential to adversely impact any Wild or Scenic River resources or values. (City of Richmond General Plan)
- **Land Use/Parks and Recreation:** The proposed track alignment is not located in an area designed for park or recreation uses and no such uses occur within the project area. Therefore, it has no potential to adversely impact any park or recreation resources or values. In addition, no publicly-owned public parks, recreational areas, or wildlife or waterfowl refuges protected under Section 4(f) of the Department of Transportation Act of 1966, as amended, are in the project area. Please see Chapter 3 for comments submitted by the East Bay Regional Park District concerning Point Pinole Regional Shoreline and the proposed Breuner Marsh Restoration and Public Access Project. Responses immediately follow the comments.
- **Growth:** The proposed project will not increase population or demand for track capacity. No aspect of the project has any identified potential to cause or contribute to growth or growth inducement if implemented.
- **Land Use/Farmlands/Timberlands:** The project site is designated in the City General Plan for industrial uses. It has been used for industrial purposes for more than 60 years based on a review of the historic aerial photographs in the Phase 1 Environmental Site Assessment. The project site does not and has not supported any farmland or timberland uses that would qualify the proposed track alignment as farmland. (City of Richmond General Plan and Phase 1 Environmental Site Assessment)
- **Visual/Aesthetics:** The connector track site is located within a highly urbanized area that does not have any significant visual resources or aesthetic values. The new connector track will be integrated into an industrial visual setting that already contains two mainline

railroad track corridors, BNSF and UPRR. The new track will not substantially modify the visual setting and will not block any sensitive or important scenic vistas. (Site visits and City of Richmond General Plan.)

- Acquisitions: The proposed track alignment will require acquisition of approximately 8.30 acres. This will consist of three partial property acquisitions from two property owners as follows: 1.82 acres will be acquired from Assessor Parcel Number (APN) 408-070-13; 1.16 acre will be acquired from APN 408-070-012-5; and 5.32 acres will be acquired from APN 408-060-017-6. All property consists of open fields or outdoor storage areas, except for the small property acquisition that encompasses Rheem Creek channel. BNSF will purchase the properties required to support the Richmond connector track. Each owner will be offered fair market value for his/her property based on a formal appraisal of the property's value. If necessary BNSF has the power of eminent domain to acquire property that is essential to interstate rail operations. Please refer to Figures 6a and 6b which show the proposed properties to be acquired. The properties that are proposed to be acquired do not have any occupied structures. Therefore, implementation of the proposed project does not have any potential to require the relocation of any residents or the replacement of any structures.

Physical Environment

- Paleontology: The proposed track alignment will not excavate material at the project site. All grading activities will be carried out as fill activities. Therefore, it does not have any potential to adversely impact any paleontological resources at the project site.
- Geology/Soils/Seismic/Topography: The proposed project will not alter site geology or topography. Site soils have already been heavily modified by past development and remediation activities. The connector track alignment is not located near any known active faults and the proposed project does not include any human occupancy structures. Therefore, no adverse effect on geology/soils/seismic/topographic characteristics of the site will result from project implementation. The site geology information was obtained from the City of Richmond General Plan, General Plan EIR and the Geotechnical Phase 1 Environmental Site Assessment.

2.1 Human Environment

2.1.1 Existing and Future Land Use

Affected Environment

Contra Costa County

The Contra Costa County General Plan Land Use Element provides the goals and policies for addressing land use issues within the unincorporated areas of the county. None of the policies apply specifically or exclusively to the rail corridors that traverse the county. The basis for planning is an "urban center" concept model. The urban centered concept is directed at utilizing cities and unincorporated communities or centers to accomplish anticipated urban expansion in an orderly manner, based on the ability of these communities to furnish public services along with land needs based on population demands and in balance with employment-generating land uses.

City of Richmond

The City of Richmond General Plan Land Use Element provides the goals and policies for addressing land use issues within the city. None of the policies apply specifically or exclusively to the rail corridors that traverse the city. Similar to the County, the basis for planning is an “urban center” concept model. The proposed track alignment is designated for industrial use on the City General Plan and zoned for industrial use in the City Development Code. Regarding relevant land use issues, both the City and County General Plans acknowledge the BNSF and UPRR rail corridors through their jurisdictions and indicate support for alternative modes of travel to on-road vehicular transportation systems, including rail.

The project area is characterized by light industrial uses surrounded by a mix of heavy industrial, commercial, and some residential uses. The existing railroad tracks and the major roadways, Giant Road and Richmond Parkway, constitute a major transportation corridor through the project area. The project area is within the City of Richmond and an unincorporated portion of the county. As noted above, the whole alignment of the Richmond Rail Connector is designated for industrial use.

Environmental Consequences: Build Alternative

Under the Build Alternative the Richmond Rail Connector is being installed to connect two existing rail corridors, BNSF and UPRR, within the project area to allow trains to move from one set of tracks to another. These rail corridors have been in place for 100 years or more, and the intervening land between the two track corridors at the project location have historically been used for industrial uses. The property on which the connector track will be installed is also designated for industrial uses. Thus, the railroad operations already exist in the project area and the installation of the new connector track will not add a new or different use at the project location. The proposed rail connector project is consistent with existing land uses within the project area and it is also consistent with the existing land use designations under the City’s General Plan and zoning.

No-Build Alternative

The No-Build Alternative would result in no land use impacts as conditions within the proposed project alignment would remain in their existing condition. An indirect effect of this alternative would be to continue impacts from the conflicts between BNSF intermodal train operations in downtown Richmond and local circulation, including noise, air pollutants, and substantial delays where trains and vehicles intersect at at-grade locations in the city.

Avoidance, Minimization and/or Mitigation Measures

The implementation of the Build Alternative will not cause any adverse land use or zoning impacts. Therefore, no measures are required to avoid, minimize or mitigate land use impacts.

2.1.2 Consistency with State, Regional and Local Plans

Affected Environment

The project alignment occurs within an area that is designated and used for industrial purposes; serves as a major transportation corridor; and does not contain any sensitive biological or cultural resources. The California Transportation Commission, in conjunction with the regional Metropolitan Transportation Commission, selected the proposed project to reduce congestion within the local area and to support goods movement from the Port of Oakland to eastern destinations. The project has been assigned Transportation Implementation Plan (TIP) ID CC-090032 and a Caltrans CTIPS ID of 20600004415. These IDs acknowledge the proposed project’s inclusion in regional transportation planning documents. City of Richmond

and Contra Costa County planning documents acknowledge and support efficient goods movement as well as the alternative mode of transportation afforded by the passenger trains (36 per day) that utilize this corridor.

During the comment period on the Environmental Assessment, the East Bay Regional Parks District submitted comments regarding the implementation of the “Breuner Marsh Restoration and Public Access Project” (Breuner Marsh Project). This project is located approximately one-quarter mile to the northwest of the proposed Richmond Rail Connector project alignment. The Rheem Creek channel functions as the approximate southern boundary of the Breuner Marsh restoration site. This project envisions the following activities: remove existing site facilities; excavate new channels; regrade the site; restore habitat; install two new trails; establish public access to the property; and provide long-term recreation. Demolition and mass grading (approximately 110,000 cubic yards) are expected to start in the summer of 2013 and the project will be completed and open to the public in 2015.

Environmental Consequences: Build Alternative

The proposed project is fully consistent with all state, regional and local plans, including the Richmond General Plan, the San Pablo General Plan 2030 and the Contra Costa General Plan 2005-2020. The local plans (County and City) acknowledge the importance of rail operations through the proposed corridor. As noted above, the project is listed in the Federal Transportation Improvement Program for 2011/2012.

San Pablo General Plan

Although the proposed Richmond Connector project will not be implemented in the City of San Pablo, the city is located on the west side of Giant Road adjacent to the project area. The City General Plan 2030 was reviewed and several applicable policies were evaluated. Giant Road is identified as an Auto Arterial in the General Plan Transportation Element and is scheduled for safety improvements and a Class 3 bikeway. Giant Road is also identified as a truck route within the city. Policy C-G-8 identifies that the City will seek to balance goods movement with health and quality of life priorities in the community. By relocating an estimated 2.4 BNSF trains per day approximately 600 feet to the west of the existing BNSF track, actual noise in the City of San Pablo will be slightly reduced. Thus, the proposed project is consistent with Policy C-G-8.

The San Pablo General Plan also contains Policy SN-1-41 regarding control of noise sources, including trains and construction activities. By slightly reducing relative train noise on the city, the proposed project is consistent with this policy and mitigation measures in Section 2.2.5 ensure that construction noise impacts do not exceed FTA guidelines. Policy SN-1-42 requires exploring the possibility of establishing Railroad Quiet Zones. The railroads do not control implementation of Railroad Quiet Zones. The City of San Pablo should coordinate with the City of Richmond to confer with the State Public Utilities Commission if it wishes to establish quiet zones where at-grade crossings occur along the boundary between the two cities. Regardless, by shifting the 2.4 BNSF trains to the west, the horn noise generated where at-grade crossings occur adjacent to the city will be slightly reduced. Based on this review, the proposed project is consistent with the City's General Plan.

Breuner Marsh Project

The goals of the Breuner Marsh Project are to restore a part of the San Pablo Bay shoreline to a healthy, biologically diverse natural community, to encourage public access along the shore and to fill a gap in the San Francisco Bay Trail for pedestrians and bicycles. As part of the restoration of the shoreline, the project plans to increase and improve wetland habitats in the project area.

The Richmond Rail Project is located to the east and south of Breuner Marsh, on the other side of the UPRR tracks. Future rail operations will not be altered on the UPRR tracks adjacent to Breuner Marsh. The proposed rail connector joins the UPRR tracks south of Rheem Creek, which is the southern boundary of the Breuner Marsh Project. While Rheem Creek does flow through the Richmond Rail Connector site to the Breuner Marsh site, the rail project will not change the capacity or flow of the creek. Therefore, the rail project will not prevent the restoration of wetlands proposed by the Breuner Marsh Project.

In addition, the new connector would not affect access to Breuner Marsh during or after construction. The proposed Breuner Marsh construction activities will overlap with the Richmond Rail Connector construction, but the connector track will be completed about a year before the Marsh is opened to the public.

As described in Section 2.4, there are also no cumulative impacts that would make the Richmond Rail Project inconsistent with the Breuner Marsh Project. Therefore, the Richmond Rail Project is consistent with the goals of the Breuner Marsh Project.

No-Build Alternative

The No-Build Alternative would result in no direct conflicts with any of the reference plans that affect the project area. An indirect effect of implementing this alternative would be to continue the impacts from conflicts between BNSF intermodal train operations in downtown Richmond and local circulation, including noise, air pollutants, and substantial delays where trains and vehicles intersect at at-grade locations in the city. The state and regional planning objective of eliminating these conflicts and enhancing the flow of goods from the Port of Oakland would not be achieved by implementing the No-Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

The implementation of the Build Alternative will not cause any conflicts or inconsistencies with any State, regional or local plans. Therefore, no measures are required to avoid, minimize or mitigate such impacts.

2.1.3 Community Impacts

2.1.3.1 Community Character and Cohesion

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [42 U.S.C. 4331(b)(2)]. Final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as, destruction or disruption of human-made resources, community cohesion and the availability of public facilities and services.

Affected Environment

This issue concerns the human environment, in terms of defining a community in regards to boundaries and neighborhoods. Local businesses, homes and activity centers also play a part in defining a community, as well as demographic characteristics, economic base, locations of community facilities and other relevant characteristics. The railroad tracks have existed within the community surrounding the connector track alignment for more than 100 years. Industrial uses have been conducted on the property between the two track corridors for at least 50 years. The project site is bounded by two major arterials, Giant Road on the east and Parr Boulevard

on the south. Industrial uses occur on the west side of the UPRR tracks. The north end of the project area is bounded by the elevated Richmond Parkway and a storage facility. Residential uses are located on the east side of Giant Road in the City of San Pablo. Thus, the community can be considered an industrial neighborhood bounded by major transportation corridors on all sides.

Both the BNSF and UPRR tracks pass through Richmond. BNSF tracks (refer to Figure 3a) turn southwest near Triangle Court where the tracks ultimately enter the BNSF classification yard in Richmond. A single BNSF track then traverses through the downtown portion of Richmond south of Cutting Boulevard and Interstate 580 until this track connects to the UPRR line at Stege. Stege is the railroad name for the location where the BNSF and UPRR tracks converge in the southeastern portion of the City of Richmond. Refer to Figure 3. The UPRR and BNSF tracks parallel each other until approximately Triangle Court where the UPRR line crosses the BNSF tracks and heads generally south-southeast until Stege, where the two railroads again converge. The proposed project will not alter any of these existing tracks. The only change will be a shift of several BNSF intermodal freight trains onto the UPRR line between Stege and the project site once the connector track is installed. All other train operations will remain as they are or as future demand will support.

Environmental Consequences: Build Alternative

The construction and operation of the proposed project will not result in the acquisition of any residential property. The proposed alignment is situated within an area designated for industrial land use and which has historically been used for industrial activities. The existing housing areas in the project vicinity are located outside of the proposed project area, east of Giant Road. These developments were built long after the BNSF and UPRR tracks were in operation and were installed with the awareness in each community of the housing proximity to the tracks and rail operations within the rail corridor. The proposed project will not alter the existing physical conditions for these residences.

The proposed project would not have any identifiable adverse long-term effect on the affected communities or neighborhoods. In fact, there would likely be a positive effect on these communities as the connector track project and improvements to signals and train control along with improvements to roads will make it less likely for trains to be delayed, resulting in less waiting and fewer interruptions in the flow of traffic where roads intersect with railroad tracks at at-grade crossings. The only road improvement will occur where the existing BNSF track crosses John Avenue. The new connector track lead will begin north of John Avenue, which will result in improvement of the existing at-grade crossing on John Avenue to accommodate two tracks instead of the existing single track. The new at-grade crossing will be concrete and much smoother than the existing asphalt track crossing on John Avenue.

This will improve the flow of traffic on local streets within the City of Richmond. Additionally, air quality effects of freight trains near the rail corridor should be reduced as fewer train delays result in less idling of trains and lower adverse air quality emissions from vehicles idling at these at-grade crossings. Noise from idling trains would also be reduced. Based on the above information, the Build Alternative would not affect community character and cohesion.

No-Build Alternative

The No-Build Alternative would result in no changes in community character or cohesion at the project site. An indirect effect of implementing this alternative would be to continue impacts from conflicts between BNSF intermodal train operations in downtown Richmond and the neighborhoods along the BNSF track and Stege, including noise, air pollutants, and substantial

delays where trains and vehicles intersect at at-grade locations in the city. The state and regional planning objective of eliminating these conflicts and enhancing the flow of goods from the Port of Oakland would not be achieved by implementing the No-Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

The implementation of the Build Alternative will not cause or contribute to substantial changes in community character and cohesion. Therefore, no measures are required to avoid, minimize or mitigate such impacts.

2.1.3.2 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. As documented in the preceding section, the City of Richmond contains a high percentage of minority and low-income populations.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in the project. The California Department of Transportation's commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix 3 of this document.

Affected Environment

According to the Contra Costa County General Plan Housing Element, the county had a relatively high median household income in 2000 of \$79,000. In 2009, the city's median household income was identified as \$50,346, with per capita income at \$23,349. By contrast the City of Richmond General Plan indicates that approximately 50% of the households within the city were considered lower-income households. For 2011, Health and Human Services defined the poverty level for a family of four as \$22,350. In "City Facts," last updated in July 2009, the City provides the following data on household income:

- Less than \$10,000 = 9.2%
- \$10,000-\$14,999 = 5.4%
- \$15,000-\$24,999 = 10.9%
- \$25,000-\$34,999 = 10.3%
- \$35,000-\$49,999 = 13.9%
- \$50,000-\$74,999 = 17.1%
- \$75,000-\$99,999 = 14.2%
- \$100,000-\$149,999 = 12.5%
- \$150,000-\$199,999 = 4.2%
- \$200,000 or greater = 2.2%
- Median Income in the City of Richmond (50% above and 50% below) = about \$50,000
- Median Income in Contra Costa County = about \$78,385

"City Facts" identifies the percentage of populations in Richmond as follows:

- Hispanic or Latino = 33.5%
- Black or African American = 30.0%
- White = 19.4%
- Asian = 14.4%
- Other = 2.7%

Contra Costa County QuickFacts from the US Census Bureau identifies percentage of populations in Contra Costa County as follows:

- Hispanic or Latino = 24.8%
- Black or African American = 9.7%
- White = 47.3%
- Asian = 15.2%
- Other = 3%

The City has a substantially higher proportion of minority residents (80.6%) compared to the County (52.7%). Since the minority community in Richmond is substantially greater than that which occurs in the County, and since a substantial portion of the City population is below the current household poverty level (25.5%) when compared to the County (9%), the proposed project occurs within an environmental justice community.

Environmental Consequences: Build Alternative

The following issues were evaluated to determine if they would affect environmental justice populations:

- Community Character & Cohesion – The proposed project would be constructed in an industrial area between two railroad tracks. No residences would be acquired and no neighborhood would be divided by the project. The industrial property proposed for acquisition contains one small storage structure and no other structures. A portion of the property to be acquired contains a capped contaminated site that has been properly closed. No existing businesses will be acquired; therefore no adverse effects on the environmental justice community in Richmond will result from project implementation. Access to residential and community industrial resources would not change. More information is included in Section 2.1.3.1.
- Air Quality – The detailed evaluation of air quality issues in Section 2.2.4 indicates that the project-related emissions of criteria pollutants will not exceed regional levels established by the Bay Area Air Quality Management District and project-related emissions will meet the Federal conformity levels of the Clean Air Act. A review of the potential for localized impacts (such as fugitive dust, Carbon Monoxide hotspots or diesel particulate concentration) indicates that the project will not expose the local population to project-specific or nuisance hazards from air pollutants with the implementation of minimization measures during construction.
- Noise – As a consequence of shifting an average of 2.4 freight trains to the UPRR tracks per day (this value is based on the total number of trains over the 12-month period from May1, 2011 to June 1, 2011) over the proposed Richmond Rail Connector, the noise environment between the proposed rail connector and Stege, where the new trains will operate, will be altered by a slight increase in train noise and horn noise. The increase in train noise relative to the existing noise environment will add one decibel within the rail corridor and the

increase in horn noise will add one decibel at three existing at-grade track/road crossings. The rail corridor from the rail connector is bounded by industrial uses except at one at-grade road crossing location where the increased horn noise between the current condition and the modeled future condition is approximately 1 decibel. This increase in sound level is undetectable. However, because of the existing noise levels, Federal Railroad Administration guidelines consider this is a moderate impact. Noise minimization or attenuation measures were evaluated and determined to be infeasible for the affected residences. Please refer to the detailed noise discussion in Section 2.2.5.

- **Transportation/Traffic** – The proposed project will have no adverse effect on any transportation or traffic issues. The project will benefit goods movement through the community of Richmond and will enhance the flow of local traffic in downtown Richmond by re-routing the slow-moving BNSF intermodal trains that presently traverse the community from Stege to the BNSF yard and then from the yard back to the project area on the existing BNSF mainline track. Refer to Figures 3a and 3b.
- **Hazardous Materials** – The connector track alignment will be constructed on top of a capped contaminated soil site. Specific measures will be implemented to prevent disturbance of this cap and no exposure of the remediated contaminated site will occur from implementing this project. No other substantial exposure of the local community to hazardous conditions will occur from implementing the proposed project.
- **Construction Impacts** – All construction activities, other than delivery of material to the project site, will occur within the proposed connector track alignment and adjacent property. The project will generate fugitive dust, but with implementation of dust control measures, such as application of water and covering trucks, the fugitive dust can be prevented from leaving the project site. No other potential air emissions were identified that could affect people in the area to during construction. Noise effects from construction will be controlled by limiting construction activities to daylight hours and implementing other noise minimization measures during construction. Access exists to the project site from both Parr Boulevard and Giant Road and the maximum of approximately 150 vehicle trips, including truck delivery of fill material, can occur without any adverse effect on the local circulation system. Traffic controls on the local access roads will be used when trucks access and leave the construction area. No on-road detours are anticipated, but if required for short periods during the day, such detours will be coordinated with the local emergency service providers through implementation of a construction traffic management plan approved by the local police, fire and other emergency service providers.

Based on the above discussion and analyses in this document, the Build Alternative will not cause disproportionately high or adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice.

No-Build Alternative

No direct environmental justice impacts would occur from the No-Build Alternative as conditions would remain the same as under existing conditions. Indirectly, failure to improve the movement of BNSF's Port of Oakland intermodal trains would allow adverse effects on the local circulation system, and related adverse air and noise impacts, to continue to occur in Richmond.

Avoidance, Minimization and/or Mitigation Measures

No measures are required.

2.1.3.3 Utilities and Emergency Services

Affected Environment

Utilities

Kinder Morgan has two high pressure natural gas pipelines within the UPRR right-of-way, an 8" pipeline on the east side of the tracks and a 12" pipeline on the west side of the tracks. A fiber optic line is located within BNSF right-of-way.

Fire Protection

The proposed project area is not in a wildland fire area. The Contra Costa County Fire Protection District administers and provides suppression personnel. Support personnel are Contra Costa County employees. The District is a full service fire department providing emergency services to all unincorporated areas of the county through a network of fire stations, personnel, and equipment. The District's headquarters is located at 2010 Geary Road, in Pleasant Hill, California.

Fire protection services for the City of Richmond are provided by the Richmond Fire Department, which staffs seven fire stations. The Fire Department has 89 sworn personnel and 7 non-sworn personnel.

City of Richmond Fire Stations

Station #61 140 W. Richmond Avenue

Station #62 1065 7th Street

Station #63 5201 Valley View Road

Station #64 4801 Bayview Avenue

Station #66 4100 Clinton Avenue

Station #67 1131 Cutting Blvd.

Station #68 2904 Hilltop Drive

In addition to fire suppression, the City Department provides other services such as emergency medical services, building inspection, fire prevention, building plan review, arson investigation, and public education.

Police Protection

The Contra Costa County Sheriff's Department provides police protection services throughout the county. The Contra Costa County Sheriff's main headquarters is located at 651 Pine Street, in Martinez, California. In the event that the Sheriff's Department requires assistance or is unable to respond within the unincorporated areas surrounding the cities, local Police Departments dispatch officers as needed, upon request of the Sheriff's Department. The Sheriff's Department has full law enforcement authority in the unincorporated areas of Contra Costa County, and the California Highway Patrol also has full traffic enforcement responsibility for state highways in the county.

Police protection services are provided to the City of Richmond by the Richmond Police Department. The Department's headquarters is located at 1701 Regatta Boulevard, in Richmond, California.

Environmental Consequences: Build Alternative

The proposed project may require the relocation of one of the Kinder Morgan pipelines and the fiber optic line because they may conflict with installation and operation of the connector track. The plan at this time is to encase the pipeline on the east side of the tracks, or if necessary relocate it within the UPRR existing right-of-way. No effect is anticipated for the 12" pipeline on the west side of the tracks, but if necessary it may also be encased. The existing fiber optic line will also either be encased to protect it or relocated within the existing BNSF right-of-way. Managing these utilities will not require additional work beyond that already proposed within either railroad right-of-way.

Emergency Services

The existing rail operations place a minimal demand on fire and police protection under routine operations. The proposed project does not alter the number of train operations, and as a result it has a low potential to generate demand for emergency services during construction or future operations. Closure of existing roads for certain periods is not anticipated, but if it must occur, such closure would require development of alternative emergency response routes (detours). Similarly, construction staging areas may experience an increase in trespass and theft activities over the short-term, which can place additional demand on local law enforcement services. These issues are addressed below.

Fire Protection

Along the whole construction route, a minimal potential exists to create a random demand for emergency response services. Implementation of the measure provided in the following section will ensure that potential adverse impacts to emergency fire response capability at the project site and in the immediate project area are maintained.

Over the long term, the installation of the connector track and associated rail improvements will facilitate better emergency response capabilities. The connector track will facilitate better movement of trains along the corridor, thus reducing the amount of time that future BNSF intermodal trains spend at any one point, such as at an existing at-grade road crossing. No mitigation is required for the long-term emergency access and fire protection capability of the affected fire departments. Future access will be equal to or better than the existing condition. The proposed project is not located in or near a wildland fire area. No potential exists to increase fire hazards in wildland areas or in the project area.

Police Protection

Police emergency responses will experience the same short-term impacts during construction of the connector track as fire emergency response. Similar mitigation will be implemented to ensure that police response times are maintained within each jurisdiction's response time guidelines. Implementation of the measure provided in the following section will ensure that potential adverse effects to emergency police response capability are minimized to a level such that the current level of service (as of the date of construction) is maintained to the project site and surrounding area.

Staging and equipment storage areas shall be provided with adequate protection to minimize potential for trespass and theft. Access control shall be implemented by BNSF and the construction contractor during construction to minimize demand for law enforcement response during construction. Implementation of the measures provided in the following section can ensure that potential demand for law enforcement resources during construction is minimal.

The long-term impacts from implementing the proposed project will be beneficial for law enforcement access throughout the city and county for the same reasons as outlined above for fire department emergency access, i.e., fewer slow BNSF trains in downtown Richmond.

Based on the analysis presented above emergency services will not experience substantial adverse impacts from project implementation as long as measures outlined in the next section are implemented.

No-Build Alternative

No direct utility or service impacts would occur as a result of implementing the No-Build Alternative as conditions for all utility and emergency services would remain the same as under existing conditions. Indirectly, failure to improve the movement of BNSF's Port of Oakland intermodal trains would allow adverse effects on the local circulation system, and related adverse air and noise impacts, to continue to occur within the City of Richmond. The congestion created by delays at intersections in downtown creates a higher potential for impacts to emergency response services than the Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

The following measures will be implemented to avoid, minimize or mitigate project-related effects to utilities and services, including emergency services.

- Prior to initiating relocation of any utility system located within the railroad rights-of-way, BNSF will notify the pertinent utility of the BNSF construction plan. BNSF will work with the utility under the terms of the utilities agreement to occupy the BNSF and UPRR's rights-of-way to limit short-term system relocation effects and minimize outages to the degree feasible. BNSF shall submit sufficient engineering data to verify that remaining utility systems will function as effectively after relocation as it does before relocation.
- Prior to initiating construction of the proposed project, BNSF shall submit and have approved an emergency response access plan for fire, ambulance and police services that meets each affected jurisdiction's response time frame.
- Prior to initiating construction of the proposed project, BNSF shall submit and have approved an access control plan to its staging and equipment storage areas that meets each affected jurisdiction's crime minimization standards.

2.1.3.4 Traffic and Transportation

Regulatory Setting

The Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally-assisted programs is governed by the USDOT regulations (49 CFR part 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). FHWA has enacted

regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

Affected Environment

The proposed project is a non-standard transportation project because it focuses on the rail transport system, not vehicular traffic on federal, state and local roadways. The County General Plan anticipates a year 2020 buildout of Contra Costa County. The movement of people, goods and services through various transportation modes is, and will continue to be, vitally important to the county. Two roadways in the project area provide vehicular access to the proposed Richmond Rail Connector alignment. Giant Road is located on the east side of the connector rail site. It is an arterial providing north-south access in the project area. Parr Boulevard is a two-lane arterial that provides east-west access and it is located just beyond the southern end of the proposed connector track alignment. Richmond Parkway is a major arterial roadway with limited access in the project area. It is located near the north end of the connector track and the new BNSF track will cross beneath the Parkway adjacent to the existing BNSF track, in the vicinity of the Giant Road/John Avenue intersection.

There are several alternative forms of transportation that serve county residents and businesses. Rail and air services transporting people and freight provide access to the rest of the state and the nation. Public transit systems help ease congestion and provide transportation services locally. The BART system provides fixed route transit services throughout the county.

Bicycle routes make it easier for residents to use bicycles as a form of transportation and also serve a recreational function. The Contra Costa Transportation Authority prepared the Countywide Bicycle and Pedestrian Plan. There are no identified bicycle routes on the roads adjacent to the project site. The future construction of bikeways will be administered by either the Contra Costa County Department of Public Works or Caltrans, depending upon which agency is responsible for a road with a bike route.

Two companies currently provide rail service to Contra Costa County; the UPRR and BNSF. All lines generally traverse the county in a north-south direction. These rail lines are primarily used for the movement of freight, although Amtrak passenger trains, including Capitol Corridor passenger trains, currently run along a portion of both the UPRR and BNSF line. Within the project area, BNSF currently has an average of 18-30 trains per day, all freight trains. Within the project area, UPRR currently has an average of about 50 trains per day, with 40 of these trains being Capitol Corridor and Amtrak passenger trains. Of the 18-30 BNSF trains, an average of 2.4 freight trains per day are intermodal trains that would no longer take the circuitous route through the City of Richmond where these slow-moving trains cause delays on the local circulation system. Refer to Figure 3a which shows the BNSF route through Richmond.

Environmental Consequences: Build Alternative

No increase in train traffic will be generated by the proposed project. The redirection of the BNSF intermodal trains will remove an impediment to travel in downtown Richmond where many at-grade crossings exist, particularly in the Cutting Boulevard vicinity. This would reduce conflicts between freight trains and local traffic, improving travel in downtown Richmond. This would also lead to increases in average rail operational speeds (not maximum speed) and less delays for all trains, including passenger trains.

Construction Impacts

Development of the Build Alternative as described in Chapter 1 may create short-term circulation system impacts and generation of additional construction-related trips, which could adversely affect the area's circulation system.

The adverse impact will typically be limited to about a month at the intersection of Giant Road and John Avenue where trucks transporting fill will access the construction alignment of the proposed connector track. The maximum number of trips per day will occur during import of fill where up to 100 deliveries per day will occur over a ten-day period. There is adequate stacking area on Collins Road and the project staging area to ensure that trucks will not be stacked on Giant Road. Therefore, assuming a maximum of 20 workers on site and 100 truck trips, the proposed project is forecast to result in approximately 240 trips on the maximum day of operation. Based on the capacity of the local circulation system to access the site, both Giant Road and Parr Boulevard, construction of the proposed project will not cause substantial delays on the adjacent circulation system. Bicycle and pedestrian access to the project area will be maintained during construction. Note that the new rail will be delivered by train, not by trucks on local roadways.

No-Build Alternative

The No-Build Alternative would result in no direct impacts to the transportation system as the existing conditions would not be changed. However, indirectly the No-Build Alternative would force BNSF to continue up to 2.4 train movements through downtown Richmond along the existing BNSF tracks. With up to nine at-grade crossings, this will continue the adverse impact that already exists on the city's circulation system that this project is designed to eliminate.

Avoidance, Minimization and/or Mitigation Measures

Prior to initiating interconnection track construction, a construction traffic management plan shall be submitted and approved by the City of Richmond and Contra Costa County. The standard of review for the submitted plans shall be the provision of safe traffic flow on the local circulation system during construction and the provision of adequate access through construction areas to meet safety and emergency vehicle access and transit through construction areas at all times when construction is underway for any components of the proposed project. At a minimum this plan shall define the following:

- How to minimize disruption of vehicle and alternative modes of traffic at all times, but particularly during periods of high traffic volumes (peak hours on local roadways);
- Adequate signage and other controls, including flagpersons, to ensure that traffic can flow adequately during construction;
- The identification of alternative routes that can meet the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; at the end of each construction day roadways shall be prepared for continued utilization without any significant roadway hazards remaining;
- Time of construction activities (e.g., off-peak hours)
- Truck/Haul routes
- Construction employee parking
- Construction equipment staging
- Potential lane closures
- Work zone traffic control
- Control of traffic at any locations where short-term hazards cannot be avoided.

2.1.3.5 Cultural and Historic Resources

The following findings and analysis are based on the Historic Property Survey Report, approved in June 2012 and the Archaeological Survey Report approved in May 2012.

Regulatory Setting

“Cultural resources” as used in this document refers to all “built environment” resources (structures, bridges, railroads, water conveyance systems, etc.), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. Laws and regulations dealing with cultural resources include the National Historic Preservation Act of 1966, as amended, (NHPA), which sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer, and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department.

Affected Environment

Information in this section is based on the “Archaeological Survey Report Rheem BNSF and UPRR Connection Track, May 2012.”

The purpose of the study was to identify any archaeological resources within or immediately adjacent to the undertaking’s Area of Potential Effects (APE). The scope of the study included a historical/archaeological resources records search, historical background research, Native American contacts, consultation with the local community, and an intensive-level field survey.

Throughout the course of the study, no “historic properties,” as defined by Section 106 regulations were encountered within or adjacent to the APE. However, the APE is in close proximity to a number of known Native American shell mounds from which numerous human burials and artifacts have been recovered. In light of those discoveries, coupled with correspondences with the Native American tribes suggesting that similar cultural resources may be present within or in the immediate vicinity of the APE, the potential of encountering such subsurface cultural remains within the project boundaries cannot be overlooked.

Environmental Consequences: Build Alternative

Based on the above analysis, the proposed alignment does not have any historic or archaeological resources on the ground surface along the Richmond Rail Connector alignment. As designed the project will be constructed with minimal excavation on the proposed alignment or in support of the proposed action. However, a potential exists for subsurface resources to be exposed and this potential will require active management during construction to resolve. Two measures are provided below to address the potential for exposure of subsurface resources.

Environmental Consequences: No-Build Alternative

The No-Build Alternative would result in no direct or indirect adverse impacts to the cultural resources of the project site nor would implementation of this project cause any offsite adverse effects to cultural resources.

Avoidance, Minimization and/or Mitigation Measures

- If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.
- If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District 4 Environmental Branch so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 Hydrology/Floodplain

Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration requirements for compliance are outlined in 23 CFR 650 Subpart A. In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The 100-year floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the 100-year floodplain.”

Affected Environment

According to the Contra Costa County General Plan, all of Contra Costa County's water drains into the San Francisco Bay/Delta system. Water from the western portion of the county drains into San Francisco Bay or San Pablo Bay, while that from the northern and eastern portions of the county drain into Suisun Bay and the Delta river channels, which eventually flow into the San Pablo and San Francisco Bays. Drainages in the vicinity of the proposed connector track include Rheem Creek and San Pablo Creek. Only Rheem Creek will be affected by the proposed project where a bridge will be placed across this concrete-lined channel. San Pablo Creek is located just south of Parr Boulevard, which is outside the southern extent of the connector track improvements. Please refer to Federal Emergency Management Agency's Flood Insurance Rate Maps (FIRM) that encompasses the project area (Panels 0226F and 0228F (see Appendix 2). The Rheem Creek channel and the western portion of the project site (adjacent to the UPRR tracks) are located within the 100-year flood hazard area as shown on FIRM Panel 226.

The Contra Costa County Flood Control and Water Conservation District (FC District) maintains several flood control facilities in the county, such as Rheem Creek. Where the FC District does not have formed drainage area entities and does not own any flood control facilities, the FC District only serves in an advisory capacity to the local jurisdictions on drainage and flood control matters. The cities within the county and the County Flood Control and Water Conservation District have developed regional drainage plans to guide the implementation of new drainage systems and provide the basis for local and federal flood control projects. Adopted drainage areas allow for the assessment of drainage fees for new developments. According to the County's General Plan, the proposed project area is located outside of a drainage area with established fees.

Environmental Consequences: Build Alternative

The County Flood Damage Prevention Ordinance contains specific requirements for development in various flood zones designated on the FIRM maps. According to the FIRM of the project area, about one-half of the connector track alignment is located within the 100-year floodplain. The Rheem Creek channel is proposed to be bridged with a clear span bridge over the channel, and the remainder of the alignment will be elevated above the 1-2 foot flood elevation adjacent to UPRR tracks along the southern portion of the connector track alignment.

In general, the majority of the project alignment is topographically compatible with all of the proposed project facilities identified in the project description. The topography of the proposed track alignment is essentially flat and drainage from the BNSF and UPRR rights-of-way are already established. Both currently flow into Rheem Creek at different locations. The new track will occupy a portion of the existing rail rights-of-way as well as currently undeveloped industrial properties to be acquired for the proposed connector track alignment. Unlike a paved roadway, the new track high fill (the elevated earthen fill beneath the steel rail concrete ties and rock ballast) is not impervious to precipitation and the high fill combined with adjacent drainage swales ensure that the base floodplain elevation will not be increased as a result of installing the new connector track. Thus, the project is not forecast to substantially increase runoff or cause any major modifications in discharge of runoff from the existing rights-of-way or acquired lands.

No long-term adverse effects to surface or groundwater hydrology is anticipated to result from installing and using the connector track. Permeability will remain relatively the same where the new track replaces the compacted ground within BNSF and UPRR rights-of-way. The new connector track will continue to discharge runoff to the same regional drainage system that presently serves the project alignment. All existing drainage culverts or boxes will be installed at the same or comparable size as the existing culverts.

Drainage from the project site and adjacent properties presently follows an existing drainage swale located on the east side of the UPRR tracks. This drainage will continue to function, but where fill is placed to connect the new rail connector to the UPRR track, the existing swale will be replaced by a 48" culvert. This culvert will convey the existing flows upstream of the fill area to the existing swale downstream of the fill area. No change in the existing drainage pattern will result from this onsite drainage system modification. Consequently, no substantial effect to downstream surface water hydrology is anticipated.

Implementation of the proposed project will place some of the proposed facilities (the western portion of the alignment adjacent to the UPRR tracks) in areas exposed to 100-year flood hazards, as outlined in the existing setting discussion above. Portions of the existing railroad track and facilities already lie within the 100-year flood hazard area as identified on the referenced FIRM panels (0226F and 0228F) (see Appendix 2). The western portion of the new

connector track will be similarly exposed. However, the new track is not forecast to impede or redirect flood flows in any different manner than the existing environmental setting. Further, due to the high fill elevating the tracks above the flood hazard elevation on the property, the new connector track will not be exposed to significant flood hazards.

The new bridge over Rheem Creek will clear span the Creek channel (no bridge structures will be placed in the channel) and be placed above the 100-year flood flow elevation within the channel with adequate freeboard to protect the new rail bridge.

The proposed project does not have facilities that will expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Based on all geologic studies and maps for the region, the location of the BNSF alignment is sufficiently distant from the Bay, such that a seiche or tsunami is unlikely to affect the new connector track.

Construction

A memo to file has been prepared that explains that construction of the project will not change the floodplain based on the following information:

- The track high fill elevates the new track above the 100-year floodplain shown on Flood Insurance Rate Maps from the Federal Emergency Management Agency.
- The high fill would not increase runoff or the elevation of the 100-year floodplain since it is partially pervious to storm water and the connector track property is essentially flat.
- The project would not change the site hydrology because culverts (two) will carry flows from the south end of the project area to the north end, where the surface runoff will continue to flow into the Rheem Creek channel. This flow pattern has functioned successfully in the area for more than 100 years since both BNSF and UP tracks were constructed.

Local effects on drainage would result primarily from the construction activities associated with the proposed action, such as removal of vegetative cover, grading, filling, and re-contouring the surface soil. During construction of the new track high fill, BNSF plans to grade a temporary crossing through the Rheem Creek channel (downstream of the concrete portion of the channel) to facilitate delivery of the fill material along the connector track alignment. Once the construction activities are completed, the channel will be restored to its original condition.

No-Build Alternative

The No-Build Alternative would result in no short- or long-term impacts to existing hydrology or the floodplain.

Avoidance, Minimization and/or Mitigation Measures

Where new track facilities are constructed in a flood zone, the facility will be installed to convey stormwater runoff flows through the track high fill to existing drainage facilities, and the new track shall be a minimum of one foot above the 100-flood hazard elevation or otherwise hardened against flood-related impacts. Bridge structures over Rheem Creek shall safely pass the 100-year design storm for the watershed with adequate freeboard. Storm flows downstream of new track facilities shall not be increased and shall convey flows in essentially the same manner as those leaving the present BNSF and UPRR alignments.

2.2.2 Water Quality and Stormwater Runoff

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. Known today as the Clean Water Act (CWA), Congress has amended it several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. Important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S., to obtain certification from the State that the discharge will comply with other provisions of the act. (Most frequently required in tandem with a Section 404 permit request. See below.)
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

USACE issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE’s Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA’s Section 404 (b)(1) Guidelines (U.S. EPA CFR 40 Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA), to the proposed discharge that would have lesser effects on waters of the U.S., and not have any

other significant adverse environmental consequences. Per Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the U.S. In addition every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California’s Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This Act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of “waste” as defined and this definition is broader than the CWA definition of “pollutant.” Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in a project area are contained in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions, and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollution Discharge Elimination System (NPDES) Program

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites which result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results

in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

In some cases the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Affected Environment

Contra Costa County is bordered by San Francisco Bay and San Pablo Bay to the west, and by Suisun Bay and the channels of the Sacramento and San Joaquin rivers on the north. Groundwater is a significant source of water supply in the proposed project area and throughout the San Francisco Bay region. Surface water within the San Francisco Bay Area is primarily supplied by the Sacramento and San Joaquin rivers, which enter the Bay system through the Delta at the eastern end of Suisun Bay. Many small rivers and streams also convey fresh water to the Bay system.

According to the San Francisco Bay Regional Water Quality Control Board's "San Francisco Bay Basin Water Quality Control Plan," flows in the region are highly seasonal, with more than 90 percent of the annual runoff occurring during the winter rainy season between October and April, while many streams go dry during the middle or late summer. Some of this surface runoff percolates into the ground to replenish groundwater aquifers. Rheem Creek enters the property from the east in a concrete channel, but the channel reverts to a natural channel within the proposed project alignment. Surface flows in Rheem Creek provide limited recharge of the local groundwater table in the vicinity of the connector track alignment.

According to Volume Two of the City of Richmond General Plan, groundwater within Richmond is a limited resource that is found in flatland areas with alluvial soils. The Richmond area is underlain by clay rich soils known as bay mud. According to the EIR prepared for the West Contra Costa Sanitary Landfill's Bulk Materials Processing Center and Related Actions, bay mud is composed primarily of inter-fingering alluvial fan/stream channel and estuarine deposits, which are divided into young bay mud and old bay mud within the project area. Young bay mud has a higher clay content and lower strength than the old bay mud. The young bay mud generally occurs between the surface and depths of about 50 to 70 feet below mean sea level (msl), while old bay mud occurs at depths ranging from 50 to 70 feet below msl to a depth of about 100 feet. Sand layers up to 20 feet thick occur below the old bay mud.

Due to the presence of bay mud deposits, drainage within the city is poor. As a result, the groundwater basin is very shallow and susceptible to pollution. According to the City of Richmond General Plan, groundwater use is primarily limited to irrigation. Potable water for the city is supplied by the East Bay Municipal Utility District.

Environmental Consequences: Build Alternative

Development of the proposed project will not alter the permanent activities associated with the project area (rail and surface transportation activities), but it will alter their configuration. The RWQCB and the Contra Costa County Flood Control and Water Conservation District have established municipal stormwater discharge standards for surface runoff that apply along the project alignment. The stormwater discharged from the modified track alignment must meet these discharge standards in order to ensure that water quality degradation will not occur. Minimization measures are provided below to ensure that future surface water runoff from the project alignment does not cause substantial water quality degradation from stormwater discharged by BNSF and UPRR facilities over the long term.

Stormwater runoff is not forecast to increase by a measureable amount because the track ballast and the high fill material are not impervious and do not generate substantial additional runoff from the project site. This project will require modifications to existing storm drain facilities and the construction of new stormwater drainage facilities beyond those which currently exist. These systems were designed to convey the same volumes of flows as the existing culverts and channels that occur along the alignment. The aerial photo in Figure 5 shows all of the locations where drainage facilities will be extended within the BNSF and UPRR rights-of-way and proposed connector track alignment. These new stormwater runoff facilities will enhance removal of stormwater from the project site into the Rheem Creek channel.

The Contra Costa County Flood Control and Water Conservation District (District) submitted comments and expressed concerns regarding future maintenance of Rheem Creek channel, primarily related to access. Please refer to comment letter #7 and the response to the Flood Control District's comments found in Chapter 3, Comments and Coordination. A mitigation measure has been added to ensure access for maintenance of the channel.

Construction Impacts

The process of constructing the connector track has a potential to cause erosion, sedimentation and accidental release of pollutants that could violate water quality standards. A SWPPP that includes best management practices (BMPs) will be compiled that will be applicable for all project activities within the connector track alignment. The goal of these BMPs is to protect overall water quality during the installation of the new connector track and support infrastructure. A performance standard for reducing pollutants in stormwater runoff is included in the measures below to ensure that local water quality standards are protected.

The California State Water Resources Control Board (SWRCB) has established a statewide construction General Permit applicable to the project. Under this general permit, it is the responsibility of the project proponent to submit a Notice of Intent to the SWRCB, prepare and implement the SWPPP, and revise the SWPPP BMPs as necessary as construction conditions change. Copies of the SWPPP will be made available to the San Francisco Bay Regional Water Quality Control Board (Region 2 RWQCB). The BMPs must include both structural and non-structural measures, where applicable, and the assignment of long-term maintenance responsibilities. The RWQCB has responsibility for overseeing compliance with the General Permit. These agencies oversee the implementation of the SWPPP and ensure that the BMPs are fully implemented and effective through routine monitoring and enforcement actions.

Over the long term no change in the quality of surface runoff will occur from implementing the proposed project.

No-Build Alternative

Under the No-Build Alternative there will be no change in surface runoff or any new potential for water quality degradation from continued runoff from the project site.

Avoidance, Minimization and/or Mitigation Measures

The following measures shall be implemented to minimize water quality degradation from project construction.

- A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for the project. The best management practices (BMPs) identified in the SWPPP will be used to minimize the potential for accidental releases of any chemicals or materials on the site that could degrade water quality, including solid waste, and require that any spill be cleaned-up, contaminated material properly disposed of and the site returned to pre-discharge condition, or in full compliance with regulatory limits for the discharged material. The portion of the SWPPP that addresses erosion and related sediment discharge shall specify that the measures shall achieve pollutant removal of sediment and other pollutants from disturbed areas to the maximum extent practicable.
- For long-term site disturbances, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.) or areas re-seeded with native vegetation to minimize potential erosion within the alignment, particularly from concentrated flows (rills, gully, etc.) and sediment transport from the alignment will be minimal as part of future surface runoff.
- Typical best management practices that may be implemented along the rail connector alignment include but are not limited to the following:
 - Add protective covering of mulch, straw or synthetic material (erosion control blankets, tacking will be required).
 - Limit the amount of area disturbed and the length of time slopes and barren ground are left exposed. After construction, soil shall be compacted to a level similar to pre-construction conditions.
 - Construct diversion dikes and interceptor ditches to divert water away from construction areas.

- Install slope drains (conduits) and/or water-velocity-control devices to reduce concentrated high-velocity streams from developing.
- Apply provisions of erosion and sediment control measures that reduce volume and velocity of flows and content of sediment to levels that do not cause major rill or gully erosion in susceptible areas. In addition, provide for restoration of areas that do become eroded.
- BNSF shall maintain and facilitate access for Contra Costa Flood Control and Water Conservation District to all areas of Rheem Creek channel located between the existing BNSF track on the east and the UPRR tracks on the west.

These are typical best management practices but the specific measures that will be implemented during construction will be defined when specific construction methods are defined by the construction contractor.

2.2.3 Hazardous Waste/Materials

The following findings and analysis are based on the Phase 1 Environmental Site Assessment.

Regulatory Setting

Hazardous materials including hazardous substances and wastes are regulated by many federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, and the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). The purpose of CERCLA, often referred to as “Superfund,” is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. RCRA provides for “cradle to grave” regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety & Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is encountered, disturbed during, or generated during project construction.

In addition to the above regulatory agencies, BNSF and UPRR maintain their own internal teams to manage hazardous materials and wastes and to respond to train accidents that result in the spill of hazardous or toxic materials into the environment along their rail corridors. Management of hazardous and toxic materials being shipped by rail includes maintaining records of such materials being shipped on each train and standard response procedures and trained personnel to deal with accidental spills when they occur.

Affected Environment

A variety of land uses, including industrial, commercial, and limited residential, are adjacent to the existing right-of-way of the BNSF and UPRR main line tracks within the proposed project segment of rail. The existing rail lines have been present since at least 1915, the earliest historical record reviewed. In between these two existing rail lines, the proposed rail connector crosses the vacant LJR Property, Rheem Creek and a portion of the North Richmond commercial/industrial property. The LJR Property has always been vacant land; however, recent grading activities have been conducted at the property, resulting in the placement of fill materials on the order of 8 feet thick, within much of the proposed railway alignment.

A detailed Phase I examination of the proposed Richmond Rail Connector alignment has been compiled to provide data on historic contamination of the alignment. This document is titled "Phase I Environmental Site Assessment BNSF Railway Proposed Richmond Rail Connector Richmond Contra Costa County, California, August 2009."

The North Richmond property, at 2801 Giant Road (the former Cooper Chemical Company brownfield site), has been commercial/industrial since 1946. Past environmental practices at this property have led to localized soil and groundwater contamination. The contamination at this property was addressed by placing and confining the contaminated soil into a deed-restricted area, called "Site R," and covering it with a 1-foot cap of soil. The proposed rail connector route passes over a portion of the "Site R" deed-restricted property at 2801 Giant Road. The Phase 1 site assessment recommends a comprehensive survey be conducted to determine if monitoring wells are within the proposed rail alignment and the amount of grading or ground disturbance that will be required within the "Site R" deed-restricted property. In addition, before acquiring any deed restricted property, BNSF should investigate (Health Hazard Evaluation) for potential health hazards during grading and construction.

Environmental Consequences: Build Alternative

The Phase 1 site assessment revealed recognized environmental conditions associated with some of the properties along the proposed connector track alignment. See Table 2.2.3-1 below. The past releases within the alignment consist of heavy metals and petroleum hydrocarbons. The contamination associated with these properties has been addressed and there are no current reported releases; therefore, no adverse environmental conditions should be encountered along the proposed alignment. However, that portion of the proposed alignment that crosses over Site "R" will need the approval of the Department of Toxic Substances Control (DTSC) prior to any change in ownership or current land use. Any existing groundwater monitoring wells within the proposed alignment will also need to be addressed, i.e., possibly abandoned, relocated, or replaced.

**Table 2.2.3-1
HAZARDOUS WASTE HISTORY**

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
Cooper Chemical, 2801 Giant Road (Within proposed alignment)	Cortese	Soil and groundwater contamination from heavy metals and petroleum hydrocarbons. Capped with 1 foot of soil. Land Use Restrictions, Certified Operations & Maintenance (O&M)	Low , depending on proposed grading
	CA Bond Exp. Plan	Remedial Investigation/Feasibility Study (RI/FS) investigation completed by Responsible Party	See above
	Response	Certified O&M, 5-year review approved, Continue Monitoring of groundwater annually and quarterly site inspections	See above
	Deed	Certified O&M	See above
	EMI	Bay Area AQMD, Listing for Total Hydrocarbon Gases, 0.015 ton/year (2005)	Low , no reported violations
	Envirostor	Certified O&M, Prohibited uses, notify DTSC with changes in use, property owner, prior to development	Low , depending on proposed grading
	Hist. Cal-Sites	Certified O&M, All planned activities implemented, Remediation continues	See above
Triple A Machine, 2801 Giant Road (Adjacent to the east)	HAZNET	Hazardous Waste Generator: waste oil and mixed oil, unspecified oil-containing waste, unspecified organic liquid waste, liquid waste with pH less than 2 with metals	Low , based on no reported violations
Earthquake Protection Systems, 2801 Giant Road (Adjacent to the east)	FINDS	National Emissions Inventory Database, No details were provided	Low , based on no reported violations
	EMI	EMI, Bay Area AQMD, Listing for Total Hydrocarbon Gases, 1 ton/year (2002-2003)	Low , based on no reported violations
Golden State Steel and Stair, Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	Hazardous Materials Management Program (HMMP), regulates businesses that store 55 gals. of hazardous materials liquid, 500 pounds of hazardous materials solid, or 200 cubic feet of hazardous materials as a gas, No reported violations	Low , based on no reported violations

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
Western Intermodal Services, 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	Same as above	Low , based on no reported violations
Richmond Machine and Fabricating, 2801 Giant Road (Adjacent to the east)	ERNS	Emergency Response and Notification System, for 6 gallon spill of anhydrous ammonia from a valve at an aboveground tank in 1991	Low , spill to soil was cleaned up
	HAZNET	Unspecified oil-containing waste	Low , based on no reported violations
Utility Aerial Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	HMMP and Aboveground Tank, No reported violations	Low , based on no reported violations
	HAZNET	Other organic solids, waste oil, and mixed oil.	See above
	Historical Cortese	No data provided	See above
RBJ Steel Fabricating, Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	HMMP, No reported violations	Low , based on no reported violations
Michael Bondi Metal Design, Inc., 2801 Giant Road (Adjacent to the east)	Contra Costa County Site List	HMMP, No reported violations	Low , based on no reported violations
North Richmond Properties, Inc., 2801 Giant Road (Adjacent to the east)	FINDS	National Emissions Inventory Database, No details were provided	Low , based on no reported violations
Weigmann & Rose International, 2801 Giant Road (Adjacent to the east)	FINDS	Other pertinent environmental activity identified at site	Low , based on lack of data
	RCRA-NonGen	Hazardous materials handler, Generator violations 1986, Achieved compliance 1991	Low , based on achieving compliance
Unspecified Facility Name, 2801 Giant Road (Adjacent to the east)	CHMIRS	2002, Two 2.5-inch natural gas lines were hit during an excavation in the road, and were repaired	None , based on incident

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
Lazy J Ranch, 3002 Giant Road (alignment crosses over a portion of the property)	SLIC	RWQCB Spills, Leaks, Investigations, and Cleanups, site is a cleanup program site	Low , based on completed cleanup
T-Mobile West Corporation, 2777 Giant Road (Adjacent to the south and east)	Contra Costa County Site List	HMMP, No reported violations	Low , based on no reported violations
Brulin Company, Inc., 2775 Giant Road (Adjacent to the south and east)	RCRA-SQG	Small quantity generator of solvents, more than 100 Kg and less than 1,000 Kg per month of hazardous waste	Low , based on no reported violations
	FINDS	California Hazardous Waste tracking System, No data provided	See above
	HAZNET	Unspecified aqueous solution	See above
	Contra Costa County Site List	HMMP, No reported violations	See above
	SLIC	San Francisco Bay RWQCB Spills, Leaks, Investigations, and Cleanups, site was a cleanup program site, Cleanup completed in 2006	Low , based on case completion
	CA WDS	The facility is listed as industrial with continuous or seasonal discharge that is a minor threat to water quality, under Waste Discharge Requirements	Low , based on waste discharge and NPDES requirements
American Standard, Inc., 3002 Giant Road (across Giant Road to the east)	CERC-NFRAP	Preliminary Assessment completed 1987, No further remedial action planned	Low , no further remedial action status
	Cortese	1997, Certified O&M, land use restrictions	Low , based on completed cleanup
	Ca Bond Exp. Plan	Heavy metals discovered at the site, Remedial plan submitted	Low , based on completed cleanup
	Response	5 underground storage tanks (USTs) were discovered and cleanup completed, except under buildings, Certified O&M, land use restrictions in place	Low , based on completed cleanup
	Deed	Land use restrictions	See Above

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
	Envirostor	Certified O&M, land use restrictions in place	See Above
	Hist. Cal-sites	Certified O&M, land use restrictions in place	See Above
Giant Trade Center, 3002 Giant Road (across Giant Road to the east)	HAZNET	Waste oil and mixed oil, other empty containers (30 gallons or more), off specification, aged or surplus organics	Low , based on completed cleanup
	HIST. Cortese	No data provided	See above
	Contra Costa County Site List	Listed in UST program, Inactive in 1987	See above
Broadway Project, American Standard, 3002 Giant Road (across Giant Road to the east)	HAZNET	Disposal of off specification, aged, or surplus organics	Low , based on no reported violations
	SLIC	UST closure, Diesel soil contamination discovered, Case still open	Low , based on the soil only contamination and distance from alignment

Facility Name, Address, Direction Relative to the Site	Listed Database(s)	Current Agency Status	Recognized Environmental Condition (REC) Potential
FMC Corporation - Richmond, 855 Parr Boulevard (Adjacent to the east)	Cortese	Land Use Restrictions, Certified Operations & Maintenance (O&M)	Low , remedial work completed
	Response	Site Mitigation and Brownfields Reuse Program (SMBRP), Soil and groundwater contamination from pesticides and other chemicals, Capped with asphalt, Certified Operations & Maintenance (O&M)	Low , See above
	DEED	Certified Operations & Maintenance (O&M)	Low , See above
	EMI	3 tons/year of organic hydrocarbon gases emitted (1995 through 2002)	Low , No reported violations
	Envirostor	Land Use Restrictions, Certified Operations & Maintenance (O&M)	Low , remedial work completed
	Hist. CAL-Sites	Deed restricted, Certified Operations & Maintenance (O&M)	See above
Crown Cork & Seal, 601 Parr Boulevard (adjacent to the west)	LUST	Leaking Underground Storage tank. Gasoline leak, site cleanup and case closed	Low , based on cased closed status
	CA FID UST	No data reported	See above
	Contra Costa County Site List	In UST program, Inactive in 1996	See above
	NPDES	Construction permit, No additional data supplied	Low , No violations
	Sweeps UST	Historical listing of 3 USTs, two 8,000-gallon and one 3,000-gallon	Low , Case closed status
	Hist. Cortese	No data provided	See above

Based on the above analysis, the proposed alignment does have historic contamination constraints that will require active management during construction to resolve.

No long-term change in hazards related to continued operation of railroad transport of hazardous materials is forecast to occur from project implementation because no new trains or transport activities will be generated as a result of project implementation.

Measures designed to minimize, control or remediate potential accidental releases must be implemented to prevent the creation of new contaminated areas that may require remediation in the future and to minimize exposure of humans to public health risks from accidental releases. Such measures are presented in the following section. These measures are provided to reduce

the potential for such accidents to occur (use of spill prevention countermeasure practices to minimize potential for accidental releases as part of construction activities); to immediately collect and store or remove the primary source of contamination, including soils; and to remediate any residual contamination to levels that do not exceed regulatory thresholds for allowable use in the future.

Since the proposed connector track project provides for more efficient flow of rail traffic through this segment of the rail corridor, the potential for rail accidents (which occur rarely) will be reduced relative to the existing situation. BNSF and UPRR's emergency response capabilities will remain the same and the ability to respond to accidents will remain the same after completion of the project as before. Therefore, the net effect of the proposed project is to reduce the potential for accidents relative to the current environmental setting and provide a comparable level of response capability should an accidental release of hazardous or toxic substances occur during future operations.

Construction Impacts

During construction the proposed project has a potential to expose some contaminated soil. However, the known contamination along the proposed alignment can be properly managed to prevent adverse effects from such exposure to the community and construction employees through the measures described below.

Inherent to the use of hazardous materials during construction, such as diesel fuel and other petroleum products, is the risk of an accidental release. Because of this risk, federal, state and local agencies have established regulations to minimize the likelihood of such occurrences. During construction or maintenance activities in support of the proposed project, fuels, oils, solvents, and other petroleum materials classified as "hazardous" will be used to support these operations.

There are two approaches to managing hazards: (1) minimize the potential release of hazardous or toxic substances into the environment; and (2) if released, have the resources and techniques on hand to respond to an accidental release, including controlling a release, managing any adverse exposure from a release; cleaning up (remediating) a release; and properly disposing of the material contaminated by the release.

No-Build Alternative

No public health or safety impacts would occur at the project site as a result of the No-Build Alternative.

Avoidance, Minimization and/or Mitigation Measures

- BNSF shall implement the Grading Safety Plan prepared for this project as approved by the Department of Toxic Substances Control. The performance standard for this study and remediation effort shall be to protect both humans and the environment from significant exposure to contamination during remediation or construction activities that could harm either people or the environment.
- All contaminated material encountered or exposed within the Richmond connector track segment that exceeds regulatory standards shall be capped as in the present circumstance or identified, collected and delivered to a licensed treatment, disposal or recycling facility that has the appropriate systems to manage the contaminated material.

- BNSF shall identify a qualified professional industrial hygiene firm and have a professional available to monitor all construction and remediation activities within the alignment of the connector track. At the end of construction, a report shall be submitted to the local and state regulatory agencies that summarizes all remediation activities and residual conditions at the completion of connector track installation. This report shall document the findings and basis for determining that there is no residual hazard remaining at the completion of construction.
- All spills or leakage of petroleum products during construction activities will be remediated in compliance with applicable state and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste will be collected and disposed of at an appropriately licensed disposal or treatment facility. Before determining that an area contaminated as a result of an accidental release is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken within the contaminated area to verify that these clean-up thresholds have been met.

2.2.4 Air Quality

The following findings and analysis are based on the Air Quality and GHG Impact Analyses, approved in June 2012.

Regulatory Setting

The Federal Clean Air Act (FCAA) as amended in 1990 is the federal law that governs air quality. The California Clean Air Act of 1988 is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency (U.S. EPA) and California Air Resources Board, set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and State ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns. The criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM, broken down for regulatory purposes into particles of 10 micrometers or smaller – PM₁₀ and particles of 2.5 micrometers and smaller – PM_{2.5}), lead (Pb), and sulfur dioxide (SO₂). In addition, State standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and State standards are set at a level that protects public health with a margin of safety, and are subject to periodic review and revision. Both State and Federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics with their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the NEPA. In addition to this type of environmental analysis, a parallel “Conformity” requirement under the FCAA also applies.

FCAA Section 176(c) prohibits the U.S. Department of Transportation and other Federal agencies from funding, authorizing, or approving plans, programs, or projects that are not first found to conform to State Implementation Plan (SIP) for achieving the goals of Clean Air Act requirements related to the NAAQS. “Transportation Conformity” takes place on two levels: the regional, or planning and programming, level. The proposed project must conform at both levels to be approved. Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 CFR 93 govern the conformity process.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and in some areas, sulfur dioxide (SO₂). California has nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO₂, and also has a nonattainment area for lead (Pb). However, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all of the transportation projects planned for a region over a period of at least 20 years for the RTP, and 4 years for the FTIP. RTP and FTIP conformity is based on use of travel demand and air quality models to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that requirements of the Clean Air Act and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA), make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and “open-to-traffic” schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter (PM₁₀ or PM_{2.5}). A region is “nonattainment” if one or more of the monitoring stations in the region measures violation of the relevant standard and U.S. EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by the U.S. EPA, and are then called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot spot analysis. In general, projects must not cause the “hot spot”-related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

The proposed project is located in the Bay Area Air Basin (BAAB). The BAAB encompasses nine counties, including all of Contra Costa County. The Bay Area topography is characterized by complex terrain with coastal mountains, interior valleys and various bays. The major gaps in the Coast Range occur in the Bay Area. The Golden Gate gap facilitates the inflow of marine air. The Carquinez Strait is the opening that allows airflow to leave the Bay Area into the Central Valley. The proposed project is located along the primary outflow from the Bay Area into the Central Valley.

The BAAB’s current attainment status with respect to federal standards is summarized in Table 2.2.4-1. In general, the Bay Area experiences low concentrations of most pollutants when compared to federal standards, except for ozone and particulate matter (PM-10 and PM-2.5), pollutants for which standards are exceeded periodically. The Bay Area’s attainment status for ozone has changed several times over the past decade, first from “nonattainment” to “attainment” in 1995, then back to “unclassified nonattainment” in 1998 for the 1-hour federal ozone standard. In June 2004, the Bay Area was designated as “marginal nonattainment” for the 8-hour ozone standard. In 2008, the U.S. EPA lowered the 8-hour ozone standard from

0.08 part per million (ppm) to 0.075 ppm. Whereas the air basin only marginally exceeded the 0.08 ppm standard, the 0.075 ppm standard is exceeded more frequently.

**Table 2.2.4-1
STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS AND ATTAINMENT STATUS**

Pollutant	Averaging Time	(State) SAAQS ^a		(Federal) NAAQS ^b	
		Standard	Attainment Status	Standard	Attainment Status
Ozone (O ₃)	1-hour	0.09 ppm	N	NA	See Note (c)
	8-hour	0.07 ppm	N	0.075 ppm	N(d)
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9.0 ppm	A	9 ppm	A
Nitrogen Dioxide (NO ₂)	1 hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	A	0.053 ppm	A
Sulfur Dioxide (SO ₂)	1 hour	0.25 ppm	A	NA	NA
	24 hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM ₁₀)	24 hour	50 µg/m ³	N	150 µg/m ³	U
	Annual ^e	20 µg/m ³	N	NA	NA
Fine Particulate Matter (PM _{2.5})	24 hour	NA	NA	35 µg/m ³	N
	Annual	12 µg/m ³	N	15 µg/m ³	A
Sulfates	24 hour	25 µg/m ³	A	NA	NA
Lead	30 day	1.5 µg/m ³	A	NA	NA
	Quarter	NA	NA	1.5 µg/m ³	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA

Notes: A = Attainment; **N** = Nonattainment; U = Unclassified; NA = Not Applicable or no applicable standard; ppm = parts per million; µg/m³ = micrograms per cubic meter.

- a SAAQS = state ambient air quality standards (California). SAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.
- b NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the three-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM₁₀ standard is attained when the three-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour PM_{2.5} standard is attained when the three-year average of 98th percentile is less than the standard.
- c The national 1-hour ozone standard was revoked by the U.S. EPA on June 15, 2005.
- d In 2008, U.S. EPA lowered the 8-hour federal standard for ozone to 0.075 ppm. EPA will issue final designations based upon this standard at which point the Bay Area Air Basin is expected to be designated as non-attainment.
- e State standard = annual geometric mean; national standard = annual arithmetic mean.

Source: BAAQMD

On June 2, 2010, the U.S. EPA established a new 1-hour SO₂ standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO₂ NAAQS

however must continue to be used until one year following U.S. EPA initial designations of the new 1-hour SO₂ NAAQS. EPA expects to designate areas during 2012.

With a marginal non-attainment designation of the federal 8-hour ozone standard, and with attainment of the federal PM-10 standard, no federal attainment planning as part of a State Implementation Plan (SIP) was required over the last several years. EPA lowered the 24-hour PM-2.5 standard from 65 µg/m³ to 35 µg/m³ in 2006. EPA designated the Bay Area as nonattainment of the PM-2.5 standard on October 8, 2009. The effective date of the designation is December 14, 2009 and the Air District has three years to develop a plan, called a State Implementation Plan (SIP) that demonstrates the Bay Area will achieve the revised standard by December 14, 2014. The SIP for the new PM-2.5 standard must be submitted to the U.S. EPA by December 14, 2012.

In September 2005, the BAAQMD, in cooperation with the Metropolitan Transportation Commission and Association of Bay Area Governments, prepared the *Bay Area 2005 Ozone Strategy*. The Ozone Strategy is a roadmap showing how the San Francisco Bay Area will achieve compliance with the state 1-hour ozone standard as expeditiously as practicable, and how the region will reduce transport of ozone and ozone precursors to neighboring air basins. An update of the 2005 Ozone Strategy was adopted in 2010. The 2010 Clean Air Plan (CAP) has the following objectives:

- Comply with California Clean Air Act requirements
- Develop an integrated plan that addresses multiple pollutants
- Adopt control strategies to minimize public health risk
- Achieve state standards as soon as practical
- Update previously adopted control strategies
- Reduce transport to downwind air basins
- Report on progress and update baseline and trends

The 2010 CAP and associated CEQA documents were adopted in June, 2010. The 2010 CAP is not a SIP document and does not respond to federal requirements for PM-2.5 or ozone planning. However, the CAP control strategies to reduce PM emissions will be mirrored in any mandated federal planning requirements.

Because there is no current SIP for any federal non-attainment pollutants in the BAAB, for purposes of a conformity finding with Section 176(c), it was determined that current compliance with federal clean air standards constitutes that a maintenance plan instead of a SIP is in place. For air basins in which a maintenance plan is valid, the following annual emissions represent a *de minimis* annual emissions threshold for evaluating conformity. If a project's emissions are below the *de minimis* value, then the project is deemed to conform to the SIP and no further analysis of air quality impacts is required.

NOx	-	100 tons/year*
VOC	-	100 tons/year*
CO	-	100 tons/year
PM-10	-	100 tons/year
PM-2.5	-	100 tons/year
Pb	-	25 tons/year

*-50 tons per year if the basin is designated non-attainment for ozone

The proposed project would improve rail efficiency and reduce both train and motor vehicle engine idling over the long term. Operational aspects of the project are air quality positive. The only anticipated source of potentially adverse impact would be during construction. For the proposed connector track project, construction activity emissions that do not exceed the above annual *de minimis* thresholds would be considered in conformance with Section 176 (c) of the federal Clean Air Act. For purposes of a conservative analysis, the more restrictive level of 50 tons per year for NOx and VOC was used assuming that the BAAB will be designated as federal non-attainment for ozone by the time project construction would occur.

Ozone, PM-10, and PM-2.5 are clearly the "problem" air pollutants in the project area, and in the air basin as a whole. The project area is however, slightly better ventilated than locations farther inland in the San Francisco Bay Area from marine airflow. Ozone levels are lower in comparison to the southern counties in the basin.

If the project-related emissions from construction and operations are less than specified "*de minimis*" levels, no further SIP consistency demonstration is required. The following emissions levels are presumed evidence of SIP conformity presuming that the BAAB will be designated as a non-attainment area for the recently revised 8-hour standard for ozone:

VOC/ROG*	-	50 tons/year
NOx	-	50 tons/year
PM-2.5	-	100 tons/year
PM-10	-	100 tons/year

*VOC/ROG (Volatile Organic Compounds/Reactive Organic Gas)

Environmental Consequences: Build Alternative

The proposed project consists of the installation of a connector track between the existing BNSF track and the UPRR tracks in the northern portion of the City of Richmond. The purpose of this connector track is to allow BNSF intermodal trains serving the Port of Oakland, which currently must wind their way through Richmond, to transfer from the BNSF track to the UPRR tracks, which provide a more direct route to and from the Port (refer to Figures 3a and 3b). The effect of this rail system infrastructure improvement will be to enhance flow of freight (goods movement). It will reduce emissions associated with the longer route through the city on the BNSF tracks and also reduce vehicle emissions and adverse effects on the flow of traffic at approximately fourteen at-grade crossings in Richmond. This project is not forecast to have any effect on future train operations (number of trains) because the actual number of trains is determined by the volume of freight arriving at the Port at any given time and because track capacity is not presently constrained and no overall increase in track capacity will be created by this proposed infrastructure improvement. The effect of the proposed project will be to enhance the overall flow of train traffic through the project area.

Operational Impacts

Vehicle Idle Reduction

Operationally, the proposed connector will allow for more efficient rail operations by reducing idle times for trains on sidings waiting for single tracks to clear. If a portion of BNSF traffic to/from Oakland further shifts to UPRR tracks between Stege Junction and the new connector, a number of Richmond road/rail intersections will experience less delay because almost all BNSF mainline intersections are at-grade while most UPRR intersections south of Chesley Avenue are grade-separated. The comparison between uses of the UPRR versus BNSF mainline in terms of the numbers of at-grade crossings is summarized in Table 2.2.4-2:

**Table 2.2.4-2
LOCAL ROAD AND TRAIN TRACK AT-GRADE CROSSINGS IN RICHMOND**

BNSF	UPRR
Parr Blvd	Parr Blvd
Brookside Dr.	Brookside Dr.
Market St.	Market St.
Chesley Ave.	Chesley Ave.
Richmond Parkway	Cutting Blvd
Ohio Ave	
3 rd St.	
4 th St.	
Cutting Blvd.	
Harbor Way/Wright Ave.*	
Marina Way	
Marina Bay Dr.	
34 th St.	
Regatta Blvd.	

*a track bisected crossing, counted as a single crossing for analysis purposes

Refer to Figure 3a and 3b. Cross-over to the UPRR tracks at the connector eliminates approximately ten at-grade crossings where on-road traffic is delayed for each freight train. Given that freight trains may be as long as one mile and that trains average less than 20 mph, gates often are down for more than 4 minutes. Some of the BNSF at-grade crossings are on low volume streets, but many are on higher volume streets with substantial idling times, such as Cutting Boulevard. Reduction in vehicle idling times from at-grade conflicts is air quality positive. Because freight schedules are variable, it is not possible to accurately quantify any air quality benefit. As an order of magnitude estimate, it was assumed that 2.4 diverted freight trains would reduce daily on-road vehicle idling by 800 minutes (2.4 trains x 10 crossings x 20 vehicles delayed x 2 minute average delay).

The daily emissions benefit from on-road vehicle idling reduction depending upon the vehicle type, delayed is estimated as follows (pounds/day) in Table 2.2.4-3:

**Table 2.2.4-3
DAILY EMISSIONS BENEFIT FROM ON-ROAD VEHICLE IDLING REDUCTION**

Vehicle Type	ROG	CO	NOx	PM-10	PM-2.5
Light duty auto	0.05	0.62	0.04	0.002	0.003
Medium duty vehicle	0.10	1.10	0.14	0.002	0.003
Heavy duty vehicle	0.24	1.69	1.08	0.004	0.004

Source: EMFAC2011 Computer Model

Although the reduction is not a substantial amount, the air pollution emissions reduction benefit is further enhanced by an increase in BNSF freight train travel speed through Richmond, a shorter, more direct route between the proposed connector and Stege Junction on the UPRR mainline rather than the circuitous BNSF tracks through West Richmond, and overall rail freight system efficiency from reduced railroad engine idling times waiting on sidings for the mainline to clear. Some of these efficiencies cannot be quantified with reasonable accuracy. They do attest to the fact that the proposed project is generally air quality positive during operations even if some benefits are not directly quantifiable.

Train Idling Reduction

There are approximately ten freight trains that may experience delay (some UPRR, some BNSF). For purposes of calculations, it was assumed that each freight train was delayed for fifteen minutes each (some longer, some not at all). The daily delay "penalty" because of track conflict is 2.5 hours of train engine idling.

Idling train engines are not substantial polluters. Diesel engines emit mainly CO and NOx whose generation rate depends upon oxidation temperature. At "cool" idle, NOx generation rates are low. The emissions "savings" from a reduction of 2.5 idling hours were calculated using EPA factors for Tier 1 engines and are as follows (lb/day):

CO	0.4
ROG	0.1
NOx	3.1
SOx	<0.1
PM-10	<0.1

These reduced emissions are not necessarily substantial, but any reductions of ozone precursor emissions (NOx and ROG) in a non-attainment airshed are positive.

PM-2.5 and PM-10 Hot Spot Potential

Transportation projects may cause increased levels of particulate emissions at locations where a significant number of diesel vehicles congregate at a single location. A qualitative "hot spot" analysis is required for "projects of air quality concern" (POAQC) located in non-attainment areas if FHWA or Federal Transit Administration funding or approval will occur. The guidelines that characterize a POAQC is a facility that serves 10,000 diesel-fueled trucks (or equivalent) per day. The PM-10 emission factor for heavy duty diesel trucks is approximately 0.05 gram/mile (EMFAC2007). In one mile of travel, 10,000 diesel trucks (the POAQC level) would generate 500 grams of PM-10 emissions per mile.

Line-haul engines average 0.2 grams of PM-10 per brake-horsepower hour (EPA-420-F-09-025, 2009). Four engines running at 500 HP each over a 50 mile stretch would generate 8 grams/mile of PM-10 per train seen as follows:

$$0.2 \text{ g/BHP-HR} \times 500 \text{ HP/engine} \times 4 \text{ engines/50 miles} = 8 \text{ grams/mile}$$

One four-engine train is therefore the PM-10 equivalent emitter of 160 diesel trucks. The proposed project would allow an average of 2.4 freight trains to shift from the BNSF tracks to the UPRR tracks between the new connector and Stege Junction. PM-10 emissions from these 2.4 trains are "new" emissions relative to the existing homes nearest the UPRR tracks. An average of 2.4 trains is the diesel-truck equivalent of 384 trucks per day, or approximately one truck every 4 minutes. The PM-10/PM-2.5 impact is well below the 10,000 truck per day POAQC level.

Actually, overall regional diesel combustion emissions would be slightly reduced by substantial reduction of idling on sidings. PM-10/PM-2.5 emissions will also be reduced from less idling of cars and trucks at approximately ten at-grade crossings along the existing BNSF mainline. The

proposed project is not a POAQC and thus does not require a PM-10/PM-2.5 “hot spot” analysis.

Mobile Source Air Toxics (MSAT)

The control of transportation MSATs at the local, state, and national level has focused on on-road sources. However, any movement of goods or people that requires combustion of fossil fuels generates MSATs (also called hazardous air pollutants, or HAPs) in varying amounts. In response to the Clean Air Act Amendments (CAAA), EPA regulates 188 air toxics. Seven of these compounds are designated as carcinogenic, including acrolein, benzene, 1,3-butadiene, formaldehyde, naphthalene, polycyclic organic matter (POM) and diesel particulate matter (DPM). EPA and the California Air Resources Board (CARB) have long standing programs to reduce MSATs from on-road sources. In 2008, EPA promulgated national rules for locomotives (73 FR 37096, June 30, 2008). Newly manufactured and remanufactured locomotives must meet standards for PM-10, VOC and NOx. The stringency of the standards depends upon the year of original manufacture and ranges from Tier 0 (pre-2001) to Tier 4 (post-2014). For PM-10, for example, a Tier 4 locomotive must be twenty times “cleaner” than a Tier 0 engine. Because these standards are only triggered when engines are replaced or rebuilt, it will take a number of years for these standards to take full effect. However, a dramatic reduction in criteria pollutants and in MSAT’s is projected to occur seen as follows for large line-haul locomotives shown in Table 2.2.4-4:

**Table 2.2.4-4
PROJECTED LOCOMOTIVE EMISSIONS REDUCTIONS (from Year 2012 Baseline)**

Year	PM-10 (1)	VOC (2)	NOx (3)
2012	0.0%	0.0%	0.0%
2014	12.2%	14.1%	6.3%
2016	24.4%	28.2%	16.0%
2018	34.1%	40.8%	25.0%
2020	43.9%	49.3%	31.2%
2025	61.0%	63.4%	48.6%
2030	75.6%	73.2%	63.2%
2035	82.9%	81.2%	74.3%
2040	90.2%	85.9%	80.6%

(1) Including DPM (2) Including gaseous MSATs and smog precursors (3) Smog Precursor
Source: EPA-420-F-09-025 (April, 2009)

The proposed project will create a small reduction in regional MSAT emissions from decreased idling times on sidings, from a reduction in the amount of delay for BNSF at-grade crossings in Richmond, and an increase in travel speed on UPRR tracks for that portion of BNSF freight traffic shifted to UPRR tracks. MSAT emissions in locomotive exhaust will be reduced near the BNSF mainline, but slightly increased along the UPRR tracks.

Increased MSAT emissions along the UPRR tracks were calculated assuming an existing DPM emission rate of 8 grams per mile for freight trains and 2 grams per mile for passenger service. The fractional share of gaseous MSATs was estimated using “speciation factors” for diesel exhaust supplied by the California ARB. If the project is completed and fully operational before 2015, there will be an increase in MSAT exposure along the UPRR tracks compared to existing conditions. By 2015, locomotive emissions reductions will more than compensate for increased freight traffic on the UPRR tracks seen as follows (grams/mile) in Table 2.2.4-5:

**Table 2.2.4-5
LOCOMOTIVE EMISSIONS REDUCTION BY 2015**

MSAT	2012 (a)	2015 (b)	2020 (b)
DPM	160.0	124.0	83.5
Benzene	137.3	106.4	71.0
1,3-Butadiene	25.8	20.0	13.5
Acrolein	3.2	2.5	1.7
Formaldehyde	54.2	42.0	28.3

(a)=10 freight and 40 passenger trains on UPRR tracks

(b)=12.4 freight and 40 passenger trains on UPRR tracks

Source: Speciation data from "Colton Grade Crossing Separation Air Quality Analysis" LSA Associates, 2010

There is no universally accepted methodology that can accurately translate any increase in MSAT exposure into a corresponding public health risk. The generally adopted public health risk guideline for MSAT exposure is an individual lifetime excess cancer risk of 10 in one million (compared to 300,000 in a million from all cancer occurrences). MSAT inhalation risk is estimated by assuming a person remains at one specific outdoor location for 24 hours per day for 350 days per year for 70 years, including the first three months of this exposure *in utero*. The dispersion calculation that converts source emissions into receptor exposure is equally imprecise as are the published cancer potency factors that convert exposure to risk.

Because of multiple limitations in the methodologies for forecasting health impacts for the with-versus no-project alternatives, a health risk assessment (HRA) was not conducted for the proposed action. It should be noted that in a regional sense, a number of small emissions benefits will actually reduce MSAT emissions for the with-project alternative. Given the mobility of the Bay Area population on both a daily and lifetime basis, the cumulative benefit of this project is presumed to off-set any localized impact.

Microscale CO Hot-Spot Analysis

Transportation projects are required to demonstrate that they will not create new CO "hot spots" or worsen existing violations. Analysis guidance documents are focused almost exclusively on roadway CO emissions. The proposed project will not increase on-road congestion, and may reduce vehicular delays at locations where idling or slow-moving trains currently block on-road traffic. Although the proposed action is not a roadway project, a standard CO impact analysis has been developed and used for well over a decade. The CO analysis flowchart was applied to the proposed connector project. The use of the flowchart demonstrates that no detailed CO modeling analysis is required as follows:

CO Protocol Flowchart

3.1.1 Is this project exempt from all emissions analysis?

Response: No

3.1.2 Is this project exempt from regional emissions analysis?

Response: No

3.1.3 Is this project locally defined as regionally significant?

Response: No, regionally significant projects are major roadways or fixed track transit guideways. The proposed cross-over track is not a roadway and is not designed for passenger service.

3.1.9 Examine Local Impacts

Level 1: Is the project in a CO non-attainment area?

NO

Level 1: Was the area redesignated as “attainment” after the 1990 Clean Air Act?

YES

Level 1: Has “continuous attainment” been verified by the local Air District?

YES, Proceed to Level 7

Level 7: Does the project worsen air quality?

NO, the project will reduce on-road vehicular delay at existing at-grade crossings, improve BNSF freight train travel speeds and shorten the cross-Richmond train travel distance.

Project satisfactory, no further analysis required.

Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) is a concern in some parts of California where serpentine rock formations contain high fractions of asbestos-containing materials. However, that concern revolves around the subsequent abrasion and release of such material from roadway paving with NOA aggregates. There is negligible re-suspension of such material from a railroad track bed because there is no mechanical wearing process. Even if the track bed ballast rock contained elevated levels of NOA, there is no mechanism to affect an airborne release.

Regional Conformity

The Richmond Rail Connector project was included in the regional emissions analysis conducted by the Metropolitan Transportation Commission for the Regional Transportation Plan (RTP). The current RTP, which is called the Transportation 2035 Plan, was found to conform to applicable federal air quality standards and implementation plans (Resolution 3976, October 27, 2010). The project’s design concept and scope have not changed from what was analyzed in the Transportation 2035 Plan. This analysis found that the plan and, therefore, the individual projects in the plan, are in conformity with the State Implementation Plan (SIP) to achieve National Ambient Air Quality Standards.

The Richmond Rail Connector project is also included in the federal 2011 Transportation Improvement Program (TIP), (TIP ID CC-090032). The project has no designated funding in the 4-year TIP period (2010-2014), but was considered as part of the conformity determination of the 2011 TIP. The project is included in the current RTP, Transportation 2035 as RTP Number 22089. The project is included in the current RTP, Transportation 2035 as RTP Number 22089. FHWA and the Federal Transit Administration found the RTP and TIP to conform to the SIP on December 14, 2010.

A proposed 2011 TIP Amendment to reprogram existing funds to include the proposed project has been found by MTC staff to not trigger a new air quality conformity determination given that it was already in the conforming 2011 TIP.

Cumulative Impacts

The proposed connection track may promote an increase in freight and passenger movement by improved rail schedule reliability. However, transport by rail is considered more pollution-efficient than on-road movement. Cargo movement by rail yields an average fuel efficiency of 400 net ton-miles per gallon of fuel (American Railroad Association, 2004). An on-road truck hauling 25 tons of cargo at 5 miles per gallon has a cargo efficiency of 125 net ton-miles per gallon. Rail would generally not induce growth of goods/passenger movement, but only accommodate an existing possible demand. Cumulative air quality impacts are considered incrementally positive within a regional context.

Construction Impacts

During project construction, it is anticipated that the BAAB will be in non-attainment for federal clean air standards for ozone and for particulate matter.

Air pollution emissions during construction were calculated using the URBEMIS2007 computer model. The following prototype construction equipment fleet was assumed as shown in Table 2.2.4-6:

**Table 2.2.4-6
TYPICAL CONSTRUCTION EQUIPMENT**

Track-bed Preparation	1 Grader
	3 Compactors
	1 Dozer
	1 Roller
	1 Backhoe
	1 Water Truck
Bridge Construction and Utilities Installation	2 Concrete Saws
	1 Grader
	2 Signal Boards
	2 Backhoes
	1 Crane
1 Trencher	
Turn Out Pad	4 Cement Mixers
	1 Paver
	1 Paving Equipment
	1 Roller
	1 Backhoe
Track/Signal Installation	1 Crane
	1 Forklift
	1 Generator
	2 Welders

Although bridge construction may occur concurrently with roadbed preparation, the two activities were split to facilitate abstraction of the emissions data. The track installation activity for this project relies on train haul delivery of materials. Utilizing the above equipment fleet the following emissions in Table 2.2.4-7 were calculated by the URBEMIS2007 computer model:

**Table 2.2.4-7
DAILY OFF-ROAD CONSTRUCTION EQUIPMENT EMISSIONS (lbs/day)**

Activity	ROG	NOx	CO	SO ₂	PM-10 Exhaust	PM-2.5 Exhaust	CO ₂
Track-bed Preparation (4.5 months)							
No Minimization	3.3	25.7	15.8	0.0	1.4	1.3	2,794.5
With Minimization	3.3	19.6	15.8	0.0	0.2	1.1	-
Bridge Construction and Utilities Installation (7 months)							
No Minimization	2.6	19.4	12.4	0.0	1.1	1.0	2,246.8
With Minimization	2.6	14.3	12.4	0.0	0.2	0.2	-
Turn Out Pad Construction (30 days)							
No Minimization	2.6	14.8	11.1	0.0	1.3	1.2	1,543.9
With Minimization	2.6	14.8	11.1	0.0	1.3	1.2	-
Track/Signal Installation (4 months)							
No Minimization	1.9	8.7	6.5	0.0	0.6	0.5	1,017.5
With Minimization	1.9	7.4	6.5	0.0	0.4	0.4	-

Truck delivery and commuting for construction crews were calculated separately using the EMFAC2007 computer model and later added to the off-road emissions burden. The following on-road mileage listed in Table 2.2.4-8 and Table 2.2.4-9 was utilized:

**Table 2.2.4-8
ON-ROAD COMMUTING**

Phase	# Employees	RT Distance	Miles per Day
Track-bed Preparation	50	50 miles	2,500
Bridge Construction	75	50 miles	3,750
Turn Out Pad	15	50 miles	750
Track/Signal Installation	50	50 miles	2,500

**Table 2.2.4-9
DAILY DELIVERY TRUCK TRIPS**

Phase	#Truck Trips	RT Distance	Miles per Day	Duration
Track-bed Preparation (Fill Import)	62	20 miles	1,240	10 days
Track-bed Preparation (Deliveries)	26	20 miles	520	10 days
Bridge Construction	10	20 miles	200	130 days
Turn Out Pad	54	20 miles	1,080	5 days
Track/Signal Installation	0	-	-	-

Utilizing EMFAC2007, the following emissions in Table 2.2.4-10 and Table 2.2.4-11 were calculated by activity (pounds/day):

**Table 2.2.4-10
CAR AND LIGHT TRUCK
ON-ROAD EMISSIONS FROM CREW COMMUTING (pounds/day)**

Activity	ROG	NOx	CO	PM-10	PM-2.5	CO ₂
Track-bed Preparation	0.3	1.2	12.6	2.8	2.5	1860.3
Bridge Construction	0.5	1.7	18.7	4.1	3.7	2753.3
Turn Out Pad	0.1	0.3	3.8	0.8	0.8	558.1
Track/Signal Installation	0.3	1.2	12.6	2.8	2.5	1860.3

**Table 2.2.4-11
HEAVY DUTY TRUCK
ON-ROAD EMISSIONS FROM TRUCK DELIVERY TRIPS (pounds/day)**

Activity	ROG	NOx	CO	PM-10	PM-2.5	CO ₂
Track-bed Preparation (Import)	1.1	20.1	9.7	0.6	0.6	3985.5
Track-bed Preparation (Deliveries)	0.5	8.4	4.1	0.3	0.2	388.8
Bridge Construction	0.2	3.3	1.6	0.1	0.1	644.4
Turn Out Pad	1.0	17.5	8.5	0.6	0.5	3471.5

The combined maximum total emissions from mitigated construction equipment emissions (URBEMIS2007), truck activity (EMFAC2007) and commuter activity (EMFAC2007) totaled for each phase as follows in Table 2.2.4-12 with application of specified minimization measures:

**Table 2.2.4-12
CONSTRUCTION, TRUCK HAUL AND EMPLOYEE COMMUTING MAXIMUM (pounds/day)**

Activity	ROG	NOx	CO	PM-10	PM-2.5	CO ₂
Track-bed Preparation	5.2	49.3	42.2	3.9	4.4	9,029.2
Bridge Construction	3.3	19.3	32.7	4.4	4.0	5,644.5
Turn Out Pad	3.7	32.6	23.3	2.7	2.5	5,573.5
Track/Signal Installation**	2.2	8.6	19.1	3.2	2.9	2,877.8

assumes simultaneous delivery of roadbed materials and construction figures represent maximal day when deliveries and construction both occur for indicated activity
** not including emissions from track-laying train

Rail support during track-laying would consist of maneuvering the train into place and then using the on-board crane to place the concrete ties and continuously welded steel 30 minutes per day at 1,000 HP power output, and deposit materials for 7.5 hours at 100 HP average power. Although track-laying sometimes can sometimes proceed at one mile per day, one week was assumed required for this phase. The calculated emissions for the on-track source, assuming a Tier 2-rated locomotive engine, are shown in Table 2.2.4-13:

**Table 2.2.4-13
ON-TRACK SOURCE EMISSIONS**

Rail Support Emissions	ROG	NOx	CO	PM-10	PM-2.5
Daily (lb/day)	0.7	13.8	3.5	0.5	0.4
Annual (tons)	<0.1	<0.1	<0.1	<0.1	<0.1

Since there are no currently applicable CEQA significance thresholds for construction, emissions were annualized for comparison to the Section 176 (c) *de minimis* levels in the Clean Air Act implementation guidelines.

NEPA Analysis

The project, within the NEPA definition of intensity and context, represents a short-term impact in order to achieve a long-term air quality benefit. Its limited intensity is seen in comparing the total project emissions to the Section 176 (c) SIP conformity *de minimis* guidelines. All emissions would be well below the applicable non-attainment area guideline.

The following emissions in Table 2.2.4-14 were calculated by multiplying the daily emissions times the following time spans:

Table 2.2.4-14
ANNUAL EMISSIONS (tons/year)

Activity	ROG	NOx	CO	SO ₂	PM-10	PM-2.5	CO ₂
Track-bed Preparation (4.5 months)							
	0.19	1.17	1.48	<1	0.19	0.18	252.29
Bridge Construction and Utilities Installation (7 months)							
	0.25	1.48	2.52	<1	0.34	0.31	434.63
Turn-Out Pad (30 days)							
	0.06	0.51	0.36	<1	0.04	0.04	84.59
Track/Signal Installation (4 months)							
	0.05	0.49	0.35	<1	0.04	0.04	83.60
Total *	0.55	3.65	4.71	0	0.61	0.57	855.11
De Minimis Levels							
	50	50	-	-	100	100	-

*unlikely that all projects would occur in same year but worst case scenario

All annual project-related construction emissions, assuming all activities occur within the same calendar year, are well below the *de minimis* thresholds. Because operational air pollution emissions will be slightly reduced through project implementation from existing conditions, annual construction activity emissions equal maximum project total emissions. Since annual total emissions are below *de minimis* levels, no SIP consistency analysis is required.

No-Build Alternative

The No-Build Alternative would result in continuation of the existing pattern of trains forced onto sidings or only slower segments of track because of track demand conflicts. Such a pattern delays train schedules, creates safety issues as trains change speeds where they enter or exit the mainline, blocks surface streets, emits excess air pollutants from idling engines and creates noise impacts at idling engine locations.

Avoidance, Minimization and/or Mitigation Measures

Project construction requires implementation of the following dust control measures to minimize air quality impacts during construction:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.

- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- Vehicle speeds on unpaved areas shall be limited to 15 miles per hour.

2.2.5 Noise

The following findings and analysis are based on the “Noise and Vibration Impact Analysis,” approved in July 2012.

Regulatory Setting

NEPA provides a broad basis for analyzing and addressing noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of projects.

FTA Guidelines

The Federal Transit Administration (FTA) has developed guidelines for noise/vibration impact assessments from heavy rail projects. In the absence of definitive guidance for general rail projects, the FTA's Transit Noise and Vibration Impact Assessment (May 2006) has been presumed applicable to the proposed project. Although the guidance is not specifically oriented to freight rail projects, the criteria are based on research about community response to noise and have been used to assess potential impacts for a number of rail projects.

Operational Noise: FTA guidelines define three classes of land uses where noise exposure should be evaluated. These are shown in Table 2.2.5-1 below along with the applicable noise metric for each category.

**Table 2.2.5-1
FTA LAND USE CATEGORIES AND NOISE METRICS**

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor Leq(h) ^(a)	A tract of land where quiet is an essential element of their intended purpose. This category includes lands set aside for serenity and quiet and such land uses as outdoor amphitheaters and concert pavilions, as well as national historic landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor Ldn ^(b)	Residences and buildings in which people sleep. This category includes homes, hospitals, and hotels, where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor Leq(h) ^(a)	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included.

(a) Leq(h) = one-hour average (equivalent) sound level

(b) Ldn = day-night average noise level

The FTA Guidebook characterizes potential noise impacts as having no impact, moderate impact or severe impact. The severity with a proposed rail action depends on the existing noise exposure. In an existing very quiet environment, an increase of 10 decibels (dBA) or more would be considered a moderate impact and increases over 15 dB would be considered severe. As baseline levels increase, the project increment that would trigger a moderate or severe finding becomes progressively smaller.

Construction Noise: FTA Construction Noise Assessment Guidelines state that an appropriate impact threshold for construction noise is a 30-day average Ldn of 75 dBA or the ambient noise plus 10 decibels, whichever is greater.

Affected Environment

A “Noise and Vibration Impact Analysis” (June 21, 2012) was prepared to assess possible noise and vibration impacts from the project.

The study area for impacts includes the current alignment for BNSF intermodal trains, as well as the proposed alignment. The project alignment includes Category 1 and 2 uses, as defined in Table 2.2.5.1, within its potential noise impact corridor of 375 feet. The primary sources of noise in the project area include traffic on major roadways and highways, railroad operations, airports, industrial activities, and the Camp Parks Reserve Forces Training Area near San Ramon.

Roadways in the project area include Richmond Parkway, Giant Road, and Parr Boulevard. According to the City of Richmond General Plan, Richmond Parkway is and will continue to be a predominant source of noise within the project area. According to the County’s 2005 Noise Contour Maps for the project area, the 24-hour average noise level (DNL) along Richmond Parkway was measured at between 60 to 70 DNL in 2005. The County’s General Plan indicates that future development noise levels along Richmond Parkway will be approximately 72 DNL at 100 feet when the County reaches full development. Richmond Parkway and traffic on both Parr Boulevard and Giant Road provide some of the overall background noise experienced within the project area.

Railroads

Railroad operations in Contra Costa County consist of high speed mainline operations on the BNSF railway line and on the UPRR railway line. In addition, the Bay Area Rapid Transit (BART) System, an electrically driven passenger line, operates throughout the county; however, the BART system does not produce substantial noise levels.

Noise levels from railroad operations within the project area were identified in the Contra Costa County General Plan and the City of Richmond General Plan.

Railroad Operations

The proposed construction of an at-grade connection railroad track will allow a portion of BNSF intermodal freight train traffic to shift to a UPRR line. This shift will reduce the frequency of intermodal train traffic passing through a number of at-grade intersections on the BNSF mainline through the City of Richmond. All UPRR (roadway intersections between North Richmond and Stege Junction through Richmond) except for one are grade-separated (at Cutting Blvd.). Between Stege Junction and the Port of Oakland, the tracks are owned by UPRR with BNSF having track rights.

BNSF averages 18 trains (nine each direction) per day through North Richmond. It is currently estimated that approximately one-half of current BNSF freight activity would shift to the UPRR

track and thus avoid fourteen at-grade intersections in Richmond. This action could, however, increase noise levels at sensitive receivers, such as homes, located near the UPRR tracks. Such noise increase could result both from moving trains (locomotives and freight cars) as well as from train horns sounded near at-grade crossings. Because the UPRR tracks already carry approximately 50 trains per day, the addition of 2.4 shifted trains will not increase single event noise, but will increase the daily number of such activities.

Existing Noise Levels

The current railroad noise model supported by federal agencies is the “CREATE” model (HMMH, 2006). The model is a spreadsheet model that can accommodate eleven types of moving sources, eight types of stationary sources (cross-over’s, storage yards, and transit centers), and four types of track conditions (joints, wheel flats, etc.) at any noise-sensitive receivers. The model contains reference noise data for every type of source along with adjustment factors for size, speed, duration or intervening barriers. This model was used to calculate existing train noise along the UPRR tracks and then run again for the added contribution from diverted BNSF freight trains.

Railroad activity levels (train speeds, number of engines/cars, horn use locations, etc.) were provided by UPRR and/or BNSF. Sometimes these inputs can vary substantially from one day to another or from one engineer to another. A series of noise measurements were therefore conducted at three residences along the UPRR tracks whose noise environment may be impacted by the increased freight train traffic. The purpose of these measurements was to establish a real-world baseline noise level for comparison with model predictions.

Measurements were made at three locations in the Shields-Reid neighborhood of Richmond that would be potentially impacted by the project. These receivers were selected because they might be affected by both train movement and horn noise. Chesley Avenue is the only crossing along the UPRR tracks that is non-grade separated and has adjacent residences. Monitoring was conducted near the Chesley Mutual Housing complex and at the eastern dead ends of Alamo Avenue and Duboce Avenue with the UPRR tracks. Monitoring was conducted for 24+ hours on April 16-17, 2012. The results (hourly averages and instantaneous peaks) are shown in Table 2.2.5-2. Evidence of train activity was assumed manifested in peak noise levels over 80 dB at the Alamo Avenue monitor. The data suggest that the existing UPRR tracks had some level of activity on 22 of 24 hours. The hours of 11-12 p.m. and 01-02 a.m. appeared to be the only hours without any track usage.

Inspection of the duration of each noise “pulse” is an indication of whether it was a long freight train or a short commuter rail. A few of the short pulses may be due to contamination from perhaps a dog barking, helicopter over flight or residential activity at the last house before the railroad tracks. The Alamo Avenue meter recorded 14 extended events and 54 short excursions above the normally quiet background. Of the 14 longest events, in 24-hours, nine would appear to have been freight movement by longer trains and five by either short freights or longer passenger trains such as Amtrak.

As noted below in Table 2.2.5-2, measured noise levels were somewhat lower than those predicted by the currently accepted railroad noise model. This may be due to a combination of factors. Freight trains may be shorter, require fewer engines, travel slower on this segment than maximum speed, and shielding by the industrial building north of Chesley Avenue may reduce some noise by shielding it. The difference between model and measurement results was used as a calibration factor to improve the analysis accuracy.

**Table 2.2.5-2
SHIELDS-REID NEIGHBORHOOD NOISE MONITORING
(Leq/Lmax, in dBA)
April 16-17, 2012**

Time	Chesley Ave.	Alamo Ave.	Duboce Ave.
18:00-19:00	72/93	70/87	62/81
19:00-20:00	69/92	69/89	63/84
20:00-21:00	71/93	68/90	63/80
21:00-22:00	71/93	71/93	70/92
22:00-23:00	68/93	64/88	62/81
23:00-24:00	56/74	45/57	53/56
0:00-1:00	64/87	66/93	60/76
1:00-2:00	56/83	50/71	54/67
2:00-3:00	64/86	66/90	59/84
3:00-4:00	68/92	67/88	59/81
4:00-5:00	59/83	59/87	54/74
5:00-6:00	63/84	60/84	56/81
6:00-7:00	68/85	69/93	57/78
7:00-8:00	70/93	71/90	65/90
8:00-9:00	68/89	71/89	62/84
9:00-10:00	75/93	73/96	64/90
10:00-11:00	72/93	65/87	63/91
11:00-12:00	69/89	66/91	58/77
12:00-13:00	75/93	65/91	59/85
13:00-14:00	73/96	69/89	63/83
14:00-15:00	71/95	72/90	58/78
15:00-16:00	69/92	70/93	59/83
16:00-17:00	70/93	67/94	52/77
17:00-18:00	67/86	66/85	58/76
Peak Hour Leq	75	73	70
Ldn	73	72	66
Distance	60 feet	70 feet	300 feet

Train Horns

Use of train horns is required near at-grade crossings as a safety measure except with very limited exceptions. Train horn noise is a special condition that is not included in the CREATE model because it is a localized effect affecting only limited numbers of receivers near the crossing. Horns can, however, create noise levels exceeding the moving train contribution in close proximity to the crossing. The Federal Railroad Administration (FRA) has supported the development of an At-Grade Crossing Noise Model whose results can be superimposed upon the CREATE output to generate a composite impact. The FRA model is based upon an assumed 104 dB maximum horn noise level at 100 feet, and adjusts that reference level for location, duration, surface conditions and possible shielding.

Environmental Consequences: Build Alternative

The proposed connector track project will generate two sources of noise along its alignment: temporary construction activity noise and continued railroad operation noise. No increase in railway service is forecast to occur as a result of project implementation. Any operational noise impacts would derive from the new track alignment, from possible speed increases associated with reduced delay at existing sidings, and from possible future rail traffic growth.

Short-Term Impacts

Noise from construction activities would be generated by two primary sources during the construction phase: the on-road transport of construction materials and workers driving to work, and the off-road construction itself. Since transportation of personnel and materials will occur on already traveled roadways, background noise conditions will mask any project on-road contributions. Some heavy materials delivery for track improvements is proposed to be via trains such that on-road truck noise will be limited to delivery of fill material and support construction materials.

Construction activities occur in various steps, each of which involves different types of equipment and a distinct noise characteristic. These steps would alter the character of the noise levels surrounding the construction sites as the project is developed

FTA construction noise assessment guidelines recommend that 8-hour Leq levels should not exceed 80 dB (Page 12-8) in residential areas. The industrial land use standard is 90 dB. Noise levels from equipment uses for rail construction are typically slightly above 80 dB at 50 feet from the source. Table 2.2.5-3 abstracted from the FTA guidelines (Table 12-1) lists the following reference noise levels at 50 feet:

**Table 2.2.5-3
EQUIPMENT NOISE REFERENCE LEVELS AT 50 FEET**

Backhoe	80 dB
Ballast Equalizer	82 dB
Ballast Tamper	83 dB
Compactor	82 dB
Mobile Crane	83 dB
Spike Driver	77 dB
Tie Handler	80 dB

If several pieces of equipment operate in close proximity, a reference level of 85 dB at 50 feet is a representative input analysis threshold. The short-term reference level is reduced by intermittent usage, by distance spreading and by any intervening ground effects in determining the 8-hour Leq. Distance spreading alone between track construction and the closest home will be -6 dB. Worst case construction noise will be less than the 80 dB 8-hour Leq impact criterion at the nearest residence. The industrial impact criterion of 90 dB Leq is met at less than 25 feet from the activity. No construction activity noise impacts are associated with the proposed project.

Construction Vibration

The primary concern from construction vibration is typically related to structural damage effects. Track laying does not entail use of heavy equipment that has a potential for any perceptible structural impacts. The accepted construction vibration damage criterion for walls, stucco, or slabs is 0.2 inches/sec (peak particle velocity, or PPV). A loaded truck has a typical PPV of 0.08 inch/second at 25 feet. The damage criterion is met by 14 feet from the source. Construction trucks or similar equipment will not operate within 14 feet of any off-site homes. There will be no vibration impacts from project construction.

Long-Term Impacts

Train Traffic Input Data

Train activity information was obtained from UPRR for their existing trackage. A daily average of 2.4 BNSF freight trains was assumed to be potentially diverted. The various input parameters required for the CREATE and train horn models were as follows for an analysis reference distance of 50 feet from the equivalent source-receiver location:

UPRR Existing

10 freight trains (6 day, 4 night) [50 mph, 4 locomotives, 5,000 feet of cars]

40 passenger trains (30 day, 10 night) [50 mph, 1 locomotive, 5 cars]

BNSF Added by Proposed Project

2.4 freight trains (1.5 day, 0.9 night) [50 mph, 4 locomotives, 5,000 feet of cars]

No wheel flats, no jointed track (CWR), no embedded track, no aerial structures, no barriers, no intervening homes.

Levels of Noise Impact

The Federal Transit Administration has published a comprehensive guidebook on Transit Noise and Vibration (FTA-VA-90-1003-06) updated in May, 2006. The guidebook defines three classes of land use that may be noise sensitive as follows:

Category 1 – Outdoor amphitheaters, national landmarks, etc.

Category 2 – Residences, hospitals/rest homes, hotels

Category 3 – Schools, libraries, theaters, churches

The UPRR trackage to which some BNSF traffic may be diverted only includes Category 2 noise sensitive uses along some segments. The noise metric that best identifies the level of noise sensitivity for Category 2 uses is the day-night level (Ldn). Figure 3-2 of the FTA guidebook characterizes potential noise impacts as having no impact, moderate impact or severe impact. The severity of the difference associated with a proposed rail action depends upon the existing noise exposure. In an existing very quiet environment, an increase of +10 dB or more would be considered a moderate impact and increases over 15 dB would be considered severe. As baseline levels increase, the project increment that would trigger a moderate or severe finding becomes progressively smaller. The distribution of impact severity is shown as follows in Table 2.2.5-4 as a function of the cumulative project contribution to the baseline (dB Ldn):

**Table 2.2.5-4
PROJECT ONLY CONTRIBUTION TO NOISE BASELINE LEVEL**

Project Only Contribution to Noise Baseline Level	Project Only Contribution (dB)		
	No Impact	Moderate Impact	Severe Impact
40 dB	<50	<55	>55
50 dB	<54	54-59	>59
60 dB	<58	58-63	>63
65 dB	<61	61-66	>66
70 dB	<65	65-69	>69
75 dB	<66	66-73	>73
>77 dB	<66	66-75	>75

Source: FTA Guidebook, Table 3-1, 2006

Results

The CREATE and the train horn noise models were run for those homes closest to the Chesley Avenue/UPRR Crossing. The model output is attached. At 60 feet from the track centerline (the closest homes), the following day-night (Ldn) noise levels are calculated in Table 2.2.5-5 using the FRA train noise models from the train activity scenarios shown above (dB):

**Table 2.2.5-5
DAY-NIGHT (LDN) NOISE LEVELS AT 60 FEET FROM TRACK CENTERLINE**

Scenario	No Horns	Horns Only	Moving + Horns
Existing UPRR Freight	74	73	77
Existing UPRR Passengers	65	75	75
Combined Existing Total	75	77	79
BNSF Only	68	70	72
Combined UPRR + BNSF	75	78	80

Based solely on the modeling results, the addition of 68 dB Ldn from added BNSF trains (without horns) to a calculated 75 dB Ldn UPRR baseline is considered a “moderate impact.” At the one UPRR location where warning horns are used near residential uses (Chesley Avenue at-grade crossing), the BNSF contribution is calculated by the computer models to add 72 dB Ldn to a 79 dB Ldn baseline. This is again considered to be a “moderate impact.”

However, the measured existing noise levels were considerably lower than the model predictions. The model predicts that existing UPRR noise levels from moving trains and crossing horns should be 79 dB Ldn at 60 feet from the track centerline. If the calculated reference noise level of 79 dB Ldn is adjusted for distance from the track, the comparison of modeling and measurement is presented in Table 2.2.5-6:

**Table 2.2.5-6
COMPARISON OF MODELED NOISE LEVEL WITH MEASURED NOISE LEVEL**

Parameter	Chesley	Alamo	Duboce
Distance to track	60 feet	70 feet	300 feet
Measured 24-hour Ldn	73 dB	72 dB	66 dB
Modeled@receiver set-back*	79 dB	78 dB	72 dB
Model – measurement	-6 dB	-6 dB	-6 dB

*=dB Ldn for an acoustically “hard” surface

The difference between model and measurement was 6 dB at each monitoring location. If the entire model output is shifted by the measured calibration factor of -6 dB, the results near the Chesley Avenue crossing would be as follows (dB Ldn):

Existing UPRR Freight	(77 dB - 6 dB adj. = 71 dB)
Existing UPRR Passenger Service	(75 dB – 6 dB adj. = 69 dB)
Combined Level at 50 feet	(71 dB + 6 dB adj. = 73 dB)
BNSF Freight only	(72 dB - 6 dB adj. = 66 dB)
Combined UPRR + BNSF	(73 dB + 6 dB adj. = 74 dB)

For a baseline level near 73 dB Ldn for the existing trains (see above), an adjusted project only contribution of 66 dB Ldn is considered a moderate impact. With the use of train horns, even the minor addition of 2.4 trains per day generates a moderate noise impact. At all other UPRR track locations where horns are not used near residential development, the baseline level would be 69 dB Ldn near the tracks if the same - 6 dB off-set were applicable. The adjusted BNSF contribution of 62 dB Ldn (68 dB calculated –6 dB off-set) constitutes a “no impact” situation. Any consideration of possible moderate impact reduction would thus only center on the residential uses near the Chesley Avenue UPRR crossing. Any requirement to mitigate or minimize impacts at the Chesley Avenue UPRR crossing is evaluated below under the Avoidance, Minimization and Mitigation discussion.

Vibration Impact Assessment

The Noise Study included an evaluation of potential vibration impacts. Vibration caused by trains is the result of wheels rolling on the rails. This energy is then transmitted through the track support system into the ballast through the ground to the foundations of nearby buildings, and finally throughout the remainder of the building structure. The level of vibration received at the building is a function of the type of trains, their speeds, track system, structure, support and condition, distance from the tracks, geological condition, and the receiving structure. Ground-borne vibration does not typically annoy people who are outdoors.

The motion due to ground-borne vibration is described in vibration velocity levels, measured in decibels referenced to 1 micro-inch per second. To avoid confusion with the decibel used to describe sound levels, the abbreviation VdB is used. Typical ground-borne vibration levels are presented in Table 2.2.5-7:

**Table 2.2.5-7
TYPICAL GROUND-BORNE VIBRATION LEVELS**

RMS Vibration Velocity	Human or Structural Response
65 VdB	Threshold of human perception
70 VdB	Perceptible to most people
75 VdB	Generally acceptable for residential use
80 VdB	Annoying to people for frequent events
90 VdB	Difficulty with motion-sensitive tasks
95 VdB	Cosmetic damage to older structures
100 VdB	Cracks in walls and Foundations

The FTA has published the most recent guidance manual for the assessment of noise and vibration impacts in transportation projects, Transit Noise and Vibration Impact Assessment, May, 2006. It was assumed that land uses near FRA rail projects would similarly experience the same level of vibration sensitivity as FTA transit projects.

Impacts are determined by estimating future ground-borne vibration levels and comparing those levels to the criteria shown in Table 2.2.5-8:

**Table 2.2.5-8
GROUND-BORNE VIBRATION IMPACT LEVELS**

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 micro/in/sec)		
	Frequent Events (1)	Occasional Events (2)	Infrequent Events (3)
Category 1: Buildings where ambient vibration is essential for interior operations	65 VdB	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB

- (1) "Frequent Events" is defined as more than 70 vibration events per day
- (2) "Occasional Events" is defined as between 30 to 70 events per day
- (3) "Infrequent Events" is defined as fewer than 8 vibration events per day

The UPRR tracks currently carry 10 freight trains and 40 passenger trains. The addition of 2.4 diverted BNSF trains would create 60 vibration events (50 existing and 10 added). The post-project condition would continue to be considered "occasional events." The applicable vibration impact criterion for homes adjacent to the existing UPRR tracks is therefore 75 VdB.

Vibration assessment requires detailed knowledge of train speeds, train weights, suspension system stiffness, track structure, sub-surface propagation characteristics, receiver location, and receiver structural features. Along the length of the UPRR tracks from the proposed connector to Stege Junction, many of these parameters are variable. Therefore, the following analysis focuses on representative locations.

The FTA guideline shows the following generalized RMS vibration level in Table 2.2.5-9 as a function of distance from a locomotive powered passenger or freight train traveling at 50 mph:

**Table 2.2.5-9
VIBRATION LEVEL**

Distance to Track Centerline	RMS Vibration Level (Re: 1 microinch/sec)
14'	95 VdB
25'	90 VdB
45'	85 VdB
80'	80 Vdb
140'	75 VdB
250'	70 Vdb

The threshold for cosmetic damage of 95 VdB is reached at 14 feet. Any possible impact would therefore be associated with vibration nuisance and not structural damage. Representative set-backs from the tracks of closest homes along the UPRR tracks may vary from near 50 feet to more than 300 feet. Their vibration level during freight train passage varies accordingly. The

closest homes along the alignment along with the likely vibration level during freight train passage, is shown in Table 2.2.5-10:

**Table 2.2.5-10
VIBRATION LEVEL DURING FREIGHT TRAIN PASSAGE AT CLOSEST HOMES**

Roadway	Set-Back	VdB	Roadway	Set-Back	VdB
Chesley	83 ft	80	Gertrude	124 ft	76
Alamo	185 ft	73	Duboce	327 ft	68
Triangle Ct.	62 ft	82	Lincoln Ave.	90 ft	79
Last Ave.	180 ft	73	Portola	240 ft	70
13 th St.	55 ft	83	Roosevelt Ave.	250 ft	70
Village Way	75 ft	80	Livingston	72 ft	81
Espee Ave	80 ft	80	22 nd St.	117 ft	77
Carlson Blvd.	144 ft	75	S 25 th St.	100 ft	78
S 29 th St.	105 ft	78	Steger Ave.	230 ft	71

Based upon the above vibration significance criterion of 75 VdB, homes within 140 feet of the tracks may experience perceptible vibration, but not at any level of possible structural effects. However, the FTA guidelines state that if impact criteria for existing conditions are already exceeded, receivers are considered to experience additional vibration impact "...if the project significantly increases the number of vibration events. Approximately doubling the number of events is required for a significant increase." (Page 8-5, Section 8.1.2, FTA, 2006).

The number of vibration events perceptible at the closest tier of homes would increase from 50 to 52 or 53 per day from BNSF cross-over traffic. As noted above, this is not considered a significant increase per FTA definition of "significant." No vibration reduction measures are considered necessary.

Construction Vibration

The primary concern from construction vibration is typically related to structural damage effects. Track laying does not entail use of heavy equipment that has a potential for any perceptible structural impacts. The accepted construction vibration damage criterion for walls, stucco, or slabs is 0.2 inches/sec (peak particle velocity, or PPV). A loaded truck has a typical PPV of 0.08 inch/second at 25 feet. The damage criterion is met by 14 feet from the source. Construction trucks or similar equipment will not operate within 14 feet of any off-site homes. There will be no vibration impacts from project construction.

No-Build Alternative

Under the No-Build Alternative there would be no construction. Therefore, there would be no short-term noise or vibration impacts. All long-term noise and vibration impacts would remain the same as occurs at the present time. Under this alternative the noise from the BNSF intermodal freight train operations in downtown Richmond would occur along the BNSF tracks as shown on Figure 3a.

Avoidance, Minimization and/or Abatement Measures

Short-term construction activities will introduce new noise into the environment over a period of approximately one year. Therefore, there are noise effects that require avoidance, minimization and/or mitigation measures. Construction noise effects will be minimized by implementing the following measures:

- Limit construction to the hours of 7 a.m. to 7 p.m. on Mondays through Fridays, and 9 a.m. to 6 p.m. on Saturdays. No construction will be allowed on Sundays and federal holidays, except in emergencies.
- Utilize construction methods or equipment that will provide the lowest level of noise impact, i.e., use newer equipment that will generate lower noise levels.
- Equip all construction vehicles and fixed or mobile equipment with properly operating and maintained mufflers or sound attenuation devices, as specified in regulations at the time of construction.
- Schedule the construction such that the absolute minimum number of equipment would be operating at the same time at the same location.
- Maintain good relations with the school and community, such as keeping people informed of the schedule, duration, and progress of the construction, to minimize the public objections of unavoidable noise. Communities should be notified in advance of the construction and of the expected temporary and intermittent noise increases during the construction period.
- Provide all employees that will be exposed to noise levels greater than 75 dB over an 8-hour period with adequate hearing protection devices to ensure no hearing damage will result from construction activities.
- Install portable noise barriers that are demonstrated to reduce noise levels below hearing damage thresholds if equipment is being used that can cause hearing damage at adjacent noise receptor locations (distance attenuation shall be taken into account). . This may include erection of temporary berms or plywood barriers to create a break in the line-of-sight, or erection of a heavy fabric tent around the noise source.

Long-Term Noise Abatement

Moderate impacts should be reduced if measures are considered reasonable and feasible. Options to reduce moderate noise impacts can include construction of barriers, building grade separations, or closing the at-grade crossing. However, because Chesley Avenue is an at-grade crossing, use of noise walls is not feasible. The cost of constructing a grade separation is perhaps 20 million or more dollars. Grade crossing closure would require a change to the General Plan Circulation Element and would create long detours for Shields-Reid community members. The “typical” noise mitigation options are not considered reasonable and feasible.

A more recently popular train noise reduction measure has been the creation of “quiet zones” that eliminates the sounding of train horns except in special circumstances. Creation of quiet zones is allowed under the final federal train horn rule that became effective on June 24, 2005. Establishing a quiet zone must meet a wide variety of safety considerations. Every public grade crossing in a new quiet zone must be equipped at minimum with the standard or conventional flashing light and gate automatic warning system. A quiet zone may be established to cover a full 24-hour period or only during the overnight period from 10:00 p.m. to 7:00 a.m. when noise events are penalized ten-fold in the Ldn calculation.

Local governments must work in cooperation with the railroad that owns the track, and the appropriate state transportation authority to form a diagnostic team to assess the risk of collision

at each grade crossing where they wish to silence the horn. A determination is made about what type of additional safety engineering improvements is necessary to effectively reduce the risk associated with silencing the horns. The decision is based on localized conditions such as highway traffic volumes, train traffic volumes, the accident history and physical characteristics of the crossing, including existing safety measures.

Examples of additional safety engineering improvements that may be necessary to reduce the risk of collisions include: medians on one or both sides of the tracks to prevent a motorist from driving around a lowered gate; a four-quadrant gate system to block all lanes of highway traffic; converting a two-way street into a one-way street; or use of wayside horns posted at the crossing directed at highway traffic only.

Once all necessary safety engineering improvements are made, the local community must certify to the FRA that the required level of risk reduction has been achieved. A quiet zone becomes effective and train horns go silent only when all necessary additional safety measures are installed and operational.

However, based on the limited change in Ldn along the proposed alignment with the additional BNSF trains, the implementation of a "quiet zone" is not required of this project and no further pursuit of a quiet zone will be carried out by the project proponents. The City may wish to pursue this option and the above information provides the basic outline of how to implement a quiet zone if deemed justified by the City.

2.3 Biological Environment

2.3.1 Natural Communities

The following findings and analysis are based on the “Natural Environment Study (Minimal Impacts),” approved in February 2012. This study prepared for the associated California Environmental Quality Act evaluation.

Regulatory Setting

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species Section 2.3.5. Wetlands and other waters are also discussed below in Section 2.3.2.

Affected Environment

A Natural Environment Study, Minimal Impacts (November 2011) was prepared for the associated California Environmental Quality Act evaluation and is referenced here as a comprehensive evaluation of biological resources for the project.

The Biological Study Area (BSA) is defined as the project's proposed physical ground disturbance footprint, plus a buffer zone where indirect impacts may result from construction. The BSA consists of an approximately 80-foot wide, .75-mile long proposed railway right-of-way corridor and two 0.25-mile long BNSF and UPRR railway segments at either end, located west

of the intersection of Giant Road and the onramp of Richmond Parkway. The proposed alignment traverses southwest-northeast through mostly open fields near a mix of residential, light industrial and commercial buildings. The ground surface is highly disturbed and has been recently disked. The terrain is relatively level, with elevations ranging between 15 to 25 feet above mean sea level.

The vast majority of the alignment is disturbed and characterized by common disturbance oriented species. There are two channels (Rheem Creek and an unnamed channel) where riparian and wetlands habitats occur within the project alignment. The following is a discussion of the general biological characteristics of the natural communities associated with the proposed right-of-way.

Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. Typically the level of disturbance within the connector track right of way is severe. Most of the adjacent areas along the proposed alignment range from undisturbed native habitat to complete urbanization. The community is characterized by storksbill (*Erodium cicutarium*), foxtail chess (*Bromus madritensis*), wild oats (*Avena barbata*), ripgut brome grass (*Bromus diandris*), and foxtail fescue (*Vulpia myuros*). Other species occurring in this community are short-pod mustard (*Brassica geniculata*), barley (*Hordium vulgare*), *Amsinckia* sp., and star thistle (*Centaurea melitensis*).

Due to the chronic disturbances as well as a recent burn within the proposed alignment, this area does not support a diverse fauna. The most common animal species observed on the site were dogs (*Canis lupus familiaris*) and beachy ground squirrels (*Otospermophilus beecheyi*). Other common species include western meadowlark (*Sturnella magna*), cottontail rabbits (*Sylvalegus audobonii*), and mourning doves (*Zenaida macroura*).

Riparian/Streambed in unnamed channel

This channel is characterized as a highly disturbed drainage ditch that has spotty areas of Wild-berry (*Rubus* sp.) and willow trees (*Salix* sp.), and then other patches of non-native grasses and little or no vegetation.

Environmental Consequences: Build Alternative

BNSF indicates the need for the acquisition of up to about 8.32 acres (consisting of an 80-foot right-of-way for the entire approximate 0.75 mile length of connector track). The entire acquired right-of-way will be disturbed during construction. In addition, about 8.32 acres already within BNSF and UPRR rights-of-way will be disturbed, for a total disturbance area of 14.5 acres. This area includes the turnout pad that will be constructed to install the crossover train tracks within the UPRR alignment. Most of the project area is characterized by ruderal (weedy) fields and industrial areas. There are no sensitive biological habitats within these areas. Impacts to wetlands and other waters in the project area are discussed below.

No-Build Alternative

The No-Build Alternative has no potential to disturb any natural communities on the project site. There would be no indirect impacts on natural communities if this alternative is selected.

Avoidance, Minimization and/or Mitigation

No measures are required.

2.3.2 Wetlands and Other Waters

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344) is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the United States (U.S.), including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

USACE issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (U.S. EPA 40 Code of Federal Regulations [CFR] Part 230), and whether permit approval is in the public interest. The 404 (b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practical alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as the FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

The Regional Water Quality Control Boards (RWQCB) were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the CWA. Please see the Water Quality section for additional details.

Affected Environment

Wetlands in the BSA are typically dominated by erect, rooted, herbaceous hydrophytic plant species adapted to growing in conditions of prolonged inundation. Common plant species present in this wetland type include cattails (*Typha* spp.) and Wild-berry (*Rubus* sp.) This seasonally flooded area consists of freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall until the first substantial rainfall. The vegetation is composed of wetland generalists, such as hyssop loosestrife (*Lythrum hyssopifolia*), cocklebur (*Xanthium* spp.), and Italian ryegrass (*Lolium multiflorum*) that typically occur in frequently disturbed sites, such as along streams.

The result of the jurisdictional determination is that there are two features on the site that would be subject to regulatory jurisdiction by the USACE under Section 404 of the CWA or the Rivers and Harbors Act of 1899; the State Water Quality Control Board under Section 401 of the CWA, and California Department of Fish and Game (CDFG) under Section 1600 of the Fish and Game Code. The first area is located in the Rheem Creek channel where the channel makes a transition from a concrete-lined box channel to a soft bottom natural channel. The Rheem Creek crossing area is characterized by wetland plant species, wetland hydrology, and wetland soils. Therefore, this feature meets the criteria for wetlands, and is regulated as such.

The second area subject to jurisdiction is an unnamed drainage feature that runs parallel to the UPRR tracks on the east side. The surface runoff accumulates at the high fill and flows north until it discharges into Rheem Creek. There is no natural channel, just a low-elevation swale where the surface runoff accumulates and flows under low velocity to the creek channel. This channel is characterized by hydrophytic vegetation using the facultative neutral test. However there are no hydric soils or wetland hydrology associated with this site. Therefore, this channel is characterized as a Waters of the U.S., and a Streambed.

Environmental Consequences: Build Alternative

The Build Alternative will temporarily disturb 0.2 acre of wetlands in Rheem Creek. It will permanently eliminate 0.32 acre of waters of the U.S. in the unnamed drainage feature that runs parallel to the UPRR tracks on the east side. Mitigation is proposed below to offset these impacts. Regulatory permits will be obtained from the USACE (404 Permit), RWQCB (401 Certification) and CDFG (1602 Streambed Alteration Agreement).

Construction Impacts

During construction of the track high fill across the project alignment, a temporary crossing of Rheem Creek channel will be installed to transport the fill material across the site from Giant Road. Once completed, this temporary crossing will be removed and the new bridge will be installed and the disturbed channel area will be revegetated with native species comparable to the existing plant community in the unlined portion of the channel. Approximately 0.2 acres of the wetlands in Rheem Creek will be temporarily affected by construction of the crossing.

No-Build Alternative

The No-Build Alternative has no potential to disturb any wetland resources on the project site. There would be no indirect impacts on wetland resources if this alternative is selected.

Avoidance, Minimization and/or Mitigation

- Mitigation for impacts to jurisdictional waters of the United States and State shall be offset by either or both of the following measures: (a) acquisition of wetland mitigation credits from an authorized wetland mitigation bank in the general area of the project at a ratio of 2:1 for each acre lost; and (b) revegetating the area adjacent to the eastside of the new track, not

directly adjacent to the track but within the new track alignment, with a comparable set of native wetland plants as presently occurs within the proposed alignment. This requirement shall be memorialized in the 1602 Streambed Alteration Agreement, 404 Permit and 401 Certification obtained for this project prior to disturbing the wetland habitat that occurs within the project alignment.

- Prior to disturbing the Rheem Creek channel, BNSF shall identify the local native plants that can be used to revegetate the channel following disturbance by the temporary construction activities. The channel shall be returned to pre-disturbance conditions and the soft bottom of the channel shall be revegetated with native plants that already occur within the channel. The revegetation shall be completed prior to the first rainfall following completion of construction activities.

2.3.3 Plant Species

Regulatory Setting

The USFWS is responsible for the protection of federally listed special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. “Special status” is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA). Please see the Threatened and Endangered Species section in this document for detailed information regarding these species. This section of the document discusses all federally protected special-status plant species, including USFWS candidate species.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et. seq. See also 50 CFR Part 402.

Affected Environment

Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. The community is characterized by storksbill (*Erodium cicutarium*), foxtail chess (*Bromus madritensis*), wild oats (*Avena barbata*), riggut brome grass (*Bromus diandris*), and foxtail fescue (*Vulpia myuros*). Other species occurring in this community are short-pod mustard (*Brassica geniculata*), barley (*Hordium vulgare*), *Amsinckia* sp., and star thistle (*Centaurea melitensis*).

Wetlands in Rheem Creek

Wetlands have the potential to be temporarily impacted within the project's BSA. They are typically dominated by erect, rooted, herbaceous hydrophytic plant species adapted to growing in conditions of prolonged inundation. Common plant species present in this wetland type include cattails (*Typha* spp.) and Wild-berry (*Rubus* sp.) This seasonally flooded freshwater wetland supports ponded or saturated soil conditions during winter and spring and is dry through the summer and fall until the first substantial rainfall. The vegetation is composed of wetland generalists, such as hyssop loosestrife (*Lythrum hyssopifolia*), cocklebur (*Xanthium* spp.), and Italian ryegrass (*Lolium multiflorum*) that typically occur in frequently disturbed sites, such as along streams.

Riparian/Streambed in unnamed channel

This channel on the east side of the UPRR tracks is characterized as a highly disturbed drainage ditch that has spotty areas of Wild-berry (*Rubus* sp.) and willow trees (*Salix* sp.), and then other patches of non-native grasses and little or no vegetation.

A list of special-status plant species from the U.S Fish and Wildlife Service is included in Chapter 3.

Environmental Consequences: Build Alternative

Although the project area of impact contains some riparian/wetland habitat that could support sensitive plant species, there are no sensitive plant species located anywhere on the project site. Therefore, the proposed project has no potential to adversely affect any sensitive plant species or resources.

Construction Impacts

No special-status plant species will be affected during construction.

No-Build Alternative

The No-Build Alternative has no potential to adversely affect any plant species or resources on the project site. There would be no indirect impacts on sensitive or protected plant species if this alternative is selected.

Avoidance, Minimization and/or Mitigation Measures

Because the proposed project will not adversely affect any sensitive plant species or resources, no avoidance, minimization or mitigation measures are required.

2.3.4 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened or Endangered Species section below. All other federally protected special-status animal species are discussed here, including USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

Affected Environment

Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. Due to the chronic disturbances as well as a recent burn within the proposed alignment, this area does not support a diverse fauna. The most common animal species observed on the site were dogs (*Canis lupus familiaris*) and beachy ground squirrels (*Otospermophilus beecheyi*). Other common

species include western meadowlark (*Sturnella magna*), cottontail rabbits (*Sylvalegus audobonii*), and mourning doves (*Zenaida macroura*).

A list of special-status animal species from the U.S Fish and Wildlife Service is included in Chapter 3.

Environmental Consequences: Build Alternative

Although the BSA contains some riparian/wetland habitat that could support sensitive animal species, there are no special-status animal species located anywhere on the project site. Therefore, the proposed project has no potential to adversely affect any special-status animal species.

Construction Impacts

Temporary noise and construction activities within the BSA may preclude or disrupt nesting in these areas. Avoidance measures are provided below to ensure that there will be no loss of nesting birds.

No-Build Alternative

The No-Build Alternative has no potential to adversely impact any special-status animal species or resources on the project site. There would be no indirect impacts on special-status or protected animal species if this alternative is selected.

Avoidance, Minimization and/or Mitigation Measures

Because the proposed project will not adversely impact any special-status animal species or resources, no avoidance, minimization or mitigation measures are required. However, due to the potential for native birds to occupy the site during nesting season, measures are identified below to avoid impacts to birds protected by the Migratory Bird Species Act.

- Any grubbing or clearing will be conducted outside of the bird-breeding season of February 15th through September 1. If this is not possible, a qualified biologist must perform a pre-construction survey for active migratory bird nests. Caltrans biologists require 10 - 15 days notice before clearing and grubbing. If no active nests are located, the tree removal or trimming will occur within three days of the survey. The contractor will not remove or trim any tree containing an active nest. Field surveys will be completed no more than two weeks before beginning construction during the migratory bird-nesting season from February 15 to September 1. A report of findings will be provided to the California Department of Fish and Game if construction in the vicinity of bird nests must be conducted during nesting season. If nesting birds are located within or adjacent to construction areas, construction will be redirected to other locations until such nests are abandoned.

2.3.5 Threatened and Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Department, as assigned by the Federal Highway Administration (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not

undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of any Section 7 consultation is concurrence on a “not likely to adversely affect” (informal consultation) or “likely to adversely affect” (formal consultation). Formal consultation results in the resource agency issuing a Biological Opinion with an Incidental Take Statement. If the action agency determines that there is “no effect,” consultation is not required. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1996, as amended, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Affected Environment

The results of this survey and evaluation of listed species are that no listed or sensitive species or their associated habitats are present within the proposed alignment. The vast majority of the project area is disturbed vacant field.

Environmental Consequences: Build Alternative

Although the BSA contains some riparian/wetland habitat that could support threatened or endangered species, there are no such species located anywhere on the project site. Therefore, the proposed project has no potential to adversely impact any threatened or endangered plant or animal species or resources. Based on these findings, the proposed project will have “no effect” on any federally listed species and it will not be necessary to obtain an Incidental Take Statement for this project.

Construction Impacts

No threatened or endangered species would be affected by construction.

No-Build Alternative

No threatened or endangered species occur within the BSA. The No-Build Alternative has no potential to adversely impact any threatened or endangered species or resources on the project site. There would be no indirect impacts on threatened or endangered species if this alternative is selected.

Avoidance, Minimization and/or Mitigation Measures

Because the proposed project will not adversely impact any threatened or endangered species or habitats, no avoidance, minimization or mitigation measures are required.

2.3.6 Invasive Species

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other

biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” The California noxious weed list can be used to define the invasive plants that must be considered as part of the analysis for this project.

Affected Environment

The majority of the project site is disturbed and these portions of the alignment contain a number of invasive species, including noxious weeds as described in Section 2.3.1 through 2.3.4 above.

Environmental Consequences: Build Alternative

The project location is in an urbanizing area at the edge of developed industrial and residential areas. The project alignment is already infested with invasive species in the vicinity of and within the project alignment. The implementation of the project will result in the removal of vegetation and habitat, such that occupation by invasive species will be reduced. Ongoing maintenance by BNSF controls invasive weed species and the same maintenance program will be implemented along the connector track alignment. Any future landscaping along the track alignment to control long-term erosion potential must utilize low-growing native plant species. With implementation of BNSF standard landscape management practices, the proposed project will not increase invasive species.

Construction Impacts

Construction of the project could introduce additional invasive species into the project alignment or spread invasive species already in the project alignment. However, standard landscape management practices described above and minimization measures summarized below would control the spread of invasive species.

No-Build Alternative

The No-Build Alternative would have no effect on invasive species.

Avoidance, Minimization and/or Mitigation Measures

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as invasive species. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

2.4 Cumulative Impacts

Regulatory Setting

Cumulative impacts are impacts on the environment that result from the incremental impact of a proposed project together with the impacts of other past, present and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant impacts taking place over a period of time.

Cumulative impacts on resources in the project area may result from the impacts of the transportation project together with other past, present, and reasonably foreseeable projects such as residential, commercial, industrial, and other development, as well as from agricultural activities and the conversion to more intensive types of agricultural cultivation. Such land use activities may result in cumulative effects on a variety of natural resources such as species and

their habitats, water resources, and air quality. Additionally, they can also contribute to cumulative impacts on the urban environment such as changes in community character, traffic volume and patterns, increased noise, housing availability, and employment.

Cumulative impacts are best evaluated at a geographic scale that reflects their extent and likelihood of occurrence, such as a watershed or air basin, and must not be artificially limited to jurisdictional boundaries. Additionally, different resources may have different cumulative impact areas.

A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ Regulations.

Affected Environment

The connector rail alignment is located within an area that has historically been developed and used for industrial land uses. The alignment is bounded by Giant Road on the east, Parr Boulevard on the south, the UPRR tracks on the west, and industrial development and the elevated Richmond Parkway on the north. Thus, the site and surrounding area have been developed and used for industrial purposes for many years. For the cumulative impact analysis, past projects are represented by the existing land uses. A field review of the area surrounding the project area did not identify any additional current development underway within this expanded area. A review of applications for permits with the cities of Richmond and San Pablo did not identify any other proposed projects within the general project vicinity. However, during the comment period on the Environmental Assessment, the East Bay Regional Parks District (EBRPD) submitted comments regarding the implementation of the “Breuner Marsh Restoration and Public Access Project” (Breuner Marsh Project). Please see Chapter 3, Comments and Coordination. This project is located approximately one-quarter mile to the northwest of the proposed Richmond Rail Connector project alignment. The Rheem Creek channel functions as the approximate southern boundary of the Breuner Marsh restoration site. This project will remove existing site facilities; excavate new channels; regrade the site; restore habitat; install two new trails; establish public access to the property; and provide long-term recreation. Demolition and mass grading (approximately 110,000 cubic yards) are expected to start in the summer of 2013 and the project is expected to be completed and open to the public in 2015.

Environmental Consequences

As identified at the beginning of Chapter 2, the project will not affect the following resources: coastal zone, wild and scenic rivers, farmlands, geology, soils or paleontology. Therefore, the project will not have a cumulative adverse effect on any of these resources.

In addition, as discussed earlier in Chapter 2, the proposed project would not adversely affect the following issues: existing and future land use, consistency with state, regional and local plans, community character and cohesion, growth, parks and recreation, utilities and emergency services, aesthetics, traffic and transportation, hydrology, water quality, storm water runoff, air quality, emergency services, animals, plants or threatened and endangered species.

Possible cumulative effects are discussed below for cultural resources, environmental justice, floodplain, hazardous waste/materials, noise and wetlands.

Cultural Resources

No archaeological or historic resources were discovered in the project's Area of Potential Effects (APE). However, the APE is close to a number of known Native American shell mounds

where numerous human burials and artifacts were discovered and correspondence with Native American tribes suggest that similar cultural resources may be present in the APE. The project does not include substantial excavation below the existing disturbed ground surface, though. In addition, if cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

The Breuner Marsh Restoration Project identified a potential to unearth archaeological resources at a known site. However, they will protect the site as an environmentally sensitive area and with archaeological monitors. To protect possible undiscovered archaeological resources, the Breuner Marsh Project has mitigation measures in place comparable to those for the Richmond Rail Project. Therefore, the proposed project would not contribute to any cumulative impacts on cultural resources.

Environmental Justice

The only cumulative effect identified on the environmental justice community is the 1 dB increase in noise impacts related to shifting BNSF trains to the UPRR track segment between Parr Boulevard and Stege. This change in noise level is evaluated in detail in the Noise Section (2.2.5) of this document and determined to be a moderate impact at the Chesney Road at-grade crossing due to horn noise. The cumulative analysis concluded that this impact does not require abatement, because no reasonable abatement is feasible at this location. The City of Richmond and the City of San Pablo may wish to independently seek to establish a quiet zone at this location.

The Breuner Marsh Project does not pose any environmental justice issues as it consists of restoring wetland habitats and providing public access to a presently unoccupied area. Therefore, the implementation of these two projects does not create cumulative impacts related to environmental justice.

Floodplain

Rheem Creek and the western portion of the project site are located within the 100-year floodplain. Where fill is placed to attach the new rail connector to the existing UPRR track, the existing swale will be replaced by a 42-inch culvert. All existing drainage culverts or boxes will be installed at the same or comparable sizes as the existing ones. The project will also be built on fill, which is not impervious. In addition, the new bridge over Rheem Creek will clear span the channel and be placed above the 100-year flood zone.

The proposed project has been designed with minimal increase in impervious surface within the Connector Track alignment. This design combined with the essentially flat topography of the site and overall lack of runoff from the project area results in this project not causing a substantial increase in the flow of Rheem Creek downstream from the project site. Since the runoff volume will not be substantially altered, the proposed project has no potential to increase the volume of flow in Rheem Creek downstream across the Breuner Marsh site,

The Breuner Marsh Project proposes adding a pedestrian bridge over Rheem Creek. The East Bay Regional Park District (EBRPD) will ensure the bridge complies with the City of Richmond's and Contra Costa County Flood Control and Water Conservation District's floodplain management regulations. This will include 100-year flood elevation freeboard requirements, as well as the location of bridge abutments and channel bank protection requirements. The

EBRPD will also obtain grading and building permits and complete final design review for the parking area and restroom in the floodplain.

Since the Richmond Rail Project will not increase the base floodplain elevation or permanently alter the Rheem Creek channel and the Breuner Marsh Project will comply with floodplain management requirements, the proposed project will not have a cumulative effect on the floodplain.

Hazardous Waste/Materials

A portion of the project site was contaminated in the past and the contamination has been remediated to allow industrial development. As part of the remediation, the contaminated area was capped with clean soil. The proposed connector track project will protect the existing cap and the use of the site to support rail operations is consistent with the allowed uses. Since this project is not designed to support additional train operations, the installation of the connector track does not increase the potential for a train accident and a related spill of hazardous materials being transported by trains. However, during construction petroleum products will be used to support construction activities, and a potential for accidental release of hazardous materials does exist. Specific measures have been incorporated into the project to minimize the potential for damage to the environment or to human health from such an accidental spill of hazardous materials. In summary, the proposed project does not include removal of any soil from the site and the construction program is designed to protect the cap over the contaminated site so no contaminated material will have to be removed from the site for disposal.

The Breuner Marsh Project is near an underground Shell pipeline on the eastern side the project site. In addition, it's possible that excavated soil may be contaminated from former pipeline leaks or lead and other metals. The project will avoid placing fill within 10 feet of a pipeline and avoid excavation within 25 feet if possible. Any contaminated soils will be tested. If soils are found to have contamination above regulatory limits, the soil will either be excavated and removed, or capped and buried in place according to standards.

With the precautions taken by both projects, no cumulative impacts will occur relating to hazardous waste or materials.

Noise and Vibration

As described for air quality, noise and vibration issues are also inherently cumulative in nature. Individual emissions of sound from a stationary or mobile source combine with the other sound generators in the immediate area to create a composite or integrated level of sound/noise. Within the immediate project area the number of train operations will not be increased, so the overall sound and vibration level in the project area will not increase. Thus, the project will not cause any change to the cumulative noise environment at the project location.

Along the existing BNSF route, from the project area south through downtown Richmond to Stege, there will be fewer trains and therefore less overall noise within the existing BNSF corridor. From the project area south to Stege on the UPRR tracks, up to 2.4 train trips will be added to the existing average number of 50 trains per day. The additional trains on the UPRR corridor will increase the existing cumulative noise level by less than 1 dB. The rail corridor from the rail connector is bounded by industrial uses except at one at-grade road crossing location where the increased horn noise between the current condition and the modeled future condition is approximately 1 decibel. This increase in sound level is undetectable. However, because of

the existing noise levels, guidelines from the Federal Railroad Administration consider this a moderate impact. Operational noise minimization or attenuation measures were evaluated and determined to be infeasible for the affected residences. Please refer to the detailed noise discussion in Section 2.2.5.

Once the Breuner Marsh Project is completed, the main noise sources would be car arrivals and departures, conversations, and foot or bicycle traffic. It would not contribute notable noise levels to the existing conditions. Therefore, there would be no cumulative long-term noise impacts from the proposed project combined with the Breuner Marsh Project.

Construction activities at Breuner Marsh and the proposed project site will overlap. However, due to the high background noise in this transportation corridor and the distance between the two areas of construction, none of the daytime construction activity noise will exceed the background noise levels at the nearest residential areas, Parchester Village and the residences along the east side of Giant Road. No night-time construction activities are proposed for either project. Based on these factors, no adverse short-term cumulative noise impacts will occur during these overlapping construction activities.

Wetlands and Other Waters

The majority of the connector track alignment crosses a highly disturbed natural community that has low habitat value. The proposed connector track will temporarily affect about 0.2 acre of Rheem Creek channel that contains some wetland vegetation, but no listed or sensitive species. The new track will also eliminate about 0.32 acre of Waters of the U.S. located adjacent to the UPRR tracks. However, onsite mitigation will offset the temporary loss of wetland habitat in Rheem Creek and acquisition of offsite wetland habitat at a mitigation bank will be acquired to compensate for the onsite loss of Waters of the U.S.

The main purpose of the Breuner Marsh Project is to restore and enhance 30 acres of tidal marsh wetlands. Therefore, after mitigation, the proposed connector track project will not contribute to a cumulative impact on wetlands or other waters.

CHAPTER 3 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings and interagency coordination meetings. This chapter summarizes the results of Caltrans' efforts to identify, address, and resolve project-related issues through early and continuing coordination.

Several project development team meetings have been held to date with representatives from various branches within Caltrans. Project development team meetings have occurred since the project's inception in 2009. The initial consultations on this project were held with BNSF Railway staff and Caltrans Division of Rail staff. Participants in this process included Mr. Walt Smith and Mr. John Fleming of BNSF and Mr. Bruce Roberts of Caltrans Division of Rail. These consultations have continued over the past two years on a periodic basis.

Mr. Kevin Osmun of LOR Geotechnical compiled the Phase 1 Environmental Site Assessment. In developing the construction management guidelines for installing the Richmond Rail Connector across the former Cooper Chemical Company Brownfield, Mr. Osmun has been coordinating with Mr. Claude Jemison at the Department of Toxic Substances Control (DTSC) Brownfields and Environmental Restoration Program. This coordination was conducted during the last quarter of 2011 and is ongoing into 2012.

In developing the cultural resources report extensive consultation has occurred between Mr. B. Tom Tang and local agencies, historical societies and Native Americans. Contacts and discussions have been held with the following groups.

Local Agencies: Richard Mitchell, Planning Director, City of Richmond; and
Maureen Toms, Supervisor, Department of Community
Development, Contra Costa County

Local Historical Societies: Mildred Dornan, President, Point Richmond History Association;
and El Cerrito Historical Society

Native Americans: Dave Singleton, Native American Heritage Commission; Jean-
Marie Feyling, Amah/Mutsun Tribal Band; Irene Zwierlein,
Chairperson, Amah/Mutsun Tribal Band; Ann Marie Sayers,
Chairperson, Indian Canyon Mutsun Band of Costanoan;
Rosemary Cambra, Chairperson, Muwekma Ohlone Indian Tribe
of the San Francisco Bay Area; Andrew Galvan, The Ohlone
Indian Tribe; Ramona Garibay, Representative Trina Marine
Ruano Family; Jakki Keli, Ohlone/Costanoan; Katherine Erolinda
Perez, Ohlone/Costanoan Northern Valley Yokuts/Bay Miklok; and
Linda G. Yamane, Ohlone/Costanoan.

No pre-historic archaeological resources were identified in response to these communications, but several of the respondents suggested Native American monitoring during

construction. Since Native Americans have not previously identified resources at this location and excavation will be minimal, they will be briefed on the project through the appropriate channels.

In order to compile information regarding current train operations, representatives of both BNSF and UPRR were contacted to obtain this information. Contacts with the staffs of these two rail companies were conducted in early January 2012.

The USFWS was contacted to obtain a sensitive species list and this list was integrated into the presence absence table compiled in the Natural Environmental Study Minimal Impacts (Appendix 1).

A Public Notice on “Notice of Availability/Notice of Intent to Adopt a Mitigated Negative Declaration, Notice of Availability of Environmental Assessment, and Announcement of Public Meeting for the Proposed Richmond Rail Connector Project” was published on September 16, 2012 in the Contra Costa Times (in English) and the El Mensajero (in Spanish). The Public Meeting was held on October 2, 2012 from 6:00 – 8:00 p.m. in the Bermuda Room at the Richmond Convention Center located at 403 Civic Center Drive, Richmond, CA 94804. No one from the public attended this meeting.

The Public Notice and copies of the Environmental Assessment and the Initial Study were made available at the City of Richmond Central Library located at 325 Civic Center Plaza, Richmond, CA 94804 and the San Pablo Library located at 2300 El Portal Drive, Suite D, San Pablo, CA 94806. Copies were also sent to the City of San Pablo (c/o Library) at 13831 San Pablo Avenue, San Pablo, CA 94806. In addition, the environmental documents were available online at <http://www.dot.ca.gov/dist4/envdocs.htm>.

The following pages are the Comment Letters from the EA and IS and Responses to those Comments.



EDMUND G. BROWN JR.
GOVERNOR

COMMENT LETTER #1

STATE OF CALIFORNIA

GOVERNOR'S OFFICE of PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT



KIEN ALEX
DIRECTOR

October 17, 2012

Howell Chan
California Department of Transportation, District 4
Federal Highway Administration
P.O. Box 23660
Oakland, CA 94623-0660

Subject: Richmond Rail Connector Project
SCH#: 2012092032

Dear Howell Chan:

The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on October 16, 2012, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

1-1

"A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures

cc: Resources Agency
1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

RESPONSES TO COMMENTS
LETTER #1
OFFICE OF PLANNING AND RESEARCH, STATE CLEARINGHOUSE

- 1-1 This is an acknowledgment letter verifying that the State Clearinghouse submitted the Initial Study and proposed Mitigated Negative Declaration to selected state agencies for review, and that one state agency submitted comments through the Clearinghouse by the close of the review period on October 16, 2012. The State Clearinghouse assigned this project the following tracking number, SCH#2012982932. This letter is for information only and does not require additional formal response.

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

5001 Blum Road
Martinez, CA 94553
(925) 646-4980
(800) 735-2929 (TT/TDD)
(800) 735-2922 (Voice)



September 27, 2012

RECEIVED

File Number: 320.12620.17274

OCT 03 2012

STATE CLEARING HOUSE

Mr. Scott Morgan
State Clearing House
1400 Tenth Street, Room 121
Sacramento, CA 95814

*Clear
10/16/12
e*

Dear Mr. Morgan,

Thank you for the opportunity to review the "Notice of Completion" environmental document from the State Clearinghouse (SCH) regarding the Richmond Rail Connector Project, SCH# 2012092032 encompassing; Giant Road, John Avenue and Parr Boulevard near the city of Richmond, in Contra Costa County. The California Highway Patrol (CHP) is the primary agency that provides traffic law enforcement, safety, and traffic management on State Route 4, which is the closest State Route nearest this project. The Contra Costa Area is responsible for these functions and will not be affected by the implementation of this project.

2-1

Questions regarding this response may be directed to Acting Lieutenant Steve Perca via e-mail at sperea@chp.ca.gov or by telephone at (925) 646-4980

Sincerely,

J. L. FENNER, Captain
Commander
Contra Costa Area



Safety, Service, and Security

An Internationally Accredited Agency

**RESPONSES TO COMMENTS
LETTER #2
DEPARTMENT OF CALIFORNIA HIGHWAY PATROL**

- 2-1 Thank you for taking time to review the environmental document and letting us know the proposed project will not affect the California Highway Patrol.



EDMUND G. BROWN JR.
GOVERNOR



MATTHEW ROMOQUIF
SECRETARY FOR
ENVIRONMENTAL PROTECTION

San Francisco Bay Regional Water Quality Control Board

September 24, 2012
CIWQS Place No.: 786539

Sent via electronic mail—no hard copy to follow

California Department of Transportation
Attn: Mr. Howell Chan
Howell.Chan@dot.ca.gov
P.O. Box 23660
Oakland, CA 94623-0660

Subject: Environmental Assessment for the Richmond Rail Connector Project

Dear Mr. Chan,

We have reviewed the California Department of Transportation's (Department) Richmond Rail Connector Project Environmental Assessment dated September 2012 and offer the below comments.

3-1

Section 2.3.2 of the document notes that approximately 0.32 acres of U.S. waters would be permanently eliminated upon project implementation. The document proposes compensatory mitigation measures that would "be memorialized in the 1602 Streambed Alteration Agreement and 404 Permit." The document fails to mention the San Francisco Bay Regional Water Quality Control Board's 401 water quality certification, which would also require mitigation for any impacts to jurisdictional waters.

3-2

Section 2.3.2 also proposes either wetland mitigation banking or on-site re-vegetation as compensatory mitigation for permanent impacts. Rheem Creek appears to be significantly degraded in the project vicinity, allowing for significant restoration and enhancement opportunities. The Department must thoroughly describe the feasibility all on-site mitigation opportunities in its application for 401 water quality certification. We will not issue 401 water quality certification for the project if mitigation banking is proposed in-lieu of feasible on-site opportunities for creation or restoration of jurisdictional features, such as Rheem Creek.

JOHN MULLER, CHAIR | BRUCE H. WOLFE, EXECUTIVE OFFICER

1516 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay

Mr. Howell Chan
Caltrans

- 2 -

September 24, 2012

Please contact Brendan Thompson of my staff, at (510)-622-2506, or via e-mail, at BThompson@waterboards.ca.gov, if you have any questions.

Sincerely,

**Dale
Bowyer**

Digitally signed by Dale Bowyer
DN: cn=Dale Bowyer, o=S.F. Bay
Water Quality Control Board,
ou=Watershed Division,
email=dbowyer@waterboards.c
a.gov, c=US
Date: 2012.09.24 15:51:14
-07'00'

Dale Bowyer
Watershed Division Section Leader

cc: State Clearinghouse
Army Corps of Engineers
California Department of Fish and Game

RESPONSES TO COMMENTS
LETTER #3
SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD

- 3-1 Discussion of permit requirements, including the requirement to obtain a 401 Certification, is provided in Section 2.3.2 under the Regulatory Section and Environmental Consequences Section of the EA and page 26 of the IS. We have also revised the sentence you referred to in your comment, which is under Avoidance, Minimization and Mitigation Measures, to include the 401 Water Quality Certification.
- 3-2 Rheem Creek is a federal flood control channel constructed by the U.S. Army Corps of Engineers and maintained by the Contra Costa County Flood Control and Water Conservation District (FC District). The Rheem Creek channel onsite is a vertical side walled channel across the proposed track alignment (not concrete) and the channel bottom may be considered degraded. According to the Contra Costa Flood Control and Water Conservation District, the creek was designed to contain storm runoff flows of about 800 cubic feet per second and does not have the capacity to convey storm flows from 100-year storm events. Revegetation will take place in Rheem Creek for mitigation of temporary impacts. Due to the limited capacity of the channel, though, it is possible that neither the Corps nor the FC District will allow revegetation of the channel as mitigation for permanent impacts because it would decrease capacity of the Rheem Creek channel. However, during acquisition of the three regulatory permits (404, 401 and 1602), BNSF will explore onsite mitigation for permanent impacts as an alternative to acquisition of offsite mitigation banking credits. We will confer with the U.S. Army Corps of Engineers (through the 404 process) and with the District regarding this issue as part of the requirement to obtain an encroachment permit. The 401 permit application will include the discussion requested in this comment.



October 4, 2012

Howell Chan, Senior Environmental Planner
California Department of Transportation, District 4
111 Grand Avenue
Oakland, CA 94612

Re: Notice of Intend to Adopt a Mitigated Negative Declaration for the
Richmond Rail Connector Project, Richmond

Dear Mr. Chan:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Mitigated Negative Declaration for the Richmond Rail Connector Project (Project) located in the City of Richmond. EBMUD has the following comments.

GENERAL

4-1

EBMUD owns and operates an 8-inch and 12-inch water main located east of the intersection of Williams Street and Collins Avenue and west of the intersection of John Avenue and Giant Road, respectively that traverse the project site and proposed BNSF Railway. These water mains provide continuous service to EBMUD customers in the area and the integrity of these pipelines must be maintained at all times. Any proposed construction activity in EBMUD easements would be subject to the terms and conditions determined by EBMUD including relocation of the water mains, at the project sponsor's expense. Please submit a full set of drawings (full size or 11x14) for review and approval. All submittals should be sent to EBMUD M/S 504, Serge Terentieff, Senior Civil Engineer, 375 Eleventh Street, Oakland, CA 94607.

If you have any questions concerning this response, please contact David J. Rehnstrom, Senior Civil Engineer, Water Service Planning at (510) 287-1365.

Sincerely,

A handwritten signature in black ink that reads 'David J. Rehnstrom'.

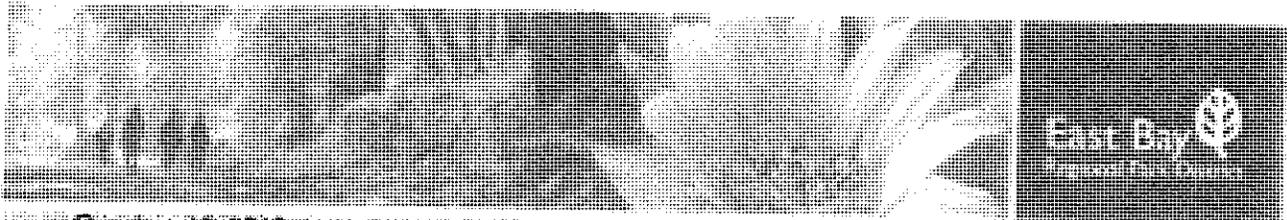
For William R. Kirkpatrick
Manager of Water Distribution Planning

WRK:ELE:sb
sb12_211.doc

cc: BNSF Railway Company

**RESPONSES TO COMMENTS
LETTER #4
EAST BAY MUNICIPAL UTILITY DISTRICT**

- 4-1 It is standard for all utilities to be identified prior to initiating construction, but it helps to have the utility companies identify those underground utilities of concern. This input is appreciated. At this time it appears that the BNSF Railway Company will oversee construction of the new connector track. BNSF will contact the District and submit the engineering drawings for review and approval. Since there is very little excavation associated with this proposed project, it may be possible to leave the water lines in place, but this will be determined during consultations with the Utility District. BNSF will work with EBMUD to ensure any concerns are addressed and if it is necessary to move the water mains that there is no interruption in service.



October 10, 2012

Howell Chan
California Department of Transportation, District 4
Office of Environmental Analysis
P.O. Box 23660
Oakland, CA 94623-0660

Subject: Proposed Richmond Rail Connector Project, Point Pinole Regional Shoreline

Dear Mr. Chan,

The East Bay Regional Park District ("District") has obtained a copy of the draft Environmental Assessment (EA) for the subject project. The District was not notified by Caltrans or the Federal Highway Administration about the proposed project. The EA was brought to our attention on October 9, 2012. Comments on the EA are due on October 16, 2012.

5-1

The District owns the 2,532 acre Point Pinole Regional Shoreline that is in close proximity to the northern and western ends of the proposed project area. This public park is also within the area of potential project effect and subject to review under Section 4(f) of the DOT Act. Potential project impacts to park facilities are not addressed in the EA. The proposed project has the potential to impact the park in a number of ways as described below:

Traffic and Circulation: The EA states that temporary road closures may occur during project construction. However, it does not specifically state where these closures might occur or the duration of such closures. The primary point of access to Point Pinole is from the Giant Highway in Richmond. As you may be aware, Giant Highway crosses the BNSF tracks at an at-grade crossing. During weekends and festivals, Point Pinole can receive thousands of visitors. Temporary closure of Giant Highway could result in significant adverse traffic effects to Point Pinole. The EA should include mitigation measures for such effects, including prohibition of weekend construction and 48-hour advance notice of road closures.

5-2

Construction Noise: The City of Richmond has noise ordinances regarding the duration of project construction, especially for pile driving near residential areas. Parchester Village is located in close proximity to the project area. Similarly, construction noise may also adversely affect Point Pinole. The EA should address noise impacts to Parchester Village and Point Pinole.

5-3

Hydrology and Water Quality: While the EA addresses hydrology and water quality impacts in the immediate project area, it does not address downstream hydrology impacts to Rheem Creek. There may be potentially significant impacts during project construction and post-construction operation and maintenance of proposed train facilities. During construction the EA describes that a temporary crossing of Rheem Creek would impact 0.20 acres of riparian

5-4



Board of Directors

Carol Severin President Ward 2	John Suter Vice President Ward 2	Ann Wiedkamp Treasurer Ward 5	Whitney Dossant Secretary Ward 1	Doug Selen Ward 4	Savory Lane Ward 4	Yee Kook Ward 7	Robert L. Doye General Manager
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5-4
cont.

wetlands. It does not state how potential dewatering or diversion of Rheem Creek for this crossing would affect downstream areas. Would there be localized flooding? Dredging of Rheem Creek? How and who would maintain mitigation measures proposed within the Creek? Does Caltrans have concurrence from Contra Costa County Flood Control and Water Conservation District that such measures are permissible? What specific wetland mitigation banks would be utilized if wetland impacts cannot be mitigated on-site?

5-5

The District owns about 2,000 linear feet of Rheem Creek downstream of the project area. See *attached map*. How would the proposed project affect this portion of the Creek? Would there be down cutting or sedimentation in the Creek? What effects would the project have on the endangered California Clapper Rail that inhabits the mouth of Rheem Creek?

5-6

Operation and maintenance of railroad tracks and trains typically require application of oil and grease. How would the proposed project prevent such pollutants from being discharged into Rheem Creek? Track maintenance typically includes application of pesticides, especially herbicides to control weeds. What measures are being taken to prevent the discharge of herbicides into Rheem Creek?

5-7

Consistency with Other Approved Projects: In July of 2011 the District provided a Notice of Preparation (NOP) to Caltrans regarding the District's project at the mouth of Rheem Creek, known as the Breuner Marsh Restoration and Public Access Project. On August 3, 2011 Caltrans provided a scoping letter. *Please see attached*. The response letter did not provide information about the subject project. On March 12, 2012 the District provided Caltrans a Draft Environmental Impact Report (EIR) for the Breuner Marsh Project. See *attached CD and notice*. No EIR comments were received from Caltrans. On July 5, 2012 the District certified the final EIR for the Breuner Marsh Project. *Attached please find the final EIR and appendices*. The EA should address consistency with and potential impacts to the Breuner Marsh Project.

5-8

Section 4(f) of the DOT Act: The EA does not appear to contain a discussion of potential Section 4(f) effects to Point Pinole resulting from the proposed project. Such an analysis should address impacts to the park, including traffic and circulation, noise, aesthetics, cultural and biological resources, hydrology, water quality, land use, public services and potential conflicts with the approved Breuner Marsh Project.

Please call me at (510) 544-2622 should you have any questions regarding our comment letter and provide us with any future notices or environmental documents regarding this project.

Sincerely,



Brad Olson
Environmental Programs Manager

Attachments (4)

cc. Mitch Avalon, Contra Costa County Flood Control and Water Conservation District



Source: Google Earth, 2011.

FIGURE 3-2
SITE CONTEXT



2950 PERALTA OAKS COURT P.O. BOX 5381 OAKLAND CALIFORNIA 94605-0381 T. | 888 EBPARKS F. 510 569 4319 TDD. 510 633 0460 WWW.EBPARKS.ORG

NOTICE OF AVAILABILITY AND PUBLIC HEARING FOR AN ENVIRONMENTAL IMPACT REPORT FOR THE BREUNER MARSH RESTORATION AND PUBLIC ACCESS PROJECT

A Draft Environmental Impact Report has been prepared to assess the potential environmental consequences of the proposed Breuner Marsh Restoration and Public Access Project at Point Pinole Regional Shoreline Park in Richmond, CA. The Draft EIR identifies mitigation measures and alternatives that would avoid or reduce significant impacts. It is intended to inform decision makers, other agencies, and the public, of the Proposed Project. This Draft EIR has been prepared in accordance with the California Environmental Quality Act (CEQA). The East Bay Regional Park District (EBRPD) is the lead agency for the Project.

Proposed Project

The 150-acre Breuner Marsh Restoration and Project would restore wetlands and grasslands and provide for public access to the San Francisco Bay Shoreline. Approximately 60 acres of tidal and seasonal wetlands, and 90 acres of coastal prairie would be restored or enhanced within the project area. A critical 1.5 mile gap in the San Francisco Bay Trail would be constructed between the Richmond Parkway and the Point Pinole Peninsula. A new staging area, restrooms, picnic facilities, benches and interpretive exhibits would also be constructed.

Draft EIR Availability

A copy of this Draft EIR has been sent to the State Clearinghouse and to those who requested a copy by responding to the Notice of Preparation. It is also available for downloading from the EBRPD website at www.ebparks.org. Copies are also available at the Main Branch of Richmond Public Library at 325 Civic Center Plaza, Richmond; at the San Pablo Library at 2300 El Portal Dr. # D, San Pablo; and the Parchester Village Community Center, 900 Williams St., Richmond.

Draft EIR Comments

This Draft EIR was published on March 12, 2012, which marks the start of the 45-day comment period as required under CEQA. Written comments should be received no later than 5 p.m. on April 27, 2012 and should be sent to:

Brad Olson
East Bay Regional Parks District
2950 Peralta Oaks Court
PO Box 5381
Oakland, CA 94605



Board of Directors

Carol Severin
President
Ward 3

John Sutter
Vice-President
Ward 2

Ayn Wieskamp
Treasurer
Ward 5

Whitney Dotson
Secretary
Ward 1

Doug Siden
Ward 4

Beverly Lane
Ward 6

Ted Radke
Ward 7

Robert E. Doyle
General Manager

Comments can also be sent via email to bolson@ebparks.org.

Verbal comments can be made at the Public Hearing (see below).

Comments should focus on the environmental impacts and the adequacy of the EIR.

Public Hearing

A Public Hearing on the Draft EIR where additional comments will be received will be held on Thursday, March 22 at 7:00 PM at:

Parchester Village Community Center,
900 Williams Street,
Richmond, CA 94806

Final EIR and Responses to Comments

All comments received within the comment period and pertaining to the environmental impacts and adequacy of the Draft EIR will be responded to in writing. Comments on the project merits or unsubstantiated comments, do not require a response. Responses, together with comment letters, emails, and a hearing transcript summary, will be included in the Final EIR, along with any necessary revisions to the contents of the Draft EIR.

Final EIR Approval and Project Approval

The Final EIR will be made publicly available in the same manner as the Draft EIR. The Final EIR will be presented to the EBRPD Board of Directors to certify the Final EIR, adopt findings, and approve the project. The EBRPD meeting for EIR certification and project approval will be a public hearing where additional comments may be received.

DEPARTMENT OF TRANSPORTATION

111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5541
FAX (510) 286-5559
TTY 711



*Flex your power!
Be energy efficient!*

August 3, 2011

CC080025
CC-080-6.60
SCH# 2011072011

Mr. Brad Olson
East Bay Regional Park District
2950 Peralta Oaks Court
P.O. Box 5381
Oakland CA 94605

Dear Mr. Olson:

Breuner Marsh Restoration and Public Access Project – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the early stages of the environmental review process for Breuner Marsh Restoration and Public Access Project. The following comments are based on the NOP. As the lead agency, the East Bay Regional Park District (EBRPD) is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. This information should also be presented in the Mitigation Monitoring and Reporting Plan of the environmental document. Required roadway improvements should be completed prior to issuance of the Certificate of Occupancy. Since an encroachment permit is required for work in the state right of way (ROW), and the Department will not issue a permit until our concerns are adequately addressed, we strongly recommend that the EBRPD work with both the applicant and the Department to ensure that our concerns are resolved during the California Environmental Quality Act (CEQA) process, and in any case prior to submittal of a permit application.

Traffic Control Plan

The NOP identifies potentially significant impacts that may occur in the project vicinity due to traffic from construction, and that this issue will be evaluated in the Draft Environmental Impact Report (EIR). Some local jurisdictions have their own standards for such issues, while others defer to those of Caltrans. In the case of the latter, you may benefit from information in our Traffic Manual. See the website link below for more information.

<http://www.dot.ca.gov/hq/construct/constmanual/>

"Caltrans improves mobility across California"

 Please consider the environment before you print.
Mr. Brad Olson/ East Bay Regional Parks District
August 3, 2011
Page 2

As of September 26, 2006, the California Department of Transportation has adopted the California Manual on Uniform Traffic Control Devices (FHWA's MUTCD 2003 Revision 1, as amended for use in California), also called the California MUTCD, to prescribe uniform standards and specifications for all official traffic control devices in California. This action was taken pursuant to the provisions of the California Vehicle Code Section 21400 and the recommendation of the California Traffic Control Devices Committee (CTCDC).

Guidance on Caltrans Standards regarding traffic control devices may be found at:
<http://www.dot.ca.gov/hq/traffops/signtech/mutcdsup/pdf/camutcd/CAMUTCD-Part6.pdf>

Transportation Permit

Project work that requires movement of oversized or excessive load vehicles on State roadways, such as Interstate 80 (I-80) requires a transportation permit that is issued by the Department. To apply, a completed transportation permit application with the determined specific route(s) for the shipper to follow from origin to destination must be submitted to the address below.

Office of Transportation Permits
California DOT Headquarters
P.O. Box 942874
Sacramento, CA 94274-0001

See the following website link for more information: <http://www.dot.ca.gov/hq/traffops/permits/>.

Hazardous Materials

All motor carriers and drivers involved in transportation of hazardous materials must comply with the requirements contained in federal and state regulations, and must apply for and obtain a hazardous materials transportation license from the California Highway Patrol (CHP). The license costs \$100 dollars for the original, and \$75 for a renewal. When transporting explosives, inhalation hazards, and highway route-controlled quantities of radioactive materials, safe routing and safe stopping-places are required. A route map must be carried in the vehicle.

A driver is required to obtain a hazardous materials endorsement issued by the driver's country or state of domicile to operate any commercial vehicle carrying hazardous materials. The driver is required to display placards or markings while hauling hazardous waste, unless the driver is exempt from the endorsement requirements. A driver who is a California resident is required to obtain an endorsement from CHP, who may be contacted at (916) 843-3445.

Mr. Brad Olson/ East Bay Regional Parks District
August 3, 2011
Page 3

Please feel free to call or email Luis Melendez of my staff at (510) 286-5606 or Luis_Melendez@dot.ca.gov with any questions regarding this letter, as for any other assistance we may provide.

Sincerely,



GARY ARNOLD
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

**RESPONSES TO COMMENTS
LETTER #5
EAST BAY REGIONAL PARK DISTRICT**

- 5-1 Thank you for submitting comments on the Environmental Assessment. We have added East Bay Regional Park District to our Distribution List.

Section 4(f) applies to a publicly owned park that is open to the public when a transportation project that receives federal funds “uses” the park. Section 4(f) defines use as one of the following:

- 1) The first type of use occurs when parkland is permanently incorporated into a transportation facility. This use applies when property protected by Section 4(f) is purchased for the project or when permanent access it acquired for maintenance or other transportation-related purposes.
- 2) The second type of use is known as temporary occupancy. This applies when park land, in whole or in part, is required for project construction-related activities.
- 3) The last type of use is called constructive use. A constructive use occurs when the proximity impacts of a proposed project adjacent to, or nearby, a Section 4(f) property result in substantial impairment to the property's activities, features, or attributes that qualify the property for protection under Section 4(f). As a general matter this means that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost.

Point Pinole Regional Shoreline is located approximately one mile northwest of the project site. No land from the park will be required either permanently or temporarily for the proposed project. Therefore, the first two types of use under Section 4(f) do not apply.

Constructive use would only apply if proximity impacts, such as traffic, noise or water quality, substantially interfere with activities, features or attributes of the park. Please see Responses 5-2, 5-3, 5-4 and 5-8, which explain why the proposed project will not result in a constructive use. Since the proposed project will not use Point Pinole Regional Shoreline according to any of the three definitions of use, Section 4(f) does not apply.

- 5-2 The main construction activity that will affect traffic is delivery of fill for the connector track and the turnout pad. Fill for the connector track will be delivered over 10 days and fill for the turnout pad will be delivered over 5 days. Over these 15 days, there will be an estimated 54 truck trips per day. This equates to a maximum of about 8-10 truck trips per hour, or less than one truck trip every six minutes. BNSF indicates that it will not schedule deliveries for weekends and will also not work within local roadways on weekends, except in an emergency. The three roads that would be most affected by these deliveries include John Avenue and Collins Avenue right at the Richmond Parkway overpass and Parr Boulevard where it crosses the Union Pacific Railroad tracks. These are primary access points to the proposed track alignment and when fill is being delivered these roadways will require traffic management. Flagpersons on Giant Road will also be occasionally required to control access to the site at John Avenue. The worst-case traffic delay on Giant Road would be for no more than 5 minutes at the

John Avenue/Giant Road intersection where construction vehicles would enter the project site. The purpose would be to ensure safety of traffic as trucks going northbound on Giant Road turn left at John Avenue. Based on the above information and the distance from the park, the proposed project will have no substantial effects on park traffic. However, based on this comment, the construction contractor will be required to notify the District before the start of deliveries and if any delays or other traffic management requirements will occur on Giant Road. The BNSF project engineer will also coordinate with the District to avoid deliveries during any events.

- 5-3 Construction noise impacts are described and analyzed on pages 61 through 72 of the EA and pages 56 through 65 of the Initial Study. As noted in Response 5-1, Point Pinole Regional Shoreline is located approximately one mile northwest of the project site. The closest residences on the south end of Parchester Village are located about one-quarter mile or 1,320 feet from the project site. Noise attenuates at approximately 6 decibels per doubling of distance. With a potential 85-dB level of construction noise at 50 feet from the construction equipment, the construction noise level would be 52 dB at 1,600 feet from the site and 46 dB at one-half mile from the site. Given that background sound levels in Parchester Village are already above 60 decibels, the proposed project construction activities would be barely audible, if at all. No construction will occur at night. Point Pinole Regional Shoreline is even further away from the project area and background sound levels at the Shoreline are approximately 70 decibels.

In addition, there is no proposal to conduct any pile driving or major excavations. The new high fill will be installed above the existing ground surface using standard construction equipment. Based on these data, no adverse project-related construction noise will adversely impact Point Pinole Regional Shoreline or Parchester Village.

- 5-4 As stated above, Point Pinole Regional Shoreline is about one mile northwest of the project area. Rheem Creek is also south of park and flows to San Pablo Bay. Upstream of the project site, Rheem Creek flows in a concrete channel. In the project area, however, the channel consists of a vertical walled earthen channel with degraded wetland vegetation. Under current conditions, no runoff enters the project area from the east due to the BNSF tracks, except via Rheem Creek. The only runoff on this extremely flat parcel of land (defined by Giant Road and the BNSF tracks on the east; the UPRR tracks on the west, Parr Boulevard on the south and the existing industrial development beneath Richmond Parkway on the north) is generated within the bounds of the parcel that flows to the west, intercepts the UPRR tracks and then flows north to Rheem Creek adjacent to the track highfill. Please refer to the Hydrology Exhibit in Attachment 2. Due to the very flat topography and lack of impervious surface along the connector track alignment, very little runoff occurs from the project site. The industrial development south of the project site does contain impervious surfaces and generates runoff that flows along the east side of the UPRR tracks into the Rheem Creek channel.

Installation of the proposed Richmond Connector Track will not create a major impervious surface nor will it substantially change the slope of the property. Equalization culverts will be installed to allow runoff on the east side of the BNSF tracks to continue flowing west to the UPRR tracks and thence north into Rheem Creek. No substantial increase in runoff from this area will result from installation of the Richmond Connector Track. Where the new connector track meets the UPRR tracks, a new 48-inch culvert will be installed to carry surface runoff beneath the new track highfill. This will convey the existing surface runoff from the industrial area to the Rheem Creek channel.

Based on the information above, there will be only a slight increase in runoff, if any, from the proposed project and drainage patterns will not change.

Regarding water quality, during construction any runoff from construction areas will be managed under a Stormwater Pollution Prevention Plan (SWPPP) that will prevent sediment from leaving the construction site and causing downstream degradation of water quality or erosion. Refer to Attachment 1 to these responses to comments. It lists the specific SWPPP Best Management Practices (BMPs) being considered for this project. After the Richmond Connector Tract is completed, it will be operated and maintained in the same way as the existing UPRR and BNSF tracks. See Response 5-6 for a maintenance description. There will be no increase in train traffic associated with this proposed project and no change in future operations other than trains being allowed to connect from one company's tracks to the other company's tracks.

Regarding construction activities within Rheem Creek, the objective will be to install two large corrugated metal pipe culverts within the channel to convey upstream flows without major modification. The installation of the culverts will occur during a period of no or low flows in the channel. This can be completed in a day or two. The objective is to install the culverts to carry low flows and no water diversion is proposed, except within the channel if necessary. For example, one culvert can be installed and any low flows will be allowed to pass temporarily on the other side, and then the other culvert will be installed while any low flows are directed to the installed culvert. Based on low flows following the storm season, there does not appear to be any need to divert flows beyond this. No dredging will be required. After the temporary culverts are installed, a crossing will be installed to allow equipment to bring material required for highfill construction across the project area. When construction is completed, the temporary culverts will be removed and the original channel configuration will be restored. The channel floor will be revegetated using local native plant stock. The new bridge will be anchored outside of the Rheem Creek channel high water line and installed as a clear span over the creek channel. Thus, there will be no permanent disturbance of the creek channel under the proposed construction scenario.

For the onsite restoration of the temporarily disturbed Rheem Creek channel a restoration plan will be agreed upon with the regulatory agencies and implemented by the project team until it is accepted by the regulatory agencies. Given the high degree of disturbance of Rheem Creek channel at this location, the restoration should provide better quality habitat than currently exists.

During acquisition of the three regulatory permits (404, 401 and 1602), BNSF will also explore onsite mitigation to offset permanent impacts to waters of the United States and State of California as an alternative to acquisition of offsite mitigation banking credits. (See Response 3-2.) However, any restoration of the channel must be in full conformance with the encroachment permit obtained from the Contra Costa County Flood Control and Water Conservation District and the U.S. Army Corps of Engineers San Francisco District Readiness Branch. If onsite mitigation is not possible because of the limited capacity of the channel, the specific offsite mitigation bank will be determined during negotiations over the following regulatory permits: U.S. Army Corps of Engineers 404 Permit; Regional Water Quality Board 401 Certification; and California Department of Fish and Wildlife Streambed Alteration Agreement (1602 Agreement).

Based on the above information, there will be no change in hydrology or water quality that would affect Point Pinole Regional Shoreline.

- 5-5 As indicated in the previous response, the proposed project will not substantially increase the volume or degrade short- or long-term water quality in Rheem Creek downstream of the project area based on the analysis of the site modifications and the existing and future topography of the site. Since the proposed project will not cause substantial changes in these two variables, no change in the downstream hydrology or water quality will adversely impact that portion of the Rheem Creek channel that crosses the District's property. Similarly, no indirect effect from the proposed project is forecast to adversely impact the California Clapper Rail as all provisions of the Migratory Bird Treaty Act, including avoidance of nesting birds, will be observed. Vegetation will not be removed during the breeding season until a biologist conducts a pre-construction survey and approves any clearing. If active nests are discovered, they will not be disturbed until the nests are abandoned.
- 5-6 No maintenance of trains currently occurs on the existing tracks within the project area and none will occur within the project area in the future. Oil and grease are not used to maintain tracks. Maintenance consists of preserving the highfill through limited grading, providing adequate ballast (hard rocks underneath the track and ties), and repairing the rails, ties and electrical signals as needed. Vegetation adjacent to both the UPRR and BNSF tracks is already maintained and in most instances it is maintained mechanically. Along the new connector track vegetation can be maintained using mechanical means, such as mechanical trimming of weeds and vegetation adjacent to the track. BNSF would select the most appropriate means of maintaining the vegetation based on the type of vegetation and encroachment on the track highfill. If at any time in the future herbicides are considered for use, the type of herbicides used will be short-lived and not allowed to enter the area drainage system until fully degraded.
- 5-7 The proposed Richmond Connector Track project was unknown to Caltrans at the time the scoping letter was submitted; thus, it could not comment on the connector track project to the District. Section 2.1.2 of the Environmental Assessment (EA), Consistency with State, Regional and Local Plans has been updated to address consistency with the Breuner Marsh Project as has Section 10 of the Initial Study.

Breuner Marsh is located approximately one-quarter mile (1,300 feet) west of the nearest construction area for the rail connector and is separated from the project area by the existing UPRR tracks and the Richmond Parkway overpass.

The proposed project does not increase the number of train trips within the UPRR and BNSF corridor. It shifts certain intermodal BNSF trains to the UPRR tracks to minimize transit through downtown Richmond, which will reduce overall air pollution emissions in the region. Thus, the train operations remain the same within the rail corridor and this will not have any long-term adverse effects on the Breuner Marsh Project. The proposed project is consistent with surrounding land uses, including future improvement and operation of Breuner Marsh. The background noise level along the UPRR tracks is 75 dBA CNEL. Please refer to the noise section of the Initial Study (IS) or Environmental Assessment (EA). The background level of noise on Richmond Parkway is estimated to be between 60 and 70 dBA CNEL. The sound level from construction activities based on standard sound attenuation will be about 58 dB, which is substantially less than existing train and automobile noise levels that currently affect the Breuner Marsh site

from UPRR daily rail operations and the Richmond Connector. The sounds from the construction activities will be audible at the existing eastern Marsh boundary at Rheem Creek, but will not be as intrusive or adverse as the existing noise levels. In addition, construction will be completed on the Richmond Rail Connector before Breuner Marsh is open to the public.

Although the Marsh is not yet developed and open to the public, no land from the park will be required either permanently or temporarily for the proposed project. Therefore, the first two types of use under Section 4(f) (refer to response 5-1) do not apply.

Constructive use would only apply if proximity impacts, such as impacts to aesthetics, traffic, noise or water quality, substantially interfere with the activities, features or attributes of the Breuner Marsh future public land value. All of the future recreation facilities and activities at Breuner Marsh will be at ground level including a few small knolls east of Richmond Parkway and including access to the future Park. The proposed Richmond Rail Connector track will traverse between the two tracks at an elevation comparable to the existing BNSF and UPRR highfills. In addition, the elevated Richmond Parkway overpass over the two railroad tracks dominates the views from the Marsh to the east, hence any views on the proposed man-made knolls will not have access to the project site. Since the number of trains will also not increase as a result of the proposed project, the view to the east will remain equivalent to that which exists at this time. No change in aesthetic values at Breuner Marsh will be noticeable to viewers from this location.

The proposed project will not generate any new rail or local road traffic during future operations. Thus, there is no potential for the future operation of the Richmond Rail Connector track to affect traffic or access to Breuner Marsh.

UPRR rail operations and Richmond Parkway noise will not be altered by the proposed project. The same number of trains will continue to use the UPRR tracks adjacent to Breuner Marsh and daily traffic on the Parkway is expected to continue to increase in the future based on the City of Richmond's General Plant Traffic Circulation Element. In the long-term, intermodal BNSF trains will join or diverge from the UPRR tracks just north of Parr Boulevard, which is southeast of Breuner Marsh. Therefore, the proposed project has no potential to measurably alter the future noise environment within the future Breuner Marsh Park.

The only potential adverse impact on Breuner Marsh is indirectly from stormwater runoff from the proposed connector track alignment. Similar to the water quality measures identified for Breuner Marsh on pages 4.8-22 through 4.8-24 (Breuner Marsh Final EIR), avoidance and minimization measures are mandated for the construction of the new connector track. General measures for inclusion in the construction Stormwater Pollution Prevention Plan (SWPPP) are listed in Attachment 1 to these responses. A SWPPP for this project is nearing completion and will be implemented to prevent substantial degradation of water quality during construction. Routine long-term best management practices will also be implemented. A review of the Hydrology Subchapter in the Breuner Marsh Final EIR (Subchapter 4.8) did not identify any adverse water quality impacts to the Marsh from existing UPRR or BNSF rail operations. The new connector track will occur within the same corridor and will not cause proximity impacts such as increased storm water runoff or a change in drainage patterns.

Therefore, the Richmond Rail Project will not result in any constructive use of Breuner Marsh. Since the proposed project will not use Breuner Marsh according to any of the three definitions of use described in Response 5-1, Section 4(f) does not apply to the Richmond Rail Connector Project.

- 5-8 Please see Response 5-1, which explains why Section 4(f) does not apply to the proposed project in relation to Point Pinole Regional Shoreline. Additional explanations are provided in Responses 5-2, 5-3 and 5-4. An analysis of construction traffic is provided in Response 5-2. The proposed project will not affect long-term traffic other than to shorten some delays at grade crossings. An analysis of construction noise is provided in Response 5-3. Train traffic or capacity in the area of the park, which is north of the project area, will not change. Therefore, the project will not affect long-term noise at Point Pinole Regional Shoreline. The proposed project will not have a visual impact on the park because the new tracks will not be visible on the ground in the park. As described in Responses 5-4 and 5-5, the volume of surface runoff flows from the project site will not increase and the SWPPP and best management practices will protect short- and long-term water quality. No changes in land use will occur within the project area. Trains already operate in this transportation corridor and they will continue to operate as in the past. Thus, no impacts to land uses in the park will be affected. The project will also not create any new demand for public services. No impacts to any biological resources will occur in Point Pinole Regional Shoreline, which is a mile from the project area. As described in Response 5-5 and the Biology Sections of the IS and EA (Sections IV and 2.3, respectively), avoidance measures will be taken to protect nesting birds. No state or federally threatened or endangered species (plant or animal) are present in the project area. No historic or archaeological resources were found in the project area. Please see Section 2.1.3.5 in the EA and Section V in the IS. Please refer to Response 5-7 for information on the proposed project and the Breuner Marsh Project.

DEVELOPMENT SERVICES

Planning



CITY of SAN PABLO
City of New Directions

October 15, 2012

Mr. Howell Chan, Senior Environmental Planner
Caltrans District 4, Environmental Planning MS 8B
P.O. Box 23660
Oakland, CA 94623-0660

VIA e-mail:
howell_chan@dot.ca.gov

SUBJECT: Comments on the Environmental Assessment/ Initial Study for the proposed Richmond Rail Connector Project

Dear Mr. Chan:

6-1 This comment letter is submitted on behalf of the City of San Pablo (the "City"). The City is formally requesting, pursuant to Public Resources Code §21092.2, to be notified and involved in the entire CEQA environmental review process for the duration of the Richmond Rail Connector Project (the "Project"). The City requests that all comments submitted by it or on its behalf be made part of the official record of approval for this Project.

6-2 The City's boundary lines are located east of the Project rail lines. Railroad crossings to/from San Pablo intersect both the UPRR and BNSF lines at several points; thus, we have several concerns with regards to the increase in train activity on these lines and the associated noise level impacts that this would have on the San Pablo residential neighborhoods east of the Project area. Below is a list of some of our main concerns:

6-3 Reference to the San Pablo General Plan is lacking, as well as any analysis of noise and pollution impacts to San Pablo residents from the proposed project.

6-4 The Richmond Rail Connector Initial Study indicates that use of train horns is required near at grade crossings as a safety measure. However, the railroad crossings at the following intersections, adjacent to the San Pablo City limits are not discussed in the study: Parr Boulevard, Brookside Drive, Market Avenue

6-5 The San Pablo General Plan contains various policies which address noise levels, none of which are discussed in the initial study. The initial study should identify project impacts to San Pablo residents and compliance with the Noise element of the San Pablo General Plan. Our General Plan can be viewed at www.sanpabloca.gov/gp2030. Some of the policies contained

within the General Plan which specifically address noise impacts from rail operations include:

6-5
cont.

SN-I-41 Work with Caltrans, AC transit and railroad operators to mitigate transportation-related noise impacts on residential areas and sensitive uses. Additionally, continue to limit hours for construction and demolition work to reduce construction-related noises.

SN-I-42 Explore the feasibility of establishing a Railroad Quiet Zone in San Pablo by working with the State Public Utilities Commission Rail Crossings Engineering Section, the City of Richmond, and regional freight train operators.

A quiet zone is a railroad grade crossing at which trains are prohibited from sounding their horns in order to decrease the noise level for nearby residential communities. The train horns can be silenced only when other safety measures compensate for the absence of the horns. The Federal Railroad Administration website provides guidance to cities wishing to create railroad quiet zones, at <http://www.fra.dot.gov/Pages/1475.shtml>. Additionally, the City of Richmond has established six quiet zones and may be able to share their experience with the City of San Pablo.

6-6

As such, for future planning efforts that may affect San Pablo residents, the City respectfully requests that it be contacted early in the planning process in order to provide its insights and perspective for consideration.

General Comments:

6-7

The intent of the project is to "avoid train movement through Downtown Richmond," by installing a connector track to divert freight trains from the BNSF rail line to the UPRR line, however, by doing this, noise and pollution impacts are also being diverted and increased, without any mitigations being proposed. The UPRR line runs closer to the Old Town residential area of San Pablo and cuts through residential areas of Richmond. The overall impacts to infrastructure and provision of services associated with Project implementation are modest within the regional context. However, the lack of analysis of impacts at various intersections that provide access to and from San Pablo and lack of development of mitigation measures at railroad crossings, such as Railroad Quiet Zones, is something that should be addressed and would be expected to result in a more vibrant and livable community for residents of Richmond, San Pablo and the unincorporated County areas that are affected.

6-8

Although no increase in train traffic will be generated *by this project*, we understand that there will generally be increased train traffic to and from the Port of Oakland in the near future. The associated impacts of noise and pollution must be addressed, as these are major impacts to the communities of West Contra Costa County. Train horn noise is a

6-8
cont.

major impact, as horns from both the BNSF and UPRR lines are quite audible to San Pablo residents, awaking residents at night and causing undue stress. With respect to emissions, according to a study by the Pacific Institute¹ there is an estimated 6 times more diesel pollution released per square mile in West Contra Costa County than in the County as a whole, and 40 times more than in California. Diesel pollution has been identified as one of the biggest health threats in California and is linked to cancer, heart disease, premature death, and other health problems. Other research shows that diesel soot can trigger and may even cause asthma, which is a serious concern for this area where some zip codes have double the asthma rate of the Contra Costa County average.

6-9

The document states that drainage patterns would not be changed since culverts will be installed to convey drainage. The culverts will result in some concentration of the flows; this as well as appropriate sizing should be addressed in the design of the project.

We look forward to your response to these comments. Please let Ms. Gallegos know if you have any questions about the information provided. She may be reached by telephone at (510) 215-3002 or by email at tinag@sanpabloca.gov.

Sincerely,



Tina Gallegos, AICP
City Planner

Adèle Ho, PE
Public Works Director / City Engineer

cc: City Manager
Assistant City Manager

¹ See "Deluged by Diesel: Healthy Solutions for West County", at http://www.pacinst.org/reports/west_county_diesel/index.htm.

RESPONSES TO COMMENTS
LETTER #6
CITY OF SAN PABLO

- 6-1 The City will be retained on the notification list and the input from this City will be made part of the official record for this project.
- 6-2 This project does not involve any increase in train activity. BNSF averages 18 trains per day (freight trains) on the tracks immediately west of Giant Road. UPRR averages 50 trains per day (40 passenger trains and 10 freight trains). The proposed Richmond Connector track will allow an average of 2.4 trains per day on the BNSF track to shift at the proposed project location to the UPRR track. This will provide more direct access to the Port of Oakland than traversing through Richmond to the BNSF Intermodal Yard and then back the UPRR tracks at Stege.
- 6-3 The City of San Pablo was not referenced because there will be no change in the number of train operations on the BNSF tracks adjacent to San Pablo. However, additional information regarding the City General Plan has been included in the land use discussion in the IS and EA. Please refer to these revised sections of the two documents. The existing train operations on the BNSF track will remain the same between John Avenue and the southern terminus of Collins Avenue. From that point south, the average of 2.4 trains per day will follow the new Richmond Connector track to the UPRR tracks, slightly reducing overall noise on the City of San Pablo. South of the connector track, an average of 15.6 trains per day, instead of the current average of 18 trains, will use the BNSF tracks, slightly reducing all train noise in the City of San Pablo. It will also reduce air emissions on the BNSF tracks, but the overall air emissions within the immediate corridor will remain the same because there will be no overall change in train operations within this limited segment of the transportation corridor. However, overall emissions within the Bay Area will be reduced because the distance traveled by these 2.4 trains per day (average) will be reduced by several miles because the re-routed trains will travel straight to the Port of Oakland rather than through the City of Richmond. The proposed project will also eliminate trains idling along the existing BNSF tracks and reduce the time vehicles idle at grade crossings in Richmond. This reduced idling combined with the reduced train miles traveled qualifies the proposed project for California Congestion Management and Air Quality Improvement funds.
- 6-4 Train horn issues are discussed, but with reference to the UPRR route. Specifically, the average of 2.4 trains that would have used the BNSF track will be relocated to the UPRR track. The train horns will still be blown at the Parr Boulevard, Brookside Drive and Market Avenue grade crossings, but for these specific trains the horn noise will be approximately 600 feet to the west on the UPRR tracks, which is farther from the City of San Pablo than the BNSF tracks. Overall sound impact on the City of San Pablo will be reduced slightly by implementing the proposed project.
- 6-5 In accordance with General Plan policy SN-I-41, the proposed project will slightly reduce train operating noise in the City and the construction noise mitigation measures in the EA and IS (Sections 2.25 and 11, respectively) are fully consistent with this policy. With regard to SN-I-42, the City can work with the City of Richmond to approach the California Public Utilities Commission to establish Railroad Quiet Zones where at-grade

intersections occur within the two cities. Such quiet zones must be funded by the local jurisdictions and future liability is also assumed by the local jurisdictions. The railroads do not control this process although they are integral participants. However, this proposed project will not increase at-grade train horn noise within the City of San Pablo based on the current proposal to shift an average of 2.4 trains per day to the UPRR tracks using the connector track project.

- 6-6 Your comment is noted. The City will be kept informed of this process as it proceeds through the review process and into construction and implementation.
- 6-7 Based on our review of the Thomas Guide for Contra Costa County (page 588, 2003), the BNSF tracks cross over the UPRR tracks just south of Costa Avenue, the southern boundary of the City of San Pablo. Thus, for all locations the increase of BNSF trains on the UPRR tracks will be about 600 feet further away from the City of San Pablo, which means that the western boundary of the city will receive slightly less overall direct noise from train operations with the project than without it. Again, please refer to Response 6-5 for information on establishing quiet zones.
- 6-8 Future train operations are independent of this proposed project as they respond to commercial demand at any given time. We acknowledge that health problems are associated with diesel fuel combustion byproducts. However, the project will reduce exposure to these combustion byproducts in San Pablo by reducing the number of trains along the BNSF tracks. Even if trains increase in the future in response to commercial activities, the City would be exposed to fewer combustion byproducts with the project than without it. On the broader level, overall emissions within the general area will be reduced due to a reduction in the number of train miles under the proposed project and reduced overall idling of trains and vehicles.
- 6-9 The drainage pattern will not be modified. The flows across the project area will still be delivered to the channel on the east side of the UPRR tracks where surface runoff will continue to flow to Rheem Creek as it does currently. Please refer to the responses to comment letters 5 and 7 for further discussion of this issue.

Due to the very flat site, the purpose of all but one of the culverts is intended to equalize the depth of surface runoff on both sides of the track highfill (equalization culvert). The engineering drawings in Attachment 4 show that three culverts will be installed and one will be extended. Please refer to the Hydrology Exhibit in Attachment 2. Two 36-inch equalization culverts will be installed in the middle of the connector highfill between the BNSF and UPRR tracks. These culverts do not transport large volumes of flow, particularly on this flat site. The existing 36-inch culvert under the UPRR tracks will be extended to the west. The only drainage culvert is the 48-inch culvert that will be installed adjacent to the east side of the UPRR tracks. The existing drainage swale on the east side of the UPRR tracks currently transports any flows that accumulate in the project area north to the Rheem Creek channel. Because the new highfill would cut off the existing flow in the swale, this 48-inch culvert will ensure that the existing flows can be delivered to the Rheem Creek channel. The flows to and in the existing swale will not be increased because the project involves a minimal increase in impervious surface and the existing percolation over the project site will be maintained. Flows on the site will not become more concentrated because of the proposed project.



Contra Costa County
Flood Control
& Water Conservation District

Julia R. Bueren,
ex officio Chief Engineer
R. Mitch Avalon,
Deputy Chief Engineer

November 2, 2012

Mr. Howell Chan
Office of Environmental Analysis
California Department of Transportation
P.O. Box 23660
Oakland, CA 94623-0660

RE: Richmond Rail Connector Project
Environmental Assessment and Initial Study with
Proposed Mitigated Negative Declaration Documents

Our Files: 97-127 & 3127-06 408-060-017,-018

Dear Mr. Chan:

We have reviewed the Hydrology and Water Quality section of the Initial Study with Proposed Mitigated Negative Declaration (IS) document, and the Hydrology/Floodplain chapter of the Environmental Assessment (EA) document for the Richmond Rail Connector Project (Project). The following are our comments:

7-1

1. The U.S. Army Corps of Engineers constructed Rheem Creek flood control channel (Rheem Creek) in 1960 and transferred the facility to Contra Costa County (County) that same year. The Contra Costa County Flood Control and Water Conservation District (FC District) manages the maintenance of Rheem Creek. We have attached a copy of our right of way map ED-10093 for your reference.

7-2

2. The proposed Project has significant adverse impacts on the operation and maintenance of Rheem Creek. The Project could potentially cause drainage and flooding problems on the neighboring communities. We request that Caltrans and the Federal Highway Administration (FHWA) withhold the environmental approval of the Project and defer pronouncement that the IS and the EA documents for the Project are complete until the concerns that we will identify in the following comments in this letter have been addressed and mitigated by the Project sponsors.

7-3

3. Rheem Creek was designed by the U.S. Army Corps of Engineers (Corps) to contain storm runoff flows of about 800 cubic feet per second (cfs). This flow volume is equivalent to a 15-year storm event based on the Corps' methodology and hydrologic data back in the 1960s.

7-4

4. Rheem Creek does not have the capacity to convey storm flows from the 100-year storm events. Storm runoff in excess of 800 cfs overtops the creek banks and spreads into the adjoining properties. While there are no drawings provided for the proposed rail connector bridge in the IS and the EA documents, we anticipate that the vertical clearance between the invert of Rheem Creek and the bottom of the rail connector bridge will be very limited. Any plans in the future to improve the creek once the rail connector bridge is in place will be very costly and difficult.

As one of the mitigation measures for the adverse drainage impacts of the Project, the sponsors should improve Rheem Creek to contain the storm runoff from 100-year storm events with sufficient freeboard, starting from the BNSF railroad bridge to the downstream side of the rail connector bridge. This mitigation measure should be included in the IS and the EA documents.

7-5

5. Currently, our maintenance crew has unimpeded access along the top of bank of Rheem Creek between BNSF and UPRR tracks. This Project will eliminate our maintenance road and work areas between the rail connector alignment and the BNSF railroad, including access along the top of creek bank under the proposed rail connector bridge structure. Without this access, FC District will not be able to perform maintenance activities, such as the removal of debris and sediment buildup in the creek, and will prevent us from performing repair of any creek bank erosion in a timely manner. These are severe adverse impacts to our operation and maintenance responsibilities for Rheem Creek. These impacts in turn could cause drainage and flooding problems in the neighboring communities. The Project sponsors should address these adverse impacts in the IS and the EA documents. We would like to point out the following in connection with maintenance access:

7-6

a. There is no access to the north bank of the creek between the juncture of the rail connector track with the BNSF railroad track from a public road and across the railroad tracks. Moreover, there appears to be no level area next to the creek top of bank sufficient to accommodate workers, vehicles, equipment, and materials to safely stage creek maintenance work. We circled that area in the attached copy of Figure 6a and labeled it as "Maintenance Area A." The FC District needs safe and legal passage from a public road and across the railroad tracks to access Maintenance Area A as well as a level area near the top of bank large enough for our maintenance operations. The Project sponsors should provide more detailed and scaled drawings to the FC District to allow us to review the area of the creek at this location. We plan to provide additional comments to the EA and the IS documents after we have reviewed those drawings. The inability to access the north creek bank at this location and the

7-6
cont.

absence of sufficient level area to perform creek maintenance work are significant adverse impacts to the FC District's creek maintenance activities that the sponsors should address and propose mitigation measures for, in both the EA and the IS documents.

7-7

b. On the south bank of Rheem Creek, between the rail connector alignment and the BNSF tracks, Figure 6a shows a small segment along the creek top of bank that may be useable for staging maintenance activities. However, with the plan of BNSF to acquire the properties between the rail connector alignment and the BNSF tracks, this creek area will be "land-locked." We have circled that area in the attached copy of Figure 6a and labeled it as "Maintenance Area B." The Project sponsors should provide more detailed and scaled drawings to the FC District to allow us to review the area of the creek at this location. We plan to provide additional comments to the EA and the IS documents after we have reviewed those drawings. The access issue on the south creek bank is also a significant adverse impact to the FC District's creek maintenance activities that the sponsors should address in both the EA and the IS documents.

Assuming that there is enough room for maintenance operation along the creek top of bank, the Project sponsors should provide legal access to the creek from a public street at no cost to the County and the FC District. This maintenance access should be at least 16 feet wide, have an all-weather surface, and the access corridor should have an unobstructed height of no less than 14 feet. Also, a sufficient turn-around area and a drying area near the creek top of bank should be provided; both areas should have all-weather surfacing. The drying area will be used to dry out wet sediments and debris taken from Rheem Creek before they are transported off-site.

7-8

c. The access for creek maintenance under the proposed rail bridge structure will be very restricted once the rail bridge is in place. Due to the small grade difference between the UPRR tracks, the BNSF tracks and the top of the creek along the rail connector alignment, the vertical clearance between the top of bank of Rheem Creek and the underside of the proposed rail bridge will likely be very small. There may not be enough vertical clearance for maintenance workers to walk standing up along the top of the creek banks under the bridge, let alone drive and operate vehicles and equipment along the top of bank. These are significant adverse impacts to our ability to maintain Rheem Creek. The Project sponsors should address these adverse impacts in the EA and the IS documents and propose mitigation measures. The Project sponsors should provide more detailed and scaled drawings of the proposed bridge to allow us to review the area of the creek at this location. We plan to

7-8
cont.

provide additional comments to the EA and the IS documents after we have reviewed those drawings.

6. The FC District's maintenance activities at Rheem Creek will become more expensive because of this Project due to the following:

- a. Assuming that the FC District can perform maintenance activities on the north bank at Maintenance Area A, we will need flaggers and other safety precautions to safely cross the railroad tracks to reach that area. Our creek work will be more labor-intensive and we may need special equipment.
- b. Our travel path to reach Maintenance Area B on the south bank will be longer.
- c. If we cannot operate our equipment under the rail bridge due to limited vertical clearance, maintenance will be more labor-intensive and we may need to use special equipment under the bridge.

7-9

At this time, there is not enough information in the EA and the IS documents to enable us to make even a rough estimate of the additional maintenance expenses that we will incur because of the Project. However, the FC District does not have the funds to absorb any additional maintenance costs. The Project sponsors should contribute annual funds to the FC District for all additional maintenance costs resulting from the implementation of the Project. The EA and the IS documents should address this concern and provide appropriate mitigation measures.

7-10

7. All agreements to provide additional access areas and funding to the FC District for the maintenance of Rheem Creek should be completed before the start of Project construction. The completion of all agreements for access and funding for creek maintenance should be included among the mitigation measures for the adverse impacts of the Project to operation and maintenance of Rheem Creek.

7-11

8. Please include engineered drawings that show the layout (profiles and cross sections) of the proposed bridge at Rheem Creek in the EA and the IS documents. The drawings should include creek areas along the top of bank between the BNSF tracks and the alignment of the rail connector track.

7-12

9. The EA and the IS documents should include a discussion of the any water diversion system at Rheem Creek that may be implemented during construction. The FC District would like to review the discussion and may submit additional comments.

- 7-13 10. The EA and IS documents should include a discussion of all construction impacts, such as grading activities, staging activities, placement of falsework, to the rights of way of Rheem Creek flood control channel.
- 7-14 11. Please provide the FC District with all the engineering plans and calculations for the proposed rail connector bridge over Rheem Creek. We request that the plans be included in the EA and IS documents. Please submit the documents to the attention of Ms. Teri Rie, Associate Civil Engineer, Contra Costa County Flood Control & Water Conservation District, 255 Glacier Drive, Martinez, CA 94553.
- 7-15 12. Please submit all engineering plans and calculations for the improvement of Rheem Creek to accommodate a 100-year storm event to the FC District for review. We recommend that the plans be included in the EA and IS documents. Please send the documents to the attention of Ms. Teri Rie, Associate Civil Engineer, Contra Costa County Flood Control & Water Conservation District, 255 Glacier Drive, Martinez, CA 94553.
- 7-16 13. All activities and encroachments within the rights of way of Rheem Creek flood control channel will need approval and permission from the FC District and the Readiness Branch of the San Francisco District, U.S. Army Corps of Engineers. The approval from the Readiness Branch is a condition for the issuance of the flood control encroachment permit by the FC District.
- 7-17 14. The review process of the Readiness Branch of the San Francisco District, U.S. Army Corps of Engineers may take 8 months to 2 years to complete depending on the complexity of the Project. The FC District will handle the coordination with the Readiness Branch. We expect that the Project sponsors will pay for all expenses incurred by the FC District for coordination and review activities.
- 7-18 15. The FC District will require CEQA compliance for the issuance of its flood control encroachment permit and any land transactions that involve the FC District. This CEQA process may take 6-8 months to complete. The costs for this environmental review process shall be the responsibility of the Project sponsors.
- 7-19 16. The Project sponsors should pay for all expenses and costs related to all right of way transactions and agreements with the FC District for the Project.
- 7-20 17. We request that the IS and the EA documents mention, in the appropriate sections of these documents, that there may be land transactions, easements, and agreements for the Project that will involve the FC District.

7-21

18. Figure 6a of the IS and the EA documents — The IS and the EA documents should include information and drawings as to where the drainage from the properties between the BNSF tracks and the alignment of the rail connector track will be routed. Sheet flows of the runoff from these areas across the top of bank of Rheem Creek should not be permitted, as it would cause bank erosion. This is a potential adverse drainage impact that the Project sponsors should address and propose mitigation measures for in the EA and the IS documents.

7-22

19. Page 7 of EA document, Table 1.3.3-1 and page 4 of the IS document, Table 1-1, Permits Required — Please include the FC District in this list. The FC District will issue the flood control permit and not Contra Costa County.

7-23

20. Page 7 of EA document, Table 1.3.3-1 and page 4 of the IS document, Table 1-1, Permits Required — We request that the entries under the heading "Permit/Approval" for the FC District in these tables include the following entries "Flood Control Permit, Land Transactions, Agreements and Easements involving Flood Control District's Facilities."

7-24

21. Page 7 of EA document, Table 1.3.3-1 and page 4 of the IS document, Table 1-1 Permits Required — Please include the Readiness Branch of the San Francisco District of the U.S. Army Corps of Engineers in this list of agencies that will issue permit/approval for the Project. The Readiness Branch will need to approve all encroachments and activities of this Project within the rights of way of Rheem Creek flood control channel. The Readiness Branch is a separate office from the Regulatory Branch of the Corps of Engineers.

7-25

22. Page 26, Item C of the IS document — The statements in item C indicated that there will be temporary disturbance of wetland features at Rheem Creek related to the proposed rail bridge. The Project sponsors should be made aware that no mitigation planting or revegetation within the rights of way for Rheem Creek should be implemented without approval from the FC District and the Readiness Branch of the San Francisco District, U. S. Army Corps of Engineers.

7-26

23. Page 31, Section 2.2.1 Hydrology/Floodplain of the EA document — The first sentence in the last paragraph on this page states "The Contra Costa County Flood Control and Water Conservation District is responsible for controlling flood and storm waters throughout the county." This statement is not accurate. The FC District maintains several flood control facilities within Contra Costa County. Where the FC District does not have formed drainage area entities and does not own any flood control facilities, we only serve in an advisory capacity to the local jurisdictions on drainage and flood control matters.

24. Pages 32 and 33, Hydrology/Floodplain Section of the EA document — The third paragraph on page 32 and the third bullet item on page 33 about "Construction" indicated that a 42" culvert will be constructed under the fill for the rail connector tracks to carry flows from the Project site and the adjacent properties to an existing swale and eventually to Rheem Creek.

7-27 A drawing for the drainage path from the project site and adjoining properties to Rheem Creek should be included in the EA and the IS documents.

The Project sponsors should investigate the condition of the existing swale and the discharge point of this swale to Rheem Creek to determine if they need additional reinforcement, such as loose rock riprap and engineering fabric, to prevent further erosion of these facilities. The reinforcement work in these watercourses will require regulatory permits and an encroachment permit from the FC District will be needed for any work on Rheem Creek.

25. Page 52, item C of the IS document — The first paragraph in item C on this page mentioned that an at-grade crossing will be installed for a short period to allow transport of fill for the rail connector track. We request that this paragraph include statements that state that an encroachment permit and temporary construction easement will be needed from the FC District and approval from the Readiness Branch of the San Francisco District of the U.S. Army Corps of Engineers for this temporary crossing.

7-28

26. The IS and the EA documents provided inconsistent information about the design of the proposed bridge over Rheem Creek. On page 52, under item C, the IS document indicated that a new bridge will clear span Rheem Creek and it will be installed in a manner to pass the 100-year flow elevation with adequate freeboard (usually about 2 feet). On the other hand, on the last paragraph on page 32 of the EA document, the statement reads "The new bridge will clear span the Creek channel (no bridge structure will be placed in the channel) and be placed above the 100-year flood flow elevation within the channel with adequate freeboard to protect the new rail bridge."

7-29

27. Please include our agency in the future distribution of the environmental documents and other supporting documents for this project. You may send the documents to the attention of Ms. Teri Rie, Associate Civil Engineer, Contra Costa County Flood Control & Water Conservation District, 255 Glacier Drive, Martinez, CA 94553.

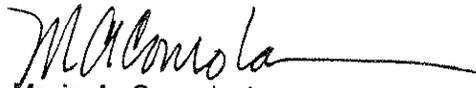
7-30

Thank you for the opportunity to provide comments on the Environmental Assessment and the Initial Study with Proposed Mitigated Declaration documents of the Project. We appreciate the efforts of Mr. Tom Dodson of Tom Dodson & Associates to coordinate the submittal of our comments for this Project.

7-31

We look forward to hearing the responses of the Project sponsors to our comments. We understand that we may need to meet with the Project sponsors and other stake holders to explain our concerns, and we are willing to do that. Should you have any questions, please contact me at (925) 313-2283 or at mcons@pw.cccounty.us.

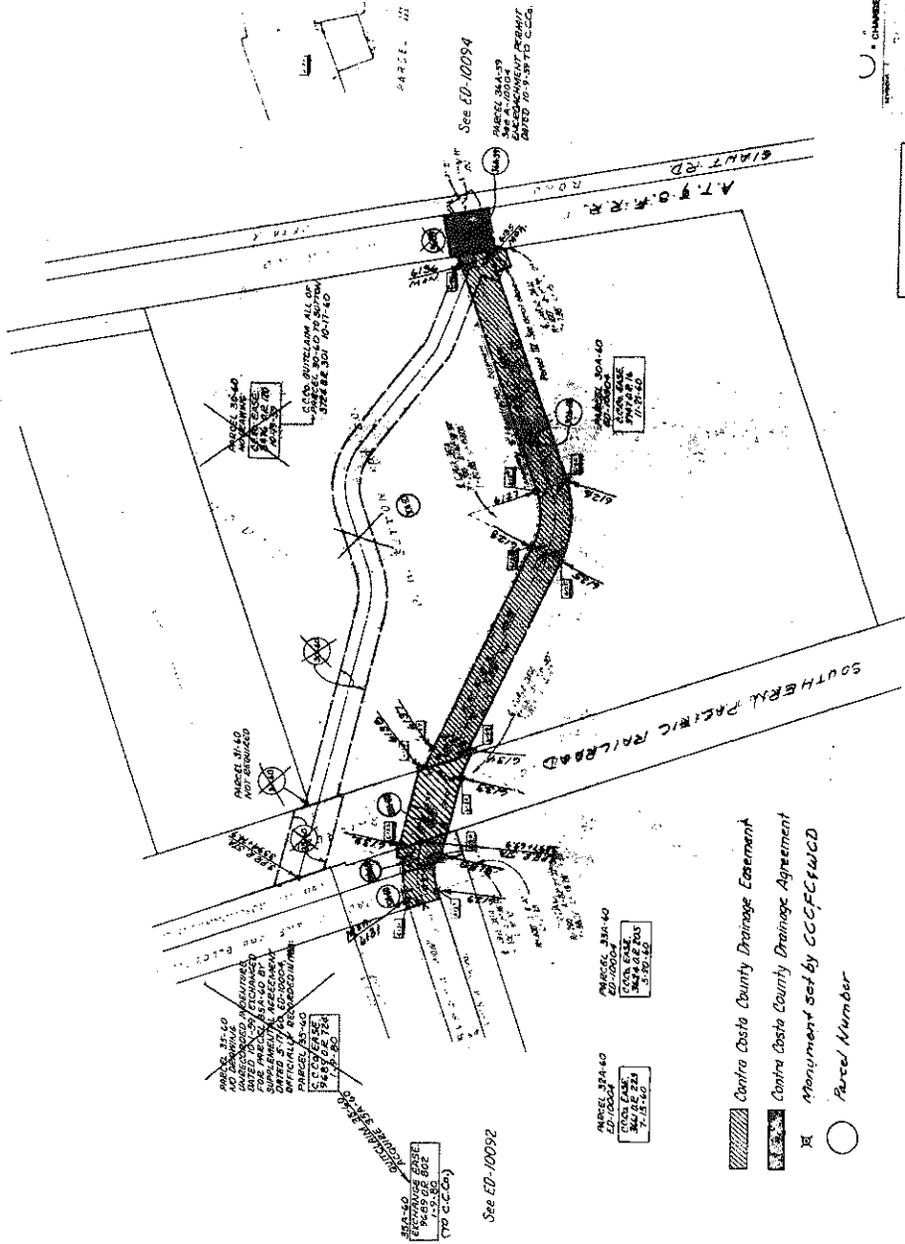
Sincerely,


Mario A. Consolacion
Senior Engineering Technician
Contra Costa County Flood Control
& Water Conservation District

MAC:cw

G:\fidct\CurDev\CITIES\Richmond\Richmond Rail Connector Project\IS&EAcomment ltr.docx
Enclosures: Right of Way Map ED 10093 and marked-up Figure 6a

- c: Mike Carlson, Flood Control
Tim Jensen, Flood Control
Teri E. Rie, Flood Control
Anthony Medina, Maintenance
Tom Dodson
Tom Dodson & Associates
2150 N. Arrowhead Avenue
San Bernardino, CA 92405
Duke Roberts
U.S. Army Corps of Engineers
San Francisco District
1455 Market Street, Room 1637D
San Francisco, CA 94103
Bijan Nooranbakht
U.S. Army Corps of Engineers
San Francisco District



-  Contra Costa County Drainage Easement
-  Contra Costa County Drainage Agreement
-  Agreement set by CCCFC/WCD
-  Parcel Number

REDUCED COPY
NOT TO SCALE

CHANGE TO DA-121 (8-21-89)
STORM DRAIN
MAINTENANCE DISTRICT NO. 4
SHEEN CREEK
RIGHT-OF-WAY
COMPOSITE HISTORY MAP

EXHIBIT ONLY
NOT FOR CONSTRUCTION

North
→

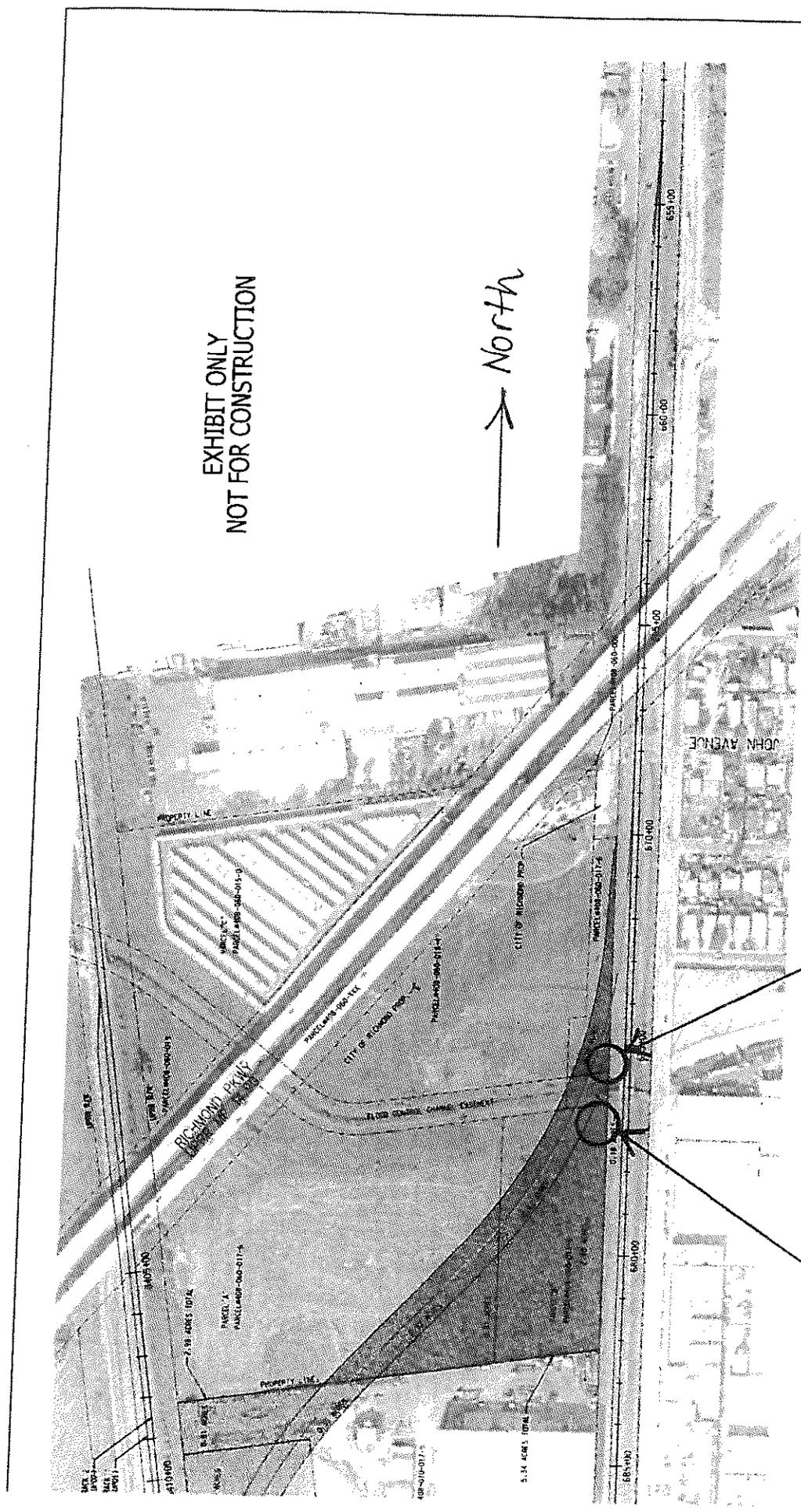


FIGURE 6a

BNSF RAILWAY RICHMOND RAIL CONNECTION		CONTRACT NO.
RIGHT OF WAY EXHIBIT CONCEPTUAL TRACK LAYOUT AND PARCEL IMPACT		DRAWING NO. YA-01
Maintenance Area A		SHEET NO.
Maintenance Area B		SCALE AS SHOWN

RESPONSES TO COMMENTS
LETTER #7
CONTRA COSTA COUNTY FLOOD CONTROL AND
WATER CONSERVATION DISTRICT

- 7-1 Thank you for the historical information and the Contra Costa County Flood Control and Water Conservation District (FC District) right-of-way map
- 7-2 Please refer to the following responses that address the FC District's specific concerns and demonstrate that the proposed Richmond Rail Connector Project will not adversely affect Rheem Creek or the FC District's operations and maintenance activities.
- 7-3 Thank you for the background information.
- 7-4 The Richmond Rail Connector project engineer, J.L. Patterson & Associates Inc. (JLP), provided the following information regarding evaluation of the proposed rail bridge across Rheem Creek. JLP reviewed the FEMA FIRM panel, Panel 0226F, and concurs that the Rheem Creek channel does not have the capacity to convey the 100-year storm flow of 1,060 cubic feet per second (cfs). However, after further inspection, JLP determined that based on the FEMA base flood elevations, the flooding occurs approximately 500 feet downstream of where the proposed rail bridge will be built. This situation has also been verified by the preliminary HEC RAS study (an independent stormwater runoff model) that was done for the new bridge. This study shows that the 100-year storm flow is being conveyed within the banks of the channel at the proposed bridge location. Refer to the HEC-RAS Model and Bridge Elevation Plan (Attachment 2) confirming the engineer's findings. The bridge will clear span the creek channel (no bridge structures will be placed in the channel) and therefore will not increase the base floodplain elevation. Based on these data, there is no need to improve the Rheem Creek channel at the rail connector bridge and no mitigation is needed to address this issue.
- 7-5 To help us respond to this comment, the FC District provided an aerial photo identifying the current method used to access Rheem Creek channel for maintenance. This aerial is provided in Attachment 3 of this document. The FC District further indicated the following: *"Our Maintenance Division performs maintenance activities on the reach of Rheem Creek between the UPRR and Giant Road from 3 to 5 times a year, which includes our spray crew doing weed abatement.....There is an existing wood bridge across the creek underneath Richmond Parkway, and this is the location where our equipment and vehicles cross the creek.....In addition to our Maintenance Division, the Readiness Branch of the Corps of Engineers performs annual inspections of this federal flood control facility."* BNSF and Caltrans have reviewed Attachment 3. Based on the access information in this aerial, BNSF has determined the following:
- First, access to the north side of the Rheem Creek channel will continue along the existing access route.
 - Second, access to the southern side of the Rheem Creek channel, from the UPRR tracks east to the new rail bridge can also continue along the existing access route.
 - Third, BNSF can provide access to the south side of the Rheem Creek channel between the proposed bridge and the BNSF track and Giant Road (Maintenance

Area B as shown on Attachment 3) within its right-of-way (immediately west of the BNSF track).

- Fourth, this leaves only the small area on the north side of the Rheem Creek channel between the proposed track and the existing track. BNSF will commit to provide access to Maintenance Area A from the west (where access will not be constrained) across the new track on an as-needed basis. This commitment can be memorialized when BNSF obtains any encroachment permit from the FC District and Corps.

Based on the above careful review of the access, Caltrans concludes that adequate access to perform routine and emergency response maintenance of Rheem Creek channel can be assured for the whole creek channel after the Richmond Rail Connector track is installed.

- 7-6 Please refer to Response 7-5. Access can be provided to the FC District for routine and emergency maintenance and repair activities to all portions of the Rheem Creek channel comparable to existing access. BNSF will submit the detailed engineering drawings to initiate the encroachment permit review process immediately following completion of the CEQA process for the proposed project. The objective will be for the FC District to use the approved Mitigated Negative Declaration as a CEQA responsible agency to support issuance of the encroachment permit for the new bridge. The current access to the channel is level and this access will not be altered by the proposed project.
- 7-7 Please refer to Responses 7-5 and 7-6. Access can be provided to the FC District for routine and emergency maintenance and repair activities to all portions of the Rheem Creek channel comparable to existing access. BNSF will submit the detailed engineering drawings to initiate the encroachment permit review process immediately following completion of the CEQA process for the proposed project. BNSF anticipates providing legal access to the FC District to allow all routine and emergency maintenance and repair activities through the encroachment permit review process.
- 7-8 Refer to Responses 7-5, 7-6, and 7-7 and to Attachment 2. It is assumed that any maintenance under the bridge will be conducted similar to the existing areas beneath Giant Road and the existing BNSF bridge across the Rheem Creek channel. Access will be provided and maintenance can be conducted as required based on the negotiations between BNSF and the FC District for the bridge encroachment permit. The proposed bridge will clear the channel at the same elevation as the top of the channel leaving a few inches of freeboard between the bottom of the bridge and the 100-year flood elevation.
- 7-9 Based on experience with channel maintenance throughout the BNSF mainline alignment, BNSF does not anticipate the costs of maintenance to measurably increase. BNSF is committed to providing adequate access and the details for any additional cost from changes in maintenance activities can be fully addressed during negotiations for the encroachment permit.
- 7-10 All parties concur that agreements for the encroachment permit must be completed prior to initiating project construction. The commitment to provide adequate access for maintenance and repairs is now included in the final Environmental Assessment, Initial Study and Mitigated Negative Declaration. Based on standard procedures, the details of this commitment will be appropriately negotiated when BNSF submits an application to the FC District for an encroachment permit to build the new bridge.

- 7-11 Attachment 2 of this document provides some of the detailed information on the bridge, including a profile and cross section. The remainder of the information will be submitted in conjunction with the encroachment permit application to the FC District.
- 7-12 According to BNSF, the construction activities in the Rheem Creek channel are designed to occur after the rainy season ends or during a period when there is no precipitation. The objective is to install the culverts to carry low flows and no water diversion is proposed, except within the channel if necessary. For example, one culvert can be installed and any low flows will be allowed to pass temporarily on the other side, and then the other culvert will be installed while any low flows are directed to the installed culvert. Based on low flows following the storm season, there does not appear to be any need to divert flows. BNSF will be responsible for assembling the resources necessary to complete installation without any diversions.
- 7-13 No mass grading will be required for the project. The project site is essentially flat with a very slight grade (about one percent) to the west (UPRR tracks). Staging will occur on the north and south sides of the creek channel on property acquired by BNSF as shown on Figures 6a and 6b of the EA and Figures 7a and 7b of the IS. The centerline of the highfill will be compacted and trucks will deliver material to construct the highfill. Any excess material will be stored in staging areas and will be covered. The bridge piers will be located outside of the channel and a precast bridge will be installed on the piers when they are completed. No falsework will be necessary. A detailed Stormwater Pollution Prevention Plan (SWPPP) is being prepared and will be presented to the FC District as part of the encroachment permit process. All best management practices (BMPs) required to prevent water quality degradation will be installed by the construction contractor.
- 7-14 A complete plan set is provided to the FC District as Attachment 4 to these responses.
- 7-15 The plans and calculations related to construction activities for the Richmond Connector track are provided as Attachment 4 to these responses. Note that the channel and bridge calculations are incorporated into these responses to comments as Attachment 2.
- 7-16 Thank you for the information. Caltrans and BNSF will coordinate with both agencies to obtain the identified permits before any construction activities begin with the regulated portion of the project.
- 7-17 In addition to coordinating with the U.S. Army Corps of Engineers on a Section 404 Permit, BNSF will work with the FC District and the Readiness Branch of the San Francisco District of the U.S. Army Corps of Engineers to expedite any additional permits required for disturbances within the Rheem Creek channel. It is understood that the project proponent will be required to pay for direct expenses incurred in obtaining encroachment permits for Rheem Creek channel.
- 7-18 CEQA compliance for all actions associated with the proposed project are covered by the Initial Study and proposed Mitigated Negative Declaration (MND). Our goal is to work with the FC District and use the adopted MND as a CEQA responsible agency for CEQA compliance. The FC District is not required to prepare a separate CEQA document.

- 7-19 Thank you for the information. BNSF works with many county flood control districts and it is understood that direct agency expenses and costs of right-of-way transactions and agreements will need to be funded by the project proponent.
- 7-20 Both the Initial Study and EA have sections documenting the need for permits and other approvals. This section of each document will be modified to add the possible requirement for land transactions, easements and agreements that involve the FC District. This information will be included in the final Initial Study and EA documents, Tables 1-1 and 1.3.3.-1, respectively.
- 7-21 Based on the existing property grade, storm runoff generated on the project site currently flows west to the UPRR tracks and then north in the existing swale to Rheem Creek adjacent to the UPRR tracks. After the new track is installed storm runoff will still be directed west to the UPRR tracks. Equalization culverts will be installed in the highfill to ensure this occurs, just as it presently does on BNSF's mainline track, which is adjacent to and west of Giant Road. Sheet flows will not be permitted to flow directly into the Rheem Creek channel. The calculations supporting this narrative description of site runoff is provided as Attachment 2 to these responses to comments. Attachment 4 contains the detailed engineering drawings for the project showing proposed drainage features.
- 7-22 Refer to Response 7-20. The reference in Table 1.3.3-1 and Table 1-1 will be revised as requested.
- 7-23 Refer to Response 7-20. The references will be modified as requested.
- 7-24 The additional reference to the U.S. Army Corps of Engineers Readiness Branch of the San Francisco District office will be included in the referenced tables.
- 7-25 Thank you for this information. BNSF proposes to acquire regulatory permits from the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Game. All disturbances in the Rheem Creek channel during construction and post construction will also be implemented in accordance with approvals from the FC District and Corps Readiness Branch.
- 7-26 The change suggested in this comment has been included in the final EA.
- 7-27 The existing runoff from the area west of Giant Road and between Rheem Creek and Parr Boulevard flows along the west side of the UPRR tracks in a swale. After the new track is installed storm runoff will still be directed west to the UPRR tracks. Equalization culverts will be installed in the highfill to convey flows from upstream (Parr Boulevard side of the highfill) beneath the highfill and then back into the swale that carries the current flows to Rheem Creek at the intersection of the UPRR highfill and Rheem Creek channel. The project will not increase the volume of runoff, so erosion will not increase and no modifications in the swale are anticipated. Attachment 4 contains the engineering drawings showing onsite drainage features.
- 7-28 The Initial Study and EA will be revised to indicate that approval of an at-grade crossing through Rheem Creek will require an encroachment permit and temporary easement from the FC District and the San Francisco Readiness Branch office of the Corps as indicated in Responses to Comment 7-20 and 7-22.

- 7-29 Please refer to Response 7-4 and Attachment 2. The text of the Initial Study has been revised to be consistent with that in the EA.
- 7-30 All information and supporting documentation will be provided to the FC District, to the attention of Ms. Teri Rie.

ATTACHMENT 1



February 9, 2012

Ms. Lisa Patterson
Vice President
TOM DODSON & ASSOCIATES
2150 N. Arrowhead Avenue
San Bernardino, CA 92405
(909) 882-3612 Office
(909) 838-1333 Cell

Re: Recommended Best Management Practices for the Burlington Northern Santa Fe (BNSF) Railroad
Richmond Rail Connector Project (MP 1185.9 to UPRR MP 14.2)

Dear Ms. Patterson,

At your request, AEI-CASC Consulting has prepared the following list of Best Management Practices (BMPs) recommended for implementation for the proposed Railroad Richmond Rail Connector Project (Project) located in in Richmond, CA. The Project lies less than 0.25 miles away from the San Pablo Bay within the San Francisco Bay Watershed, under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (2). The Project construction activities are anticipated to involve various crossings at proximate watercourses/channels that outlet to the Bay.

Once the Project plans are approved and prior to construction, a Storm Water Pollution Prevention Plan (SWPPP) will be developed in accordance with the requirements of the State Water Resources Control Board (Order No. 2009-0009-DWQ and Amendment Order No. 2010-0014-DWQ, NPDES No. 000002). SWPPP development will include determination of the Project's Risk Level and selection of appropriate project-specific BMPs. BMP design, installation, and location details will be described in the project-specific SWPPP.

Risk Level 1 projects are required to apply minimum control measures pursuant to the Construction General Permit. Risk Level 2 projects apply the typical control measures as implemented by Risk Level 1 projects with the implementation of more robust or additional control measures, as well as additional documentation and monitoring required pursuant to the SWPPP. The following BMPs, listed by the California Stormwater Quality Association BMP designations, are recommended for the Project as minimum control measures suitable for a Risk Level 1 or 2 project.

A. SCHEDULING

- o EC-1 – Scheduling: to be conducted in a manner to reduce the discharge of pollutants to storm drain facilities or water courses caused by construction activities by scheduling said activities in a manner that will limit exposure of disturbed soil to wind, rain, and stormwater run-on and run-off.

B. HOUSEKEEPING

- **Construction Materials Management Controls:**
 - WM-1 – Material Delivery and Storage
 - WM-2 – Material Use
 - WM-3 – Stockpile Management
- **Waste Management Controls:**
 - WM-5 – Solid Waste Management
 - WM-6 – Hazardous Waste Management (if necessary)
 - WM-8 – Concrete Waste Management (if necessary)
 - WM-9 – Sanitary/Septic Waste Management
 - WM-10 – Liquid Waste Management (if necessary)
- **Vehicle Storage and Maintenance Controls**
 - NS-9 – Vehicle and Equipment Fueling
 - NS-10 – Vehicle and Equipment Maintenance

C. NON-STORMWATER MANAGEMENT

- **Non-Stormwater Controls**
 - NS-1 – Water Conservation Practices
 - NS-3 – Paving and Grinding Operations (if necessary)
 - NS-6 – Illicit Discharge/Illegal Dumping Reporting
 - NS-12 – Concrete Curing (if necessary)
 - NS-13 – Concrete Finishing (if necessary)
 - NS-14 – Materials Over Water (as applicable)
 - NS-15 – Demolition Adjacent to Water (as applicable)
- **Vehicle and Equipment Cleaning** - vehicle and equipment cleaning operations are not planned.
- **Spill Response**
 - WM-4 – Spill Prevention and Control

D. EROSION CONTROLS

Erosion control consists of source control measures that are designed to prevent soil particles from detaching and becoming suspended in stormwater run-off. One or a combination of the following may be used for the Project:

- **Disturbed Areas**
 - EC-3 – Hydraulic Mulch
 - EC-5 – Soil Binder
 - EC-16 – Non-Vegetative Stabilization
 - WE-1 – Wind Erosion Control

D. SEDIMENT CONTROLS

Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water.

- **Perimeter Controls** - to control sediment from discharging from the perimeter of the site, site entrances and exits, and into drain inlets on the construction site. One or a combination of the following may be used for the Project:
 - SE-1 – Silt Fence
 - SE-5 – Fiber Rolls
 - SE-6 – Gravel Bag Berm
 - SE-7 – Sediment Sweeping and Vacuuming
- **Tracking Controls** - to reduce sediment tracking from the construction site onto private/public roads:
 - TC-1 – Stabilized Construction Entrance/Exit (as applicable)

E. RUN-ON – RUN-OFF CONTROLS

- SE-4 - Check Dams (if necessary)
- SE-10 - Storm Drain Inlet Protection (as applicable)

Please feel free to contact me at (909) 783-0101 ext 4120 or via email (rguill@aei-casc.com) should you have any questions.

Sincerely,

AEI-CASC CONSULTING,



Rebekah Guill, CPESC QSD/P
Environmental Analyst

cc: File 787-0112-00

ATTACHMENT 2

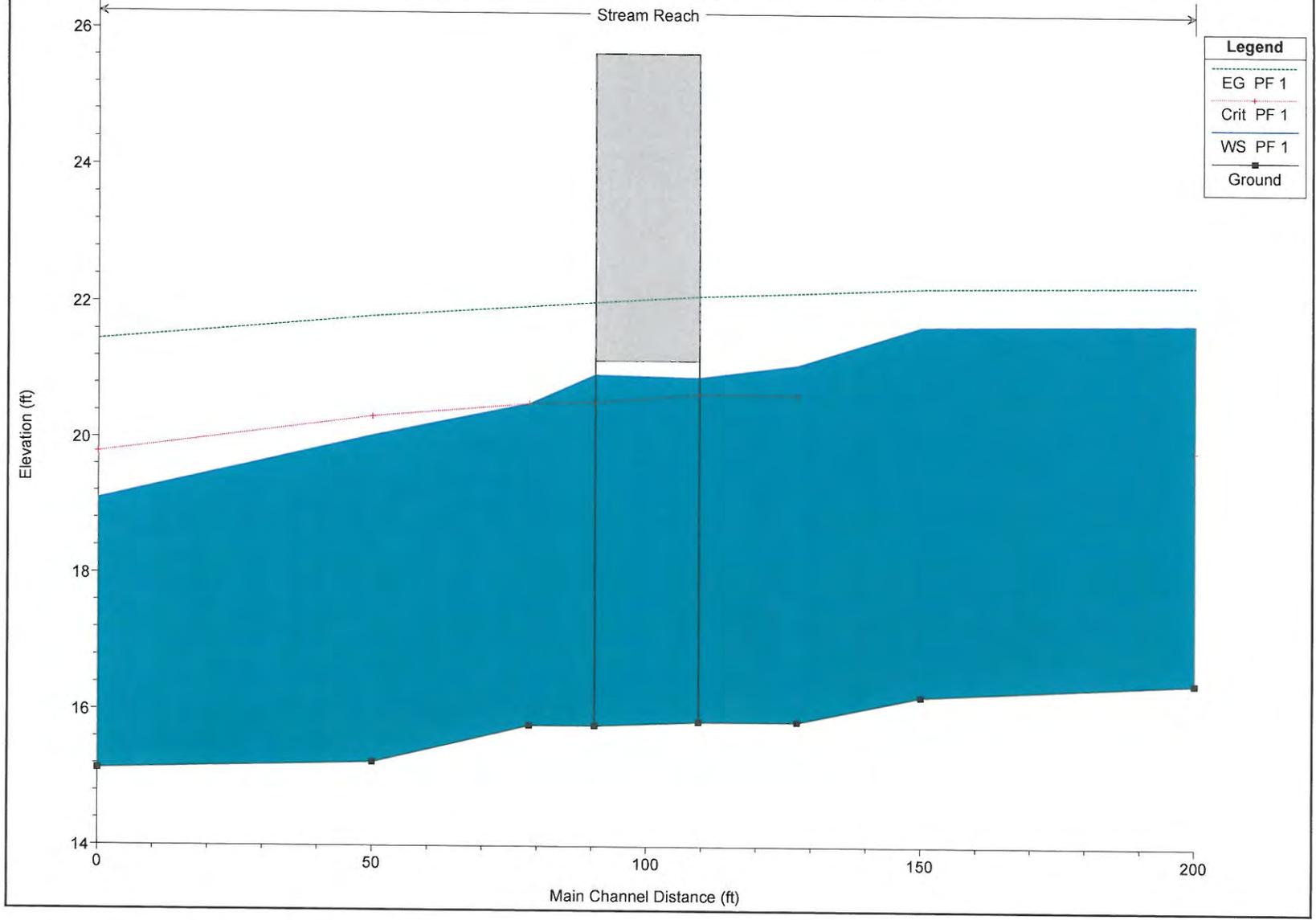
HEC-RAS Plan: Plan 01 River: Stream Reach: Reach Profile: PF 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W S Elev (ft)	Crit W S (ft)	E G Elev (ft)	E G Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach	1100.003	PF 1	1060.00	16.41	21.70	19.82	22.26	0.000672	6.00	176.78	36.55	0.48
Reach	1050.003	PF 1	1060.00	16.21	21.66		22.22	0.000842	6.03	175.80	35.56	0.48
Reach	1027.444	PF 1	1060.00	15.84	21.09	20.65	22.15	0.002277	8.23	128.97	45.72	0.82
Reach	1000.0	Bridge										
Reach	978.5776	PF 1	1060.00	15.78	20.51	20.51	21.94	0.003568	9.59	110.49	39.37	1.01
Reach	950.0039	PF 1	1060.00	15.23	20.03	20.32	21.79	0.004632	10.64	99.60	36.85	1.14
Reach	900.0039	PF 1	1060.00	15.13	19.09	19.78	21.44	0.007604	12.32	86.02	37.14	1.43

HEC-RAS Plan: Plan 01 River: Stream Reach: Reach Profile: PF 1

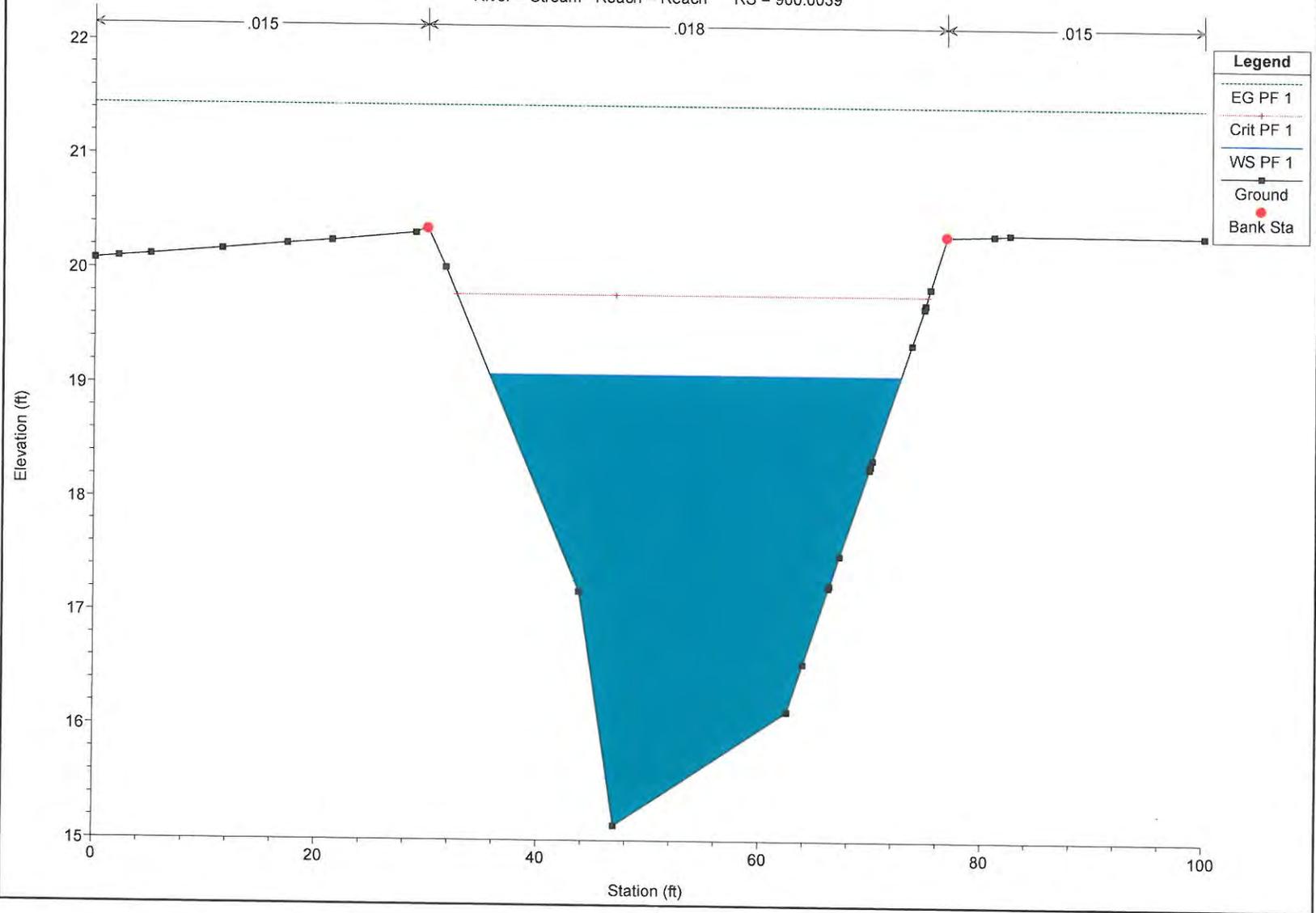
Reach	River Sta	Profile	W.S. Elev (ft)	E.G. US. (ft)	Min El Prs (ft)	BR Open Area (sq ft)	Prs O WS (ft)	Q Total (cfs)	Min El Weir Flow (ft)	Q Weir (cfs)	Delta EG (ft)
Reach	1000.0	PF 1	21.09	22.15	21.15	131.78		1060.00	25.66		0.20

Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011



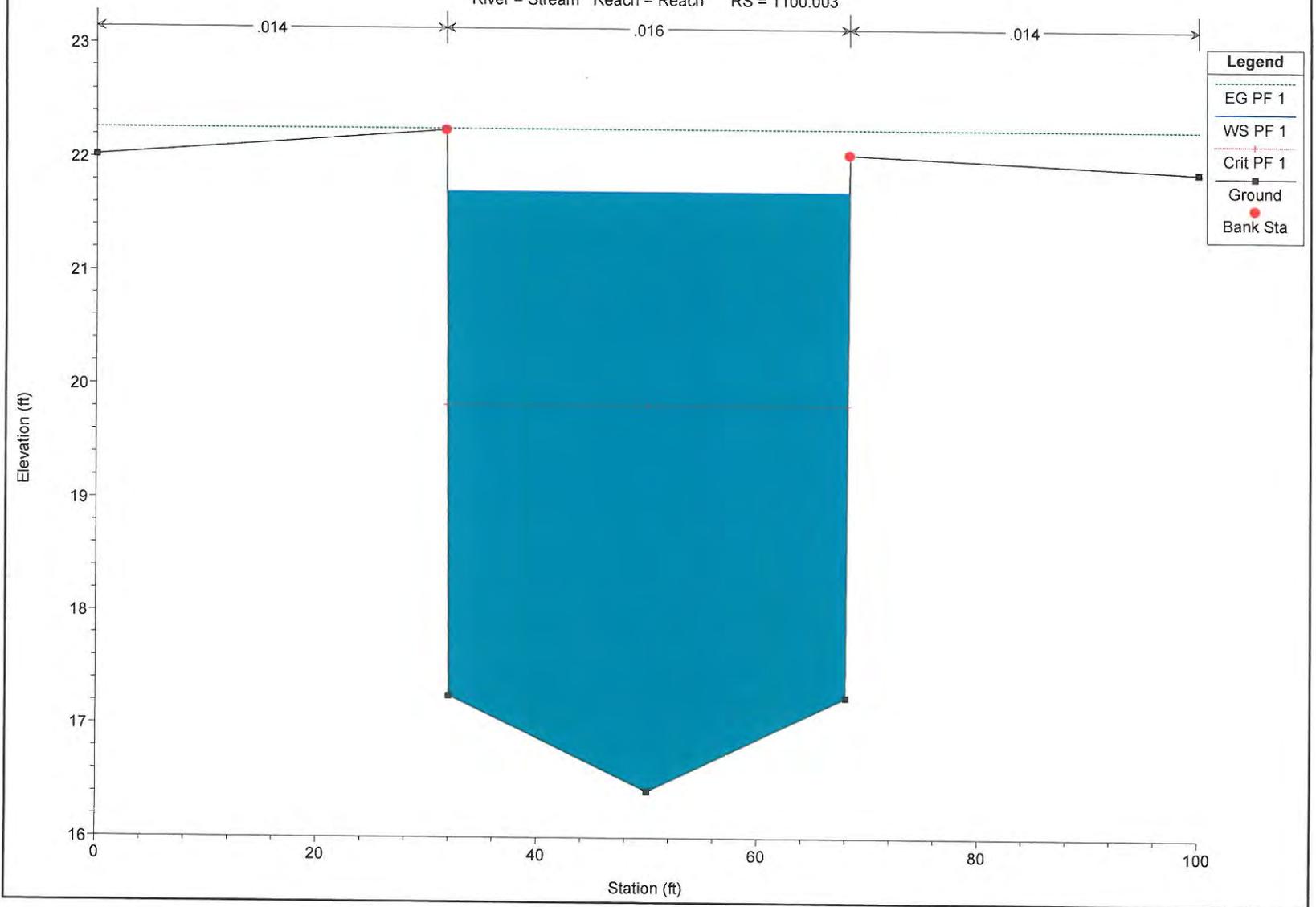
Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011

River = Stream Reach = Reach RS = 900.0039



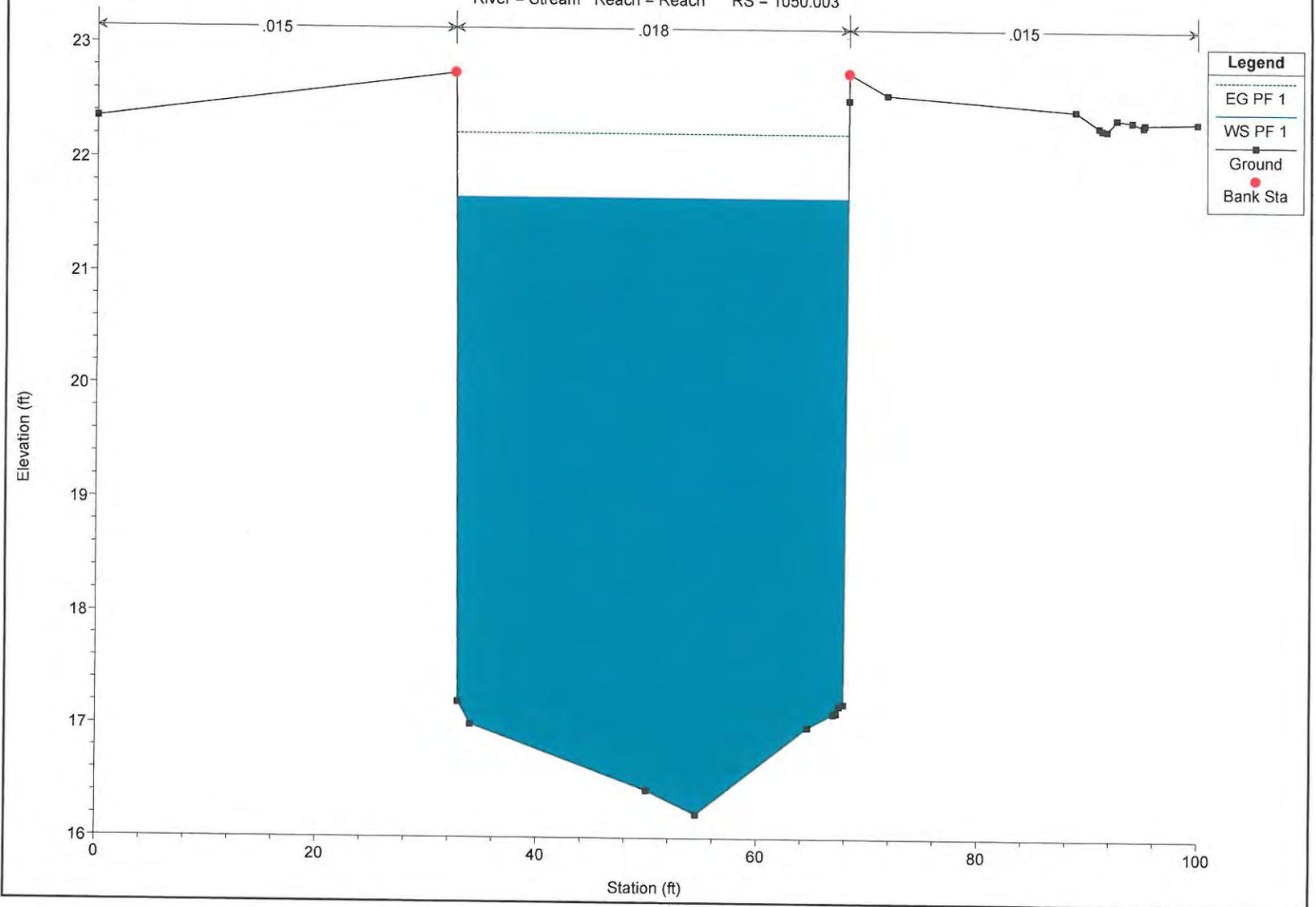
Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011

River = Stream Reach = Reach RS = 1100.003



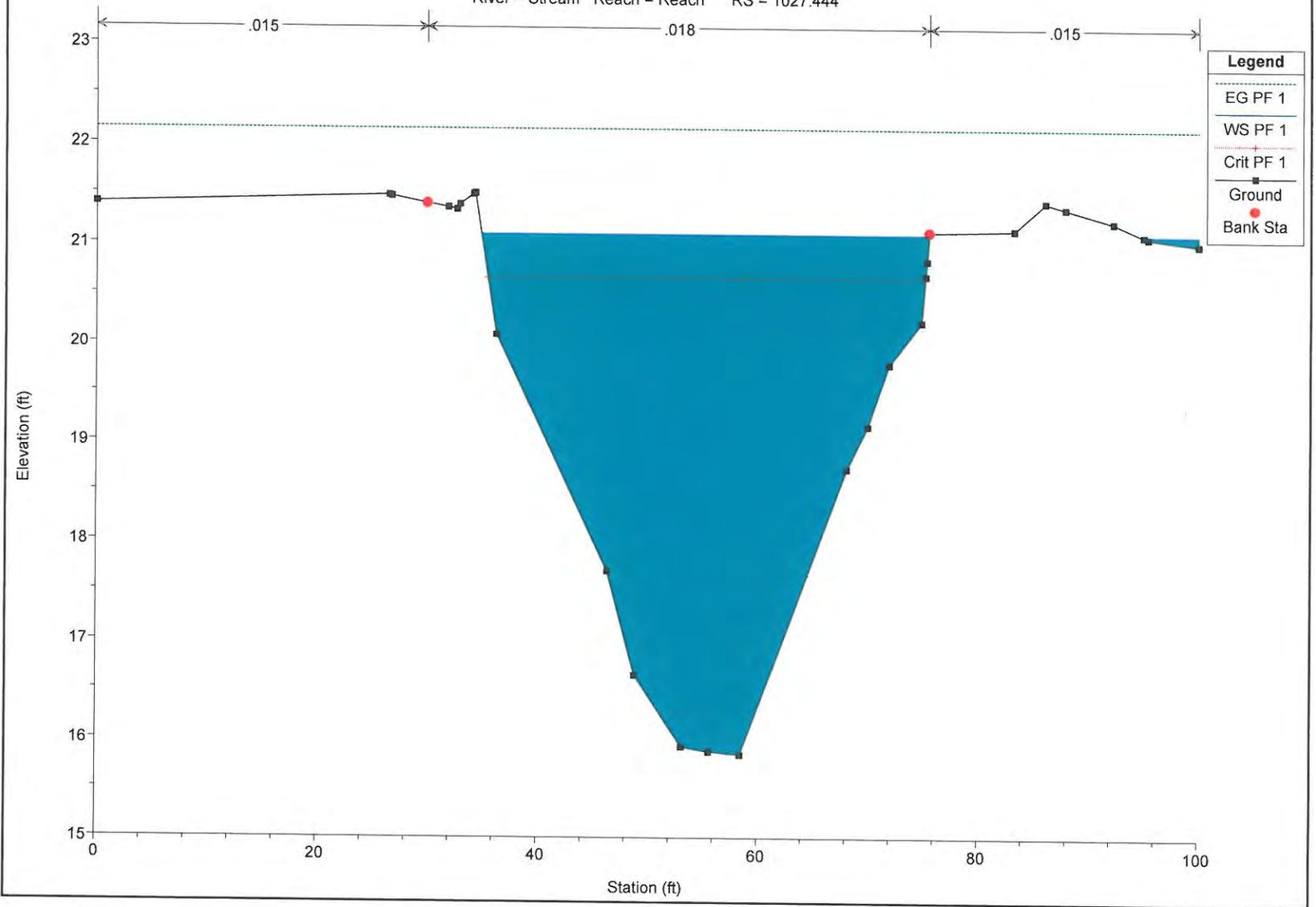
Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011

River = Stream Reach = Reach RS = 1050.003



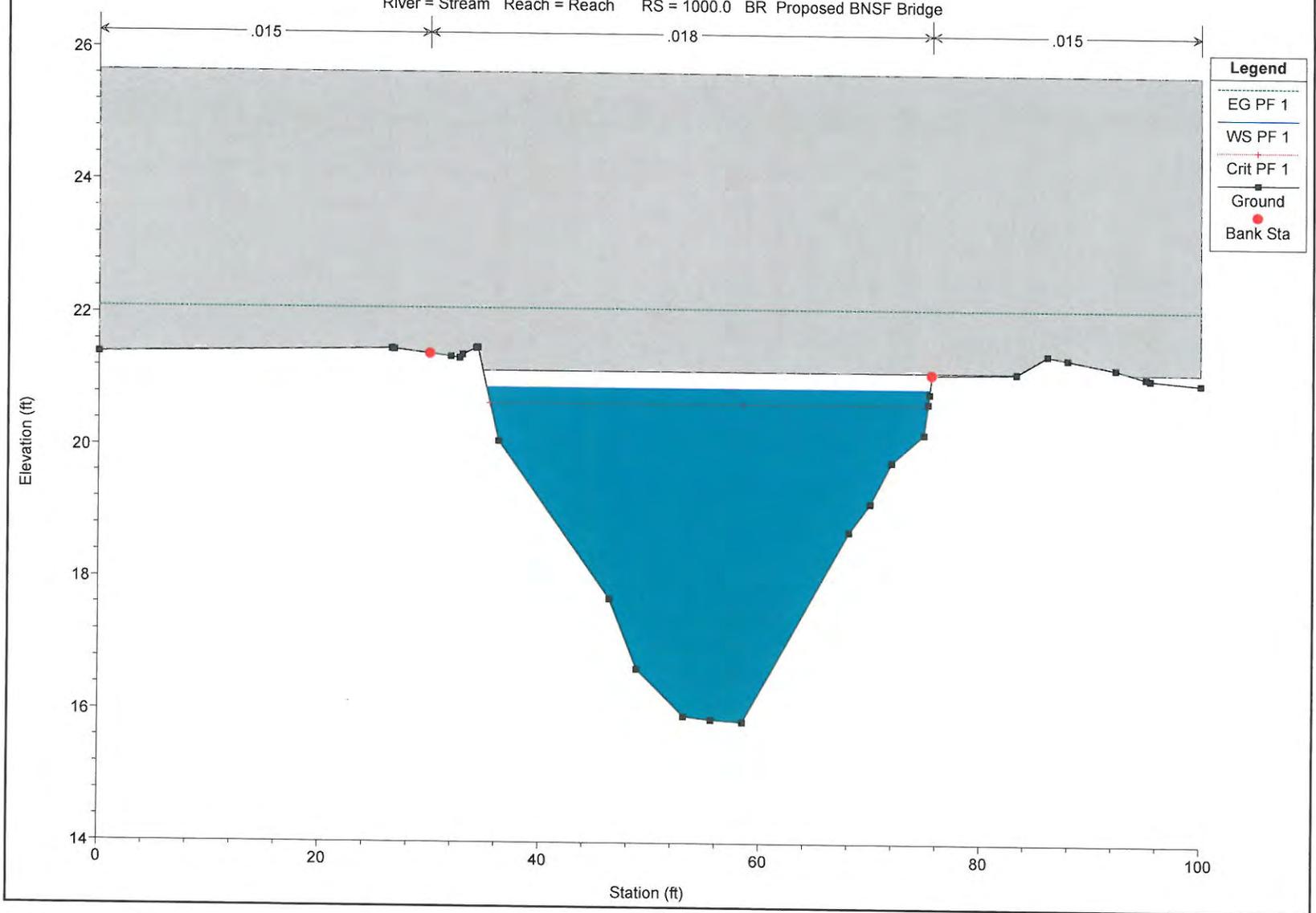
Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011

River = Stream Reach = Reach RS = 1027.444

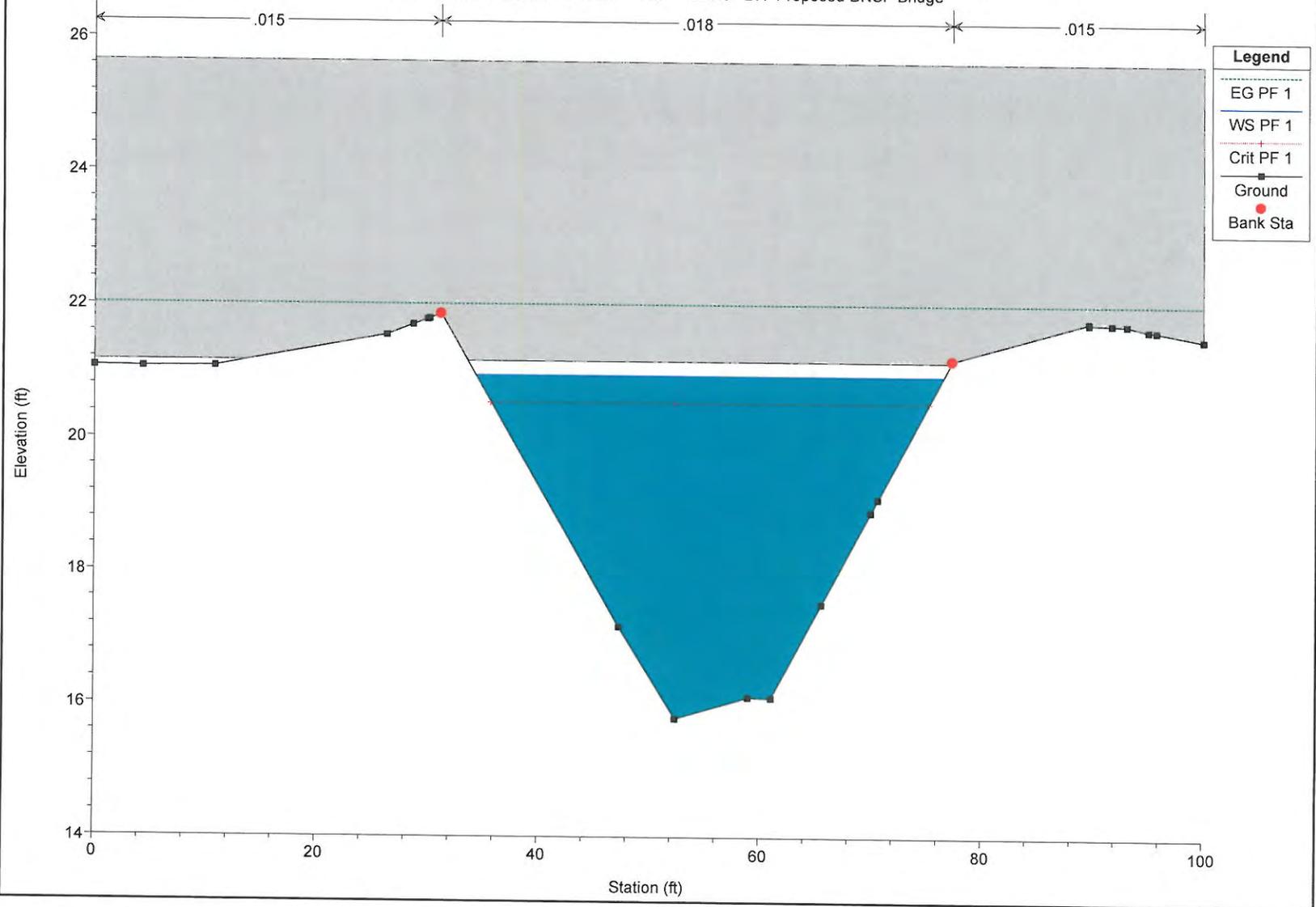


Legend	
---	EG PF 1
- - -	WS PF 1
- · - · -	Crit PF 1
■	Ground
●	Bank Sta

Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011
 River = Stream Reach = Reach RS = 1000.0 BR Proposed BNSF Bridge

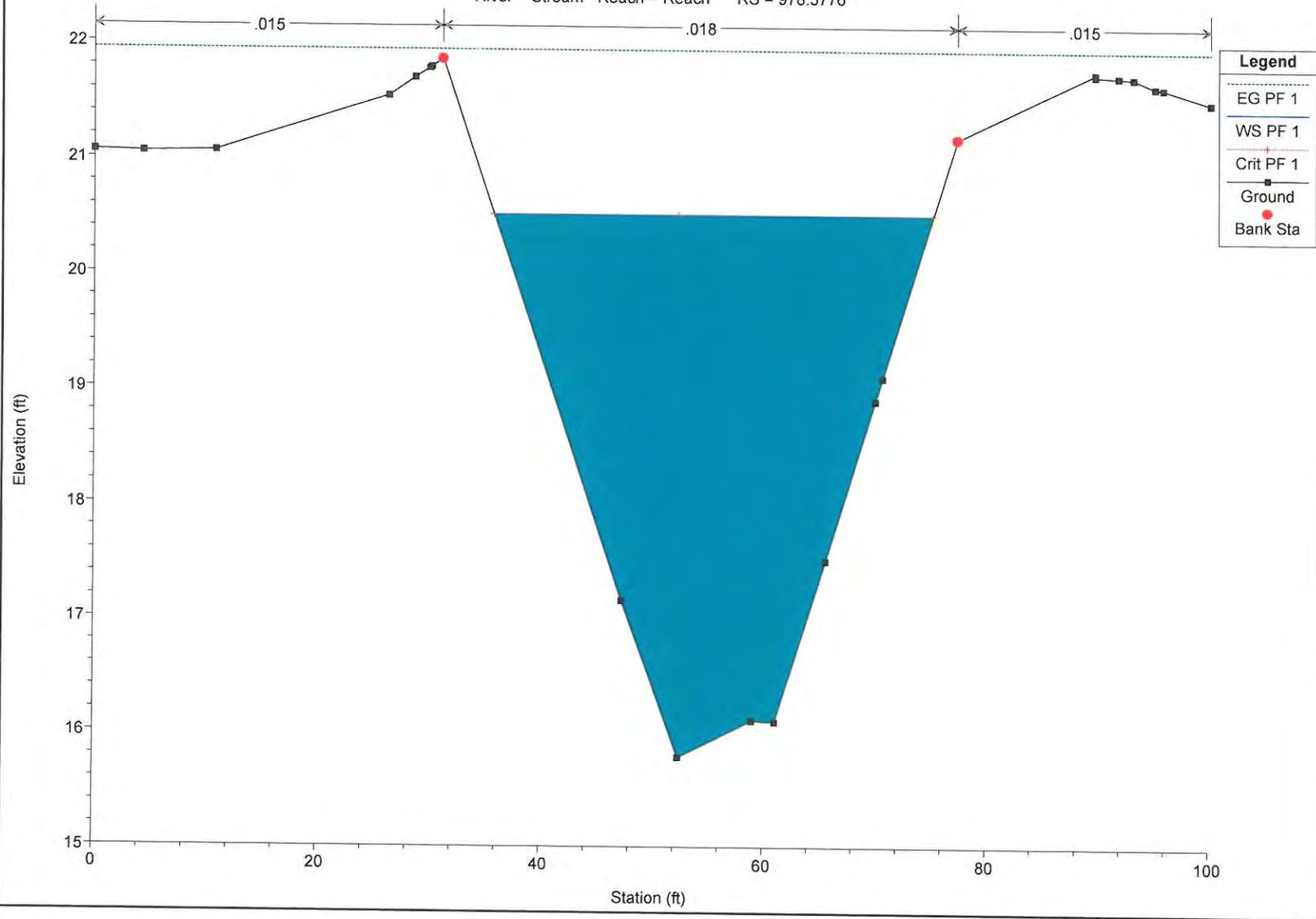


Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011
River = Stream Reach = Reach RS = 1000.0 BR Proposed BNSF Bridge



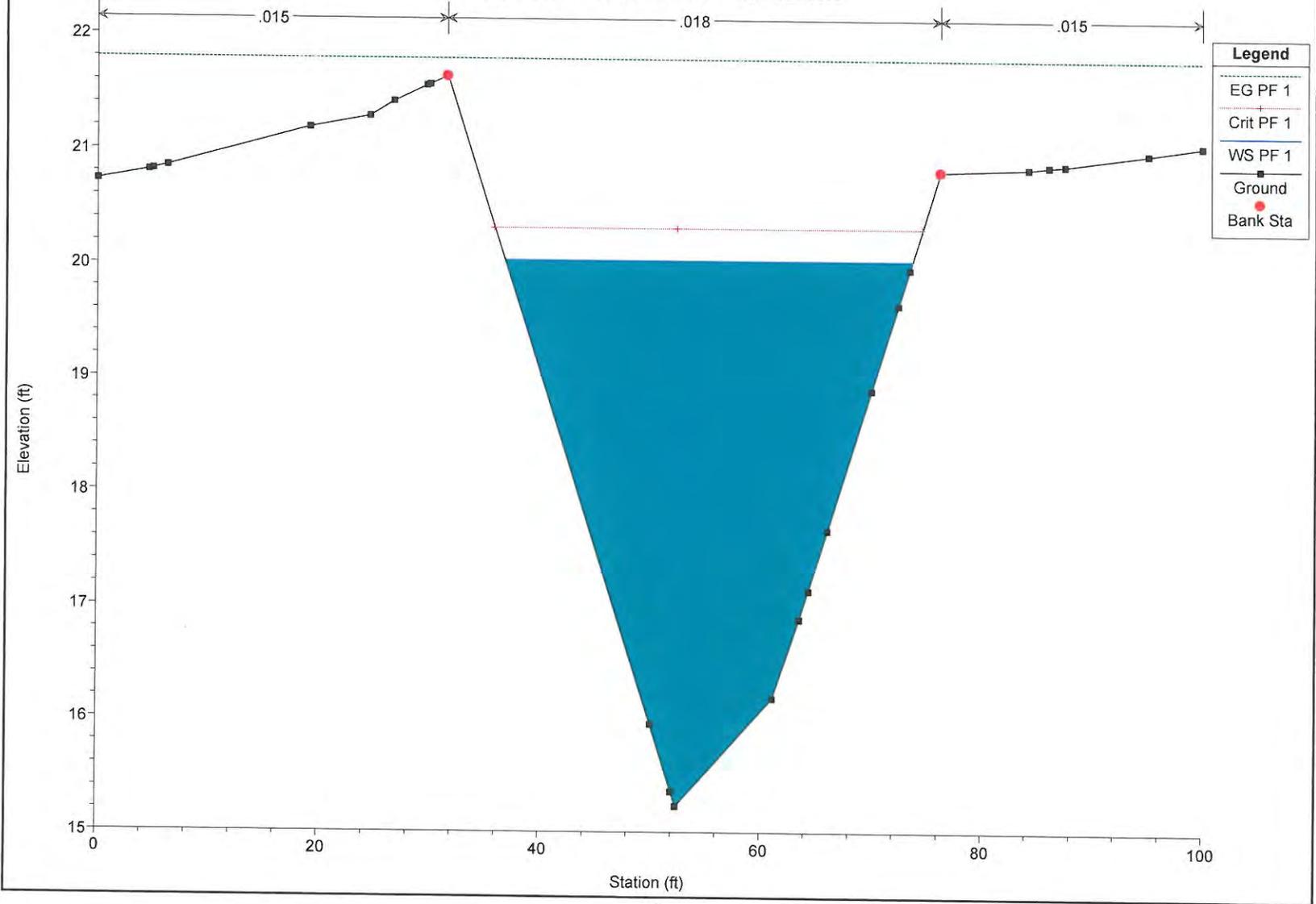
Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011

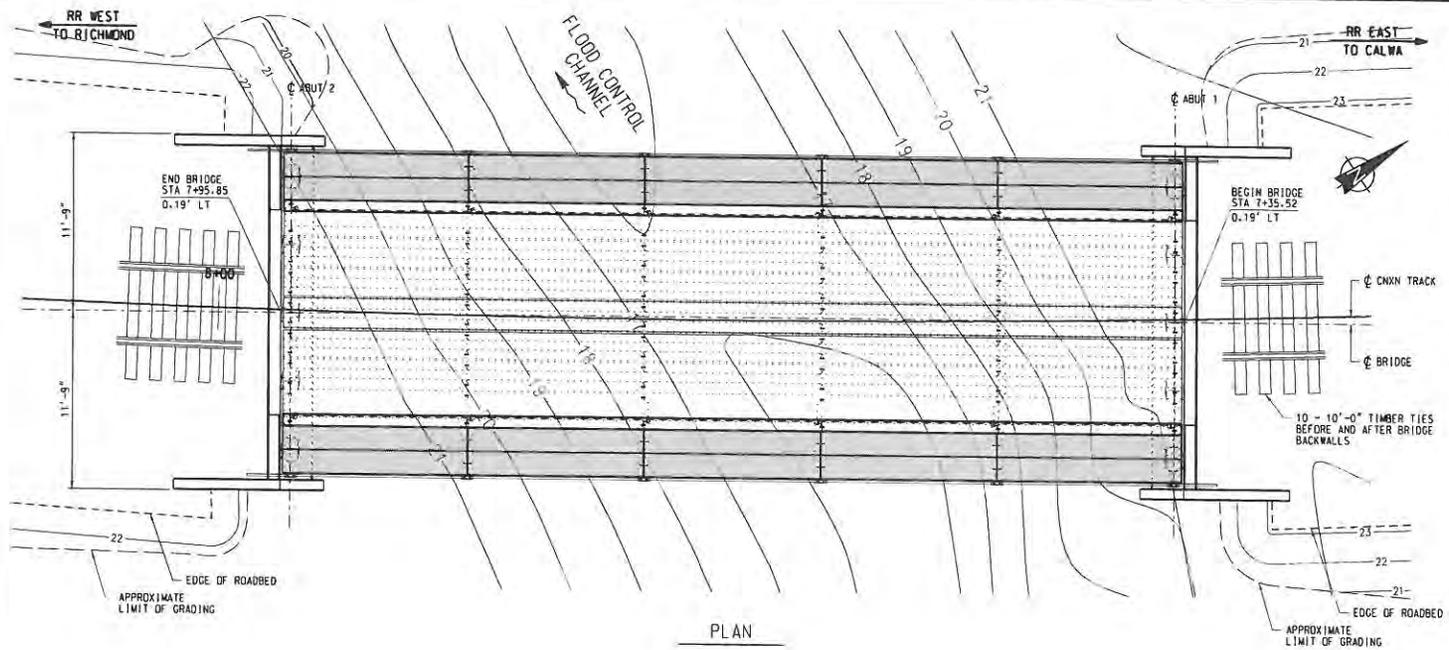
River = Stream Reach = Reach RS = 978.5776



Rheem Creek at BNSF Bridge Plan: Plan 01 9/13/2011

River = Stream Reach = Reach RS = 950.0039



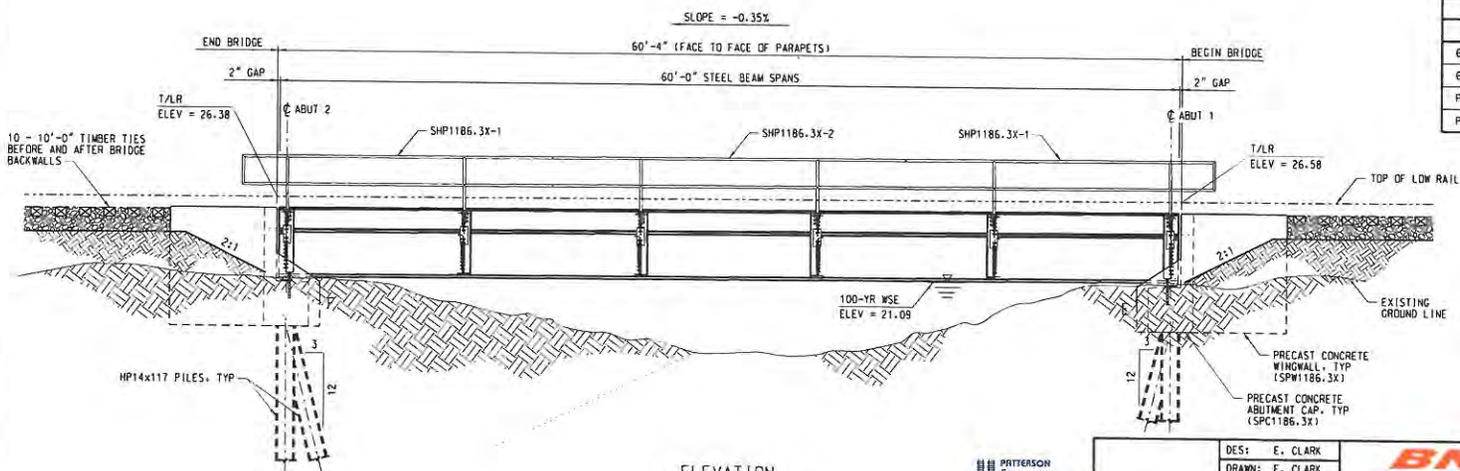


LIST OF DRAWINGS	
PLAN NO.	TITLE
7200-1186.3X-01	GENERAL PLAN
7200-1186.3X-02	PILING PLAN AND TYPICAL SECTION
7200-1186.3X-03	ABUTMENT PLAN AND ELEVATION
7200-1186.3X-04	ABUTMENT DETAILS
7200-1186.3X-05	WINGWALL DETAILS
7200-1186.3X-06	BEAM SPAN - FRAMING PLAN
7200-1186.3X-07	BEAM SPAN - DECK DETAILS
7200-1186.3X-08	MISCELLANEOUS DETAILS (SHEET 1 OF 2)
7200-1186.3X-09	MISCELLANEOUS DETAILS (SHEET 2 OF 2)
7200-1186.3X-10	STIFFENER AND WATERPROOFING DETAILS
7200-1186.3X-11	BEARING AND ANCHOR BOLT DETAILS
7200-1186.3X-12	HANDRAIL PANEL DETAILS
7200-1186.3X-13	GENERAL NOTES

TABLE OF ELEVATIONS		
LOCATION	ABUT 1	ABUT 2
TOP OF TIE	25.92*	25.72*
TOP OF CAP	20.97**	20.77**
PILE CUT-OFF	17.98	17.78
PILE TIP	-62.02	-62.22

* ELEVATIONS TAKEN AT LOW RAIL ALONG CENTERLINE OF BEARING
 ** ELEVATIONS TAKEN ALONG CENTERLINE OF BEARING

TABLE OF LIFTING WEIGHTS		
DESCRIPTION	MARK NO.	EST. WEIGHT (LBS)
60'-0" STEEL SPAN SHOP ASSEMBLY (UNIT 1)	--	86,788
60'-0" STEEL SPAN SHOP ASSEMBLY (UNIT 2)	--	86,788
PRECAST CONCRETE ABUTMENT CAP	SPC1186.3X	42,965
PRECAST CONCRETE WINGWALL	SPW1186.3X	7,971



GENERAL NOTES:

DESIGN LOADING: COOPER E80 WITH DIESEL IMPACT

BRIDGE STATIONING AND ELEVATIONS ARE BASED ON SURVEY CONDUCTED BY WESTLAND GROUP, INC DATED MARCH 2010

BRIDGE ERECTION SUBJECT TO APPLICABLE DETAILS AS SHOWN ON THE PLANS AND/OR REFERENCES AND AS DIRECTED BY THE ENGINEER

CONTRACTOR SHALL SUBMIT BRIDGE LIFTING PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION BEGIN

PRITZERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD.
 SUITE 300
 GRANITE, CA 92686

DES: E. CLARK
 DRAWN: E. CLARK
 CHECK: C.W. BAO
 DATE: 04/03/2012
 AUTH: AFEW7-1447-10
 LINE SEG: 7200

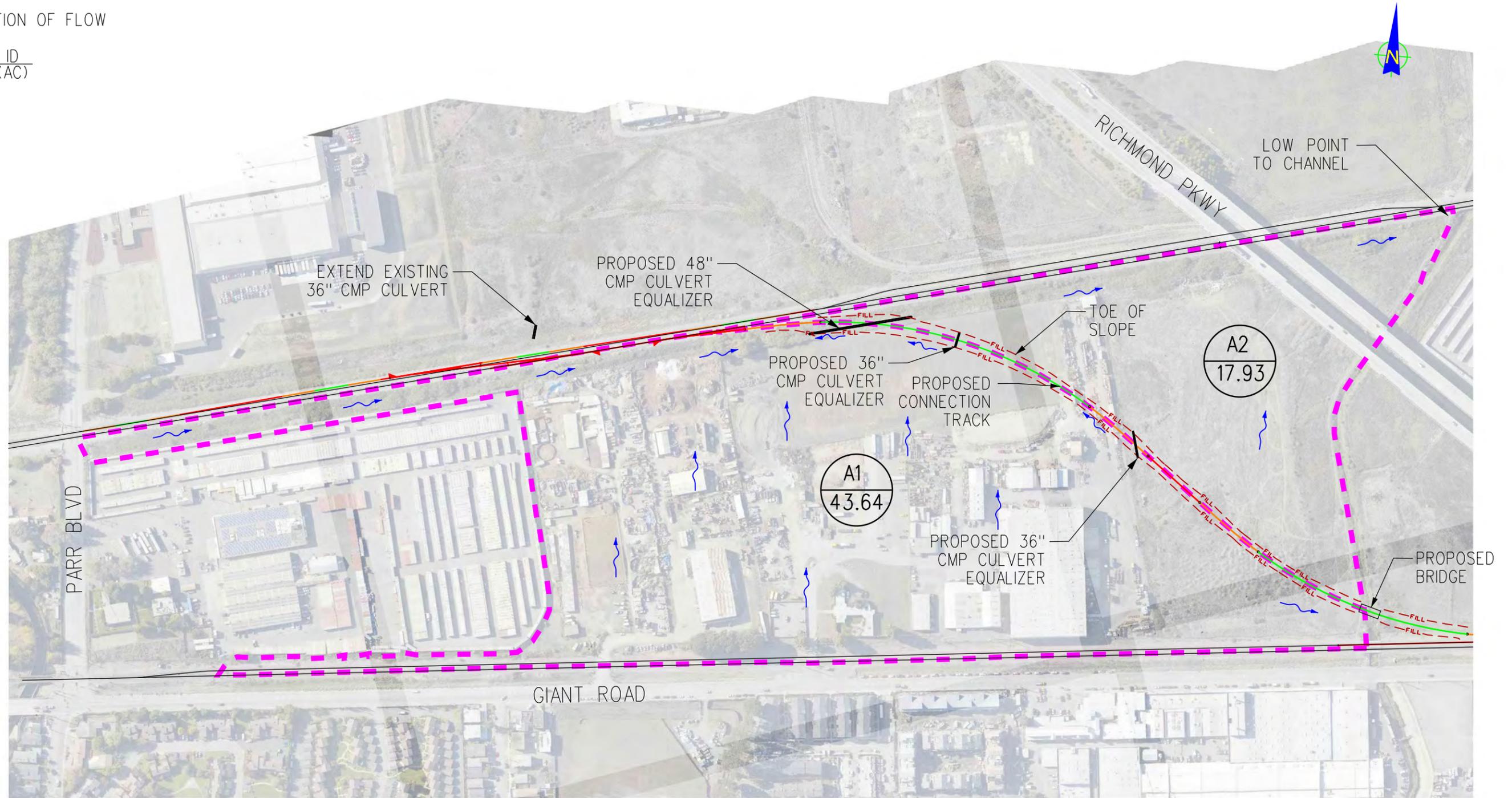
BNSF
 RAILWAY
 BRIDGE ENGINEERING
 KANSAS CITY, KS
 APPROVED: *R.G. Berry*
 ASST. DIRECTOR STRUCTURES/DESIGN

RICHMOND RAIL CONNECTOR
 BRIDGE NUMBER 1186.3X
 OVER FLOOD CONTROL CHANNEL EASEMENT
 GENERAL PLAN
 PLAN NO: 7200-1186.3X-01
 SHEET 01 OF 13

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LEGEND:

- - - TRIBUTARY AREA
- ~ ~ ~ DIRECTION OF FLOW
- A1
X.XX AREA ID
AREA (AC)



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PROJECT NUMBER	CUST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

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CHECKED BY	
APPROVED BY	
DATE	APRIL 09, 2010

BNSF
RAILWAY

PATTERSON & ASSOCIATES, INC.
725 TOWN & COUNTRY RD
SUITE 300
ORANGE, CA 92668

BNSF RAILWAY
RICHMOND RAIL CONNECTOR

PROPOSED HYDROLOGY
EXHIBIT

CONTRACT NO.	
DRAWING NO.	
REVISION	SHEET NO.
SCALE	

REV	DATE	DESCRIPTION	BY	SUB	APP

ATTACHMENT 3



The crew would access road through Collins Ave the run along the bypass to the wood bridge to access either side then head towards Giant Hwy.

ATTACHMENT 4

TO RICHMOND, CA
RR SOUTH

TO CALWA, CA
RR NORTH

MATCH LINE - BNSD 664+00
SEE DRAWING NO. RP-02



NOTES:

1. RIGHT-OF-WAY BOUNDARIES ARE BASED SOLELY ON STATION AND RIGHT-OF-WAY MAPS AND THEREFORE ARE APPROXIMATIONS. REQUIRES VERIFICATION.

LEGEND:

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- - - PROPOSED RIGHT OF WAY (BNSF)

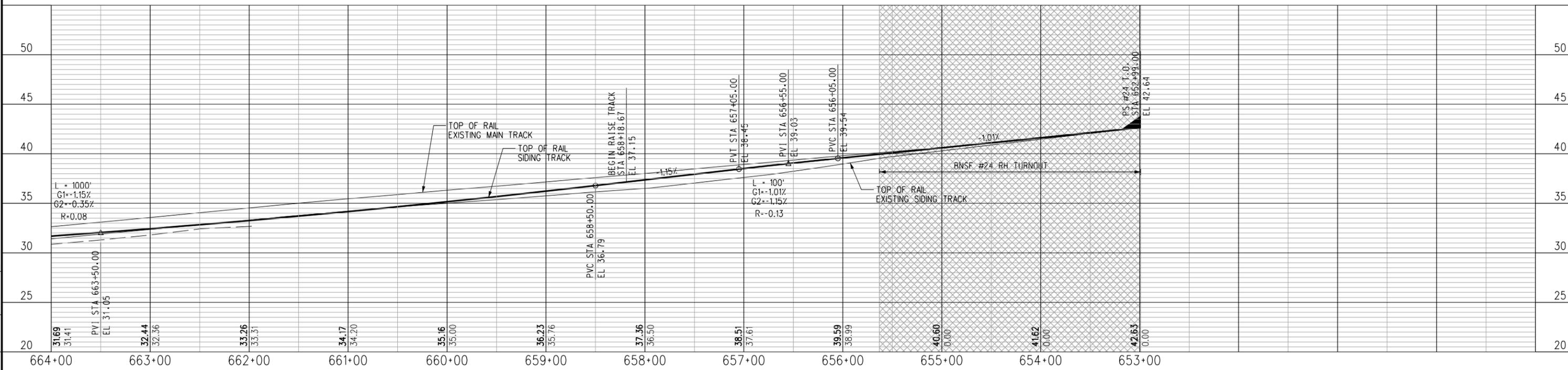
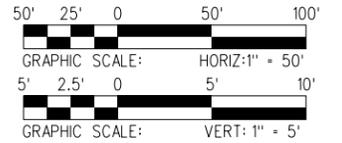
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PLAN

TRACK LEGEND:

- PROPOSED TRACK (CURVE)
- PROPOSED TRACK (TANGENT)
- PROPOSED TRACK (SPIRAL)
- PROPOSED TRACK SHIFT (CURVE)
- PROPOSED TRACK SHIFT (TANGENT)
- PROPOSED TRACK SHIFT (SPIRAL)

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- - - EXISTING TRACK (TO BE RAISED)
- - - EXISTING TRACK (TO BE REMOVED)



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CHECKED BY: M. CANAS
APPROVED BY: M. CANAS
DATE: JUNE 11, 2012

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UNION PACIFIC RAILROAD
PATTERSON & ASSOCIATES, INC.
725 TOWN & COUNTRY RD SUITE 300 ORANGE, CA 92868

BNSF RAILWAY
RICHMOND RAIL CONNECTOR
PLAN AND PROFILE - SHEET 1 OF 5
BNSD 664+00 TO BNSD 653+00
MP 1186.10 TO MP 1185.87 (BNSF)

CONTRACT NO.
DRAWING NO. **RP-01**
REVISION 0 SHEET NO. 011
SCALE AS SHOWN

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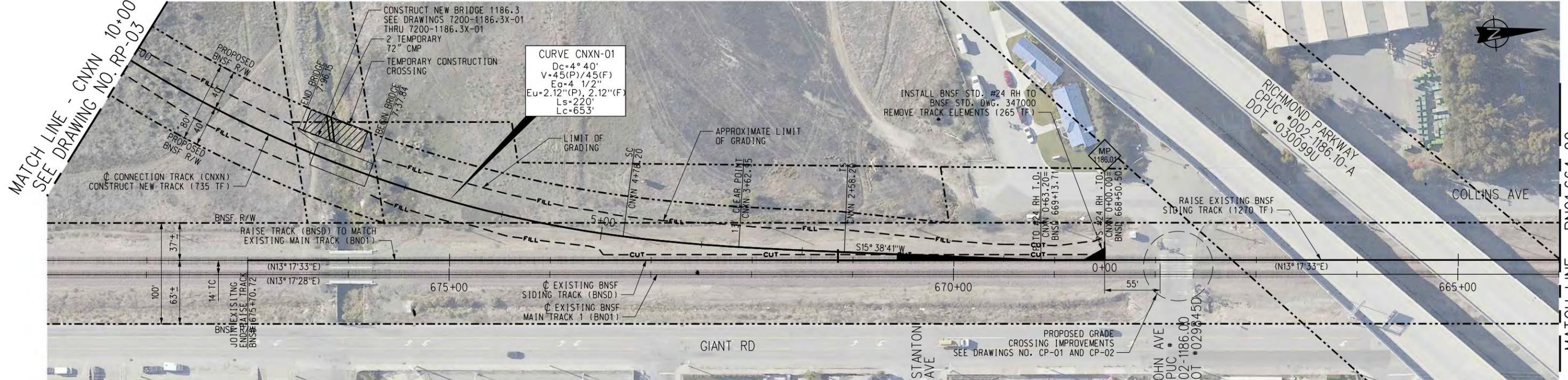
REV	DATE	DESCRIPTION	BY	SUB	APP

TO RICHMOND, CA

TO CALWA, CA

RR WEST

RR EAST



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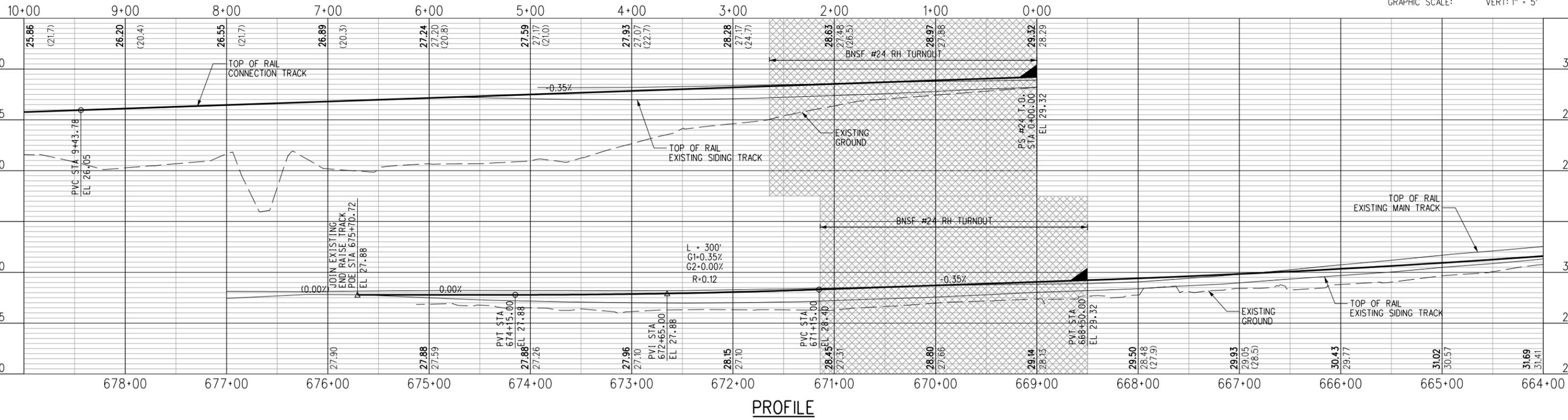
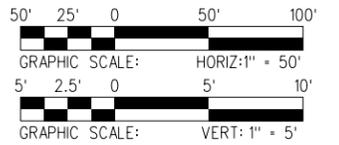
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- PROPOSED TRACK (TANGENT)
- PROPOSED TRACK (SPIRAL)
- PROPOSED TRACK SHIFT (CURVE)
- PROPOSED TRACK SHIFT (TANGENT)
- PROPOSED TRACK SHIFT (SPIRAL)

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 RICHMOND RAIL CONNECTOR
 PLAN AND PROFILE - SHEET 2 OF 5
 CNXN 10+00 TO BNSD 664+00
 MP 1186.36 TO MP 1186.10 (BNSF)

CONTRACT NO.
 DRAWING NO. RP-02
 REVISION 0 SHEET NO. 012
 SCALE AS SHOWN

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PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

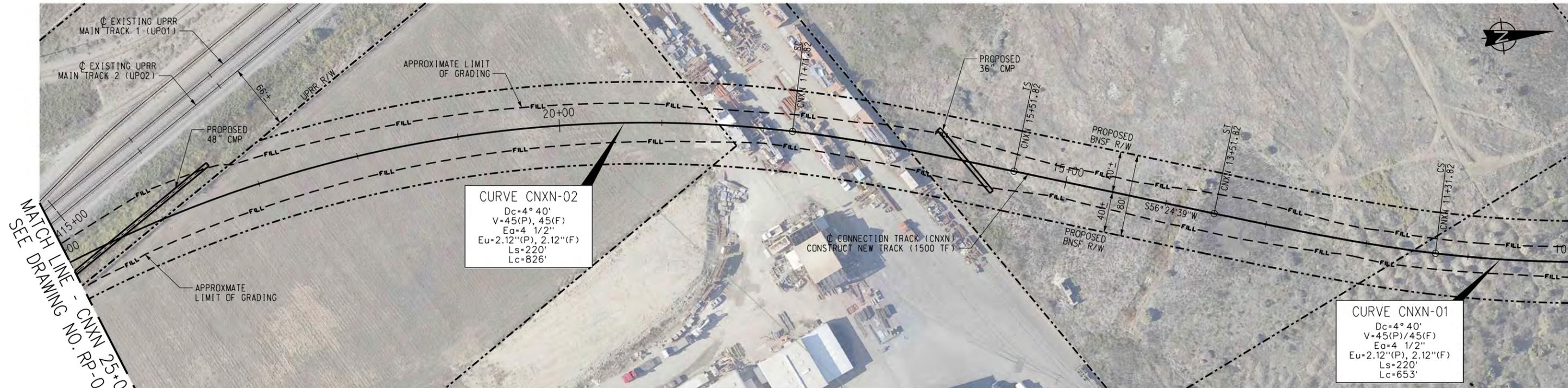
REV	DATE	DESCRIPTION	BY	SUB	APP

TO 10TH STREET (UPRR)

TO CALWA, CA (BNSF)

RR WEST

RR EAST



CURVE CNXN-02
 Dc=4° 40'
 V=45(P), 45(F)
 Ea=4 1/2"
 Eu=2.12"(P), 2.12"(F)
 Ls=220'
 Lc=826'

CURVE CNXN-01
 Dc=4° 40'
 V=45(P)/45(F)
 Ea=4 1/2"
 Eu=2.12"(P), 2.12"(F)
 Ls=220'
 Lc=653'

NOTES:

1. RIGHT-OF-WAY BOUNDARIES ARE BASED SOLELY ON STATION AND RIGHT-OF-WAY MAPS AND THEREFORE ARE APPROXIMATIONS. REQUIRES VERIFICATION.

LEGEND:

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- CUT — GRADING LIMIT (CUT)
- - - EDGE OF ROADBED
- - - PROPOSED RIGHT OF WAY (BNSF)

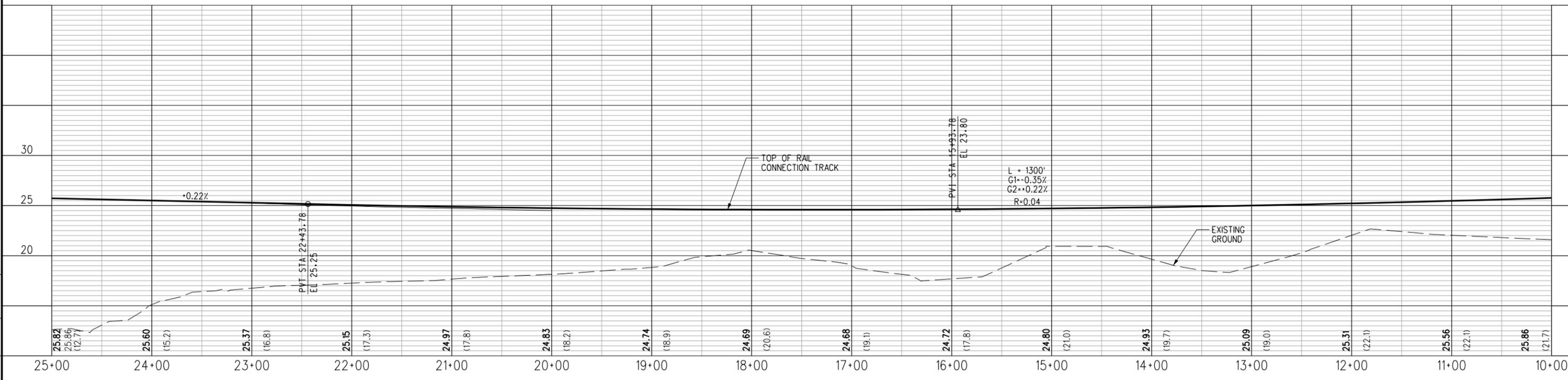
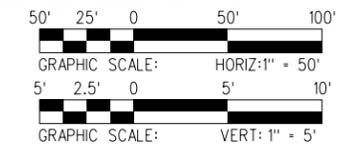
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PLAN

TRACK LEGEND:

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- PROPOSED TRACK (TANGENT)
- PROPOSED TRACK (SPIRAL)
- PROPOSED TRACK SHIFT (CURVE)
- PROPOSED TRACK SHIFT (TANGENT)
- PROPOSED TRACK SHIFT (SPIRAL)

- EXISTING TRACK (TO REMAIN)
- - - EXISTING TRACK (TO BE RAISED)
- - - EXISTING TRACK (TO BE REMOVED)



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 PLAN AND PROFILE - SHEET 3 OF 5
 CNXN 25+00 TO CNXN 10+00
 MP 1186.61 TO MP 1186.36 (BNSF)

CONTRACT NO.
 DRAWING NO. **RP-03**
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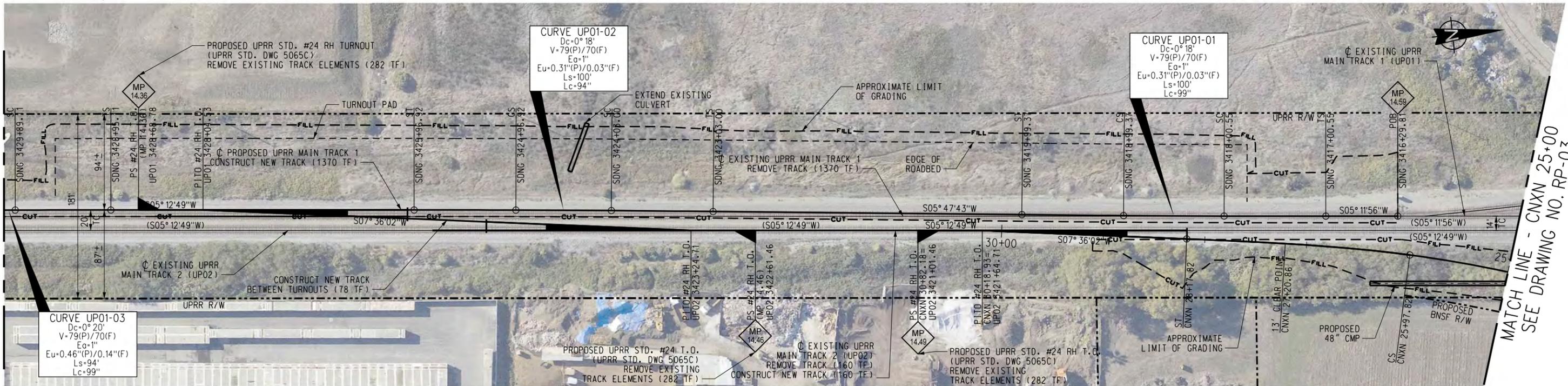
WORK ELEMENT
PHYSICAL ENTITY
CONTRACT DESIGNATOR
LINE ITEM
COST ELEMENT
PROJECT NUMBER
REV
DATE
DESCRIPTION
BY
SUB
APP

TO 10TH STREET
RR WEST

TO EAST ROSEVILLE
RR EAST

MATCH LINE - UPO2 3430+00
SEE DRAWING NO. RP-05

MATCH LINE - CNXN 25+00
SEE DRAWING NO. RP-03



NOTES:
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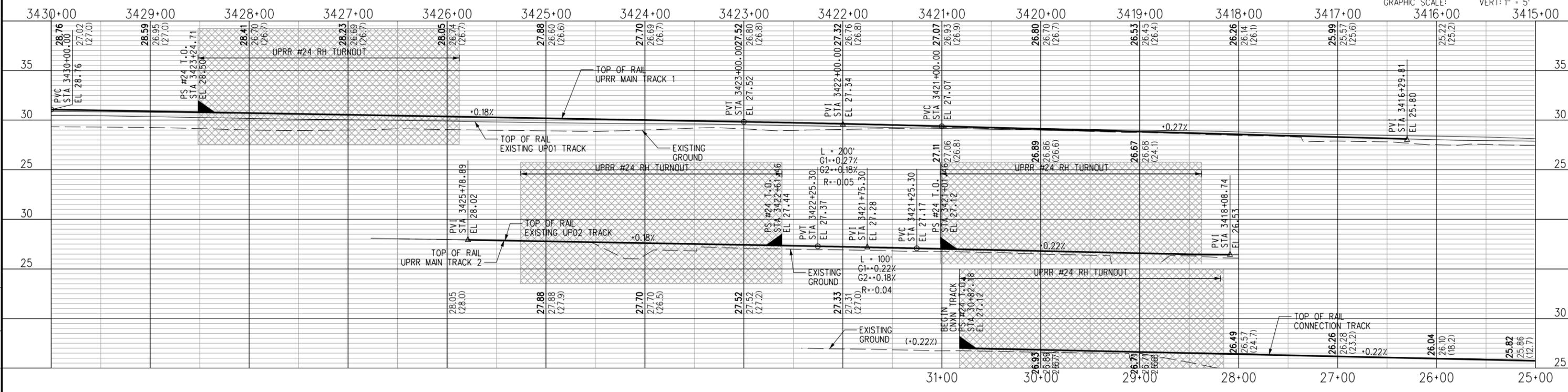
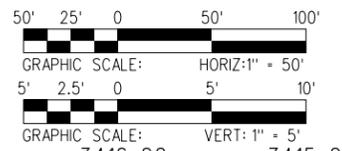
LEGEND:
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 - CUT - GRADING LIMIT (CUT)
 - - - - EDGE OF ROADBED
 - - - - PROPOSED RIGHT OF WAY (BNSF)

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TRACK LEGEND:
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 - - - - PROPOSED TRACK (TANGENT)
 - - - - PROPOSED TRACK (SPIRAL)
 - - - - PROPOSED TRACK SHIFT (CURVE)
 - - - - PROPOSED TRACK SHIFT (TANGENT)
 - - - - PROPOSED TRACK SHIFT (SPIRAL)

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 APPROVED BY M. CANAS
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 725 TOWN & COUNTRY RD SUITE 300
 ORANGE, CA 92868

BNSF RAILWAY
 RICHMOND RAIL CONNECTOR
 PLAN AND PROFILE - SHEET 4 OF 5
 UPO2 3430+00 TO CNXN 25+00
 MP 14.33 TO MP 14.59 (UPRR)

CONTRACT NO.
 DRAWING NO. RP-04
 REVISION 0 SHEET NO. 014
 SCALE AS SHOWN

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 2012-11-15

PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

TO 10TH STREET
RR WEST

EAST ROSEVILLE, CA
RR EAST



NOTES:

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LEGEND:

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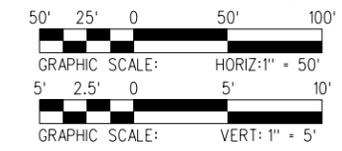
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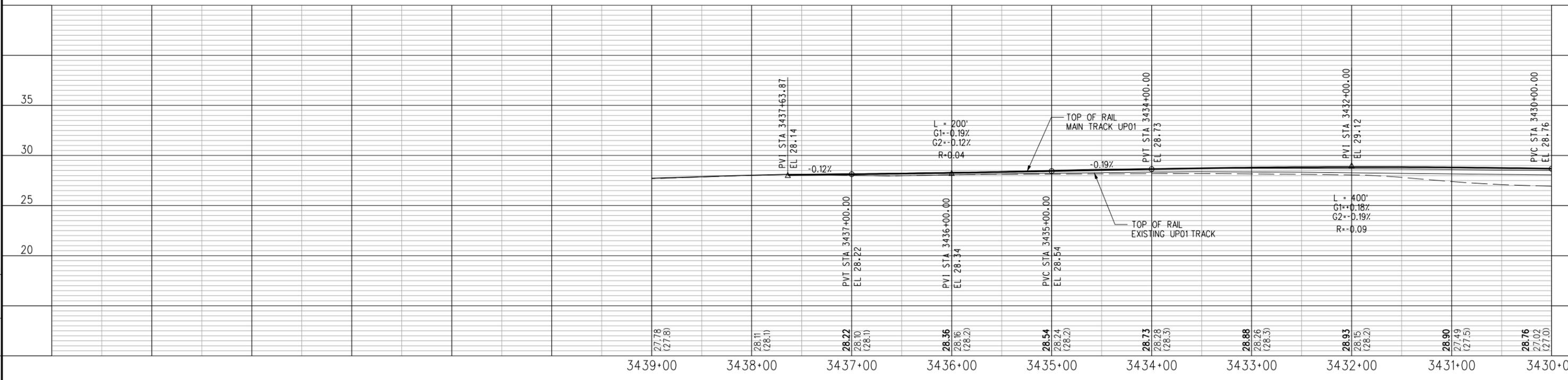
TRACK LEGEND:

- PROPOSED TRACK (CURVE)
- PROPOSED TRACK (TANGENT)
- PROPOSED TRACK (SPIRAL)
- PROPOSED TRACK SHIFT (CURVE)
- PROPOSED TRACK SHIFT (TANGENT)
- PROPOSED TRACK SHIFT (SPIRAL)

- EXISTING TRACK (TO REMAIN)
- - - EXISTING TRACK (TO BE RAISED)
- - - EXISTING TRACK (TO BE REMOVED)



MATCH LINE - UP02 3430+00
SEE DRAWING NO. RP-04



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WORK ELEMENT	PHYSICAL ENTITY	CONTRACT DESIGNATOR	LINE ITEM	COST ELEMENT	PROJECT NUMBER

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BNSF RAILWAY RICHMOND RAIL CONNECTOR
 PLAN AND PROFILE - SHEET 5 OF 5
 UP02 3445+00 TO UP02 3430+00
 MP 14.18 TO MP 14.33

CONTRACT NO.
 DRAWING NO. **RP-05**
 REVISION 0 SHEET NO. 015
 SCALE AS SHOWN

CHAPTER 4 List of Preparers

This document was prepared by the following:

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B.S., *Biology*, California Polytechnic State University, Pomona; over 18 years of experience in evaluations of absence/presence of endangered species, habitat assessments, biological assessments, impact analyses, mitigation plans, implementation plans, construction monitoring, general biological surveys, and preparation of reports for focused

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M.A., American History, Yale University, New Haven, Connecticut; 20 years of experience in Public History/Architectural History/Cultural Resources Management. Contribution: Historic Property Survey Report / Archaeological Survey Report.

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Roberts, Bruce. Senior Transportation Engineer, Caltrans, Division of Rail

M.B.A., with emphasis in Project Management, University of San Diego; over 19 years of service currently employed with Division of Rail focused on improvements with Intercity Passenger Rail Service.

Rose, Kathryn. Caltrans District 4.

M.A. Anthropology; Professionally Qualified Staff (PQS) level of Principle Investigator-Prehistoric Archaeology; Reviewed Historic Property Survey Report and Archaeological Survey Report

CHAPTER 5 References

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- Bay Area Air Pollution Summary – 2007
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CHAPTER 6 Distribution List

Elected Federal Officials

The Honorable Barbara Boxer
United States Senator
70 Washington Street, Suite 203
Oakland, CA 94607

The Honorable Dianne Feinstein
United States Senator
One Post Street, Suite 2450
San Francisco, CA 94104

The Honorable George Miller
United States Representative, 11th District
3220 Blume Drive, Suite 160
Richmond, CA 94806

The Honorable Barbara Lee
United States Representative, 13th District
1301 Clay Street, Suite 1000-N
Oakland, CA 94612

The Honorable Mike Thompson
United States Representative, 5th District
985 Walnut Avenue
Vallejo, CA 94592

Elected State Officials

The Honorable Mark DeSaulnier
California State Senator, 7th District
1350 Treat Boulevard, Suite 240
Walnut Creek, CA 94597

The Honorable Loni Hancock
California State Senator, 9th District
1515 Clay Street, Suite 2202
Oakland, CA 94612

The Honorable Susan Bonilla
California State Assemblywoman, 14th District
2151 Salvio Street, Suite 395
Concord, CA 94521

The Honorable Nancy Skinner
California State Assemblywoman, 15th District
1515 Clay Street, Suite 2201
Oakland, CA 94612

Elected County and City Officials

The Honorable John Gioia
Board of Supervisors, Contra Costa County, District 1
11780 San Pablo Avenue, Suite D
El Cerrito, CA 94530

The Honorable Federal D. Glover
Board of Supervisors, Contra Costa County, District 5
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Mayor, City of Richmond
440 Civic Center Plaza
Richmond, CA 94804

Jim Rogers
Vice Mayor, City of Richmond
440 Civic Center Plaza
Richmond, CA 94804

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Richmond, CA 94804

Jovanka Beckles
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Thomas K. Butt
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Federal Activities Office, CMD-2
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San Francisco, CA 94105-3901

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Office of Passenger and Freight Programs
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U.S. Army Corps of Engineers, San Francisco District
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Northern Valley Yokuts
Bay Miwok

Linda G. Yamane
Ohlone/Costanoan

Amah/Mutsun Tribal Band
Irene Zwielerlein, Chairperson

Amah/Mutsun Tribal Band
Jean-Marie Feyling

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson

~~Miwokma Ohlone Indian Tribe of the SF Bay Area~~
~~Rosemary Cambra, Chairperson~~
~~Monica Arellano, Vice Chairwoman (USPS returned)~~

The Ohlone Indian Tribe
Andrew Galvan

~~Trina Marino Ruano Family~~
~~Ramona Garibay, Representative~~
~~Ohlone/Costanoan~~
~~Bay Miwok~~
~~Plains Miwok~~
~~Patwin (USPS returned)~~

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East Bay Municipal Utility District
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Contra Costa County Flood Control
& Water Conservation District
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John Fleming
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Union Pacific Railroad
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Roseville, CA 95747

Jonathan Hutchison
Director of Government Affairs
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Local Libraries

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Richmond, CA 94804

San Pablo Library
2300 El Portal Drive, Suite D
San Pablo, CA 924806

Non-Governmental Agencies and Businesses

Pacific Gas & Electric
Chief Executive Officer
One Market, Spear Tower Suite 2400
San Francisco, CA 94105-1126

APPENDIX 1

**Natural Environmental Study
(Minimal Impacts)**

Richmond Rail Connector Project Natural Environment Study (Minimal Impacts)

City of Richmond
Contra Costa County

EA # 75-63304

November 2011

STATE OF CALIFORNIA
Department of Transportation

Prepared By: *Lisa M. Patterson* Date: November 29, 2011
Lisa M. Patterson (Revised: January 24, 2012)
909-882-3612
Tom Dodson & Associates
for Caltrans Division of Rail

Approved By: *Bruce Roberts* Date: 2-9-2012
Bruce Roberts, Project Manager
~~510-622-8706~~ *916-654-7293*
Caltrans, District 4 *75*

Concurred By: *B. Deunert* Date: 2/22/12
Boris Deunert, Ph D., Senior Environmental Planner
(510) 286-6371
Caltrans, District 4



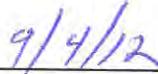
ERRATA SHEET

Property Acquisition Acreage Estimates

The final property acreage identified by the project proponents for acquisition was initially identified as 7.25 acres. However, as the project evolved and discussions were held with the property owners, the acreage identified for acquisition increased to 8.30 acres. This is the acreage shown on Figures 6a and 6b of the Environmental Assessment and the Initial Study. The acquisition of approximately 1.05 additional acres does not modify any of the findings in this technical study. All field surveys and impact forecasts were based on the biological study area described in the Natural Environment Study – Minimal Impacts (NES MI). The biological study area includes all areas that will be temporarily or permanently affected by the proposed project. Thus, this change in the acreage identified for property acquisition does not affect any of the conclusions contained in this NES MI biology resource technical study.



Tom Dodson
Tom Dodson & Associates



Date

1. Summary

1.1 Project Summary

The Richmond Rail Connector Project (Project) consists of constructing an at grade connection track and related signal improvements between the BNSF Railway Company (BNSF) and Union Pacific Railroad (UPRR) lines in the vicinity of Richmond, California (Richmond). The proposed connection track and the associated railway improvements will occur along an approximate 1.25-mile segment between the two railroad track corridors. The project is located in the City of Richmond, Contra Costa County, California, in a portion of the Rancho San Pablo land grant lying within T2N R4W, MDBM as depicted in the USGS – Richmond, California Quadrangle, 7.5 Minute Series topographic map, Mont Diablo Meridian.

Project's primary purpose is to install an at-grade rail connection that allows BNSF trains to access UPRR's Martinez Subdivision north of Richmond rather than travel through the heart of downtown Richmond. Currently, BNSF trains have to travel through downtown Richmond to reach the Port of Oakland because there is no connector to the UPRR tracks north of Richmond. The UPRR tracks provide a more direct route to the Port. The project would benefit the residents of Richmond by reducing traffic delays due to slow moving trains at at-grade crossings; it would reduce air emissions; and it would reduce noise from train air horns and warning signals at grade crossings. In addition, it would reduce the need for BNSF trains to use tracks north of Richmond on the Martinez Subdivision, freeing up capacity and reducing conflicts for both UPRR and passenger trains

The Purpose and intended use of this Natural Environmental Study - Minimal Impacts (NES-MI) is to evaluate the onsite biological resources and determine the potential for occurrence of common and special-status species, their habitat, and other regulated habitats such as Waters of the United States including Wetlands, Waters of the State, and Streambed/Riparian resources within Project's Biological Study Area (BSA). The BSA is defined as the Project's proposed physical ground disturbance footprint, plus a buffer zone where indirect impacts may result from construction. Impacts within the Project's footprint and the BSA are detailed in Section 5.0 of this document.

The proposed project consists of a single at grade connector track and related signal improvements within an approximate 1.25 mile segment of track where the two track systems parallel each other and are located approximately one-quarter mile apart. Permanent and temporary impacts to biological resources will be limited to the maximum extent practical. The vast majority of the area within the BNSF and UPRR right-of-ways serving as the rail corridor in which the proposed connector track will be installed is highly disturbed and does not support native plant communities. The area proposed for the connection track is highly disturbed. There is a channel that transects the project parcel from east to west (Rheem Creek Channel) which has been improved at the eastern end for flood control purposes. It appears that this channel is maintained because it is relatively incised and is characterized by wetland herbaceous species. No permanent impacts are proposed to this channel because the project proposes a clear-span bridge over this creek. However, in order to construct the tracks and the clear-span bridge,

the Rheem Creek channel will be temporarily crossed with culvert pipes and earthen crossing. Once the bridge construction is complete, this temporary crossing will be removed, and the channel will be restored.

There is a second unnamed channel running parallel to the UPRR on the east side track's high fill. This channel runs between the industrial development and the track. It is characterized by both herbaceous wetland species and woody wetland species. Because the proposed connector tracks are joining the UPRR tracks on a curve, the tracks will require a 300-foot long corrugated metal pipe culvert crossing. This crossing will impact 0.32 acre of the channel. This fill as well as the temporary fill proposed on Rheem Creek will likely require regulatory permits from the U.S. Army Corps of Engineers (Corps), California Department of Fish and Game (CDFG), and the State Regional Water Quality Control Board (RWQCB). The need for a 1600 Streambed Alteration Agreement from the California Department of Fish and Game at this location will depend upon the whether or not the project falls under the interstate commerce preemption rule.

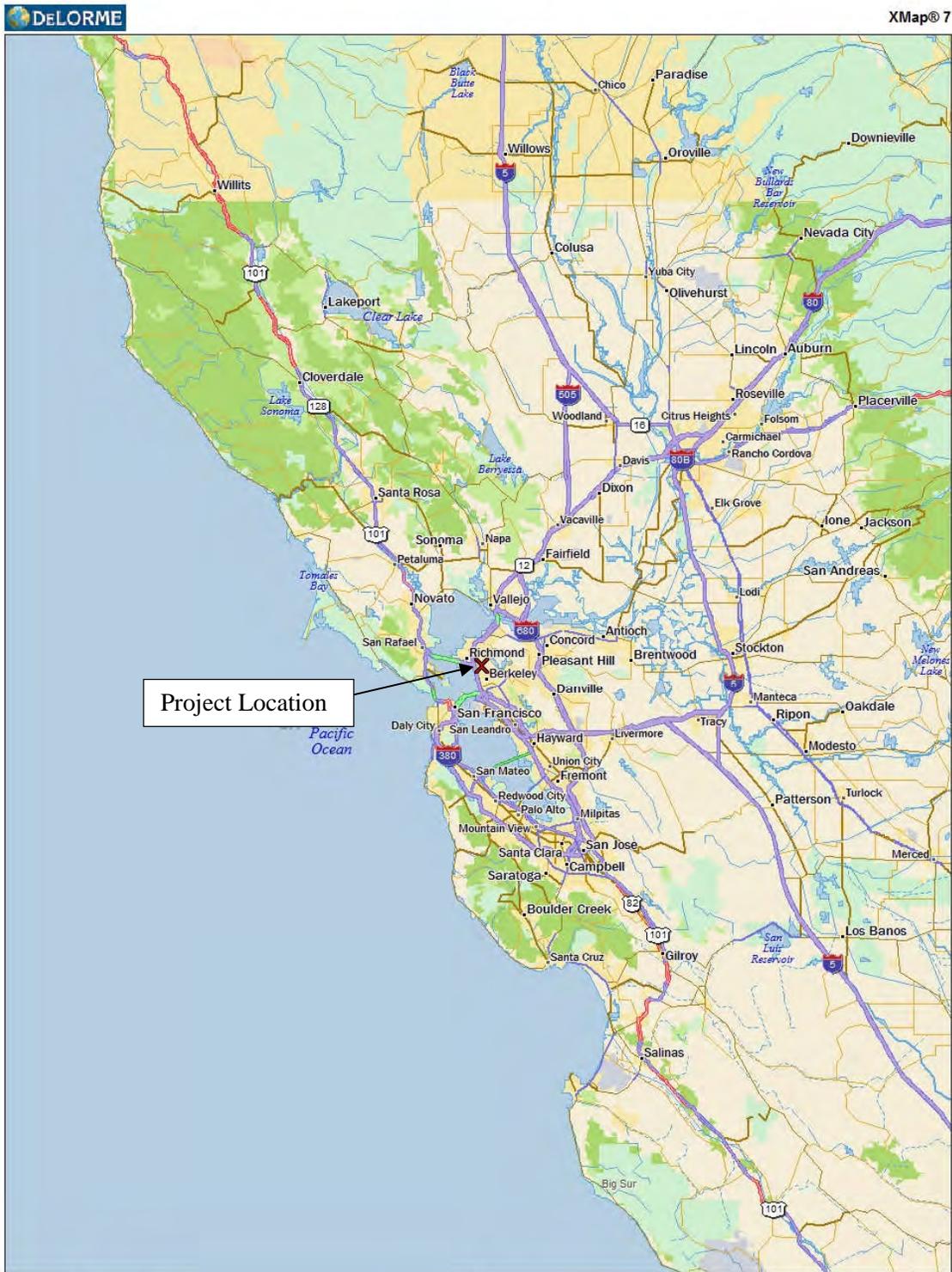
In 2006 and 2007 the East Contra Costa County HCP/NCCP (HCP/NCCP) was adopted. The participating entities are Contra Costa County, Contra Costa Flood Control District, East Bay Regional Park District, City of Brentwood, City of Clayton, City of Oakley, and City of Pittsburg. The City of Antioch did not participate, and is excluded from the coverage. The HCP/NCCP was designed to accommodate reasonable and expected growth of the participating jurisdictions. The proposed project is outside the plan area, and therefore no fee will be assessed.

1.2 Vegetation/Habitat Removal Information

There are two areas where vegetation will be removed for the construction of the project. The first is the crossing at Rheem Creek. This area is characterized by a fairly incised channel, and no trees will be impacted at this crossing. The channel bottom has some wetland vegetation characterized by cattails and bulrush. Once construction is complete, the temporary impacts in this channel will be restored to their previous grade, and are expected to revegetate quickly naturally. If after one year, natural resoration to pre-project conditions has not occurred, the project proponent will remove any weedy species from the area, and transplants propogules from adjacent stock of bullrush and cattails.

The second area is the unnamed channel that runs parallel to the UPRR alignment. The crossing will remove approximately 8 willow trees. Because the channel is maintained regularly, these trees have been routinely cut, and there form is more shrub-like than tree-like. Because the channel is routinely maintained, replanting of trees in the temporary impact area is proposed.

Figure 1 - Regional Location Map



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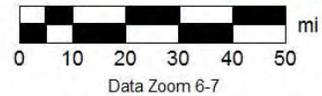
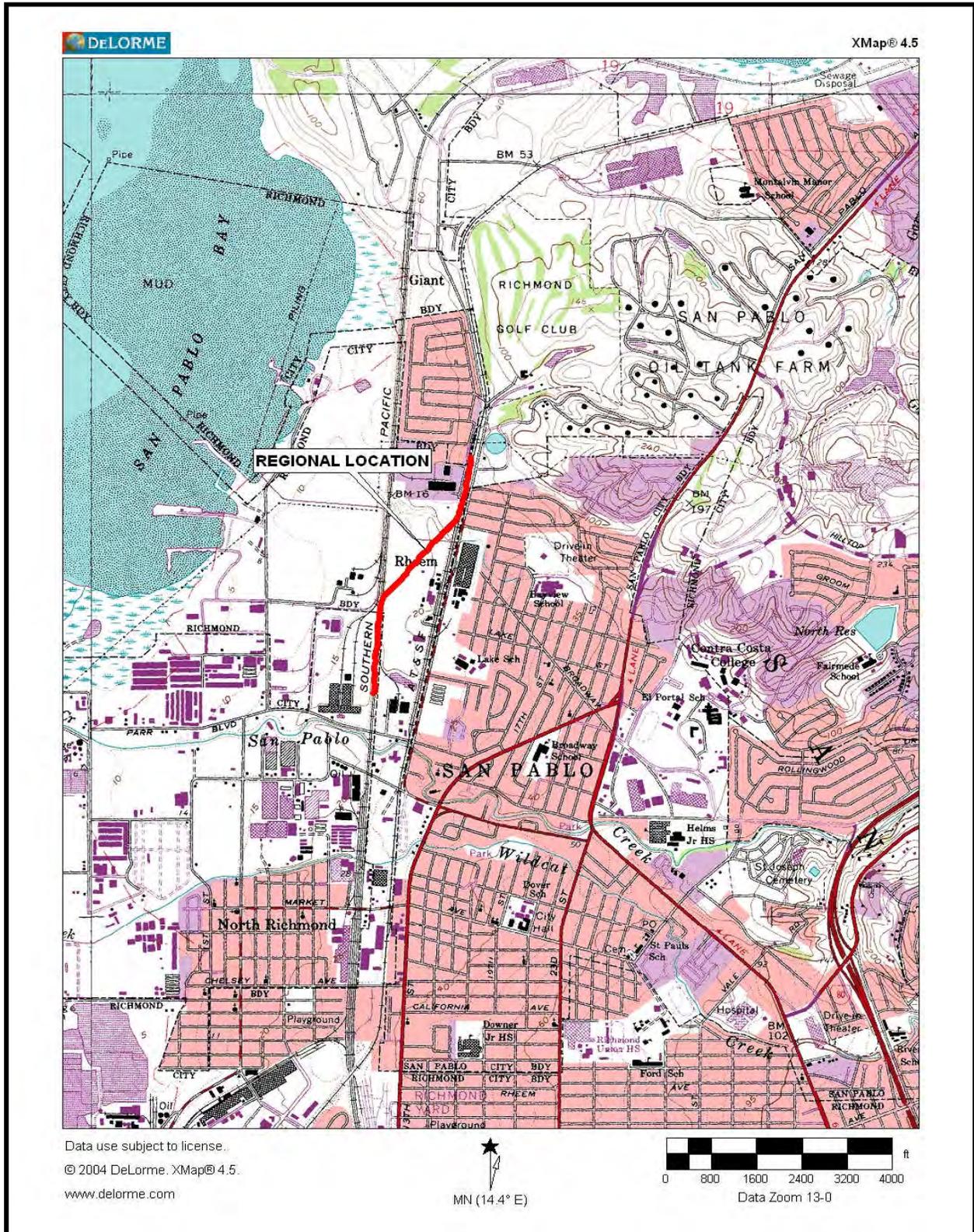


Figure 2 - Site Location Map



2. Introduction

The proposed Richmond Rail Connector Project (Project) consists of construction of an at-grade connection track between the BNSF Railway Company's (BNSF) Stockton Subdivision and Union Pacific Railroad's (UPRR) Martinez Subdivision in the northern portion of the City of Richmond(Richmond). The proposed connector track is located within Richmond and an unincorporated portion of Contra Costa County, California. Refer to Figure 1 for Regional Location Map and Figure 2 for Site Location.

The proposed project consists of a single connector track and related signal improvements within an approximate 1.25 mile segment of track where the two railroad track systems parallel each other and are located approximately one-quarter mile apart. Refer to aerial view of the project shown on Figure 3 for an overview of the proposed improvements within this segment of track.

The proposed site of the Richmond Rail Connector is on the rail corridor that connects the Port of Oakland to all points east of the Port - Northern California, the Central Valley, Southern California and the nation. It encompasses the BNSF rail lines from the Port to Barstow, and the Union Pacific rail lines from the Port south to Mojave or northeast to Nevada.

The corridor also serves as a major passenger corridor. Existing AMTRAK passenger service includes the Capitol Corridor and the San Joaquin Corridor route. The Capitol Corridor provides intercity rail service to eight Northern California counties. It had 1.7 million passengers in 2008 and is the third busiest Amtrak-operated route in the nation with 32 daily trains. The San Joaquin intercity passenger service operates between Bakersfield, Oakland and Sacramento and has the fifth highest ridership of any Amtrak service in the country. The current operating schedule includes eight daily intercity Amtrak trains. In addition, Amtrak runs four long-distance Amtrak passenger trains over the project alignment. In total, 44 passenger trains use this corridor.

The primary purpose of this project is to install an at-grade rail connection that allows BNSF trains to access UPRR's Martinez Subdivision north of Richmond rather than travel through the heart of downtown Richmond. Currently, BNSF trains have to travel through downtown Richmond to reach the Port of Oakland because there is no connector to the UPRR tracks north of Richmond. The UPRR tracks provide a more direct route to the Port. The BNSF and UPRR track alignments through Richmond are shown on Figure 3. The project would benefit the residents of Richmond by reducing traffic delays due to slow moving trains at at-grade crossings; it would reduce air emissions; and it would reduce noise from train air horns and warning signals at grade crossings. In addition, it would reduce the need for BNSF trains to use tracks north of Richmond on the Martinez Subdivision, freeing up capacity and reducing conflicts for both UPRR and passenger trains.

The need for this project is based on the following impacts imposed on the City of Richmond. For the past several years, BNSF voluntarily ran its intermodal freight trains serving the Port of Oakland on the UPRR track between Sacramento and Stege to avoid BNSF's own circuitous route through the center of Richmond. In May 2008, a Surface Transportation Board (STB) ruling stated that BNSF does not have the authority to operate its intermodal trains on this UP route. The STB ruling required BNSF

intermodal trains to travel through the center of Richmond accessing UP's Martinez Subdivision south of Richmond at Stege.

Trains using BNSF tracks through Richmond must travel a low maximum train speeds that often resulted in auto traffic blockages for extended periods of time at several closely-spaced grade crossings within Richmond. Additionally, BNSF trains accessing the Martinez Subdivision at Stege are slow and cumbersome and impact Capital Corridor and San Joaquin passenger and UP freight trains.

By substantially reducing the number of slow-moving intermodal trains in the center of the City, a connector would also relieve traffic congestion at nine grade crossings in downtown Richmond. Trains using BNSF tracks through Richmond must travel at low train speeds that often result in blocking traffic for extended periods of time at nine closely-spaced grade crossings within Richmond. The longer route and slow speeds increase the amount of time it takes BNSF trains to reach the Port of Oakland. The slow-moving BNSF trains accessing the Martinez Subdivision at Stege can also impact Capital Corridor and San Joaquin passenger and UPRR freight trains, reducing their on-time performance and reliability.

Both BNSF and UPRR freight rail operations currently serve the Port of Oakland. As a result of the decision by the STB, BNSF trains were directed to use its own tracks on the Stockton Subdivision from Stege east. The long intermodal freight trains were redirected through the core of the City of Richmond as shown on Figure 3. With installation of the proposed interconnect track as shown on Figure 2, the BNSF intermodal freight trains from the Port of Oakland will again be able to avoid the downtown Richmond track alignment and not conflict with UPRR and passenger rail operations on UPRR's Martinez Subdivision north of the proposed interconnect track, which is located just south of the Richmond Parkway. No other improvements are required to achieve the project purpose, which is to avoid intermodal freight train traffic through downtown Richmond. This discrete project fully accomplishes the project purpose.

The California Transportation Commission (CTC) concluded that this rail system improvement justified the expenditure of the funds and authorized the Richmond Rail Connector based on specific benefits cited in its approval, which included:

- *Reduces Richmond community impacts by relocating slow-moving intermodal trains*
- *Reduces emissions for idling vehicles at community grade crossings with the relocation of intermodal trains and supports the more efficient use of freight rail rather than trucks*
- *Improves efficiency and competitiveness by providing a more direct rail route to better serve Port of Oakland and Northern California*
- *Improves reliability and fluidity for the Martinez Sub freight and passenger rail users by providing a higher speed access for BNSF trains*
- *Enhances the value of the Tehachapi Corridor Rail Improvement project*
- *Improves Port of Oakland's competitiveness as first port of call*

The specific location for the Richmond Rail Connector was selected based on a review of the alignment of the two railroad tracks. Specifically, once the tracks cross Parr Boulevard, the whole alignment to the south is developed and would require displacement of existing development in order to connect the UPRR and BNSF tracks at the desired speed. Also, once north of Richmond Parkway there is no area available with sufficient length (~1.25 mile) to install the rail connector and maintain track speed, before

the rails begin to diverge. This is shown on the aerial photo provided in Figure 4. Both railroads conducted an evaluation of alternative locations and the project site located between the Richmond Parkway and Parr Boulevard is the only location available that met all of the connector site selection criteria.

The Purpose and intended use of this Natural Environmental Study - Minimal Impacts (NES-MI) is to evaluate the onsite biological resources and determine the potential for occurrence of common and special-status species, their habitat, and other regulated habitats such as Waters of the United States including Wetlands, Waters of the State, and Streambed/Riparian resources within Project's BSA. In addition this NES-MI identifies mitigation measures to reduce Project related impacts to resources.

Figure 3 - Site Aerial



3. Study Methods

Prior to beginning the field surveys, available information was reviewed from resources management plans and other relevant documents in order to determine locations and types of biological resources that have the potential to occur within and adjacent to the BSA. This investigation included a search of the California Department of Fish and Game's (CDFG) Natural Diversity Database (CNDDDB). The CNDDDB search was completed for the Richmond USGS – California, 7.5 Minute Series Topographic quadrangles.

Additionally, the following resources were used in identifying potential or known occurrences of sensitive biological resources within the proposed BSA

- *Contra Costa County General Plan*
- *East Contra Costa County HCP (August 2007)*
- *US Fish and Wildlife Service- Official List of Threatened and Endangered Species with the Potential to Occur in the Richmond USGS 7.5 Min Quadrangle*

The USGS topographic maps and Google Earth aerial imagery were also examined to determine the potential locations and types of Waters of the United States (Waters) including wetlands, and/or California Streambeds/Riparian (Streambed) resource areas.

3.1 Preliminary Jurisdictional Delineation

A preliminary jurisdictional delineation was conducted on all areas within the BSA that have the potential to be subject to the regulatory jurisdiction of the US Army Corps of Engineers under Section 404 of the Clean Water Act or the Rivers and Harbor Act of 1897; the State Water Quality Control Board under Section 401 of the Clean Water Act, and California Department of Fish and Game under Section 1600 of the Fish and Game Code; using the following criteria:

3.1.1 California Department of Fish and Game Section 1600

The CDFG takes jurisdiction over water flow areas, i.e., streams. These water flow areas are identified in the code as:

“...natural flow or bed, channel or bank of any river stream or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit or will use material from the streambeds...”

In order to quantify the acreages of “streambed”, the channel impacts were staked in the field. then mapped and acreages were calculated from the mapping.

3.1.2 U.S. Army Corps of Engineers “Waters of the United States”, excluding wetlands

The limits of “waters of the United States”, excluding wetland, are defined in 33 CFR 328.3(a) as those areas within the “ordinary high water mark” (OHWM). The OHWM is defined as:

“...that line on the shore established by the fluctuations of the water and indicated by physical characteristics such as clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.”

In order to quantify the acreages of “waters of the United States”, measurements of the channels channel impacts were staked in the field. then mapped and acreages were calculated from the mapping.

3.1.3 U.S. Army Corps of Engineers “Wetlands”

The conclusions of the Jurisdictional Delineation conducted in 2010 are based upon The U.S. Army Corps of Engineers' Wetland Delineation Manual, January 1987, Technical Report Y-87-1 (Manual). This Manual outlines a comprehensive approach based upon the presence of the following three parameters: wetland hydrology, hydrophytic vegetation, and hydric soils.

Wetland hydrology is present if the "sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation" (Manual). Hydrophytic vegetation is "the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (Manual). A positive hydrophytic vegetation indicator is present if the prevalence, characterized by the dominant species of a plant community or communities, of the vegetation is classified as hydrophytic vegetation. Dominant plant species are those that contribute more to the character of a plant community than other species present, as estimated or measured in terms of some ecological parameter (i.e., %cover, %density, etc.). Hydric soil is "soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation.”

Using this Manual, a wetland determination is made when under "normal circumstances" an area has all three parameters present. An area is not functioning under normal circumstances if a positive indicator for one of the three parameters could not be found due to effects of recent human activities. If a particular site has been recently disturbed by natural or human activities, it may not meet the criteria of "normal circumstances". If this occurs it would be classified as an "Atypical Situation" meaning one or more parameters are not reliable indicators.

To complete this Jurisdictional Wetland Delineation, all three parameters were investigated: soils, hydrology, and vegetation. The Manual describes inundation greater than one month during the growing season to be a "very long duration", therefore areas that were ponded or were saturated at the surface or within the root zone (usually 1-12 inches) in both May and August were considered to be saturated for a very long duration. The hydrophytic vegetation is characterized by plant species that have "demonstrated an ability to achieve maturity and reproduce in an environment where all or portions of the soil within the root zone become, periodically or continuously, saturated or inundated during the growing season." (Reed) The National List of Plant Species That Occur in Wetlands was used to determine the indicator status of the dominant species of a community. The wetland area was delineated by looking for vegetation boundaries in the field between communities dominated by Facultative Wetland Species – Obligate Wetland Species and those dominated by Facultative Upland - Upland species, and comparing the hydrological and soils data along the vegetation transition.

Pedestrian-based field surveys of the BSA were conducted by Lisa Patterson (formerly Lisa Tollstrup) on May 26, 2009, August 27, 2009, March 1, 2011 and August 31, 2011 in order to assess general and dominant vegetation types, vegetation community sizes, habitat types, and wildlife and plant species present within the communities. Disturbance characteristics and all other animal signs were recorded. Typical site photos are shown in Appendix D. The primary focus of this field investigation was to determine the presence of any sensitive biological resources on the project site; and to determine the extent of jurisdictional “waters of the United States” under Section 404 of the Clean Water Act, including wetlands, and CDFG “Streambed” under Section 1600 of the CDFG Code. The following discussion outlines the specific criteria for the three types of jurisdictional areas: streambed, waters, and wetlands.

3.2 Habitat Assessment

The BSA was also assessed in the field for the potential to support special-status plant and animal species based on habitat suitability comparisons with reported occupied habitats. The following potential for occurrences definitions were utilized to assess the Project-related effects to species with the Project's footprint. Potential for occurrence designations were derived from Caltrans' standard environmental reference (Caltrans 2005):

Absent [A] - Species distribution is restricted by substantive habitat requirements, which do not occur or are negligible within the Project's physical disturbance footprint, and no further survey or study is necessary to determine the likely presence or absence of this species.

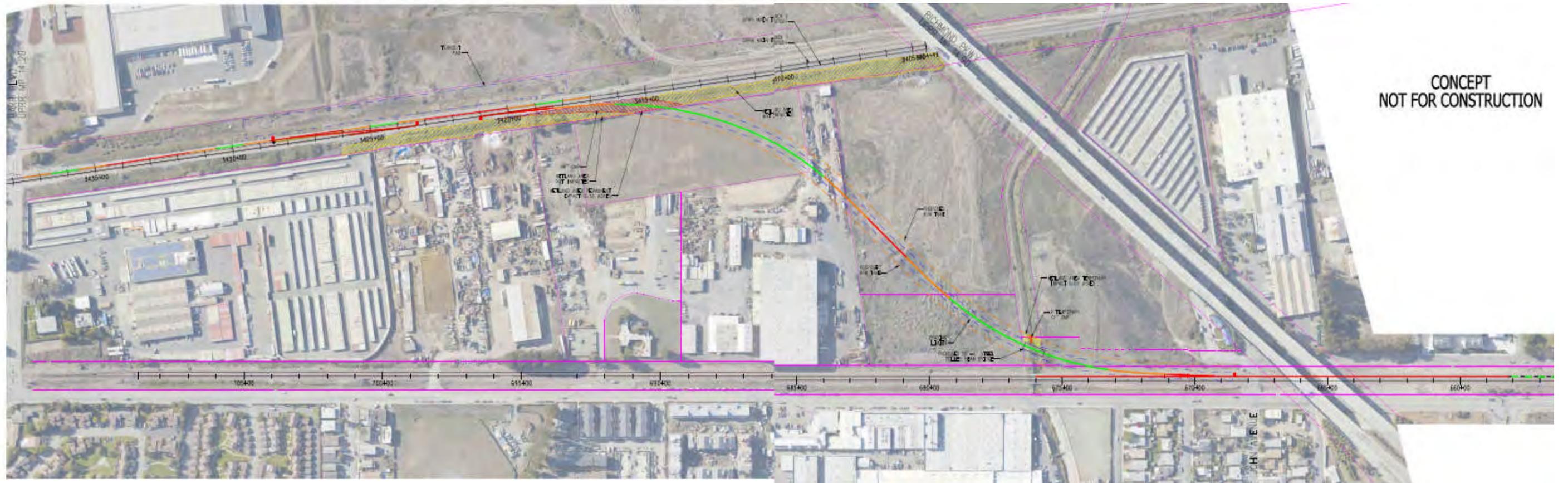
Habitat Present [HP] - Species distribution is restricted by substantive habitat requirements, which occur within the Project's physical disturbance footprint, and further survey or study may be necessary to determine the likely presence or absence of this species.

Present [P] - Species or species sign were observed within the Project's physical disturbance footprint.

Critical Habitat [CH] - The Project's footprint is located within a designated critical habitat unit.

No focused surveys were warranted for this site.

Figure 4 - Site Conceptual Plans



4. Environmental Setting

Contra Costa County is located on the eastern shoreline of the San Francisco-San Pablo Bay area, and south of the Suisun Bay and the Sacramento-San Joaquin River delta. Mount Diablo is situated near the center of the County at an elevation of 3,849 feet, overlooking the coastline to the west, the central valley and Sierra Nevada to the east, the winding river delta to the north, and the Santa Cruz Mountains to the south. The climate and environment of the County are typical of the coastal California regions, characterized by temperate summers nearing 90°F (degrees Fahrenheit) and cool, wet winters that dip to near freezing temperature. Average annual precipitation in the County is between 16 and 24 inches.

The BSA consists of an approximately 80-foot wide, .75-mile long proposed railway right-of-way corridor and two 0.25-mile long BNSF and UPRR railway segments at either end, located west of the intersection of Giant Road and the onramp of Richmond Parkway. The proposed alignment traverses southwest-northeast through mostly open fields near a mix of residential, light industrial, and commercial buildings. The ground surface is highly disturbed and has been recently disked. The terrain is relatively level, with elevations ranging between 15 to 25 feet above mean sea level. The existing railroad tracks at either end are located several feet higher than the rest of the BSA. Vegetation observed included foxtails (*Hordium sp.*), tumbleweeds (*Salsola iberica*), wild berries (*Ribes sp.*), dandelions (*Taraxacum officinale*), willows (*salix sp.*), shrubs (*Rhus trilobata*), and non-native grasses (*Bromus sp.*), with denser growth near the UPRR railroad track and within a drainage near the middle the BSA. Soils are made up of fine sand with silt and clays and some large rocks.

Annual Climate

Richmond is characterized by a Mediterranean climate. The climate is slightly warmer than the coastal areas of San Francisco, the Peninsula, and Marin County; it is however more temperate than areas further inland. The average highs range from 57 °F (14 °C) to 73 °F (23 °C) and the lows between 43 °F (6 °C) to 56 °F (13 °C) year round, and September is, on average, the warmest month. January is on average the coldest month.

The rainy season begins in late October and ends in April with some showers in May. Most of the rain occurs during stronger storms which occur between November and March and drop 3.3 to 4.91 inches (125 mm) of rain per month. January and February are the rainiest months.

Like most of the Bay Area, Richmond is made up of several microclimates. Southern parts of the city and the ridges receive more fog than northern areas. Summer temperatures are higher in inland areas, where the moderating influence of San Francisco Bay is lessened. The average wind speed is 6 to 9 miles per hour with stronger winds from March through August; the strongest winds are in June.

Soils and Topography

County general soils map (Soil Conservation Service 1977) identifies 1 soil association (distinctive patterns of soils in defined proportions) on the site. Soils are made up of fine sand with silt, loam, and clays and some large rocks formed from alluvial, sedimentary, and meta-sedimentary sources and have been formed in concert with the complex geologic history of the area. Many areas on the lower terraces

have been urbanized and/or altered by existing and past industrial practices. The Project Site has been filled. The property immediately to the east of the unnamed culvert crossing is a capped land fill, and the property to the north of Rheem Creek has been filled within the past ten years. Therefore, little native soils occur or are exposed on the site.

4.1. Description of the Existing Biological and Physical Conditions

The vast majority of the alignment is disturbed and characterized by common disturbance oriented species. There are two channels (Rheem Creek and an unnamed channel) where riparian and wetlands habitats occur within the Project alignment. See Figure 4 - Project Design for channel locations. The following is a discussion of the general biological characteristics associated with the proposed right-of-way.

4.1.1 Vegetation Communities:

Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. The community is characterized by storksbill (*Erodium cicutarium*), foxtail chess (*Bromus madritensis*), wild oats (*Avena barbata*), ripgut brome grass (*Bromus diandris*), and foxtail fescue (*Vulpia myuros*). Other species occurring in this community are short-pod mustard (*Brassica geniculata*), barley (*Hordium vulgare*), *Amsinkia sp.*, and star thistle (*Centaurea melitensis*)

Due to the chronic disturbances as well as a recent burn within the proposed alignment, this area does not support a diverse fauna. The most common animal species observed on the site were dogs (*Canis lupus familiaris*) and beachy ground squirrels (*Otospermophilus beecheyi*). Other common species include western meadowlark (*Sturnella magna*), cottontail rabbits (*Sylvalegus audobonii*), and mourning doves (*Zenaida macroura*).

Wetlands in Rheem Creek

Bulrush and cattails have the potential to be temporarily impacted within the Project's BSA. They are typically dominated by erect, rooted, herbaceous hydrophytic plant species adapted to growing in conditions of prolonged inundation. Common plant species present in this wetland type include cattails (*Typha* spp.) and Wild-berry (*Rubus* sp.) This seasonally flooded wetlands are freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall until the first substantial rainfall. The vegetation is composed of wetland generalists, such as hyssop loosestrife (*Lythrum hyssopifolia*), cocklebur (*Xanthium* spp.), and Italian ryegrass (*Lolium multiflorum*) that typically occur in frequently disturbed sites, such as along streams.

Riparian/Streambed in unnamed channel

This channel is characterized as a highly disturbed drainage ditch that has spotty areas of Wild-berry (*Rubus* sp.) and willow trees (*Salix* sp.), and then other patches of non-native grasses and little or no vegetation. Approximately 0.32 acres of this channel will be permanently filled by the proposed Project. Additionally 0.25 acres will be temporarily impacted by the construction of the crossing.

4.1.2 Disturbances

Typically the level of disturbance with the connector ROW is severe. The majority of the adjacent areas along the proposed alignment ranges from undisturbed native habitat to complete urbanization.

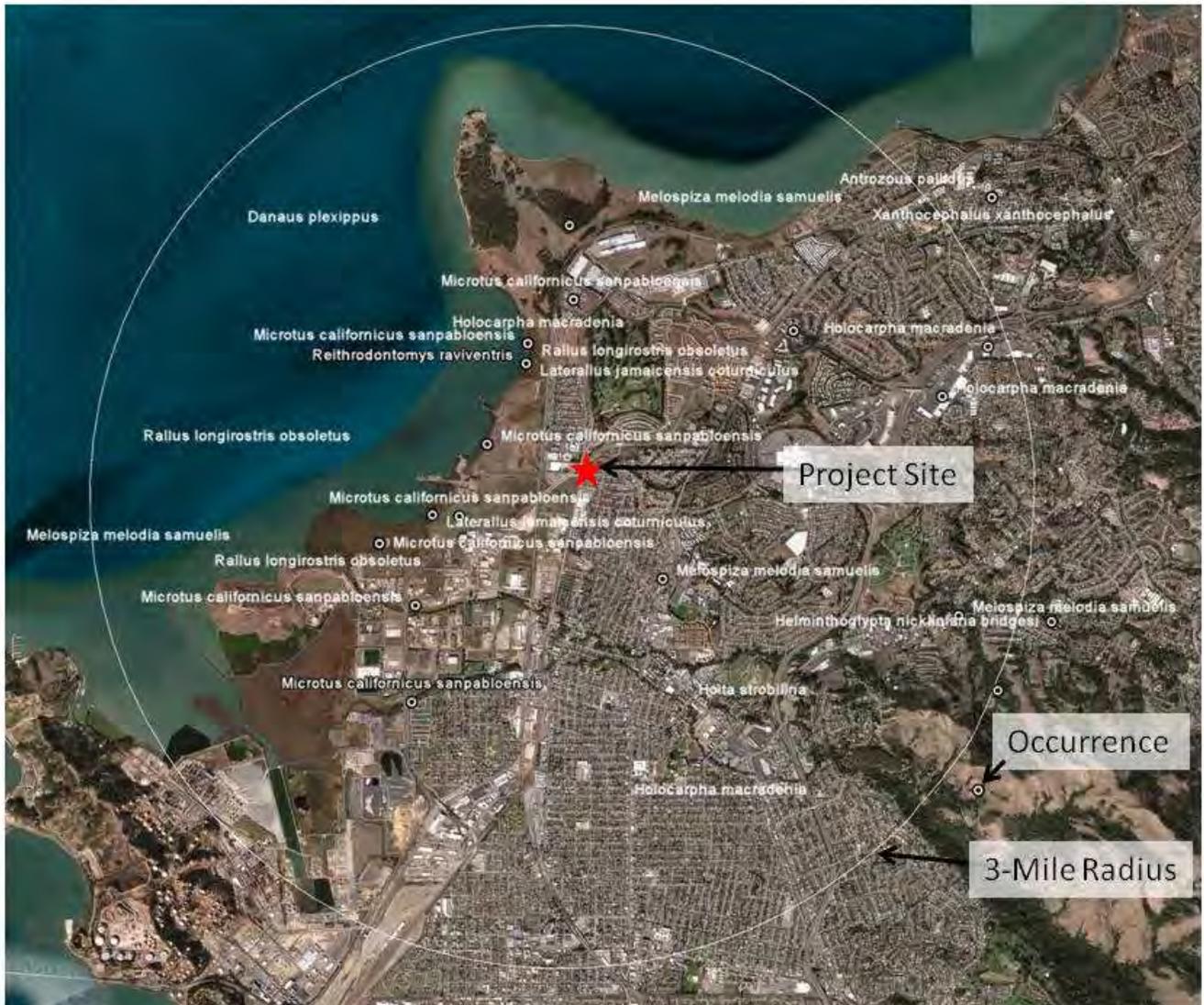
4.1.3 Jurisdictional Determination

The result of the jurisdictional determination is that there are two features on the site that would be subject to regulatory jurisdiction by the US Army Corps of Engineers under Section 404 of the Clean Water Act or the Rivers and Harbor Act of 1897; the State Water Quality Control Board under Section 401 of the Clean Water Act, and California Department of Fish and Game under Section 1600 of the Fish and Game Code. These features are the Rheem Creek channel which traverses the site from east to west, and an unnamed drainage feature that runs parallel to the UPRR tracks on the east side. These features are depicted in Figure 4.

The proposed project would result in the temporary discharge of fill into 0.02 acre of the Rheem Creek channel for a temporary pipe culvert access crossing. The Rheem Creek crossing areas is characterized by wetland plant species, wetland hydrology, and wetland soils. Therefore, this feature meets the criteria for wetlands, and is regulated as such by the above referenced resource agencies.

The project would also result in the permanent fill of 0.32 acre, and temporary fill of the unnamed drainage channel for construction of a pipe culvert railroad crossing. This channel is characterized by hydrophytic vegetation using the facultative neutral test. However there are no hydric soils or wetland hydrology associated with this site. Therefore, this channel is characterized as a Waters of the US, and a Streambed; and is subject to regulation by the above referenced regulatory agencies as such.

Figure 5 - CNDDDB Occurrences Within a 3-Mile Radius of the Site



4.2. Regional Species and Habitats of Concern

California Department of Fish and Game's CNDDDB for the Richmond USGS 7.5 Minute Quadrangle, and surrounding areas was searched as well as the U.S. Fish and Wildlife Service's Official List of Threatened and Endangered Species with the potential to occur the Richmond USGS 7.5 Minute Quadrangle. The following is a discussion of the species listed by the databases as occurring within Contra Costa County. Note the Species on the U.S. Fish and Wildlife Service's list are in bolded text.

**SPECIAL STATUS PLANT AND ANIMAL SPECIES KNOWN TO OCCUR
OR POTENTIALLY OCCUR ALONG THE BNSF PROJECT ALIGNMENT**

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Acipenser medirostris</i>	green sturgeon	None / Species of Concern	Spawns at temperatures of 8-14 Celsius preferring large cobble substrate but can use anywhere from clean sand to bedrock.	No suitable habitat occurs within the proposed project BSA. Thus no impacts can occur.
<i>Agelaius tricolor</i>	tricolor blackbird	None / Species of Concern	A colonial breeder that requires wetlands including a protected nesting substrate and insect prey within a couple of miles of the nesting site.	No suitable habitat occurs within the proposed project BSA. Thus no impacts can occur.
<i>Ambystoma californiense</i>	California tiger salamander	Endangered / None	This species utilizes temporary rain pools and permanent waters of the grasslands and open woodlands of low hills and valleys.	Suitable habitat is most likely lacking in the Planning Area for this species as a result of the intensive disturbances and urban uses. There are no vernal pools within the project BSA. Therefore, the proposed connector track project will not effect this species.
<i>Amphispiza belli belli</i>	Bell's sage sparrow	None / Species of Concern	Nests in dense stands of chemise in chaparral.	No suitable habitat occurs within the proposed project BSA. Thus no impacts can occur.
<i>Amsinkia grandiflora</i>	Large-flowered fiddleneck	Endangered/ Endangered	Occurs on valley and foothill grasslands, and in open oak woodlands on light soils	No suitable habitat occurs within the project area of BSA. With the exception of wetlands areas, the area of potential effect is highly disturbed. Additionally, this species was not observed during any of the field surveys; therefore, the probability of this species occurring within the BSA is very small.
<i>Anthicus antiochensis</i>	Antioch Dunes anthicid beetle	None / None	Known only from the Antioch Dunes.	The BSA does not include the Antioch Dunes, therefore, no suitable habitat occurs within the proposed connector track BSA.
<i>Anthicus sacramento</i>	Sacramento anthicid beetle	None / None	Restricted to sand dune areas.	The BSA does not include the Antioch Dunes, therefore, no suitable habitat occurs within the proposed connector track BSA.
<i>Anniella pulchra pulchra</i>	silvery legless lizard	None / Species of Concern	Prefers sandy or loose loamy soils under sparse vegetation with high moisture content.	No suitable habitat occurs within the proposed connector track BSA.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Apodemia mormo langei</i>	Lange's metalmark	Endangered/ None	Occurs in the stabilized dunes along the San Joaquin River. It is endemic to the Antioch Dunes	The BSA does not include the Antioch Dunes, therefore, no suitable habitat occurs within the proposed connector track BSA.
<i>Archoplites interruptus</i>	Sacramento Perch	Species of Concern/ None	Warm-water habitat in the San Joaquin River	No suitable habitat occurs in the proposed connector track project BSA.
<i>Arctostaphylos auriculata</i>	Mt. Diablo Manzanita	None/None	Chaparral	No suitable habitat occurs within the BSA. Further, this species was not observed with the BSA during any of the field surveys.
<i>Arctostaphylos auriculata</i>	Pallid Manzanita	Threatened/None	Chaparral	No suitable habitat occurs within the BSA. Further, this species was not observed with the BSA during any of the field surveys.
<i>Arclea herodia</i>	Great Blue Heron	None/Species of Concern	Common near the shores of open water and in wetlands over most of North and Central America as well as the West Indies and the Galápagos Islands. It is a rare vagrant to Europe, with records from Spain, the Azores and England	This species was observed within the BSA.
<i>Asio flammeus</i>	Short-eared owl	None/None	This species hunts in open grasslands, dunes, fresh and saltwater marshes and other open country. The species nests on the ground in a grass-lined depression that is often concealed in weeds or beneath shrubs. The species typically hunts for small mammals during the late afternoon onwards through the night.	No suitable habitat occurs within the proposed project BSA. Thus no impacts can occur.
<i>Aster lentus</i>	Suisun Marsh aster	None / None	This perennial, herbaceous member of the sunflower family occurs in brackish and salt marsh habitats of the eastern Bay Area. The plants are characterized by white to purple ray flowers.	No suitable habitat occurs within the proposed connector track BSA.
<i>Astragalus tener</i> var. <i>tener</i>	Alkali milk vetch	None / None	Alkali playa in valley and foothill grassland and in vernal pools.	According to CNDDB, this species may have been extirpated from the BSA.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Athene cunicularia</i>	burrowing owl	Species of Concern / None	Inhabits open fields and along berms where ground squirrel burrows occur.	Burrowing owl was not observed during any of the field surveys. Further, no sign of historical burrowing owl use was observed. Therefore the potential for this species to occur within BSA of this project is low.
<i>Atriplex joaquiniana</i>	San Joaquin Saltbush	Species of Concern / None	Found in chenopod scrub, alkali meadow, valley and foothill grassland.	No suitable habitat occurs within the proposed connector track BSA.
<i>Blepharizonia plumosa</i> ssp. <i>Plumose</i>	big tarplant	None / None	Grows in valley grassland and disturbed grassland habitats with dry soils. Blooms July to October.	This species is not known to occur in the vicinity of the proposed project. There is, however suitable habitat adjacent to the area BSA. The likelihood of this species being impacted by this project is low.
<i>Branchinecta mesovallensis</i>	Conservancy fairy shrimp	Species of Concern / None	This species is endemic to grasslands of the northern 2/3 of the central valley and is found in large, turbid pools.	No suitable habitat occurs within the proposed connector track BSA.
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	Threatened / None	Found in vernal pools and small pond habitat.	No suitable habitat occurs within the proposed connector track BSA.
<i>Buteo regalis</i>	ferruginous hawk	None / Species of Concern	Inhabits open grasslands, sage brush flats, desert scrub low foothills surrounding valleys and fringes of pinyon-juniper habitats.	There are roosting and nesting sites adjacent to the proposed project. However, there is little to no foraging habitat that will be affected by the proposed project. Therefore, the proposed connector track will not adversely effect this species.
<i>Buteo swainsoni</i>	Swainson's hawk	Partners in Flight Priority Bird Species / Threatened	Typical habitat of the Swainson's hawk is open desert, sparse shrub lands, grassland, or cropland containing scattered, large trees or small groves. In California's Central Valley, the nests are typically at the edge of a narrow band of riparian vegetation, in isolated oak woodland, and in lone trees, roadside trees, or farmyard trees, as well as in adjacent urban residential areas (England et al. 1989).	There are roosting and nesting sites adjacent to the proposed project, However, there is little to no foraging habitat that will be affected by the proposed project. Therefore, the proposed connector track will not adversely effect this species.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Calochortus pulchellus</i>	Mt Diablo Fairy lantern	None/None	Chaparral, Valley Grassland, Foothill Woodland.	This species was not observed during any of the field surveys. Further, all known localities are south of the highway 4. There are none in proximity to the BSA. Therefore, the probability of this species occurring within the BSA is low.
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	Threatened/Species of Concern	The western snowy plover, in general, nests , feeds , and takes cover on sandy or gravelly beaches along the coast, on estuarine salt ponds , alkali lakes, and at the Salton Sea. On the Pacific coast, it nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat , levees and flats at salt-evaporation ponds. In California, most of the breeding activity occurs on dune-backed beaches, barrier beaches, and salt evaporation ponds and it infrequently occurs on bluff-backed beaches.	No suitable habitat occurs within the proposed connector track BSA.
<i>Circus cyaneus</i>	northern harrier	None / Species of Concern	This species inhabits areas of tall, dense grasses, moist or dry shrubs, and the edges of row crops for nesting, cover, and feeding. Common food items are voles, frogs, small reptiles, crustaceans, and insects. Nests are built on the ground with shrubby vegetation.	This species was not observed during any of the field surveys. These birds could nest in grasslands or adjacent to marshes associated with the Project alignment. Although it is unlikely the proposed project will effect this species, construction staging areas should be checked prior to construction to insure no nests are disturbed.
<i>Clemmys marmorata</i>	western pond turtle	Species of Concern / Species of Concern	Inhabits fresh or brackish permanent or intermittent water bodies such as creeks and ponds.	No suitable habitat occurs within the proposed connector track BSA.
<i>Coelus gracillis</i>	San Joaquin dune beetle	Species of Concern/None	The species occurs in the dune habitat.	No suitable habitat occurs within the proposed connector track BSA.
<i>Cordylanthus mollis ssp mollis</i>	Soft Bird's-beak	Endangered/ Rare	Occurs in coastal marshes within the tidal zone	There is suitable habitat for this species within the saltwater marsh tidal zone. None were observed during the field surveys. Probability of occurrence is low to moderate.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Dowlingia pusilla</i>	Dwarf downingia	None/None	This annual member of the bellflower family Campanulaceae occurs rarely in vernal pools and roadside wetlands or ditches. Roadside ditches occur within and immediately adjacent to the project area. The flowers are low-growing and are blue to white with two small yellow spots near the throat.	No suitable habitat occurs within the proposed connector track BSA.
<i>Efferia antiochi</i>	Antioch efferian robberfly	Species of Concern/None	Known only from the Antioch Dunes and Fresno	No suitable habitat occurs within the BSA. Therefore, the proposed project will not impact this species.
<i>Elanus leucurus</i>	White-tailed Kite	Species of Concern/None	This species inhabits areas of tall, dense grasses, shrubs, farmlands and open country. The species mainly feeds on rodents and insects. Nests are typically built in tall trees near a water source. These birds forage in grasslands and grain fields adjacent to BNSF Alignment.	No suitable habitat occurs within the proposed connector track BSA.
<i>Empidonax trailii</i>	little willow flycatcher	None / Endangered	Found in extensive thickets of low, dense willows on the edge of wet meadows, ponds or backwaters.	No suitable habitat occurs within the proposed connector track BSA.
<i>Eriogonum Truncatum</i>	Mt. Diablo Buckwheat	None/None	The species is only known to live on Mount Diablo in Contra Costa County, California.	The proposed project does not occur within close proximity to the only known location. Further, this species was not observed during any of the field surveys, and the probability of occurrence is zero.
<i>Erodium macrophyllum</i>	Round-leafed Fillaree	None/None	This annual, herbaceous member of the geranium family (Geraniaceae) is known to occur in woodlands and grasslands, often on clay. The species is characterized by having undivided, basal, shallowly lobed leaves with white petals that are sometimes tinged red to purple.	The species was historically known from the Antioch Dunes, approximately 2.3 miles east of the project area. There is no suitable dune habitat within the proposed project BSA
<i>Erysimum capitatum ssp angustatum</i>	Contra Costa Wallflower	Endangered/ Endangered	Occurs on stabilized dunes near Antioch along the San Joaquin River.	No suitable habitat occurs within the project area. Therefore, the proposed project will not impact this species.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Eschscholzia rhombipetala</i>	Diamond-petaled California Poppy	Species of Concern/None	This species occurs very rarely on alkaline clay soils in open grasslands and fallow fields and is an annual member of the poppy family (Papaveraceae). The species is characterized by having a barrel shaped receptacle with no rim and small yellow petals (less than 1.5 centimeter). This species was presumed extinct until being rediscovered in 1992 on the Carrizo Plain. The occurrence from the Antioch Dunes, 2.3 miles east of the Project area, is considered extirpated.	There is no suitable habitat within the proposed project BSA.
<i>Eucyclogobius newberryi</i>	Tidewater goby	Endangered/Species of Concern	Goby inhabits lagoons formed by streams running into the sea in brackish and cool water. The tidewater goby prefers salinities of less than 10 ppt. These fish also prefer sandy bottoms with depths of 20–100 cm, near emergent vegetation beds.	No suitable habitat occurs within the proposed connector track BSA.
<i>Eumpos perotis californicus</i>	greater western mastiff bat	Species of Concern / Species of Concern	Uncommon resident that typically uses crevices in cliffs, high buildings, trees and tunnels for roosting.	No suitable habitat occurs within the proposed connector track BSA.
<i>Eryngium racemosum</i>	delta button celery / coyote thistle	None / Endangered	Found on seasonally inundated clay based floodplains.	Possible extirpated from this study's focal area according to the CNDDB.
<i>Falco peregrinus anatum</i>	American peregrine falcon	Unknown code / Endangered	Breeds near wetlands, lakes, rivers or other water on high cliffs, bands, dunes, mounds and human-made structures.	No suitable habitat occurs within the proposed connector track BSA.
<i>Fritillaria liliaceae</i>	Fragrant fritillary	Species of Concern/None	Coastal Prairie, Valley Grassland, Northern Coastal Scrub, wetland-riparian.	The closest occurrence of this species to the proposed alignment is a literature point on the north side of the Delta. There are no known localities near the proposed BSA. Further, this species was not observed during any of the field surveys, and the probability of occurrence is very low.
<i>Fritillaria agrestis</i>	Stink bells	None/None	Occurs in valley and foothill grasslands, and oak woodlands on clay flats	No suitable habitat occurs within the project area. Therefore, the proposed project will not impact this species.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Geothlypis trichas sinoua</i>	Saltmarsh common yellowthroat	Species of Concern/None	This species occupies fresh and saltwater marshes with abundant vegetative cover, including bulrush, cattails and willows.	No suitable habitat occurs within the proposed connector track BSA.
<i>Hibiscus lasiocarpus</i>	California hibiscus	None/None	Occurs on freshwater riverbanks and low pest islands in sloughs.	This species was not observed during any of the field surveys, and the probability of occurrence is low.
<i>Idiostatus middlekaufi</i>	Middle Kauf's shield-back katydid	None/None	Known only from the Antioch Dunes and Fresno	No suitable habitat occurs within the project area. Therefore, the proposed project will not impact this species.
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	Threatened/Endangered	Santa Cruz Tarweed inhabits terraced locations of valley or prairie grasslands with underlying sandy clay soils. Its characteristic habitat, the California coastal prairie ecosystem.	No suitable habitat occurs within the project area. Therefore, the proposed project will not impact this species.
<i>Hypomesus transpacificus</i>	delta smelt	Threatened / Threatened	Most often found at salinities less than 2 parts per trillion in the Sacramento and San Joaquin Delta.	No suitable habitat occurs within the proposed connector track BSA.
<i>Lampetra ayresi</i>	river lamprey	None / Species of Concern	Adults need clean, gravelly riffles. Amocoetes need sandy backwaters or stream edges with good water quality and temperatures below 25 Celsius.	No suitable habitat occurs within the proposed connector track BSA.
<i>Lampetra hubbsi</i>	Kern brook lamprey	None/None	Open fresh water rivers.	No suitable habitat occurs within the proposed connector track BSA.
<i>Lampetra tridentata</i>	Pacific lamprey	None/None	Open brackish waters.	No suitable habitat occurs within the proposed connector track BSA.
<i>Laterallus jamaicensis</i>	black rail	None / Threatened	Found in salt, brackish and freshwater marshes at low elevations.	No suitable habitat occurs within the proposed connector track BSA.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	delta tule-pea	None / None	Usually found on marsh and slough edges in freshwater and brackish marshes. Distribution is mostly restricted to the Sacramento and San Joaquin River Delta.	No suitable habitat occurs within the proposed connector track BSA.
<i>Legenere limosa</i>	legenere	None / None	Found in vernal pools.	No suitable habitat occurs within the proposed connector track BSA.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Lepidurus packardi</i>	vernal pool tadpole shrimp	Endangered / None	Vernal Pool, small pond habitat	No suitable habitat occurs within the proposed connector track BSA.
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	None / Rare	Grows in muddy or silty soil formed through river deposition or erosion in freshwater and brackish marshes and riparian scrub.	No suitable habitat occurs within the proposed connector track BSA.
<i>Limosella subulata</i>	Delta Mudwort	None/None	This perennial, herbaceous member of the figwort family (Scrophulariaceae) occurs in saltwater marshes and along shorelines.	The species is known from the immediate Project vicinity along the shores and sloughs adjacent to New York Slough. Project will not impact this area
<i>Lytta molesta</i>	molestan blister beetle	None / None	Common in dry vernal pools.	No suitable habitat occurs within the proposed connector track BSA.
<i>Masticophis flagellum ruddocki</i>	San Joaquin whipsnake	None / Species of Concern	Found in San Joaquin Valley in open, dry valley grassland and saltbush scrub with little or no tree cover. Needs mammal burrows for refuge and oviposition sites.	No suitable habitat occurs within the proposed connector track BSA.
<i>Masticophis literalis euryzanthus</i>	Alameda whipsnake	None / Species of Concern	Alameda whipsnake has commonly been reported as having a more specific association with chaparral and scrub plant communities as the habitat where it is most commonly found.	No suitable habitat occurs within the proposed connector track BSA.
<i>Myotis ciliolabrum (subulatus)</i>	small-footed myotis bat	None / None	This species ranges across the western half of North America from British Columbia, Alberta, and Saskatchewan in Canada, throughout most of the United States west of the 100th Meridian, and into central Mexico. They occur in deserts, chaparral, riparian zones, and western coniferous forest; it is most common above pinon-juniper forest.	No suitable habitat occurs within the proposed connector track BSA.
<i>Myotis evotis</i>	long-eared myotis bat	None / None	Prefers coniferous forests but is found in all brush, woodland and forest habitat from sea level to 9000 feet. Nursery roosts are located in buildings, crevices, spaces under bark and snags. Caves are used primarily as night roosts.	No suitable habitat occurs within the proposed connector track BSA.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Myotis thysanodes</i>	fringed myotis bat	None / None	Prefers pinyon-juniper, valley and foothill hardwood and hardwood-conifer habitat but is found in a wide variety of habitats.	No suitable habitat occurs within the proposed connector track BSA.
<i>Myotis volans</i>	long-legged myotis bat	None / None	Trees are used as day roosts while caves and mines are used as night roosts.	No suitable habitat occurs within the proposed connector track BSA.
<i>Myotis yumanensis</i>	Yuma myotis bat	None / None	Found in open forests and woodlands with water bodies for foraging.	No suitable habitat occurs within the proposed connector track BSA.
<i>Neotoma fuscipes riparia</i>	San Joaquin Valley woodrat	Endangered / Species of Concern	Found in riparian areas with a mix of brush and trees. Nesting sites are located in trees, snags and logs.	This species was not observed during any of the field surveys, and the probability of occurrence is low.
<i>Oncorhynchus kisutch</i>	Central Valley steelhead	Endangered / Species of Concern	Coho spend approximately the first half of their life cycle rearing and feeding in streams and small freshwater tributaries. Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean.	No suitable habitat occurs within the proposed connector track BSA.
<i>Oncorhynchus mykiss</i>	Central Valley steelhead	Threatened / Species of Concern	Requires a minimum water depth of 18 cm for upstream migration. Water velocity above 3 to 4 meters per second impedes upstream movement.	No suitable habitat occurs within the proposed connector track BSA.
<i>Oncorhynchus tshawytscha</i>	winter-run chinook salmon	Candidate / Species of Concern	Open water river habitat.	No suitable habitat occurs within the proposed connector track BSA.
<i>Pelecanus occidentalis californicus</i>	California brown pelican	Endangered/Species of Concern	California brown pelicans can be found along the entire length of California, primarily along the coast and on offshore islands.	No suitable nesting, roosting or foraging habitat occurs within the proposed connector track BSA.
<i>Perognathus inornatus</i>	San Joaquin pocket mouse	None / None	Requires friable soils in grasslands and blue oak savannahs.	No suitable habitat occurs within the proposed connector track BSA.
<i>Phrynosoma coronatum frontale</i>	California horned lizard	None / Species of Concern	Most common along sandy washes with scattered low bushes. Needs abundant supply of ants and other insects.	No suitable habitat occurs within the proposed connector track BSA.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Plecotus townsendii townsenii</i>	pacific western big-eared bat	Species of Concern / Species of Concern	Found throughout California most abundantly in mesic habitats. Requires caves, mines, tunnels, buildings or other human made structures for roosting. Roosting sites the most limiting resource (Zeimer, et al. 1990).	No suitable habitat occurs within the proposed connector track BSA.
<i>Plegadis chihi</i>	white-faced flycatcher	None / Species of Concern	Nests in dense tule thickets in shallow freshwater marshes.	No suitable habitat occurs within the proposed connector track BSA.
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	Threatened / Species of Concern	Inhabits slow moving river sections and dead end sloughs. Requires flooded vegetation for spawning and for foraging for its young.	No suitable habitat occurs within the proposed connector track BSA.
<i>Rallus longirostris obsoletus</i>	California clapper rail	Endangered/Species of Concern	The California Clapper Rail forages at the upper end of , along the ecotone between mudflat and higher vegetated zones, and in tidal sloughs. Mussels, clams, arthropods, snails, worms and small fish are its preferred foods, which it retrieves by probing and scavenging the surface while walking. The bird will only forage on mudflats or very shallow water where there is taller plant material nearby to provide protection at high tide.	No suitable habitat occurs within the proposed connector track BSA.
<i>Rana aurora draytonii</i>	California red-legged frog	Threatened / Species of Concern	Requires dense shrubby or emergent riparian vegetation closely associated with deep, still and slow moving water. Requires 11 - 20 weeks of permanent water for larval development.	No suitable habitat occurs within the proposed connector track BSA.
<i>Rana boylei</i>	foothill yellow-legged frog	None / Species of Concern	Found in partly-shaded, shallow streams and riffles with rocky substrate in a variety of habitats. Needs some cobble-sized substrate for egg-laying and at least 15 weeks of water.	No suitable habitat occurs within the proposed connector track BSA.
<i>Reithrodontomys raviventris</i>	Salt marsh harvest mouse	Endangered/ Endangered	This species is known to occur in the salt marsh habitats adjacent to, and east of, Arcy Lane (near New York Slough)	No suitable habitat occurs within the proposed connector track BSA.
<i>Sagittaria sanfordii</i>	valley sagittaria	None / None	Grows in standing or slow moving freshwater ponds, marshes and ditches.	No suitable habitat occurs within the proposed connector track BSA.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Scaphiopus hammondi</i>	western spadefoot toad	None / DFG protected	This species utilizes temporary rain pools or slow moving permanent waters for breeding. Non-breeding habitat consists of open vegetation characterized by short grasses.	Suitable habitat is most likely lacking in the Planning Area for this species as a result of the intensive agricultural and urban uses. There are no vernal pools within the project impact areas. Therefore, the proposed connector track project will not effect this species.
<i>Speyeria callippe callippe</i>	Callippe silverspot butterfly	Endangered/None	This endangered subspecies occurs in only two grasslands spots in the San Francisco Bay Area, near Oakland and on San Bruno Mountain. Its native region is now extensively developed and heavily populated, leaving the butterfly endangered. The larvae eat one species of plant only, the yellow pansy, or "Johnny Jump-up" (<i>Viola pedunculata</i>). The female adults lay their eggs on the plant or nearby, and the larvae overwinter nearby in a silk pouch. In the spring they feed on the yellow pansy, molt four times, then pupate for two weeks in a nest of leaves which they glue together with silk.	The project site is outside the know locations for this species. Further, no suitable habitat occurs within the proposed connector track BSA.
<i>Spirinchus thaleichthys</i>	longfin smelt		Open water habitat	No suitable habitat occurs within the proposed connector track BSA.
<i>Sternula antillarum</i>	California least tern	Endangered/	This species can be found on lakes, rivers and estuaries, however it is strictly on the coast in some regions in California.	No suitable habitat occurs within the proposed connector track BSA.

Scientific Name	Common Name	Status Federal/State	Typical Habitat	Occurrence Potential
<i>Suaeda californica</i>	California sea blite		Suaeda californica, grows in a restricted area within the intertidal zone of salt marshes. It is threatened by anything that alters the hydrology of the area, such as changes in sedimentation, including dredging, erosion, and recreation. It requires a porous substrate high in nitrogen, which may come from decaying plant matter and bird droppings. Invasive plant species such as introduced ice plant threaten remaining occurrences and reintroductions.	No suitable habitat occurs within the proposed connector track BSA.
<i>Tuctoria greenei</i>	Greene's tuctoria	Endangered / Rare	Grows in vernal pools and valley and foothill grasslands.	According to the CNDDDB it has been extirpated from this study's focal area.

Bold Indicates the species occurs on the U.S. Fish and Wildlife Service's List

4.3 Vegetation

The vast majority of the alignment traverses routinely disturbed fields. As such the vegetation occurring is characterized by common disturbance-oriented species. The exception to this occurs in the two drainage features on the site. Riparian and wetland habitats occur within these features. The following are the vegetation community types within the Project's BSA.

4.3.1 Urban/ Disturbed

This community occurs at the top of the slopes and in disturbed areas. The community is characterized by storksbill (*Erodium cicutarium*), foxtail chess (*Bromus madritensis*), wild oats (*Avena barbata*), riggut brome grass (*Bromus diandris*), and foxtail fescue (*Vulpia myuros*). Other species occurring in this community are short-pod mustard (*Brassica geniculata*), barley (*Hordium vulgare*), *Amsinkia sp.*, and star thistle (*Centaurea melitensis*)

4.3.2 Emergent Wetlands in Rheem Creek

Bulrush and cattail stands have the potential to be impacted within the proposed area of potential effect. They are typically dominated by erect, rooted, herbaceous hydrophytic plant species adapted to growing in conditions of prolonged inundation. Common plant species present in this wetland type include willow trees (*Salix sp.*), cattails (*Typha spp.*) and Wild-berry (*Rubus sp.*) Seasonally flooded wetlands are freshwater wetlands that support ponded or saturated soil conditions during winter and spring and are dry through the summer and fall until the first substantial rainfall. The vegetation is composed of wetland generalists, such as hyssop loosestrife (*Lythrum hyssopifolia*), cocklebur (*Xanthium spp.*), and Italian ryegrass (*Lolium multiflorum*) that typically occur in frequently disturbed sites, such as along streams. Approximately 0.02 acre of this creek will be temporarily filled by the proposed Project.

4.3.3 Riparian/Streambed in unnamed channel parallels to the UPRR

This channel is characterized as a highly disturbed drainage ditch that has spotty areas of Wild-berry (*Rubus sp.*) and willow trees (*Salix sp.*), and then other patches of non-native grasses and little or no vegetation. Approximately 0.32 acres of this channel will be permanently filled and 0.20 acre will be temporarily filled by the proposed Project.

4.4 Animals

Due to the chronic disturbances, surrounding industrial uses, major arterial and highway road features, and adjacent construction, this area does not support a diverse fauna. The most common species observed on the site were dogs (*Canis lupus familiaris*) and beachy ground squirrels (*Otospermophilus beecheyi*). Other common species include western meadowlark (*Sturnella magna*), cottontail rabbits (*Sylvalegus audobonii*), and mourning doves (*Zenaida macroura*). A complete list of species observed on site is included as Appendix A

5. Project Impacts

The BNSF indicates the need for the acquisition of up to about 7.25 acres (consisting of an 80-foot right-of-way for the entire approximate 0.75 mile length of connection track). The entire acquired right of way will be disturbed during construction. The properties to be acquired include the previously disturbed industrial lands and the Rheem Creek crossing.

There will also be fill placed within the BNSF and UPRR existing right of way. Approximately 7.25 acres of fill will be added to the existing railroad high-fill. This acreage includes a turnout pad that will be constructed in order to construct the crossover train tracks within the UPRR alignment. See Figure 4 for construction features.

Table 2: CONSTRUCTION IMPACTS

Location (Mile Post)	Type of Impact	Acreage of Impacts
New Crossing over Rheem Creek.	Clear-span Bridge - no permanent impacts: Temporary culvert for access in order to construct track and bridge.	Temporary Impacts - 0.02 Acre
Unnamed channel culvert parallel to the UPRR	Fill Channel/Riparian Habitat Temporary Construction Impacts Permanent fill for culvert crossing	Permanent Impacts - 0.32 Acre Temporary Impacts - 0.15 Acre
Upland Fill	Fill to create the new railroad road bed and turnout pads. Acquired Lands BNSF Right of Way UPRR Right of Way including Pads	7.25 Acres 5 Acres 2.25 Acres
	Total Impacts	Acres

The proposed project will not effect any State or Federally listed species nor is will it adversely effect any designated critical habitat of any Federally listed species. Therefore the project poses "no effect" findings to listed species.

6. Mitigation Measures

Most of the project areas is characterized by disturbed ruderal fields and industrial areas. There are no sensitive biological habitats within these areas. Therefore, the only mitigation measure proposed for the entire site, is the avoidance of vegetation and ground disturbance during the nesting bird nesting season, February 15th to September 1st.

The Project proposes to mitigate the temporary impacts to wetlands in Rheem Creek by restoring the channel to pre-construction grade and re-vegetating the disturbed areas with cuttings from adjacent plants. The area will be weeded while the native vegetation becomes established.

It is not feasible due to right-of-way and hydrology constraints to create habitat on site. The Federal Rail Road Administration requires that railroads maintain the vegetation near the tracks and creating vegetated mitigation areas is not an option within these areas. Further any habitat that was created would have limited biological value due to the existing land uses and the proposed rail facility. Therefore, the unavoidable permanent impacts to 0.32 acres of the unnamed channel that parallels the UPRR tracks will be mitigated by the purchase of credits in an "in lieu" fee program or bank within the general area of the project site. Restoration or Enhancement credits are envisioned for this project.

7. Permits Required

It is anticipated that the project will be required to obtain several permits including, but not necessarily limited to: a Section 404 permit from the U.S. Army Corps of Engineers (Corps); a California Regional Water Quality Control Board (RWQCB) 401 Water Quality Certification; a California Department of Fish and Game (CDFG) Streambed Alteration Agreement (1601 or 1603 Agreement); a construction stormwater discharge permit – National Pollutant Discharge Elimination System (NPDES) through filing a Notice of Intent with the State Water Resources Control Board and compiling and implementing a Storm Water Pollution Prevention Plan (SWPPP), which is overseen by the local RWQCB.

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9. Appendix

APPENDIX A

SPECIES LIST

APPENDIX A

SPECIES LIST

PLANT SPECIES

Angiospermea: Dicotyledonae

Amarantheceae
Amaranthus sp.

Anacardiaceae
Toxicodendron diversilobum

Apiaceae
Cicuta douglasii

Asteraceae
Ambrosia acanthicarpa
Anthemis sp.
Centaurea melitensis
*Carduus pycnocephalus
Haploppus squarrosus
Heterotheca grandiflora
*Helminthotheca echioides
Nemizonia pugensis
Pluchea odorata
*Sonchus oleraceus
*Lactuca serriola
Xanthium strumarium

Boraginaceae
Amsinckia sp.

Brassicaceae

Flowering plants: Dicots

Amaranth Family
Pigweed

Sumac Family
Pacific poison-oak

Parsley Family
Western waterhemlock

Sunflower Family
Ann. Bur-sage
Mayweed
Star thistle
Italian thistle
Common Sunflower
Telegraph weed
Ox Tongue
Spikeweed

prickly tongue
Milkweed

Borage Family
Fiddleneck

Mustard Family

Richmond Rail Connector

Natural Environmental Study(Minimal Impact)

Brassica nigra
Lepidium latifolium
Raphanus sativus

Black mustard
pepperweed
radish

Chenopodiaceae
salsola tragus
*Bassia hyssopifolia

Goosefoot family
Russian thistle (Tumbleweed)

Cyperaceae
Scirpus acutus

Equisetaceae
Equisetum telmateria

Horse-tail Family
horsetail

Fabaceae
*Melilotus indicus
Lotus wrangelianus
*Vicia villosa

Yellow sweet clover
California Lotus

Geraneaceae
Erodium cicutarium
Geranium carolinianum

Geranium Family
Filaree

Malvaceae
*Lavatera cretica

Polygonaceae
Polygonum sp

Buckwheat Family
Smartweed

Rosaceae
*Rubus discolor

Salicaceae
Salix sp.

Angiospermae: Monocotyledonae

Cyperaceae
Carex sp

Juncaceae
Juncus sp.

Poaceae
*Avena fatua
Bromus rubens
Bromus tectorum
Bromus diandris
Vulpia myuros
*Hordeum marinum
*Lolium perenne
*Cortaderia selloana
Paspalum distichum

Typhaceae
Typha latifolia

Flowering Plants: Monocots

Sedge Family
Sedge

Juncus Family
Juncus

Grass Family
Oats
Red brome
Cheat grass
Ripgut
Fescue

ANIMAL SPECIES

Reptilia

Iguanidae
scloperous occidentalis

Aves

Anser
Branta canadensis

Carpodacus
Carpodacus mexicanis

Columbidae
Zenaida macroura

Corvidae
Corvus brachyrhynchos

Emberizidae
Melospiza melodia

Mimidae
Mimus polyglottos

Mammalia

Leporidae
Sylvilagus auduboni

Sciuridae
Spermophilus beecheyi

Canidae
Canis lupus familiaris
Vulpes vulpes

Reptiles

Iguanids
Western Fence Lizard

Birds

Geese
Canada Goose

Finches
House finch

Pigeons and doves
Mourning Dove

Crows and Jays
American Crow

Sparrow, Warblers, Tanangers
Song sparrow

Mockingbirds and Thrashers
Northern mockingbird

Mammals

Rabbits and hares

Squirrels, chipmunks
California ground squirrel

Foxes, wolves and dogs
dog
red fox

APPENDIX B
SITE PHOTOGRAPHS

Site Photograph #1 – Rheem Creek at Crossing



Site Photograph #2 – Unnamed Channel at Culvert Crossing



Site Photograph #2 – Typical upland view October 2011



Site Photograph #4 – Typical upland view December 2011



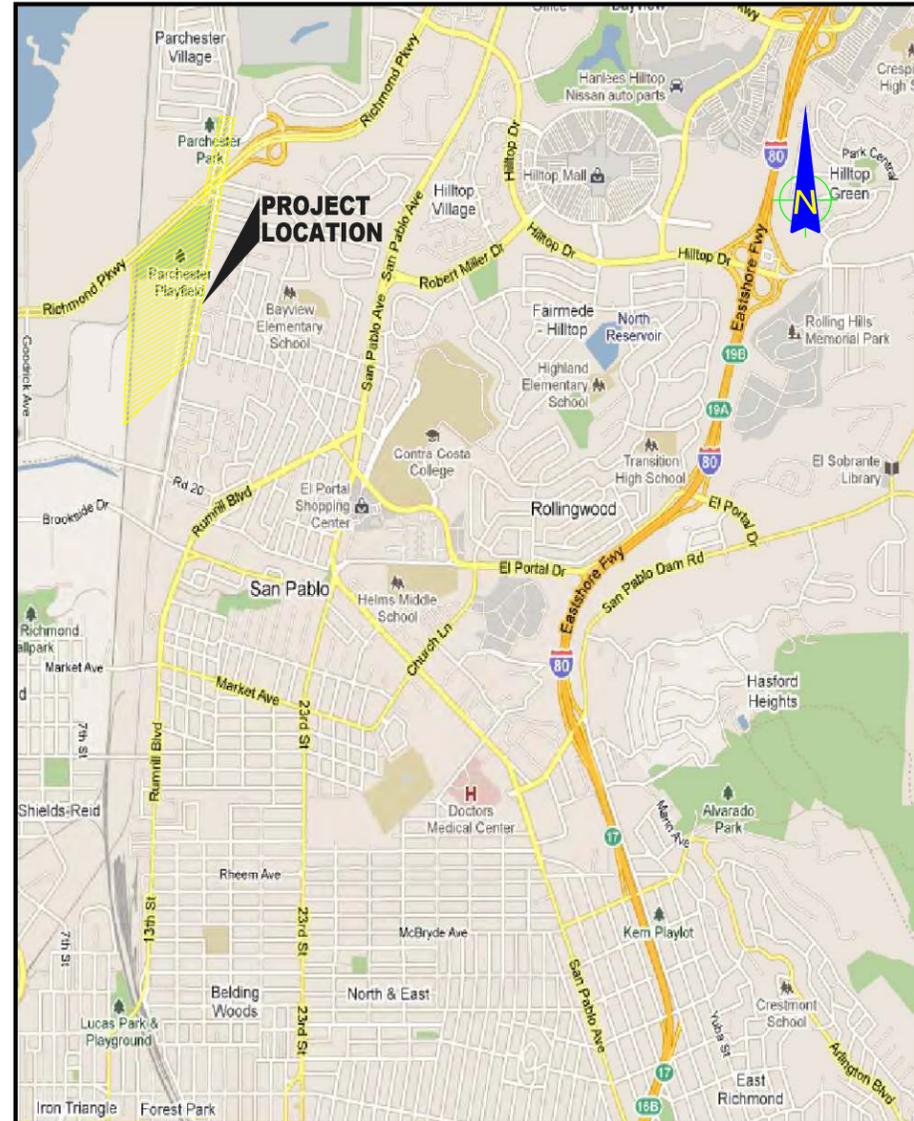
APPENDIX C

Construction Plans 60%



**UNION PACIFIC
RAILROAD**

RICHMOND RAIL CONNECTION



VICINITY MAP
NOT TO SCALE

**LINE SEGMENT 7200
STOCKTON SUBDIVISION
MP 1187.01 TO MP 1185.87**

60% SUBMITTAL

DATE: September 9, 2011



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10/29/12 AM
10/18/2011

PROJECT NUMBER	
COST ELEMENT	
LINE ITEM	
CONTRACT DESIGNATOR	
PHYSICAL ENTITY	
WORK ELEMENT	

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10/29/14 AM
10/18/2011

PROJECT NUMBER	0
COST ELEMENT	
LINE ITEM	
CONTRACT DESIGNATOR	
PHYSICAL ENTITY	
WORK ELEMENT	

DRAWING NUMBER	DRAWING TITLE	SHEET NUMBER
GENERAL		
CK-01	COVER SHEET	001
CK-02	INDEX OF DRAWINGS	002
CK-03	GENERAL NOTES, ABBREVIATIONS & SYMBOLS	003
CK-04	KEY MAP	004
SURVEY CONTROL		
VA-01	SURVEY CONTROL	005
TRACKWORK		
RC-01	TYPICAL CROSS-SECTIONS	006
RP-01	TRACK & PLAN PROFILE - SHEET 1 OF 5 BNSD 664+00 TO BNSD 663+00	007
RP-02	TRACK & PLAN PROFILE - SHEET 2 OF 5 CNXN 10+00 TO BNSD 664+00	008
RP-03	TRACK & PLAN PROFILE - SHEET 3 OF 5 CNXN 25+00 TO CNXN 10+00	009
RP-04	TRACK & PLAN PROFILE - SHEET 4 OF 5 UP02 3430+00 TO CNXN 8+00	010
RP-05	TRACK & PLAN PROFILE - SHEET 5 OF 5 UP02 3445+00 TO UP02 3430+00	011
RT-01	TRACK GEOMETRY DATA - SHEET 1 OF 2	012
RT-02	TRACK GEOMETRY DATA - SHEET 2 OF 2	013

DRAWING NUMBER	DRAWING TITLE	SHEET NUMBER
EARTHWORK		
RX-01	CROSS-SECTIONS - SHEET 1 OF 5	014
RX-02	CROSS-SECTIONS - SHEET 2 OF 5	015
RX-03	CROSS-SECTIONS - SHEET 3 OF 5	016
RX-04	CROSS-SECTIONS - SHEET 4 OF 5	017
RX-05	CROSS SECTIONS - SHEET 5 OF 5	018
CIVIL		
CP-01	GRADE CROSSING PLAN & PROFILE - JOHN ST. - SHEET 1 OF 1	019
UTILITIES		
UA-01	UTILITY PLAN - SHEET 1 OF 5 - BNSD 664+00 TO BNSD 653+00 MP 1186.10 TO MP 1185.87 (BNSF)	020
UA-02	UTILITY PLAN - SHEET 2 OF 5 - CNXN 10+00 TO BNSD 664+00 MP 1186.36 TO MP 1186.10 (BNSF)	021
UA-03	UTILITY PLAN - SHEET 3 OF 5 - CNXN 25+00 TO CNXN 10+00 MP 1186.61 TO MP 1186.36 (BNSF)	022
UA-04	UTILITY PLAN - SHEET 4 OF 5 - UP0120+00 TO UP018+00 - MP 17.36 TO MP 17.62 (UPRR)	023
UA-05	UTILITY PLAN - SHEET 5 OF 5 - UP013445+00 TO UP013430+00 - MP 17.20 TO MP 17.36	024
STRUCTURES		
S-01	RICHMOND RAIL CONNECTOR BRIDGE NUMBER 1186.3	025
S-02	CORRUGATED PIPE CULVERT	026

DRAWING NUMBER	DRAWING TITLE	SHEET NUMBER

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Santa Fe Railway

DESIGNED BY	A. CRAFT
DRAWN BY	A. COSS
CHECKED BY	P. MAHONEY
APPROVED BY	M. CANAS
DATE	SEPTEMBER 09, 2011




PATTERSON & ASSOCIATES, INC.
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BNSF RAILWAY
RICHMOND RAIL CONNECTION

INDEX OF DRAWINGS

CONTRACT NO.	
DRAWING NO.	CK-02
REVISION	0 SHEET NO. 002
SCALE	NO SCALE

GENERAL NOTES

- CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS AND THE SPECIFICATIONS FOR THIS CONTRACT.
- ALL CONSTRUCTION ACTIVITIES SHALL BE SCHEDULED AND COORDINATED THROUGH THE ENGINEER, INCLUDING THE VARIOUS COMPANIES, AGENCIES AND OTHER CONTRACTORS WHO MAY BE AFFECTED BY THIS WORK. ALL REQUIRED PERMITS INCLUDING RAILROAD RIGHT-OF-ENTRY PERMITS NEEDED FOR THE WORK SHALL BE OBTAINED BY THE CONTRACTOR UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL COMPLY WITH ALL RAILROAD OCCUPANCY REQUIREMENTS INCLUDING INSURANCE REQUIREMENTS AND USE OF AND PAYMENT FOR RAILROAD FLAGMEN.
- HORIZONTAL AND VERTICAL CONTROL POINTS FOR THE TRACK LAYOUT ARE IDENTIFIED IN THE CONTRACT DOCUMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THESE CONTROL POINTS TO ASSURE THAT ALL FACILITIES INCLUDED IN THIS PROJECT ARE CONSTRUCTED AT THE CORRECT VERTICAL AND HORIZONTAL LOCATIONS.
- THE BURLINGTON NORTHERN SANTA FE RAILWAY WILL CONSTRUCT ALL TRACKWORK. TRACKWORK DONE BY BNSF WILL INCLUDE ALL MATERIAL FROM THE TOP OF THE SUBBALLAST AND UP. THE CONTRACTOR IS RESPONSIBLE FOR ALL GRADING WORK BELOW THE TOP OF SUBBALLAST. GRADING WORK CONSISTS OF SUBGRADE PREPARATION AND PLACEMENT OF SUBBALLAST TO GRADES INDICATED ON THE PLANS.
- POSITIVE DRAINAGE MUST BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION TO PREVENT PONDING OF WATER.
- THE CONTRACTOR SHALL COMPLY WITH THE STATE OF CALIFORNIA NPDES PERMIT REGARDING THE TREATMENT OF WATER BEFORE DISCHARGING OFF OF BNSF R/W.
- CONTRACTOR SHALL SUBMIT A PHASING PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. ANY MODIFICATIONS TO THIS PHASING PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- LIMITS OF GRADING AS SHOWN ON THE PLANS ARE APPROXIMATE. WHERE LIMIT OF GRADING IS ADJACENT TO A BRIDGE, CROSSING, OR OTHER FACILITY, GRADING SHALL PROVIDE FOR A CONTINUOUS GRADE SO THAT THE RAILROAD CAN SUBSEQUENTLY LAY TRACK WITH NO ADDITIONAL WORK.
- SECTION 4216/4217 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" IS VALID. THE CONTRACTOR SHALL CALL THE UNDERGROUND SERVICE ALERT (1-800-422-4133) TWO WORKING DAYS PRIOR TO CONSTRUCTION TO OBTAIN A DIG ALERT ID NUMBER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE FIBER OPTIC LINES.
- THE CONTRACTOR SHALL BECOME FAMILIAR WITH LEGISLATION OUTLINING PROCEDURES FOR LOCATING UTILITIES BY HAND EXCAVATION AND COMPLY WITH ITS DIRECTIVE.
- PRIOR TO EACH CONSTRUCTION ACTIVITY WITHIN BNSF RIGHT-OF-WAY, THE CONTRACTOR SHALL NOTIFY BNSF'S SIGNAL REPRESENTATIVE.
- THE CONTRACTOR SHALL PROTECT ALL BNSF SIGNAL FACILITIES IN PLACE.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS FOR CONFLICTS WITH EXISTING UTILITIES, SIGNAL CABLES / EQUIPMENT AND/OR OTHER ITEMS THAT MIGHT IMPAIR CONSTRUCTION ACTIVITIES. INCONSISTENCIES FOUND SHALL BE REPORTED TO THE ENGINEER.
- REPAIRS TO FACILITIES INTENDED TO REMAIN IN PLACE SHALL BE MADE BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE STATED BY THE ENGINEER.
- ALL EXCAVATED WASTE MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE SITE. ONSITE STORAGE OF EXCAVATED WASTE MATERIAL SHALL NOT BE PERMITTED AT ANY TIME.
- ON-SITE CONSTRUCTION BY OTHERS, INCLUDING ROUTINE MAINTENANCE WORK, (BNSF FORCES, BNSF SIGNAL CONTRACTOR, AMTRAK, FIBER OPTIC, UTILITIES, ETC.) MAY OCCUR DURING THE CONSTRUCTION PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES THROUGH THE ENGINEER SO AS TO MINIMIZE INTERFERENCE WITH OTHERS.
- PRIOR TO COMMENCING WORK, ALL EXISTING SITE CONDITIONS SHALL BE FIELD VERIFIED WITH THE ENGINEER TO ASCERTAIN THE LIMITS OF WORK ACTIVITIES. THE CONTRACTOR SHALL SUBMIT AND RECEIVE THE ENGINEER'S APPROVAL OF THE CONTRACTORS PROJECT SCHEDULE AND OPERATIONS PLAN. EACH ITEM OF WORK SHALL BE DESCRIBED AND ACCOUNTED FOR IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR FURTHER INFORMATION REGARDING SUBMITTAL REQUIREMENTS.
- RAIL TRAFFIC DISRUPTIONS SHALL BE KEPT TO A MINIMUM. DISRUPTIONS IN RAIL TRAFFIC THAT MAY BE REQUIRED SHALL BE COORDINATED WITH THE ENGINEER BEFOREHAND. NO SUCH WORK SHALL BE COMMENCED WITHOUT THE ENGINEER'S APPROVAL. WORK AFFECTING THE MOVEMENT OF TRAINS WILL BE UNDER THE AUTHORITY AND OVERALL CONTROL OF THE ENGINEER OR HIS REPRESENTATIVE. AMTRAK CAPITAL CORRIDOR COMMUTER TRAIN OPERATIONS AND FREIGHT TRAFFIC MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
- THE CONTRACTOR SHALL NOT PLACE MATERIAL AND/OR EQUIPMENT WITHIN 25 FEET OF AN ACTIVE TRACK AT ANY TIME WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- EXISTING RAILROAD SIGNAGE (INCLUDING SPEED SIGNS) SHALL BE MAINTAINED DURING THE CONSTRUCTION PERIOD. ALL RAILROAD SIGNAGE SHALL BE FULLY RESTORED UPON COMPLETION OF EACH DAYS WORK IN ACCORDANCE WITH BNSF ENGINEERING STANDARDS. PRIOR TO CONSTRUCTION, BNSF STANDARD PROJECT NOTICE SIGNS SHALL BE PLACED AT LOCATIONS AS DIRECTED BY THE ENGINEER. NO TRESPASSING SIGNS SHALL BE PLACED IN ACCORDANCE WITH BNSF STD DWG 3068 AND AS SHOWN ON THE DRAWINGS.
- ALL WORK SHALL BE COORDINATED WITH BNSF'S SIGNAL ENGINEER, SIGNAL FORCES AND SIGNAL CONTRACTOR THRU THE ENGINEER. WORK WILL BE PHASED TO EFFECT THE CONTINUED OPERATION OF EXISTING SIGNAL SYSTEM DURING CONSTRUCTION. IN NO INSTANCE MAY WORK PROCEED IN ANY AREA WITHOUT ADVANCE APPROVAL OF BNSF'S SIGNAL ENGINEER. THE CONTRACTOR SHALL LOCATE ALL SIGNAL AND COMMUNICATION CONDUITS, CABLES, WIRES, OR OTHER TRACK, TRACK BED, AND RIGHT-OF-WAY.
- WALKWAYS SHALL BE PLACED AS REQUIRED BY CALIFORNIA PUBLIC UTILITIES COMMISSION GENERAL ORDER NO. 118 AND 26D FOR ALL NEW CONSTRUCTION, UNLESS NOTED OTHERWISE.
- DIMENSIONS SHOWN IN PARENTHESES INDICATE APPROXIMATE EXISTING DIMENSIONS. WHERE ELEVATIONS ARE SHOWN IN PARENTHESES AT JOIN LOCATIONS, THE CONTRACTOR SHALL VERIFY THESE ELEVATIONS PRIOR TO CONSTRUCTION AND JOIN FEATURES AT EXISTING ELEVATIONS.
- ALL EXISTING FENCES ALONG THE RIGHT-OF-WAY SHALL BE PROTECTED IN PLACE, UNLESS NOTED OTHERWISE. AT THE OPTION OF THE CONTRACTOR, FENCING MAY BE REMOVED TO FACILITATE CONSTRUCTION; HOWEVER, FENCING MUST BE REPLACED, IN KIND, AND THE CONSTRUCTION SITE MUST REMAIN SECURE AT ALL TIMES.
- THE CONTRACTOR SHALL CONSTRUCT GRADE CROSSING IMPROVEMENTS AS SHOWN IN THE PLANS, EXCEPT THAT AC PAVEMENT SHALL BE PLACED WHERE NEW CONCRETE CROSSING PANELS ARE SHOWN (TO BE INSTALLED BY BNSF). BNSF WILL REMOVE THIS AC PAVEMENT WHEN THE TRACK IS ACTUALLY CONSTRUCTED, AT A LATER DATE. TRACK GRADING AND SUBBALLAST PLACEMENT SHALL BE UNIFORM THROUGH THE CROSSING, MATCHING THE GRADING AND SUBBALLAST AT EACH END OF THE CROSSING.

- DEFINITIONS:
- A. TRACK OUTAGE: TRACK WHICH IS OUT OF SERVICE FOR A GIVEN PERIOD OF TIME.
 - B. ACTIVE TRACK: TRACK ON WHICH TRAINS ARE OPERATING AND INTERRUPTION OF SERVICE MAY OCCUR ONLY WITHIN AN APPROVED "WINDOW", AS DEFINED BELOW.
 - C. FOULED TRACK: TRACK IS FOULED WHEN AN OBSTRUCTION INCLUDING A WORKING CREW, IS WITHIN 20 FEET FROM THE CENTERLINE OF THE TRACK OR WHEN AN OVERHEAD OBSTRUCTION IS PLACED WITHIN 22'-6" ABOVE THE TOP OF RAIL. WORK MAY BE PERFORMED UNDER THE PROTECTION OF A RAILROAD FLAGMAN.
 - D. WINDOW: A GIVEN PERIOD OF TIME BETWEEN OPERATING TRAINS WHERE A TRACK MAY BE TAKEN OUT OF SERVICE, WITH THE STIPULATION THAT THE TRACK SHALL BE BACK IN SERVICE AT THE END OF THE GIVEN PERIOD OF TIME.

&	AND
@	AT
°	DEGREE(S)
'	FOOT or FEET or MINUTE(S)
"	INCH or INCHES or SECOND(S)
%	PERCENT
#	POUND or NUMBER
Δ	CENTRAL ANGLE OF CIRCULAR CURVE
2500	2500 SPUR TRACK
AC	ASPHALT CONCRETE
AP	ANGLE POINT
APE	AREA OF POTENTIAL EFFECT
APPROX	APPROXIMATELY
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
AVE	AVENUE
BC	BEGINNING OF CURVE
BLVD	BOULEVARD
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
BM	BENCHMARK
BR	BRIDGE
CB	CATCH BASIN
CC	CENTER OF CURVE
CIP	CAST IRON PIPE OR CAST IN PLACE
C/L OR C	CENTERLINE
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
CP	CONTROL POINT
CORR	CORRUGATED
CS	CURVE TO SPIRAL
CT	CONCRETE TIES
DC	DEGREE OF CURVE
DESC	DESCRIPTION
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DOT	DEPARTMENT OF TRANSPORTATION
DR	DRIVE
DU	DUCT
DWG	DRAWING
E	EAST or EASTERLY or EASTING
Ea	SUPERELEVATION, ACTUAL

E	EAST or EASTERLY or EASTING
Ea	SUPERELEVATION, ACTUAL
EC	END OF CURVE
EF	EACH FACE
EGL	ENERGY GRADE LINE
EL or ELLEV	ELEVATION
EQ	EQUAL or EQUATION
EW	EACH WAY
Eu	SUPERELEVATION, UNBALANCED
EX or EXIST	EXISTING
EXMT OR EMT	EXISTING MAIN TRACK
EMT1	EXISTING MAIN TRACK 1
EMT2	EXISTING MAIN TRACK 2
F	FREIGHT
FH	FIRE HYDRANT
FL	FLOWLINE
FS	FINISHED SURFACE
FT	FOOT or FEET
G	GRADE
G1	GRADE ENTERING VERTICAL CURVE
G2	GRADE EXITING VERTICAL CURVE
ga	GAGE
GB	GRADE BREAK
GM	GAS MATER
GRD	GROUND
GV	GAS VALVE
HGL	HYDRAULIC GRADE LINE
HORIZ	HORIZONTAL
HP	HIGH POINT or HIGH PRESSURE
I	TOTAL INTERSECTION ANGLE
INV	INVERT
L	LENGTH
Lc	LENGTH OF CURVE (CIRCULAR)
LF	LINEAR FOOT or LINEAR FEET
LH	LEFT HAND
LP	LOW POINT
Ls or LS	LENGTH OF SPIRAL
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE

ABBREVIATIONS

MIN	MINIMUM	RH	RIGHT HAND
MP	MILEPOST or MEDIUM PRESSURE	RPM	RAISED PAVEMENT MARKER
MSST	MAIN STREET SPUR TRACK	RR	RAILROAD
MT	MAIN TRACK	RT	RIGHT
MTD	MULTIPLE TILE DUCT	S	SOUTH or SOUTHERLY or SLOPE
N	NORTH or NORTHERLY or NORTHING	SC	SPIRAL TO CURVE
NMT1	NEW MAIN TRACK 1	SDMH	STORM DRAIN MANHOLE
NMT2	NEW MAIN TRACK 2	SF	SQUARE FOOT or SQUARE FEET
NMT3	NEW MAIN TRACK 3	SO	SOUTHERN
NO	NUMBER or NORTHERN	SMH or SSMH	SANITARY SEWER MANHOLE
NTS	NOT TO SCALE	STA	STATION
OD	OUTSIDE DIAMETER	STD	STANDARD
OP	OVERPASS	ST	STREET or SPIRAL TO TANGENT
OTM	OTHER TRACK MATERIAL	SUB	SUBDIVISION
O, TO O,	OUT TO OUT	T	TANGENT
P or PSGR	PASSENGER	TC	TRACK CENTER(S) or TOP OF CURB
PB	PULLBOX	TC	TOP OF GRATE
PC	POINT OF CURVE	TGC	THE GAS COMPANY
PCC	POINT OF COMPOUND CURVATURE or PORTLAND CEMENT CONCRETE	T.O. or TO	TURNOUT
PI	POINT OF INTERSECTION	T/R or TOR	TOP OF RAIL
PIP	PROTECT IN PLACE	TF	TRACK FOOT or TRACK FEET
PITO	POINT OF INTERSECTION OF TURNOUT	TRK	TRACK
POB	POINT OF BEGINNING	TS	TANGENT TO SPIRAL
POE	POINT OF ENDING	TT	TIMBER TRANSITION TIES
POT	POINT ON TANGENT	TYP	TYPICAL
PRC	POINT OF REVERSE CURVATURE	UD	UNDERDRAIN
PROP	PROPOSED	UNO	UNLESS NOTED OTHERWISE
PS	POINT OF SWITCH	UP	UNDERPASS
PT	POINT OF TANGENT	UPRR	UNION PACIFIC RAILROAD
PVC	POINT OF VERTICAL CURVE or POLYVINYL CHLORIDE (PIPE)	V	VELOCITY
PVI	POINT OF VERTICAL INTERSECTION	VAR	VARIES
PVT	POINT OF VERTICAL TANGENT	VCP	VITRIFIED CLAY PIPE
R	RADIUS or RATE OF CHANGE	VERT	VERTICAL
RCB	REINFORCED CONCRETE BOX	W	WEST or WESTERLY
R/W	RIGHT-OF-WAY	WM	WATER METER
RCP	REINFORCED CONCRETE PIPE	WV	WATER VALVE
RD	ROAD	XING	CROSSING
		XO	CROSSOVER

SYMBOLS

	EXISTING	PROPOSED		EXISTING	PROPOSED
ASPHALT			TIMBER		
BALLAST			TRACK		
CANTILEVER WITH DUAL SIGNALS			TRACK TO BE REMOVED		
CANTILEVER WITH SIGNALS			TRACK TO BE UPGRADED		
CITY OR COUNTY BOUNDARY			TRACK TO BE RAISED (VERTICAL REALIGNMENT)		
CONCRETE			TURNOUT MANUAL		
CROSSING GATE & FLASHING LIGHTS (CPUC STD #9)			CROSSOVER MANUAL		
SIGNAL SHELTER			TURNOUT POWER		
FENCE			CROSSOVER POWER		
CROSSING GATE					
HEADWALL					
MILEPOST					
POINT OF SWITCH					
POINT OF VERTICAL INTERSECTION					
RAILROAD SIGNAL (SINGLE UNIT)					
RAILROAD SIGNAL (DOUBLE UNIT)					
RIGHT-OF-WAY					
FLASHING LIGHTS (CPUC STD #8)					
SUBGRADE EARTH					

CURVE DATA

CURVE MT1-1151C	←	CURVE NUMBER
Dc = 1° 12'	←	DEGREE OF CURVE
V = 80(P) / 70(F)	←	DESIGN SPEED (TIMETABLE SPEED)
Ea = 2 1/2"	←	ACTUAL SUPERELEVATION
Vmax(P) = 81	←	MAXIMUM SPEED THRU CURVE FOR PASSENGER TRAINS (ASSUMES Eu-3")
Vmax(F) = 73	←	MAXIMUM SPEED THRU CURVE FOR FREIGHT TRAINS (ASSUMES Eu-2")
Ls = 240'	←	LENGTH OF SPIRAL(S)
Lc = 468'	←	LENGTH OF CIRCULAR PORTION OF CURVE

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WORK ELEMENT	
PHYSICAL ENTITY	
CONTRACT DESIGNATOR	
LINE ITEM	
COST ELEMENT	
PROJECT NUMBER	

60% SUBMITTAL

REV	DATE	DESCRIPTION	BY	SUB	APP
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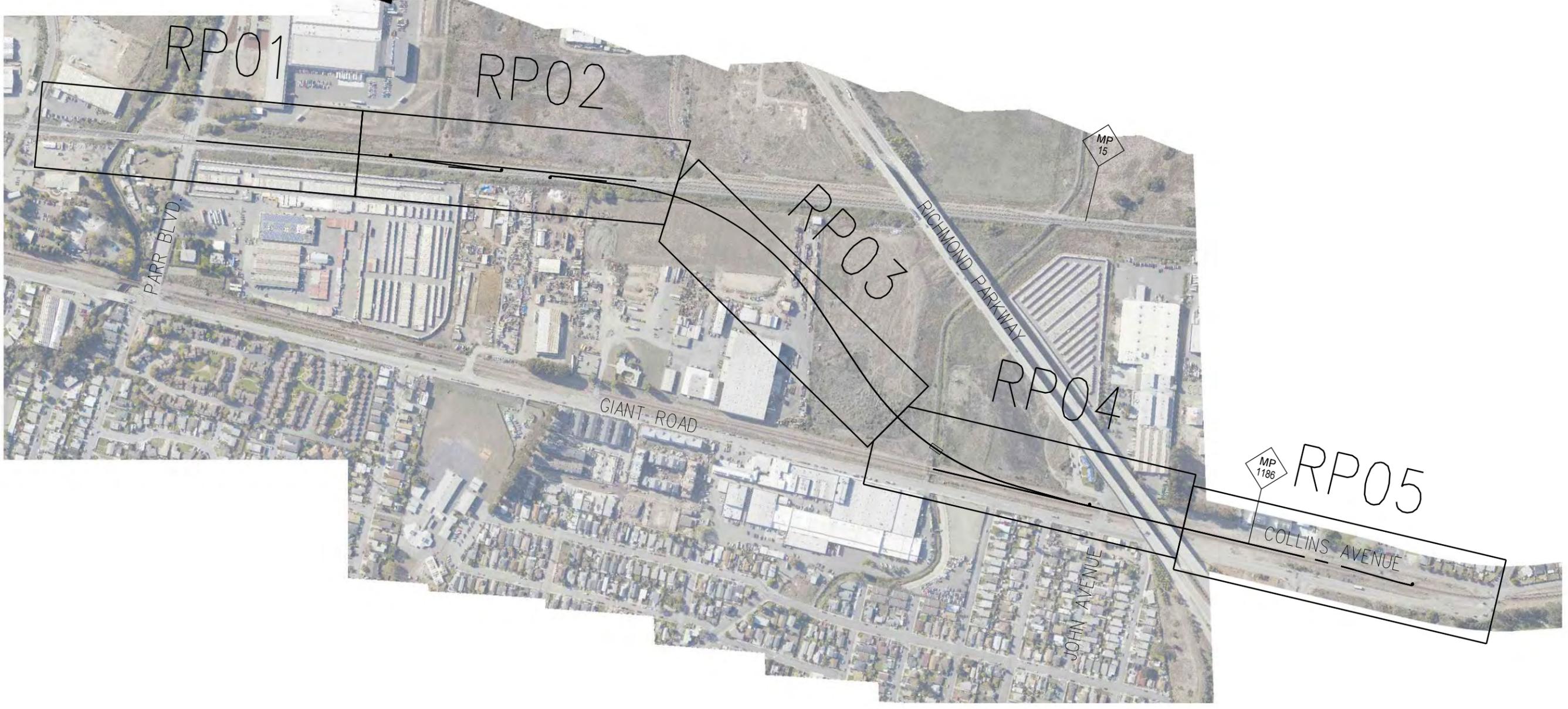
DESIGNED BY: A. CRAFT
 DRAWN BY: A. COSS
 CHECKED BY: P. MAHONEY
 APPROVED BY: M. CANAS
 DATE: SEPTEMBER 09, 2011

PATERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD SUITE 300
 ORANGE, CA 92668

BNSF RAILWAY
 RICHMOND RAIL CONNECTION

CONTRACT NO. _____
 DRAWING NO. CK-03
 REVISION 0 SHEET NO. 003
 SCALE NONE

GENERAL NOTES, ABBREVIATIONS & SYMBOLS



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10/18/2011

PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

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DESIGNED BY A. CRAFT
DRAWN BY A. COSS
CHECKED BY P. MAHONEY
APPROVED BY M. CANAS
DATE SEPTEMBER 09, 2011

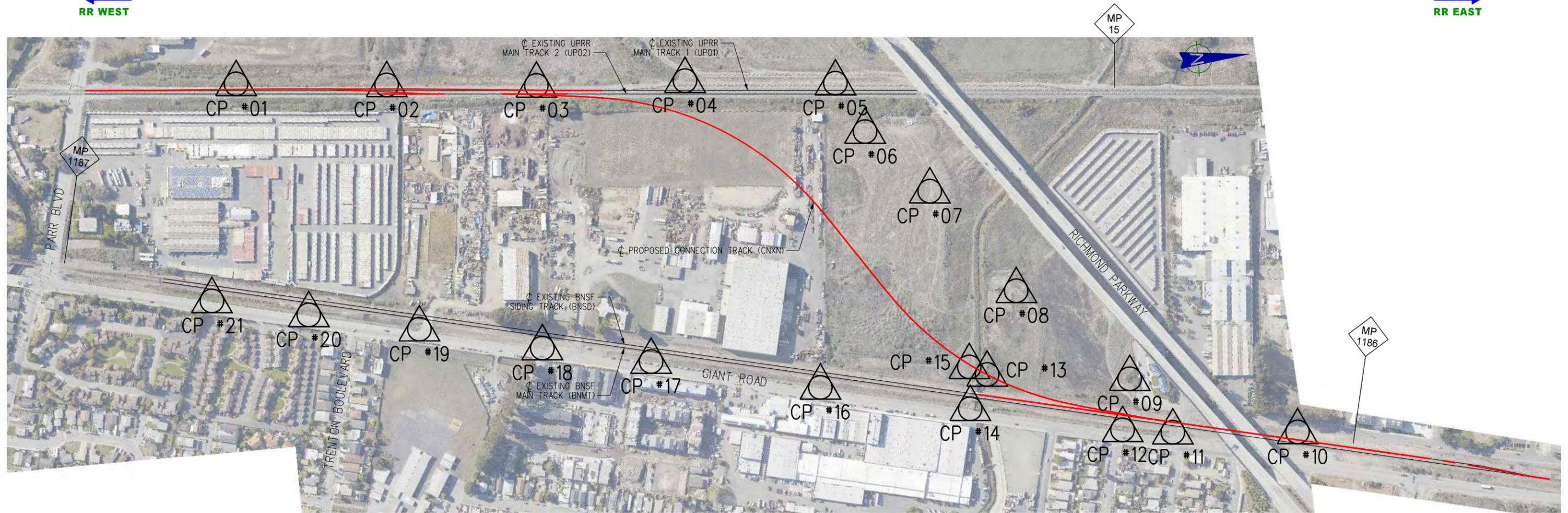


BNSF RAILWAY
RICHMOND RAIL CONNECTION
DEGRAY TO BAYARD
KEY MAP

CONTRACT NO.	
DRAWING NO.	CK-04
REVISION	0 SHEET NO. 004
SCALE	NO SCALE

TO RICHMOND, CA
← RR WEST

TO CALWA, CA
→ RR EAST



PLAN



SURVEY CONTROL POINTS

POINT	NORTHING	EASTING	ELEVATION	STATIONS	DESCRIPTION	APPROXIMATE LOCATION
CP #01	6025857.738	2180753.410	22.760	XXXX+XX.XX	REBAR AND CAP	27 FT WEST OF EXISTING UPO1 TRACK AT APPROXIMATE MP 1186.15
CP #02	6025916.400	2181350.808	24.795		REBAR AND CAP	22 FT WEST OF EXISTING UPO1 TRACK AT APPROXIMATE MP 1186.26
CP #03	6025972.541	2181945.066	23.745		REBAR AND CAP	20 FT WEST OF EXISTING UPO1 TRACK AT APPROXIMATE MP 1186.38
CP #04	6026007.479	2182536.546	22.640		REBAR AND CAP	39 FT WEST OF EXISTING UPO1 TRACK AT APPROXIMATE MP 1186.49
CP #05	6026071.952	2183132.814	20.870		REBAR AND CAP	29 FT WEST OF EXISTING UPO1 TRACK AT APPROXIMATE MP 1186.60
CP #06	6026274.565	2183233.067	23.160		REBAR AND CAP	150 FT EAST OF EXISTING UPO2 TRACK AT APPROXIMATE MP 1186.63
CP #07	6026534.248	2183468.397	21.900		REBAR AND CAP	387 FT EAST OF EXISTING UPO2 TRACK AT APPROXIMATE MP 1186.67
CP #08	6026960.112	2183775.701	20.285		REBAR AND CAP	430 FT WEST OF EXISTING BNSD TRACK AT APPROXIMATE MP 1186.74
CP #09	6027349.987	2184194.263	25.125		REBAR AND CAP	147 FT WEST OF EXISTING BNSD TRACK AT APPROXIMATE MP 1186.83
CP #10	6027621.446	2184841.470	27.825		REBAR AND CAP	31 FT WEST OF EXISTING BNSD TRACK AT APPROXIMATE MP 1186.95
CP #11	6027577.347	2184346.165	26.975		REBAR AND CAP	26 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.86
CP #12	6027549.610	2184147.643	24.805		REBAR AND CAP	44 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.82
CP #13	6027281.300	2183629.898	22.060		REBAR AND CAP	84 FT WEST OF EXISTING BNSD TRACK AT APPROXIMATE MP 1186.72
CP #14	6027410.856	2183550.487	23.020		REBAR AND CAP	46 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.71
CP #15	6027244.869	2183561.803	21.270		REBAR AND CAP	104 FT WEST OF EXISTING BNSD TRACK AT APPROXIMATE MP 1186.70
CP #16	6027272.259	2182963.217	23.665		REBAR AND CAP	47 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.59
CP #17	6027108.398	2182300.476	23.080		REBAR AND CAP	39 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.46
CP #18	6027015.467	2181873.735	26.105		REBAR AND CAP	47 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.38
CP #19	6026896.110	2181392.226	22.535		REBAR AND CAP	42 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.29
CP #20	6026799.389	2180958.400	22.495		REBAR AND CAP	47 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.21
CP #21	6026709.125	2180578.940	23.100		REBAR AND CAP	47 FT EAST OF EXISTING BNMT TRACK AT APPROXIMATE MP 1186.13

60% SUBMITTAL

DESIGNED BY A. CRAFT
DRAWN BY A. COSS
CHECKED BY P. MAHONEY
APPROVED BY M. CANAS
DATE SEPTEMBER 09, 2011



BNSF RAILWAY
RICHMOND RAIL CONNECTION

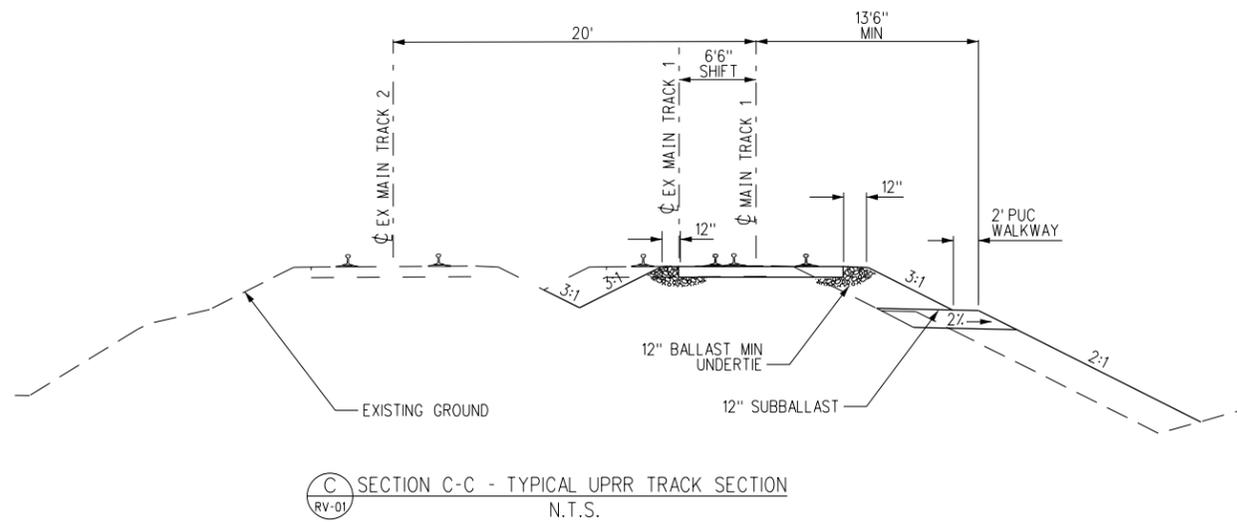
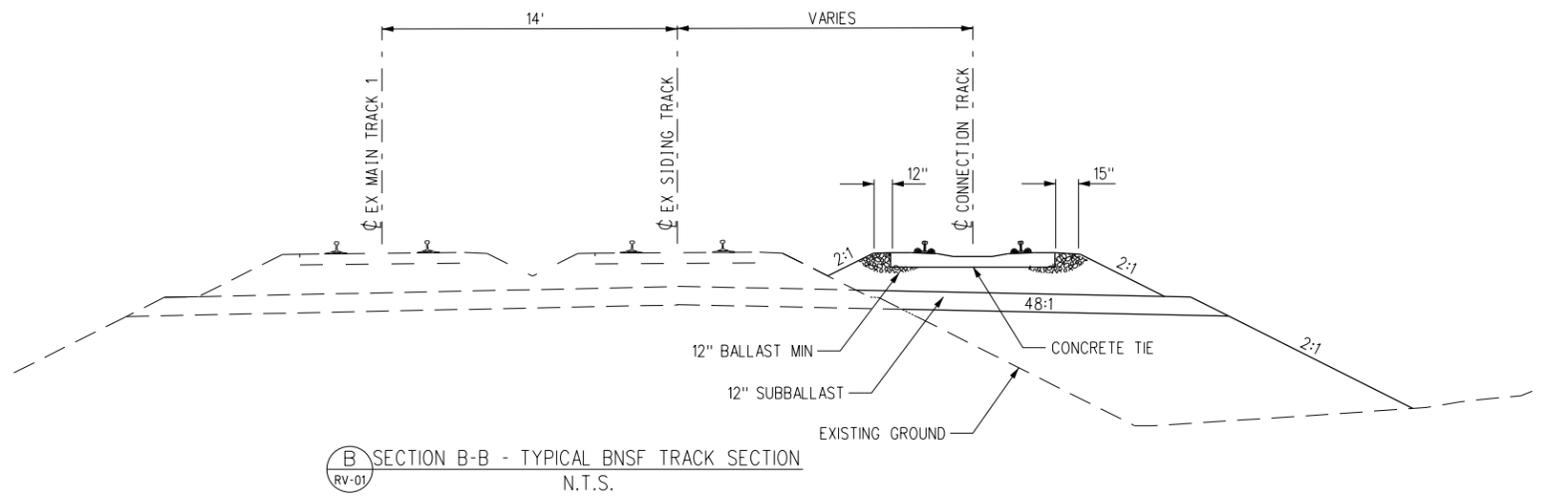
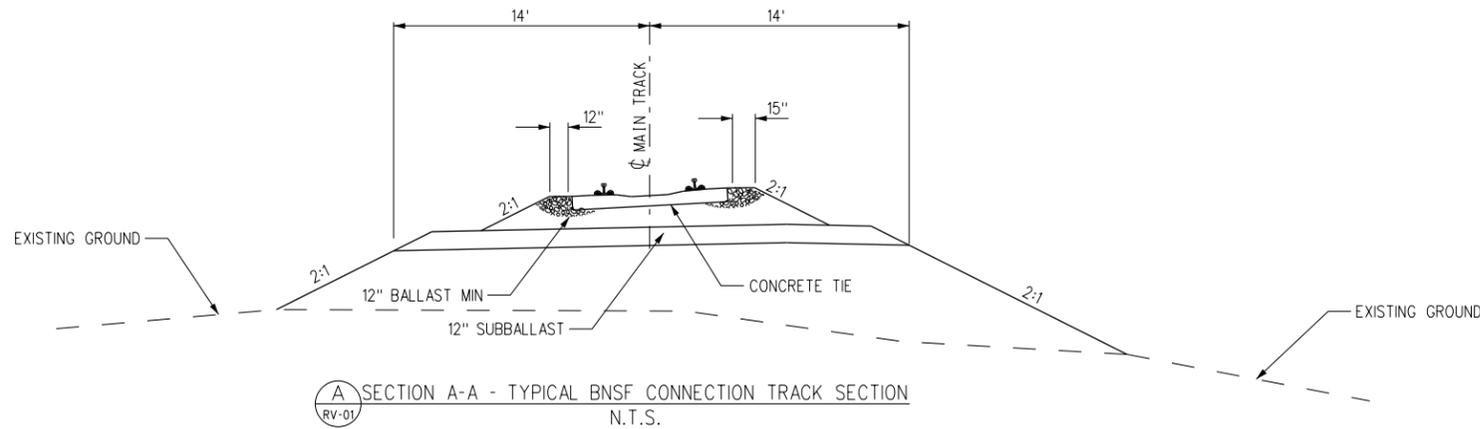
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CONTRACT NO.
DRAWING NO. VA-01
REVISION 0 SHEET NO. 005
SCALE AS SHOWN

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PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP



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PROJECT NUMBER	
COST ELEMENT	
LINE ITEM	
CONTRACT DESIGNATOR	
PHYSICAL ENTITY	
WORK ELEMENT	

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DRAWN BY	C. NATHAN
CHECKED BY	P. MAHONEY
APPROVED BY	M. CANAS
DATE	SEPTEMBER 09, 2011



BNSF RAILWAY
RICHMOND RAIL CONNECTION
TYPICAL CROSS-SECTIONS

CONTRACT NO.	
DRAWING NO.	RC-01
REVISION	0 SHEET NO. 006
SCALE	NO SCALE

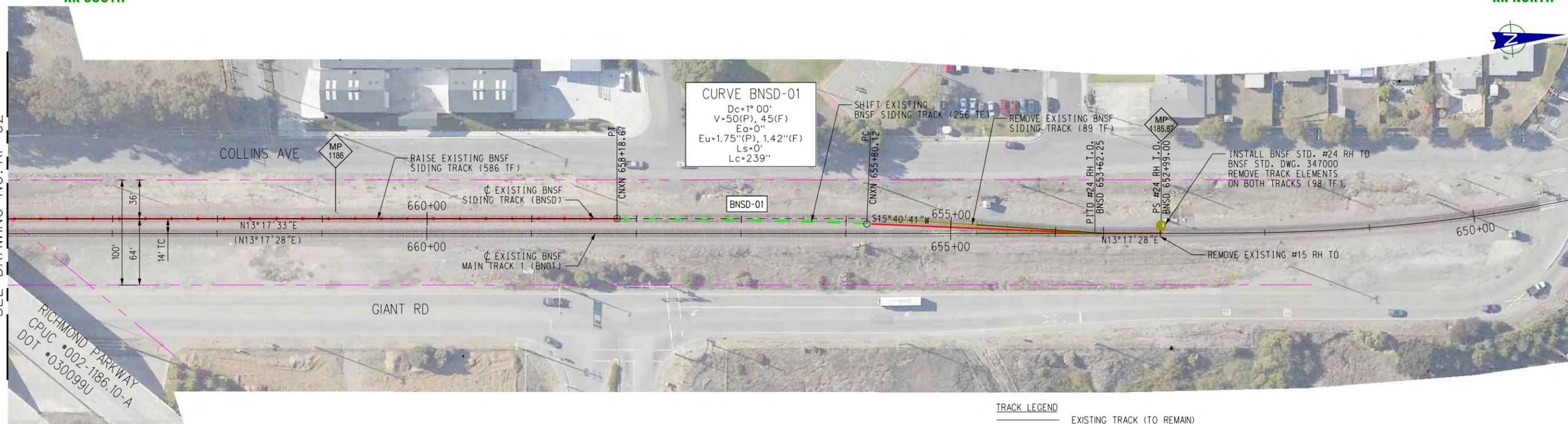
REV	DATE	DESCRIPTION	BY	SUB	APP

TO RICHMOND, CA
RR SOUTH

TO CALWA, CA
RR NORTH

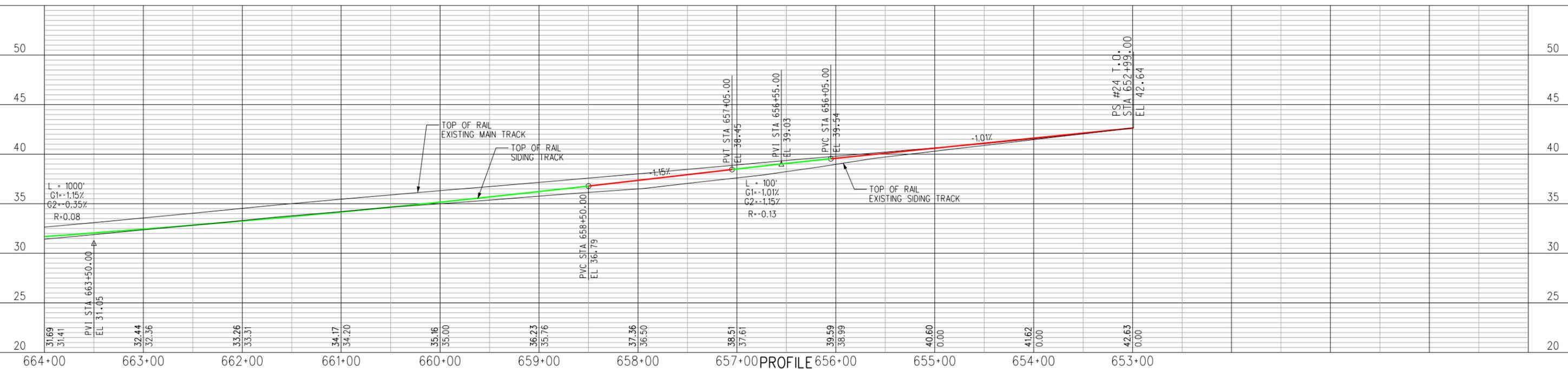
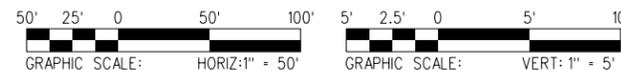


MATCH LINE - BNSD 664+00
SEE DRAWING NO. RP-02



PLAN

TRACK LEGEND
 ——— EXISTING TRACK (TO REMAIN)
 ——— EXISTING TRACK (TO BE REMOVED)
 ——— EXISTING TRACK (TO BE RAISED)



PROFILE

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 APPROVED BY: M. CANAS
 DATE: SEPTEMBER 09, 2011



BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 PLAN AND PROFILE - SHEET 1 OF 5
 BNSD 664+00 TO BNSD 653+00
 MP 1186.10 TO MP 1185.87 (BNSF)

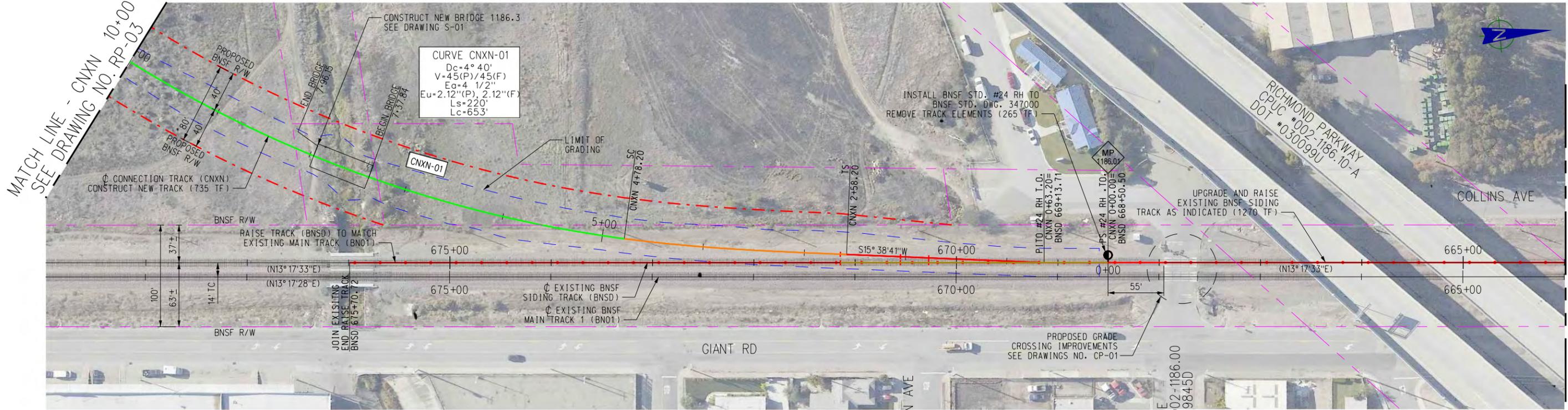
CONTRACT NO.
 DRAWING NO. RP-01
 REVISION 0 SHEET NO. 007
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TO RICHMOND, CA

RR WEST

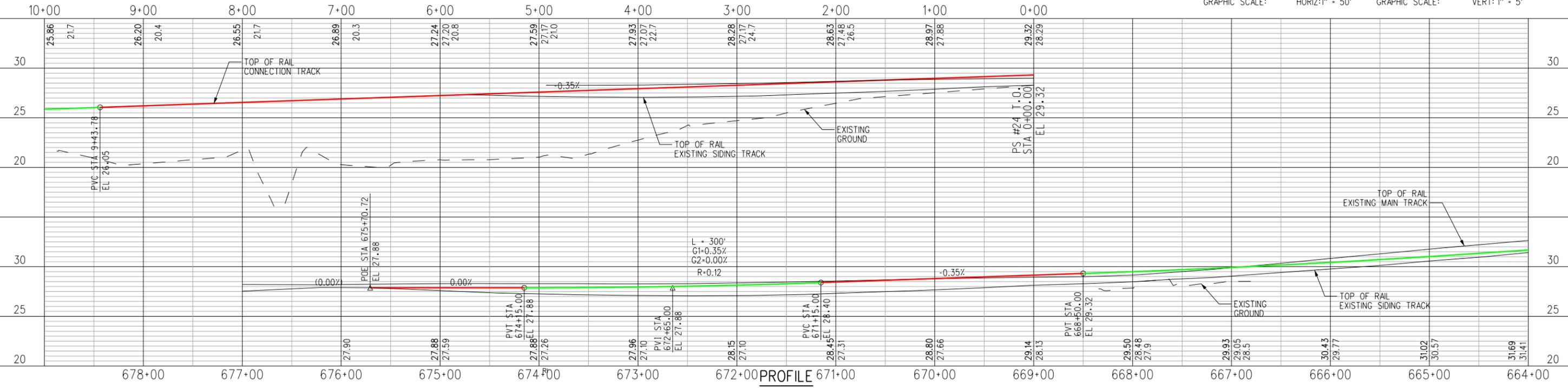
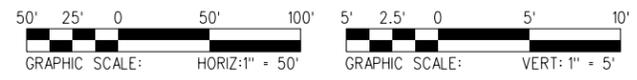
TO CALWA, CA

RR EAST



TRACK LEGEND

- PROPOSED TRACK (CURVE)
- PROPOSED TRACK (TANGENT)
- PROPOSED TRACK (SPIRAL)
- EXISTING TRACK (TO REMAIN)
- EXISTING TRACK (TO BE REMOVED)
- EXISTING TRACK (TO BE RAISED)
- PROPOSED RIGHT OF WAY (BNSF)



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PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

DESIGNED BY: A. CRAFT
 DRAWN BY: A. COSS
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 APPROVED BY: M. CANAS
 DATE: SEPTEMBER 09, 2011

BNSF RAILWAY

UNION PACIFIC RAILROAD

PATTERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD
 SUITE 300
 ORANGE, CA 92668

BNSF RAILWAY
RICHMOND RAIL CONNECTION

PLAN AND PROFILE - SHEET 2 OF 5
 CNXN 10+00 TO BNSD 664+00
 MP 1186.36 TO MP 1186.10 (BNSF)

CONTRACT NO. _____

DRAWING NO. **RP-02**

REVISION 0 SHEET NO. 008

SCALE AS SHOWN

60% SUBMITTAL

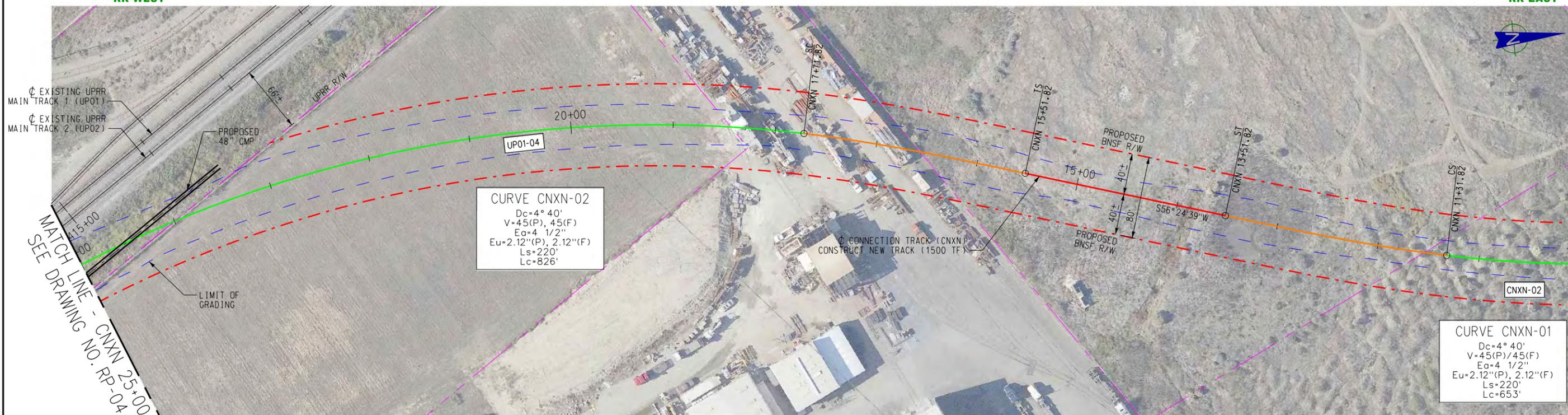
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TO 10TH STREET (UPRR)

RR WEST

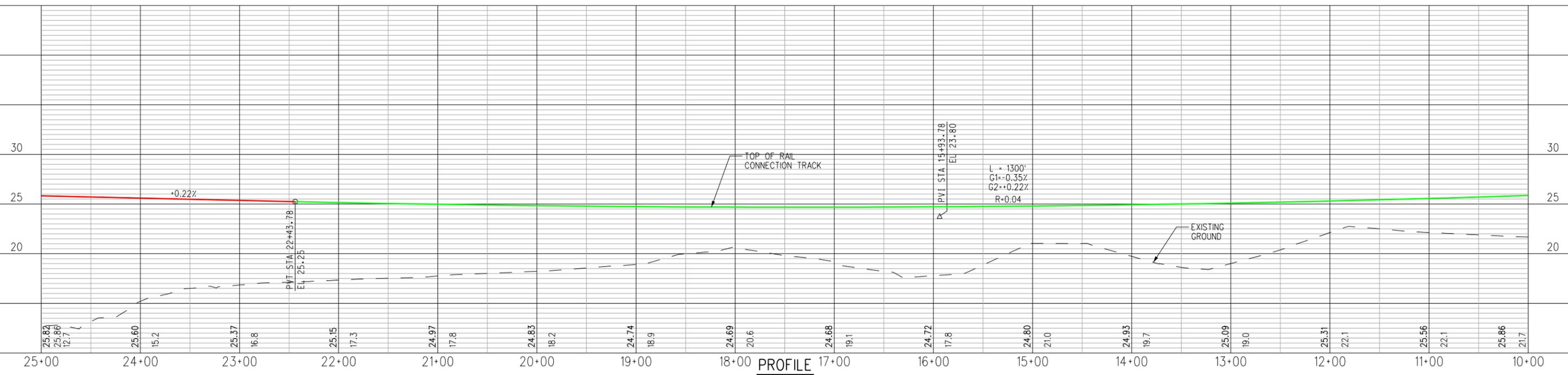
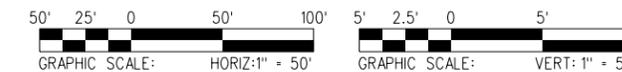
TO CALWA, CA (BNSF)

RR EAST



- TRACK LEGEND**
- PROPOSED TRACK (CURVE)
 - PROPOSED TRACK (TANGENT)
 - PROPOSED TRACK (SPIRAL)
 - EXISTING TRACK (TO REMAIN)
 - PROPOSED RIGHT OF WAY (BNSF)

PLAN



PROFILE

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 APPROVED BY: M. CANAS
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725 TOWN & COUNTRY RD
 SUITE 300
 ORANGE, CA 92668

BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 PLAN AND PROFILE - SHEET 3 OF 5
 CNXN 25+00 TO CNXN 10+00
 MP 1186.61 TO MP 1186.36 (BNSF)

CONTRACT NO.
 DRAWING NO. RP-03
 REVISION 0 SHEET NO. 009
 SCALE AS SHOWN

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 10/18/2011

PROJECT NUMBER	LINE ITEM	COST ELEMENT	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

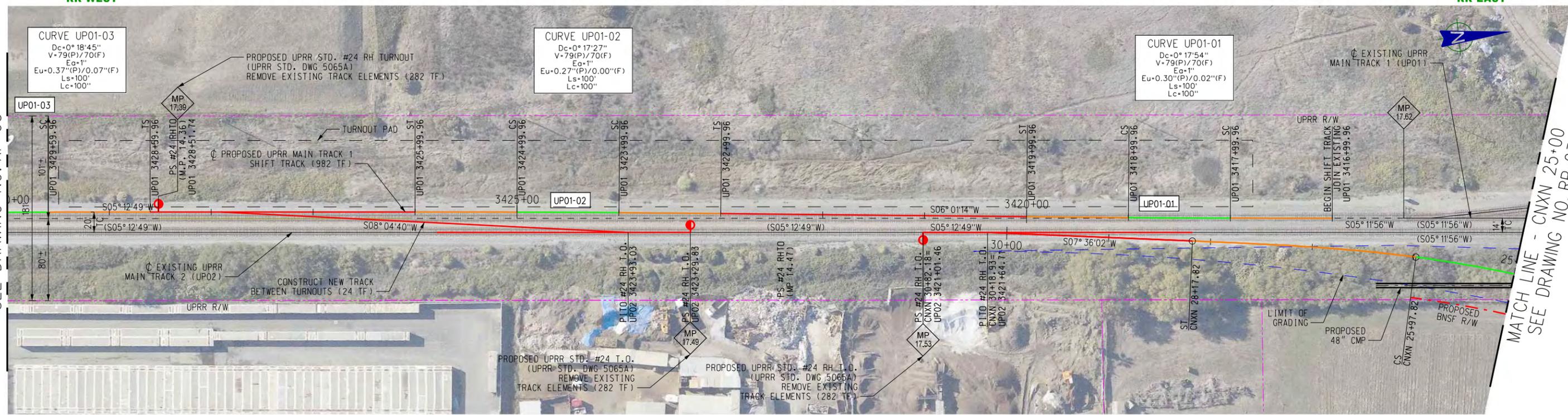
REV	DATE	DESCRIPTION	BY	SUB	APP

TO 10TH STREET
RR WEST

TO EAST ROSEVILLE
RR EAST

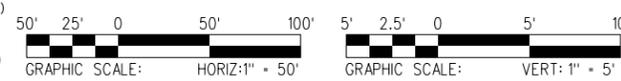
MATCH LINE - UPO2 3430+00
SEE DRAWING NO. RP-05

MATCH LINE - CNXN 25+00
SEE DRAWING NO. RP-03



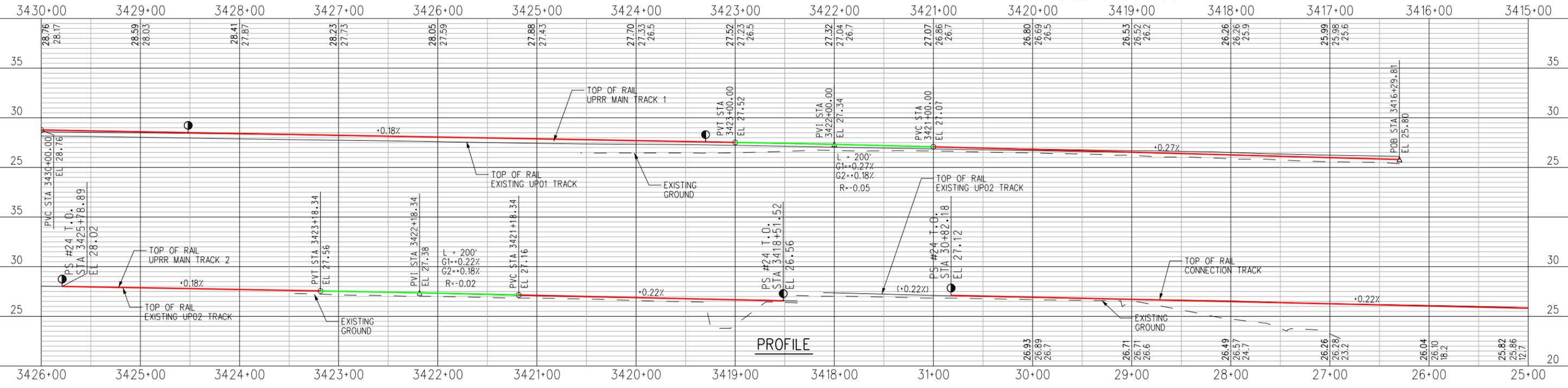
TRACK LEGEND

- PROPOSED TRACK (CURVE)
- PROPOSED TRACK (TANGENT)
- PROPOSED TRACK (SPIRAL)
- PROPOSED TRACK SHIFT (CURVE)
- PROPOSED TRACK SHIFT (TANGENT)
- PROPOSED TRACK SHIFT (SPIRAL)
- EXISTING TRACK (TO REMAIN)
- EXISTING TRACK (TO BE REMOVED)
- - - EXISTING TRACK (TO BE SHIFTED)
- - - PROPOSED RIGHT OF WAY (BNSF)



PLAN

PROFILE



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PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT
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DATE	SEPTEMBER 09, 2011

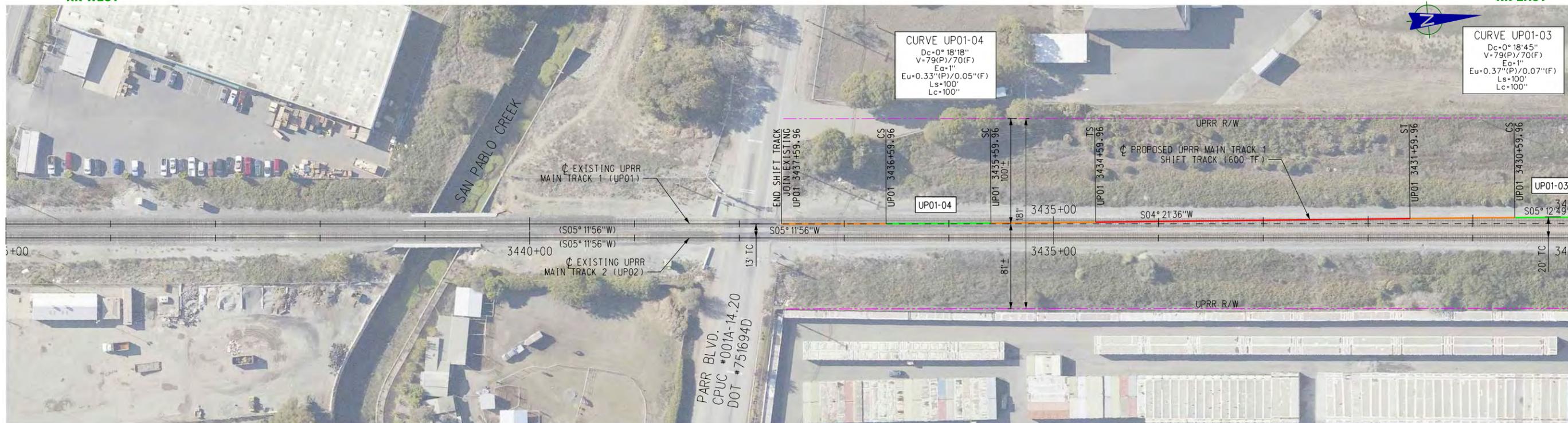


BNSF RAILWAY
RICHMOND RAIL CONNECTION
PLAN AND PROFILE - SHEET 4 OF 5
UPO2 3430+00 TO CNXN 8+00
MP 17.36 TO MP 17.62 (UPRR)

CONTRACT NO.	
DRAWING NO.	RP-04
REVISION	0 SHEET NO. 010
SCALE AS SHOWN	

TO 10TH STREET
RR WEST

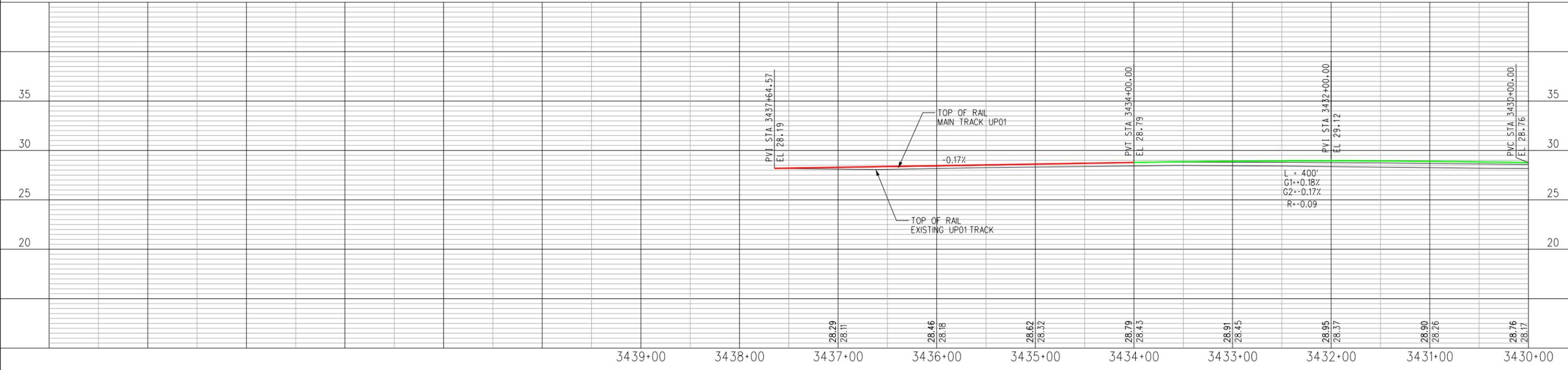
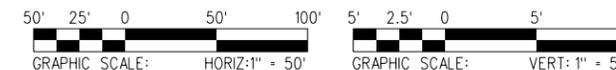
EAST ROSEVILLE, CA
RR EAST



MATCH LINE - UP02 3430+00
SEE DRAWING NO. RP-04

- TRACK LEGEND**
- PROPOSED TRACK SHIFT (CURVE)
 - PROPOSED TRACK SHIFT (TANGENT)
 - PROPOSED TRACK SHIFT (SPIRAL)
 - EXISTING TRACK (TO REMAIN)
 - - - EXISTING TRACK (TO BE SHIFTED)

PLAN



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PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

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BNSF RAILWAY
RICHMOND RAIL CONNECTION
PLAN AND PROFILE - SHEET 5 OF 5
UP02 3445+00 TO UP02 3430+00
MP 17.20 TO MP 17.36

CONTRACT NO.	
DRAWING NO.	RP-05
REVISION	0 SHEET NO. 011
SCALE AS SHOWN	

REV	DATE	DESCRIPTION	BY	SUB	APP

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 10/18/2011

PROJECT NUMBER	
COST ELEMENT	
LINE ITEM	
CONTRACT DESIGNATOR	
PHYSICAL ENTITY	
WORK ELEMENT	

P-CNXX												
CURVE NO.	DESC	BEARING	DISTANCE	STATION	NORTHING	EASTING	Dc	RADIUS	△	L	Ea/Eu SPEED	
#24 RHTO	PS	S13°15'32"W	63.20	0+00.00	2184317.794	6027529.920						
	PITO	S15°38'41"W	195.00	0+63.20	2184256.276	6027515.424						
	TS			2+58.20	2184068.501	6027462.838						
CNXX 01	SC		220.00	4+78.20	2183858.591	6027397.237					Ea=4-1/2" Eu=2.12" V=45(P), 45(F)	
	PI				2183545.520	6027278.458	4°40'00"	1228.11	30°30'08"	653.62		334.85
	CS			11+31.82	2183336.063	6027017.211						
	ST		220.00	13+51.82	2183208.981	6026837.724						
	TS	S56°24'39"W	200.00	15+51.82	2183098.337	6026671.122						
CNXX 02	SC		220.00	17+71.82	2182971.254	6026491.635					Ea=4-1/2" Eu=2.12" V=45(P), 45(F)	
	PI				2182702.630	6026156.590	4°40'00"	1228.11	38°32'47"	826.00		429.43
	CS			25+97.82	2182283.755	6026061.943						
	ST		220.00	28+17.82	2182066.731	6026026.361						
	TS	S07°36'02"W	201.11	30+18.93	2181867.384	6025999.761						
#24 RHTO	PS	S05°12'49"W	63.25	30+82.18	2181804.396	6025994.014						
	PITO											

SPIRAL DATA										
SPIRAL	LS	θ	X	Y	P		LT	ST	TS	I
P-CNXX										
BNMT-01 - IN	220.00	5°07'55"	219.82	6.56	1.64	109.97	146.73	73.39	566.90	40°45'58"
BNMT-01 - OUT	220.00	5°07'55"	219.82	6.56	1.64	109.97	146.73	73.39	566.89	
BNMT-02 - IN	220.00	5°07'55"	219.82	6.56	1.64	109.97	146.73	73.39	667.94	48°48'37"
BNMT-02 - OUT	220.00	5°07'55"	219.82	6.56	1.64	109.97	146.73	73.39	667.95	

P-BNSD												
CURVE NO.	DESC	BEARING	DISTANCE	STATION	NORTHING	EASTING	Dc	RADIUS	△	L	Ea/Eu SPEED	
#24 RHTO	POB	S13°17'28"W	.00	652+99.00	2185824.101	6027900.208						
	PS	S13°17'28"W	63.25	652+99.00	2185824.101	6027900.208						
	PITO	S13°17'28"W	.00	653+62.25	2185762.545	6027885.666						
BNSD 01	PI	S15°40'41"W	217.87	653+62.25	2185762.545	6027885.666					Ea= 0" Eu=1.42" V=45	
	PC			655+80.12	2185552.777	6027826.790						
	PI				2185437.924	6027794.554	1°00'00"	5729.65	2°23'08"	238.55		119.29
	PT			658+18.67	2185321.829	6027767.126						
	PS	S13°17'33"W	1031.67	668+50.34	2184317.794	6027529.920						
#24 RHTO	PITO	S13°17'33"W	63.21	669+13.55	2184256.285	6027515.388						
	POE	S13°17'33"W	786.29	676+99.84	2183491.057	6027334.600						

SPIRAL DATA										
SPIRAL	LS	θ	X	Y	P		LT	ST	TS	I
P-UP01										
UP01-01 - IN	100.00	0°08'57"	100.00	0.09	0.02	50.00	66.67	33.33	150.03	0°35'47"
UP01-01 - OUT	100.00	0°08'57"	100.00	0.09	0.02	50.00	66.67	33.33	149.97	
UP01-02 - IN	100.00	0°08'44"	100.00	0.08	0.02	50.00	66.67	33.33	149.93	0°34'54"
UP01-02 - OUT	100.00	0°08'44"	100.00	0.08	0.02	50.00	66.67	33.33	150.07	
UP01-03 - IN	100.00	0°09'22"	100.00	0.09	0.02	50.00	66.67	33.33	150.03	0°37'30"
UP01-03 - OUT	100.00	0°09'22"	100.00	0.09	0.02	50.00	66.67	33.33	149.97	
UP01-04 - IN	100.00	0°09'09"	100.00	0.09	0.02	50.00	66.67	33.33	149.94	0°36'37"
UP01-04 - OUT	100.00	0°09'09"	100.00	0.09	0.02	50.00	66.67	33.33	150.06	

P-UP01												
CURVE NO.	DESC	BEARING	DISTANCE	STATION	NORTHING	EASTING	Dc	RADIUS	△	L	Ea/Eu SPEED	
UP01-01	POB	S05°11'56"W	70.15	3416+29.81	2182275.363	6026022.965					Ea=1" Eu=0.27"(P) 0.00(F) V=79(P), 70(F)	
	TS		100.00	3416+99.96	2182205.501	6026016.608						
	SC			3417+99.96	2182105.920	6026007.461						
	PI				2182056.138	6026002.800	0°17'54"	19211.88	0°17'54"	100.00		50.00
	CS			100.00	3418+99.96	2182006.380	6025997.881					
UP01-02	ST	S05°47'43"W	300.00	3419+99.96	2181906.883	6025987.870					Ea=1" Eu=0.37"(P) 0.07(F) V=79(P), 70(F)	
	TS		100.00	3422+99.96	2181608.416	6025957.577						
	SC			3423+99.96	2181508.919	6025947.564						
	PI				2181459.161	6025942.642	0°17'27"	19697.75	0°17'27"	100.00		50.00
	CS			100.00	3424+99.96	2181409.380	6025937.972					
#24 RHTO	PS	S05°12'49"W	190.71	3425+99.96	2181309.801	6025928.801					Ea=1" Eu=0.30"(P) 0.02(F) V=79(P), 70(F)	
	PITO	S05°12'49"W	61.06	3427+90.67	2181119.882	6025911.471						
	TS	S05°12'49"W	8.23	3428+51.73	2181059.132	6025905.322						
UP01-03	SC		100.00	3428+59.96	2181050.877	6025905.175					Ea=1" Eu=0.30"(P) 0.02(F) V=79(P), 70(F)	
	PI			3429+59.96	2180951.282	6025896.179						
	CS				2180901.477	6025891.771	0°18'45"	18337.38	0°18'45"	100.00		50.00
	ST			100.00	3430+59.96	2180851.648	6025887.635					
	TS	S04°35'19"W	300.00	3431+59.96	2180751.976	6025879.544						
UP01-04	SC		100.00	3434+59.96	2180452.938	6025855.544					Ea=1" Eu=0.33"(P) 0.05(F) V=79(P), 70(F)	
	PI			3435+59.96	2180353.265	6025847.455						
	CS				2180303.436	6025843.322	0°18'18"	18779.51	0°18'18"	100.00		50.00
	ST			100.00	3436+59.96	2180253.630	6025838.924					
	TS	S05°11'56"W	4.59	3437+59.96	2180154.033	6025829.951						
POE				3437+64.55	2180149.465	6025829.536						

60% SUBMITTAL

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DESIGNED BY A. CRAFT
 DRAWN BY A. COSS
 CHECKED BY P. MAHONEY
 APPROVED BY M. CANAS
 DATE SEPTEMBER 09, 2011



BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 TRACK GEOMETRY DATA
 SHEET 1 OF 2

CONTRACT NO.	
DRAWING NO.	RT-01
REVISION	0 SHEET NO. 012
SCALE	NO SCALE

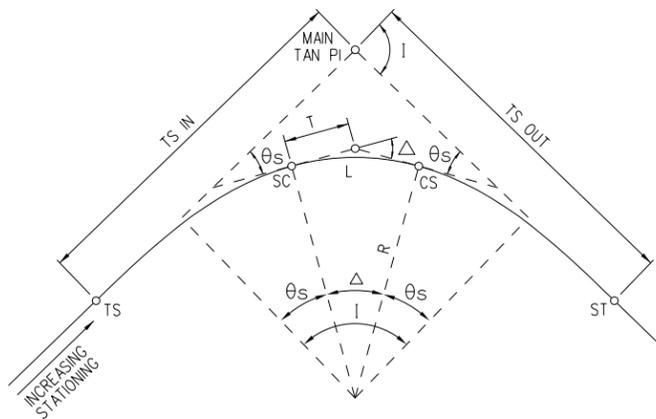


FIGURE A
CIRCULAR CURVES
WITH SPIRAL TRANSITION

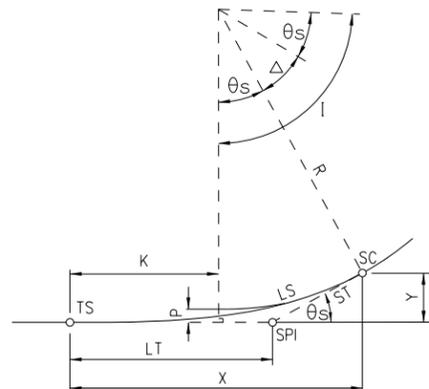


FIGURE C
SPIRAL TRANSITION CURVE

- I - TOTAL INTERSECTION ANGLE
- θ_s - SPIRAL ANGLE = $\frac{LS \cdot D_c}{200}$
- Δ - CENTRAL ANGLE OF CIRCULAR CURVE = $I - 2\theta_s$
- R - RADIUS OF CIRCULAR CURVE
- T - TANGENT LENGTH OF CIRCULAR CURVE = $R \tan \frac{\Delta}{2}$
- L - LENGTH OF CIRCULAR CURVE = $\frac{\Delta}{D_c} \times 100$
- TS - TANGENT TO SPIRAL
- SC - SPIRAL TO CURVE
- CS - CURVE TO SPIRAL
- ST - SPIRAL TO TANGENT

MAIN TAN PI - POINT OF INTERSECTION OF MAIN TANGENTS
 (TS IN) - TANGENT LENGTH OF COMPLETE CURVE = $(R+P) \tan \frac{I}{2} + K$
 (TS OUT)

(WHEN SPIRALS OF EQUAL LENGTH
 ARE USED ON BOTH SIDES OF
 CIRCULAR CURVE, SEE FIGURE C.
 FOR P AND K).

SPIRAL TRANSITION CURVE DATA:
 THE SPIRAL USED IS DEFINED BY THE BARNETT SPIRAL.

LS = LENGTH OF SPIRAL (TS TO SC)
 $\delta_s = \frac{\theta_s \pi}{180}$ $\theta_s = \frac{LS \cdot D_c}{200}$
 $X = LS \left(1 - \frac{\delta_s^2}{10} + \frac{\delta_s^4}{216} \right)$
 $Y = LS \left(\frac{\delta_s}{3} - \frac{\delta_s^3}{42} \right)$
 $P = Y - R(1 - \cos \theta_s)$
 $K = X - R \sin \theta_s$
 $ST = \frac{Y}{\sin \theta_s}$
 $LT = X - \frac{Y}{\tan \theta_s}$

$D_c = 2 \sin^{-1} (50/R) =$ DEGREE OF CURVE (CHORD DEFINITION)

SPI - SPIRAL POINT OF INTERSECTION

NOTE: $D_c, \theta_s, \Delta,$ AND I ARE IN DEGREES.
 δ_s - EXPRESSED IN RADIAN.
 ALL OTHERS DIMENSIONS ARE FEET.

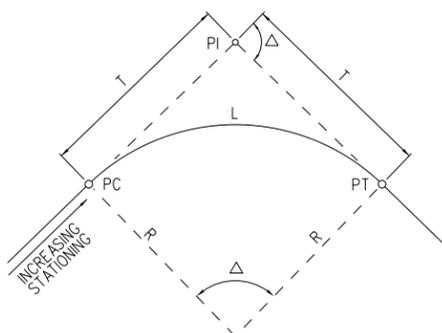


FIGURE B
SIMPLE CIRCULAR CURVE

- R = RADIUS OF CIRCULAR CURVE
- Δ = CENTRAL ANGLE OF CIRCULAR CURVE
- $T = R \tan \frac{\Delta}{2}$
- $L = \frac{\Delta}{D_c} \times 100$
- $D_c = 2 \sin^{-1} (50/R) =$ DEGREE OF CURVE (CHORD DEFINITION)

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 10/18/2011

PROJECT NUMBER	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

60% SUBMITTAL

REV	DATE	DESCRIPTION	BY	SUB	APP

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DESIGNED BY A. CRAFT
 DRAWN BY A. COSS
 CHECKED BY P. MAHONEY
 APPROVED BY M. CANAS
 DATE SEPTEMBER 09, 2011

BNSF RAILWAY

UNION PACIFIC RAILROAD

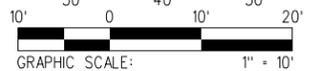
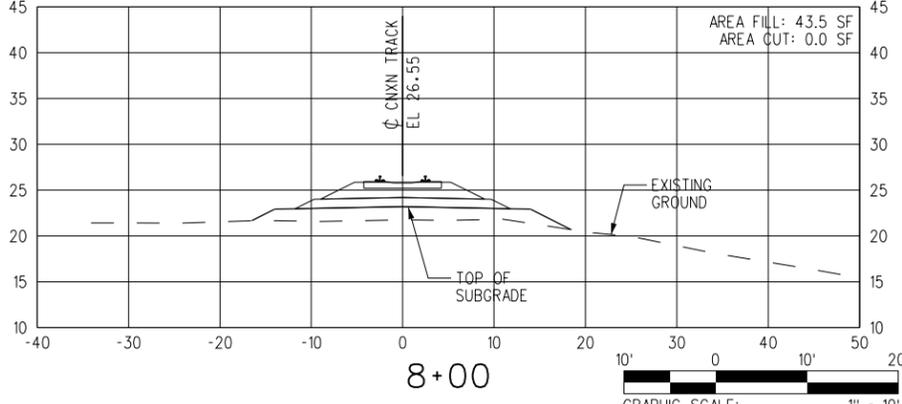
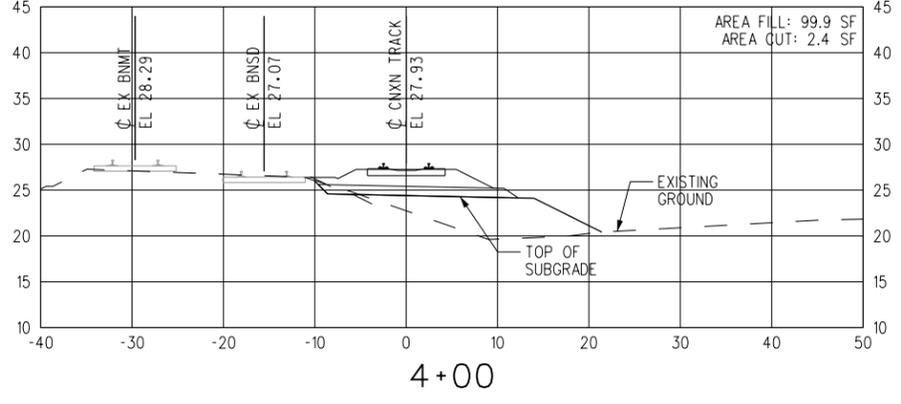
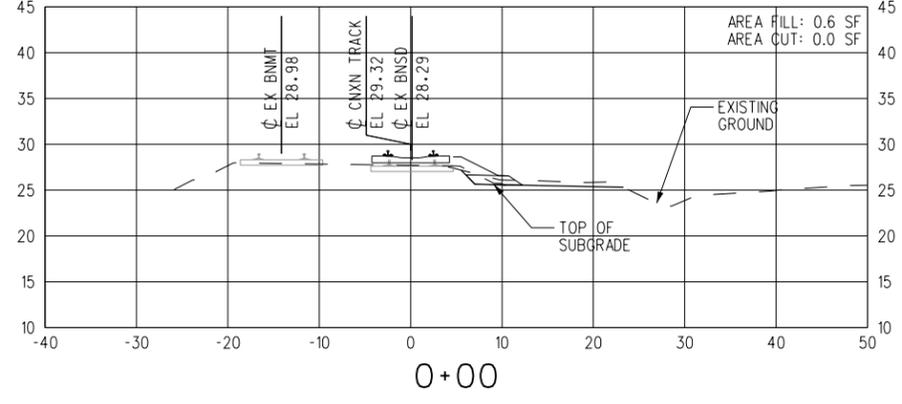
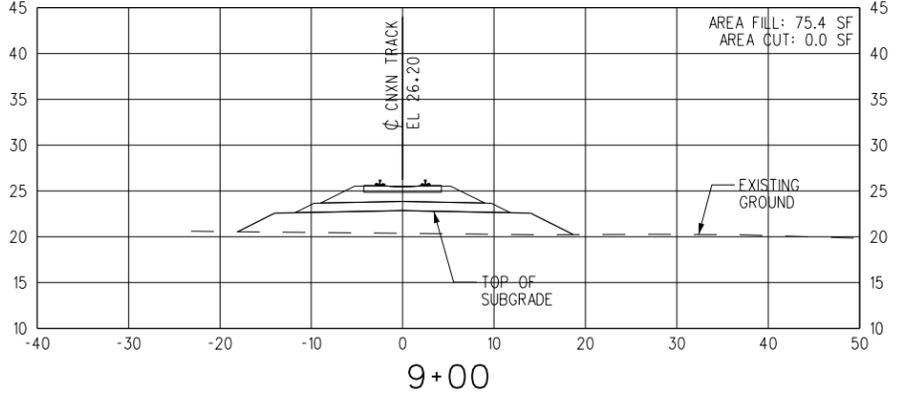
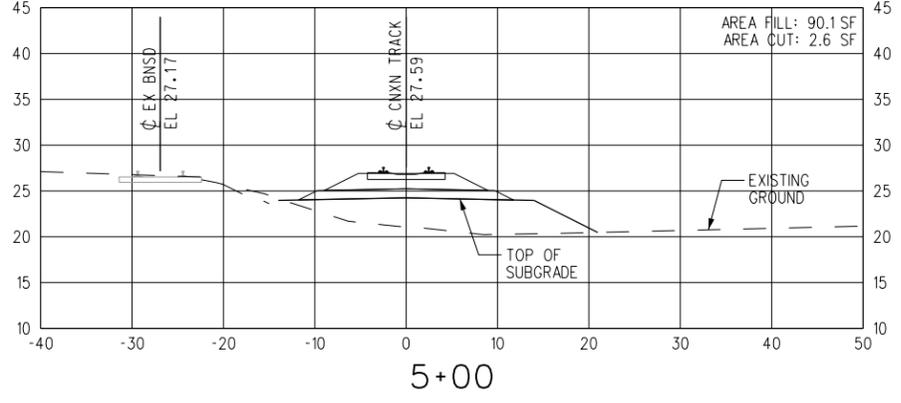
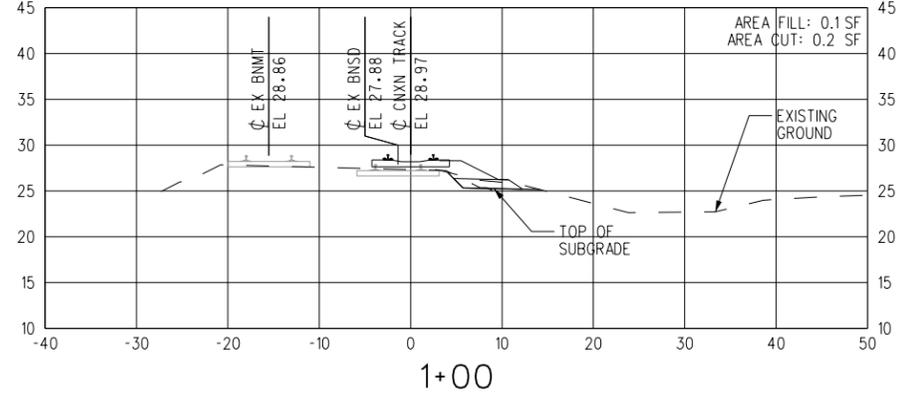
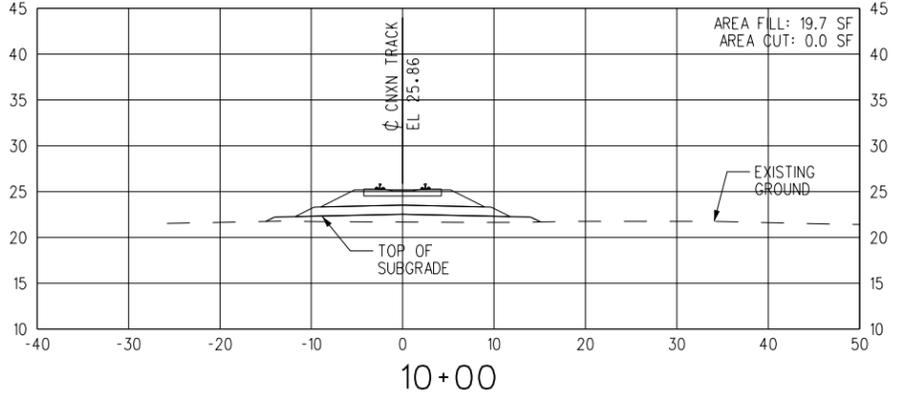
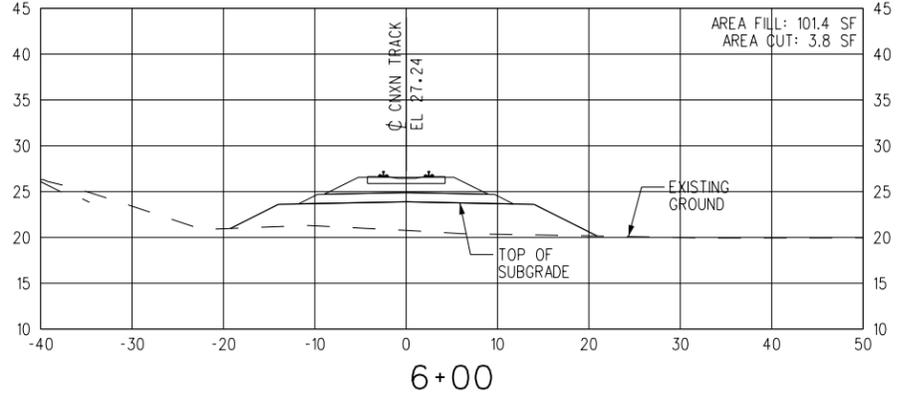
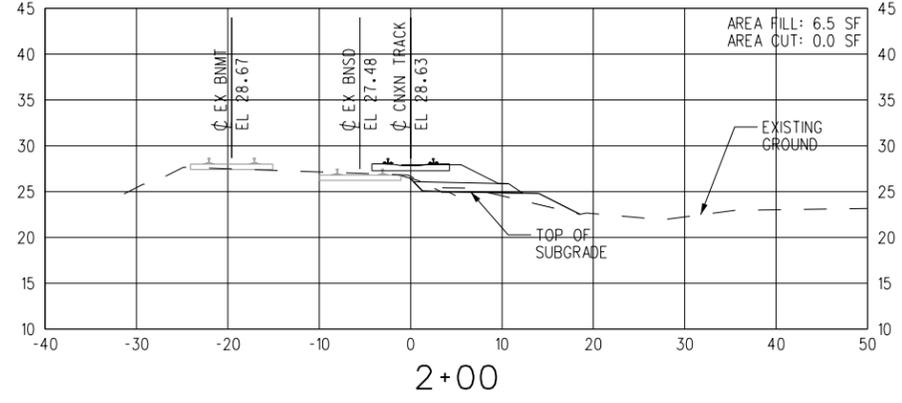
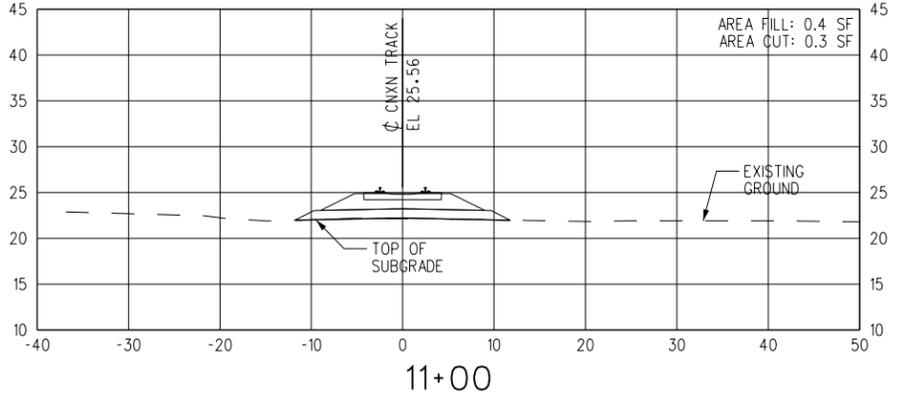
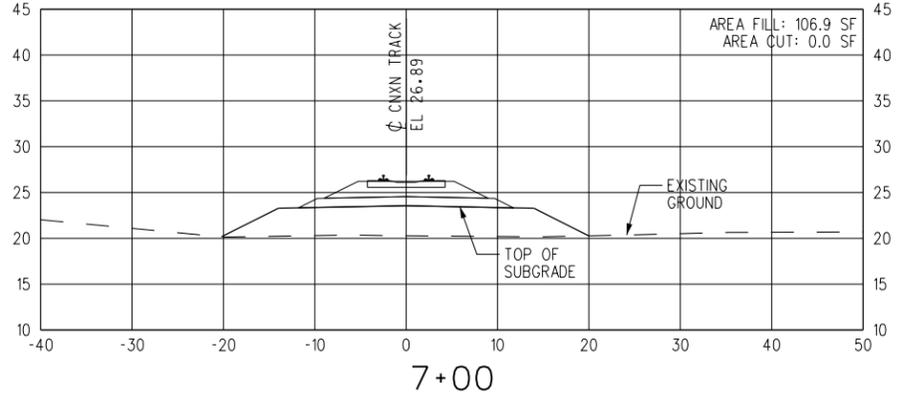
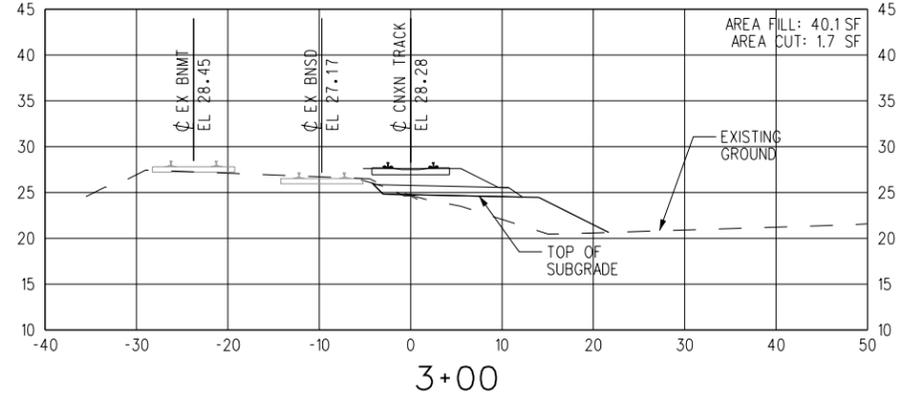
PATTERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD
 SUITE 300
 ORANGE, CA 92668

BNSF RAILWAY
 RICHMOND RAIL CONNECTION

TRACK GEOMETRY DATA
 SHEET 2 OF 2

CONTRACT NO.	
DRAWING NO.	RT-02
REVISION	0 SHEET NO. 013
SCALE	NO SCALE

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 10/18/2011



PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

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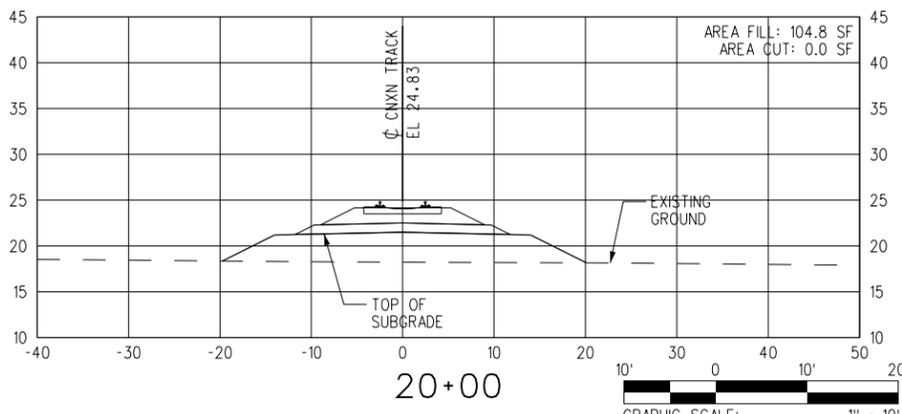
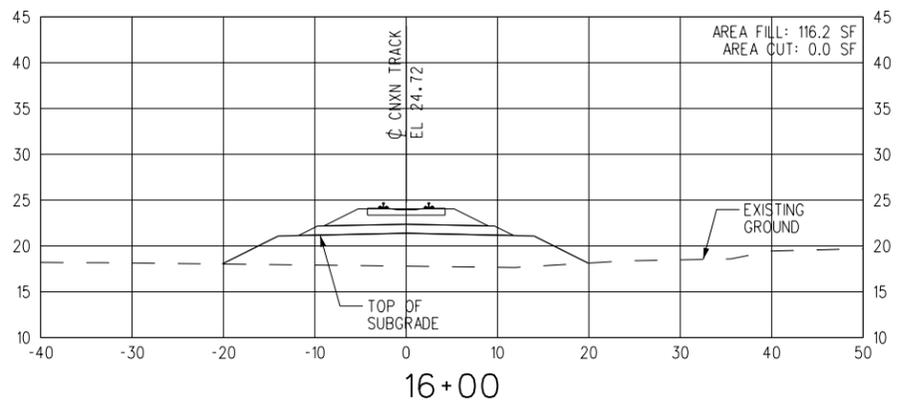
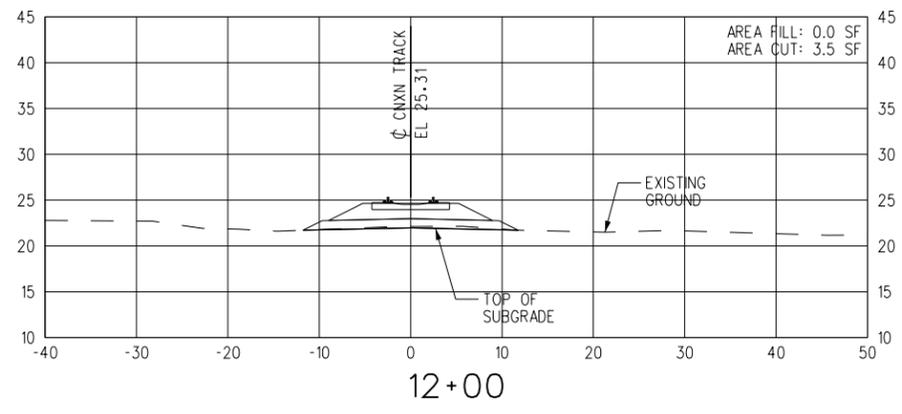
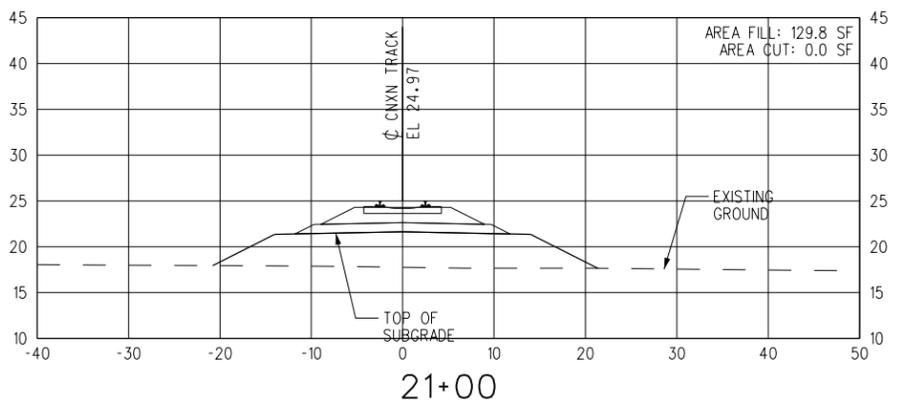
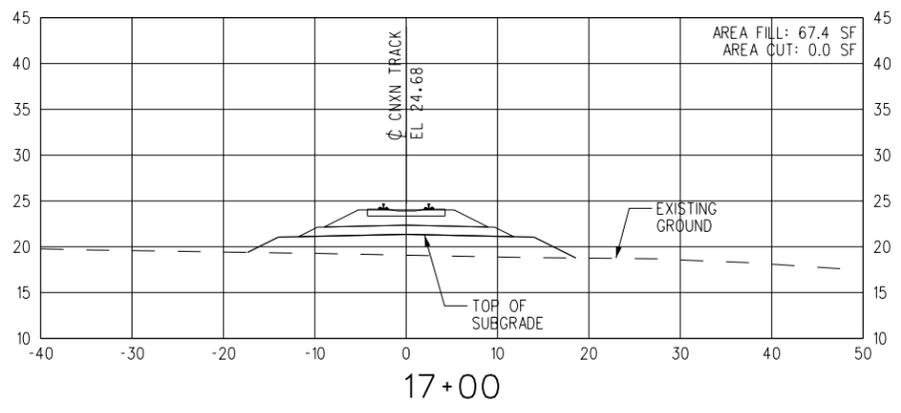
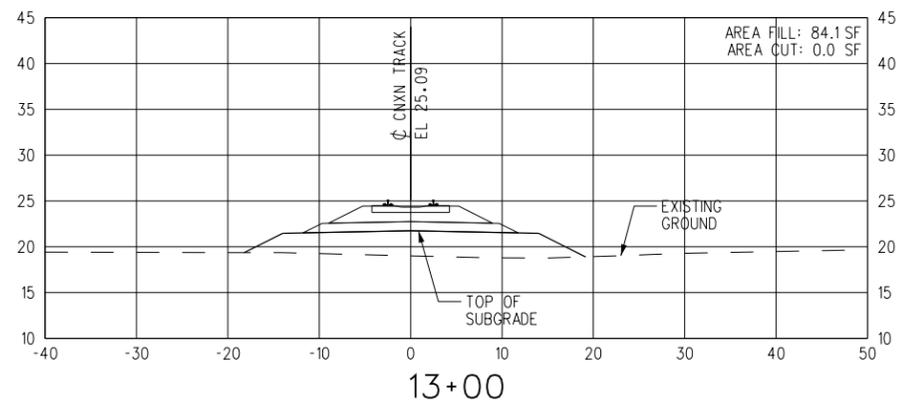
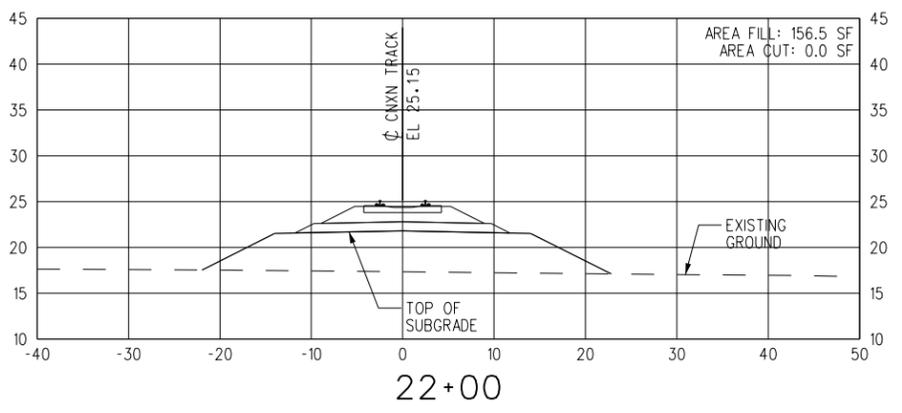
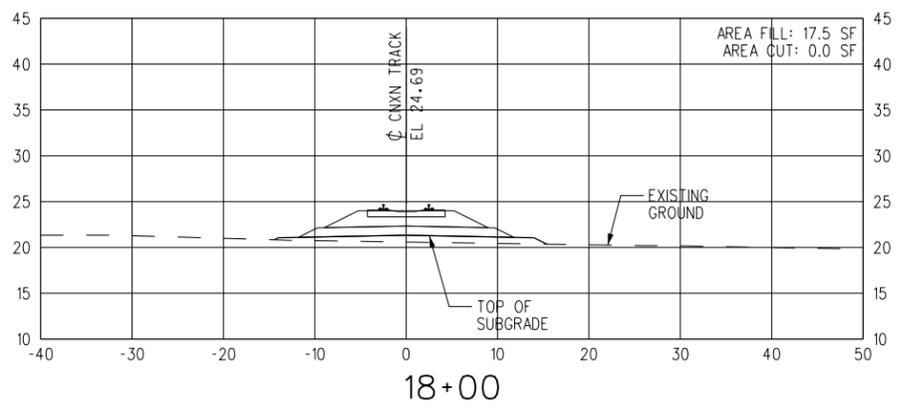
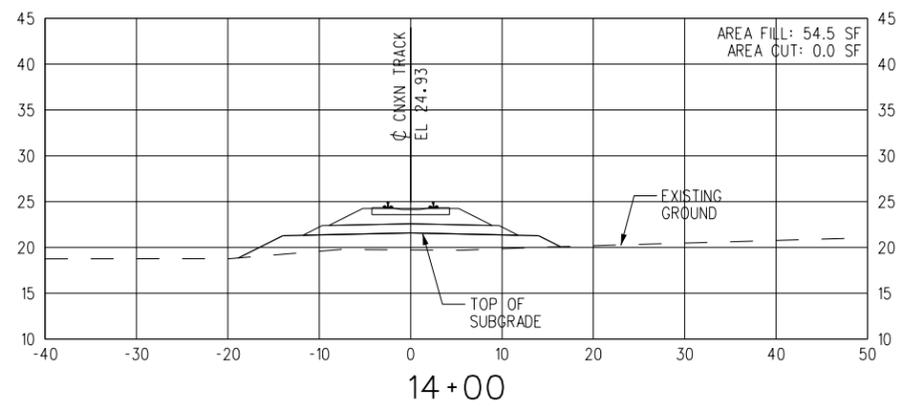
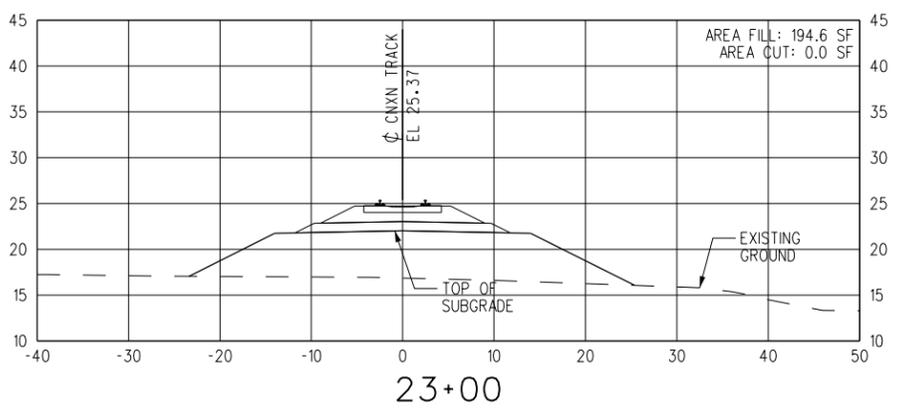
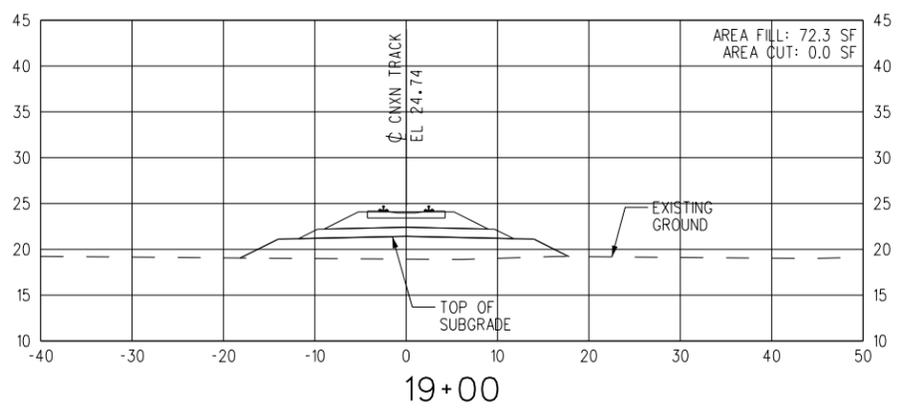
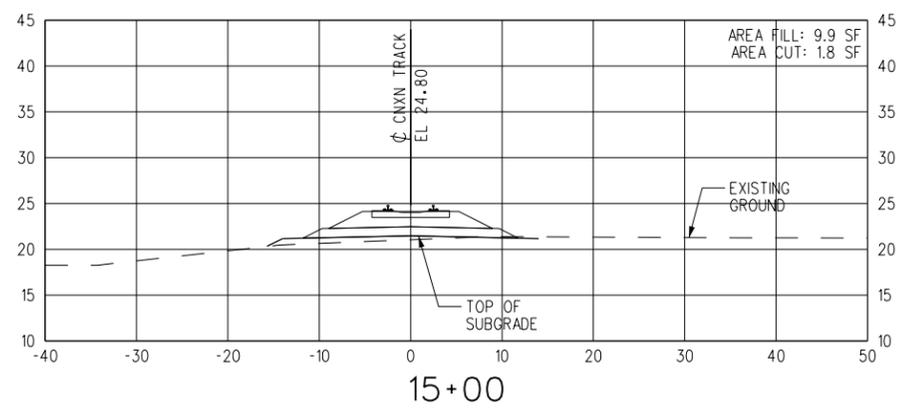
DESIGNED BY: A. CRAFT
 DRAWN BY: A. COSS
 CHECKED BY: M. CANAS
 APPROVED BY: M. CANAS
 DATE: SEPTEMBER 09, 2011



BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 CROSS-SECTIONS - SHEET 1 OF 5
 CNXX 0+00 TO CNXX 11+00

CONTRACT NO.
 DRAWING NO. RX-01
 REVISION 0 SHEET NO. 014
 SCALE AS SHOWN

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 10/18/2011



PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

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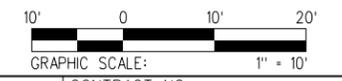
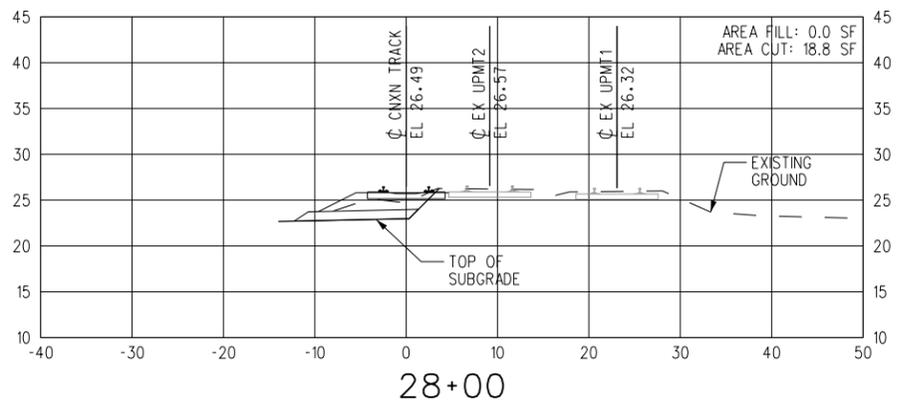
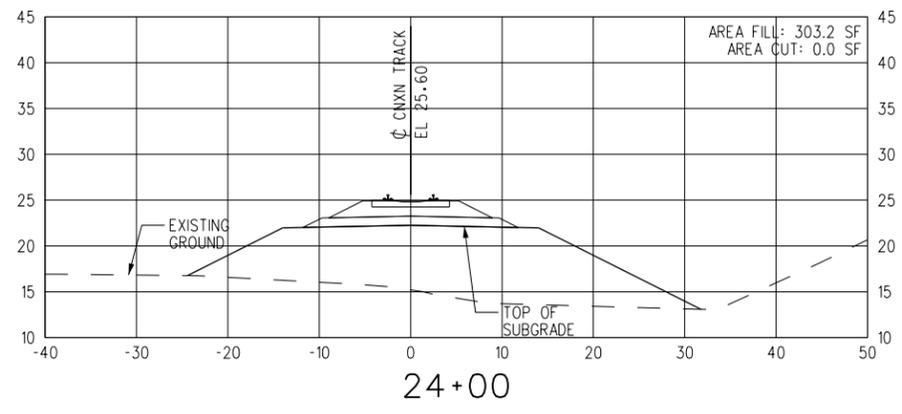
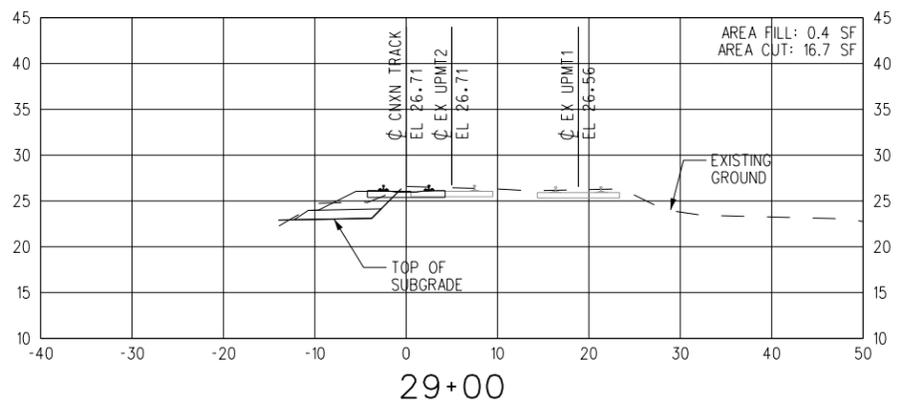
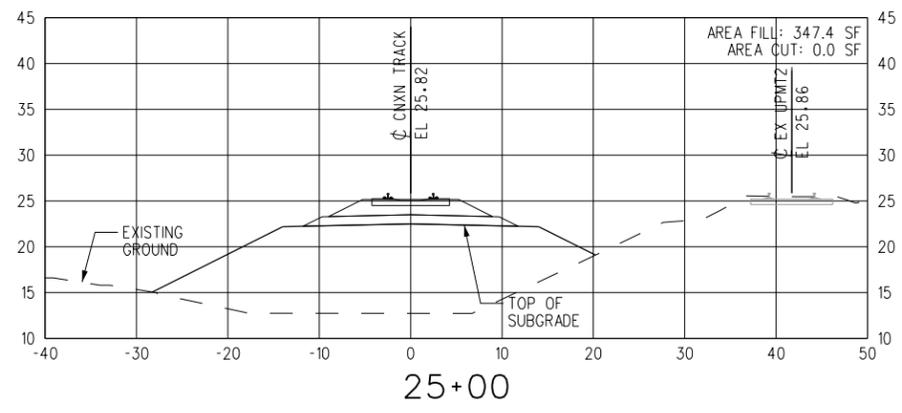
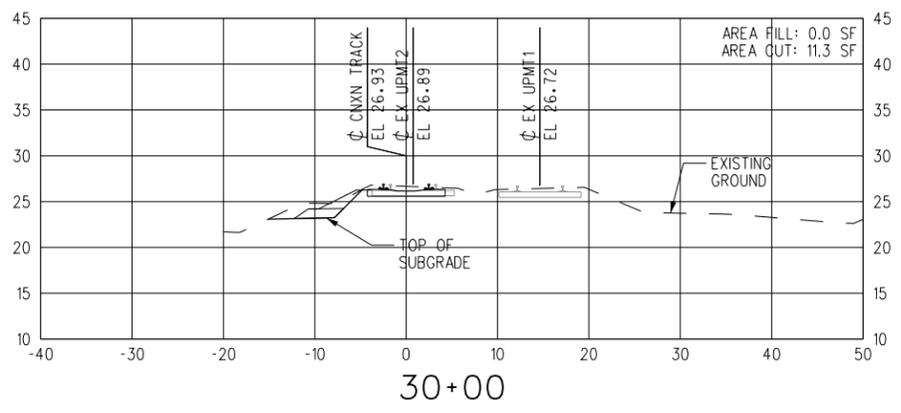
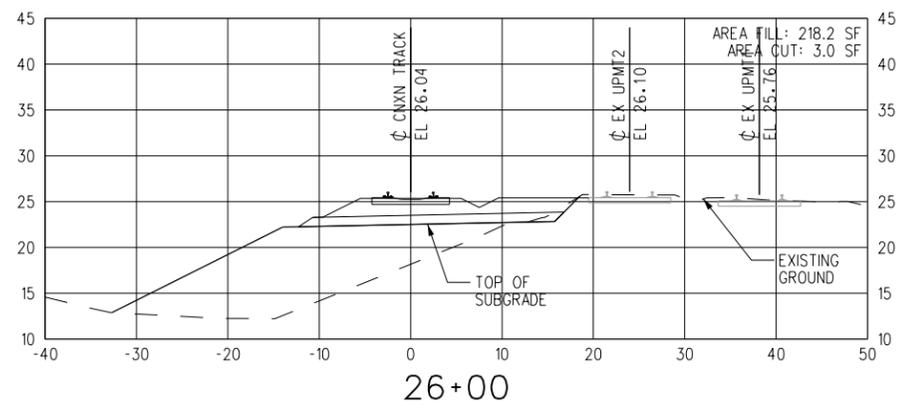
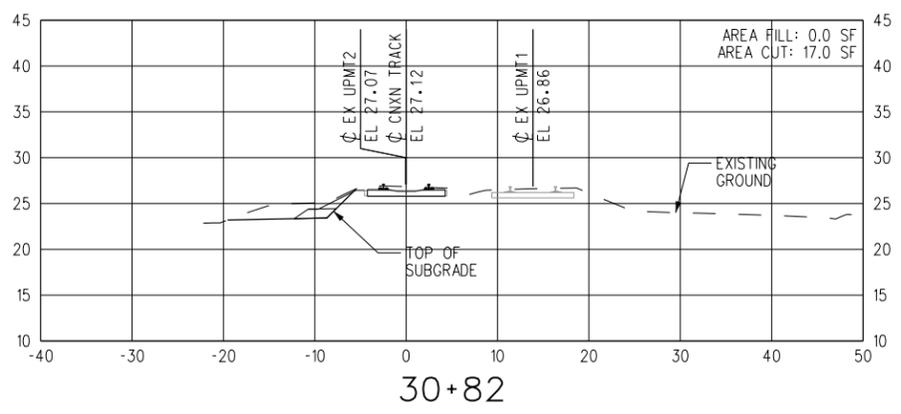
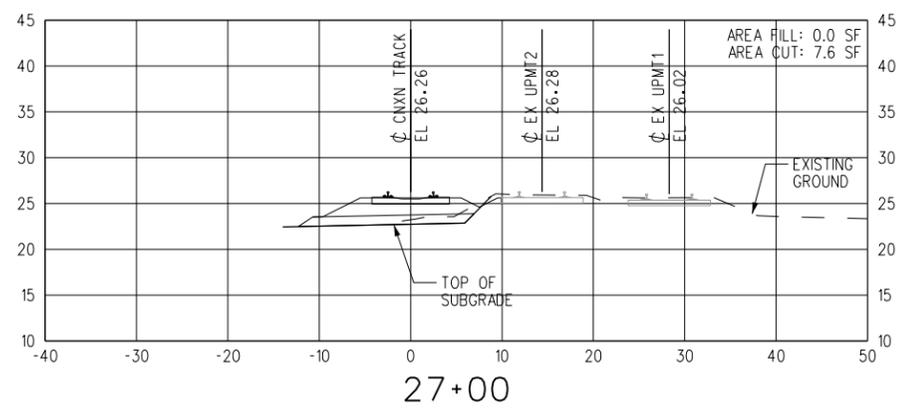
DESIGNED BY: A. CRAFT
 DRAWN BY: A. COSS
 CHECKED BY: M. CANAS
 APPROVED BY: M. CANAS
 DATE: SEPTEMBER 09, 2011



BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 CROSS-SECTIONS - SHEET 2 OF 5
 CNXN 12+00 TO CNXN 23+00

CONTRACT NO.
 DRAWING NO. RX-02
 REVISION 0 SHEET NO. 015
 SCALE AS SHOWN

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 10/18/2011



PROJECT NUMBER	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

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 DRAWN BY: A. COSS
 CHECKED BY: M. CANAS
 APPROVED BY: M. CANAS
 DATE: SEPTEMBER 09, 2011

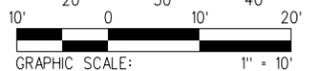
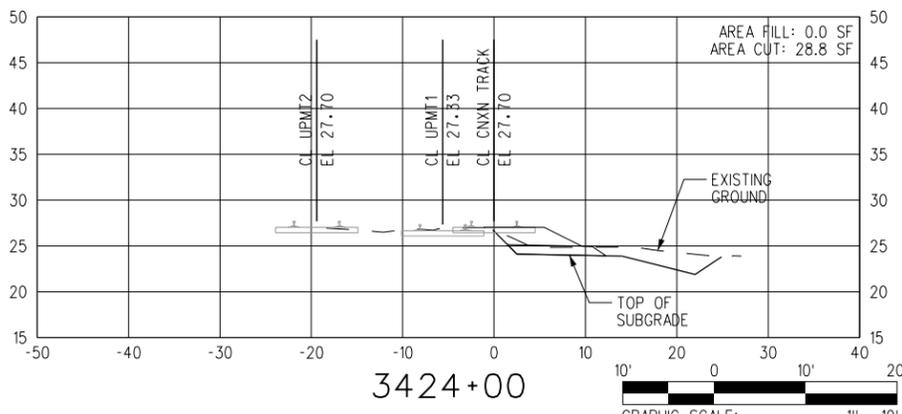
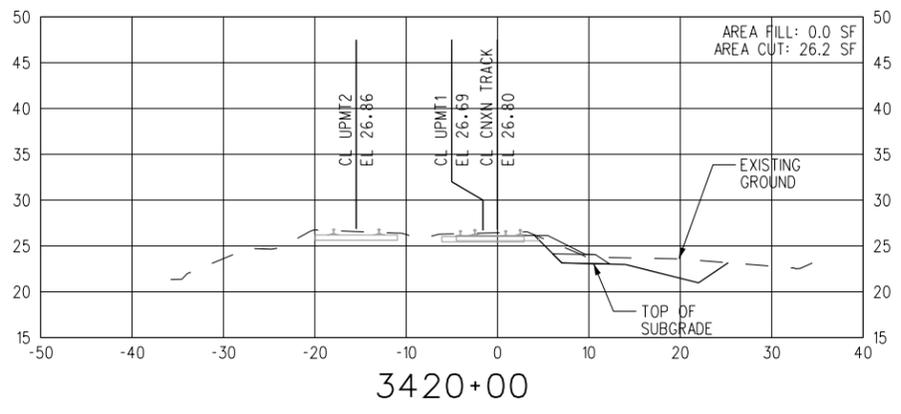
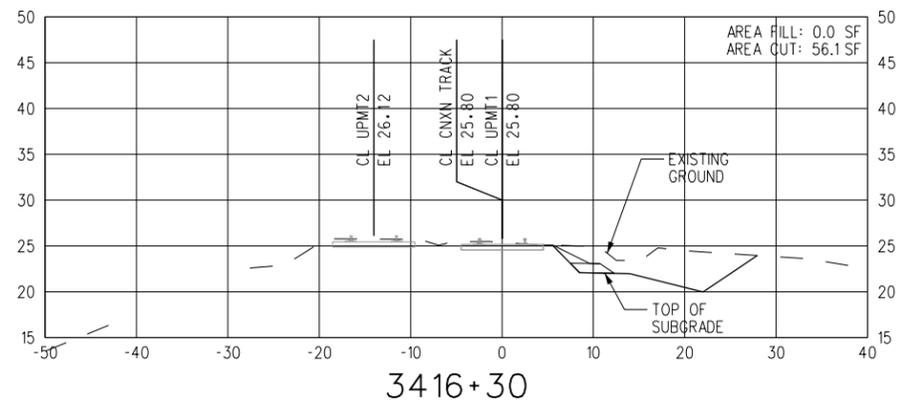
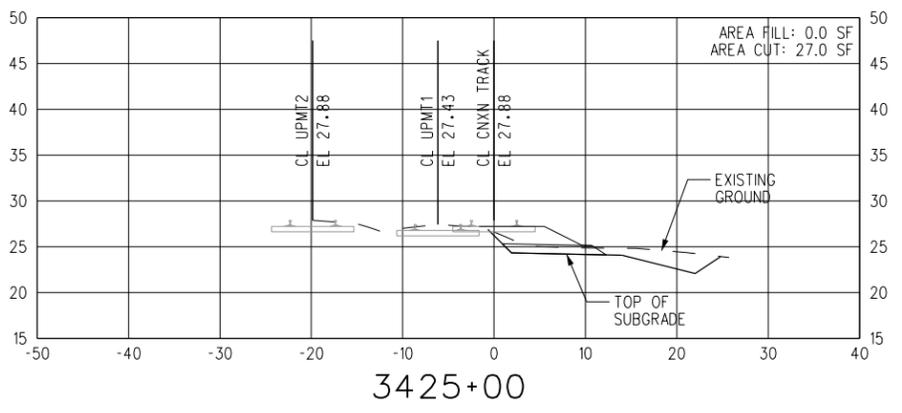
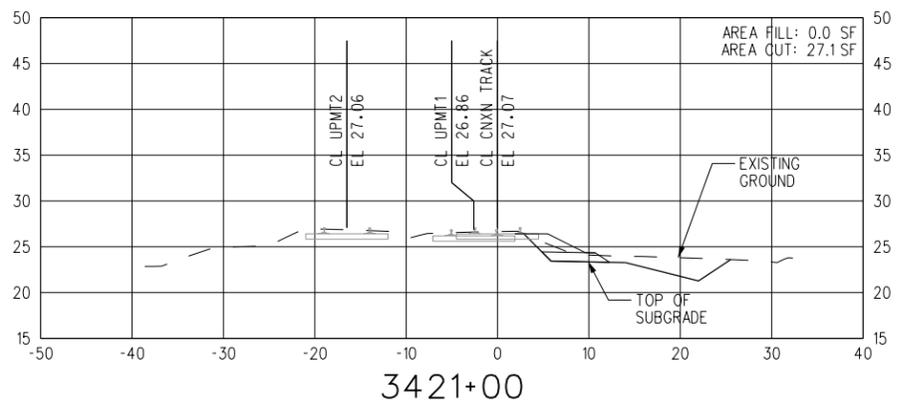
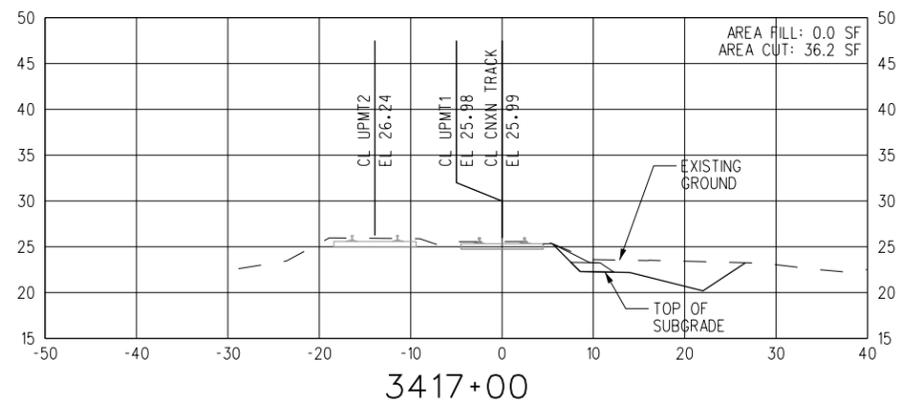
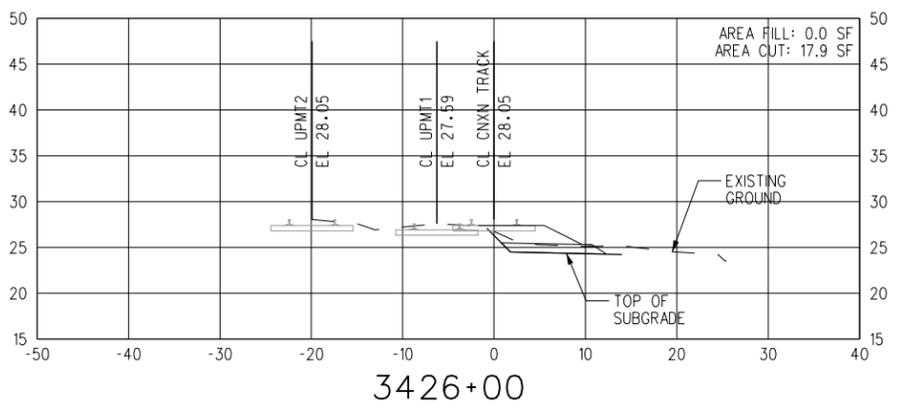
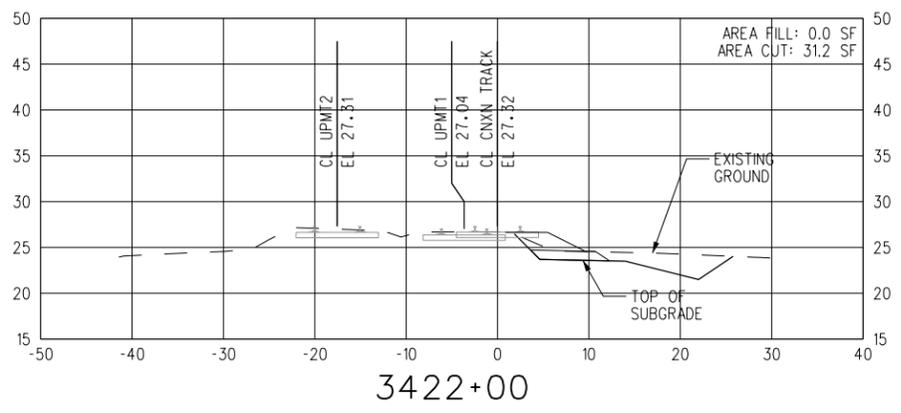
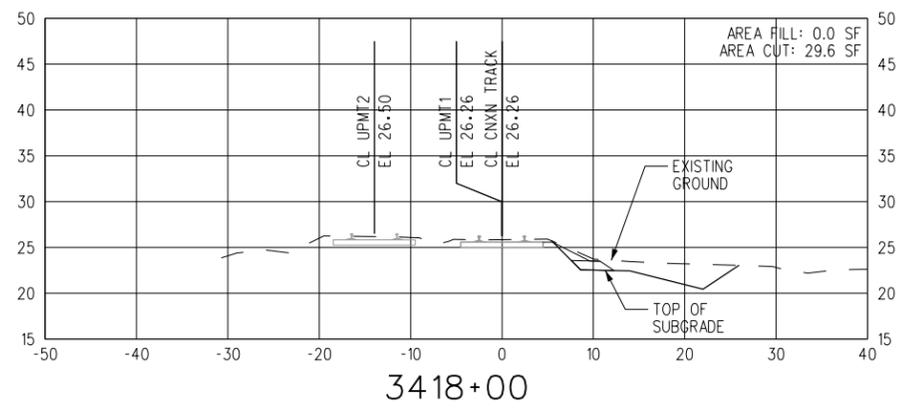
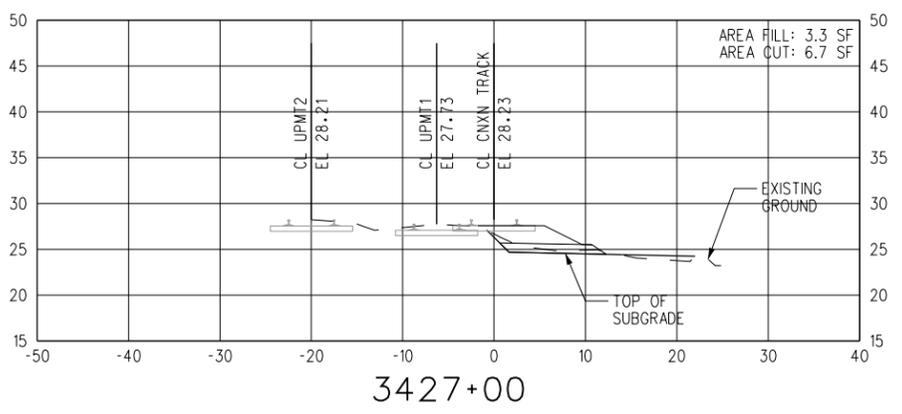
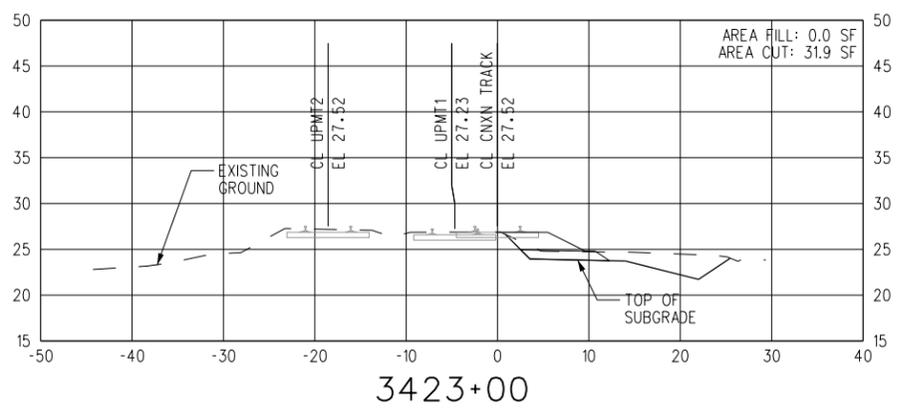
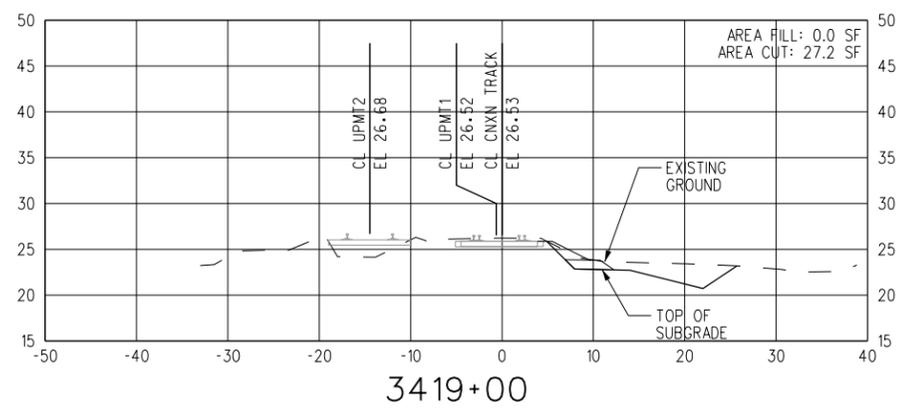


BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 CROSS-SECTIONS - SHEET 3 OF 5
 CNXN 24+00 TO CNXN 30+82

CONTRACT NO.	
DRAWING NO.	RX-03
REVISION	0 SHEET NO. 016
SCALE AS SHOWN	

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 10/18/2011

PROJECT NUMBER	
COST ELEMENT	
LINE ITEM	
CONTRACT DESIGNATOR	
PHYSICAL ENTITY	
WORK ELEMENT	



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DESIGNED BY: A. CRAFT
 DRAWN BY: A. COSS
 CHECKED BY: M. CANAS
 APPROVED BY: M. CANAS
 DATE: SEPTEMBER 09, 2011

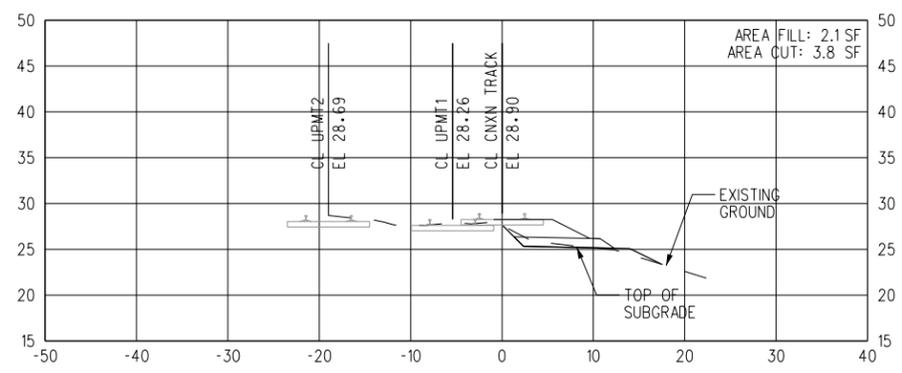


BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 CROSS-SECTIONS - SHEET 4 OF 5
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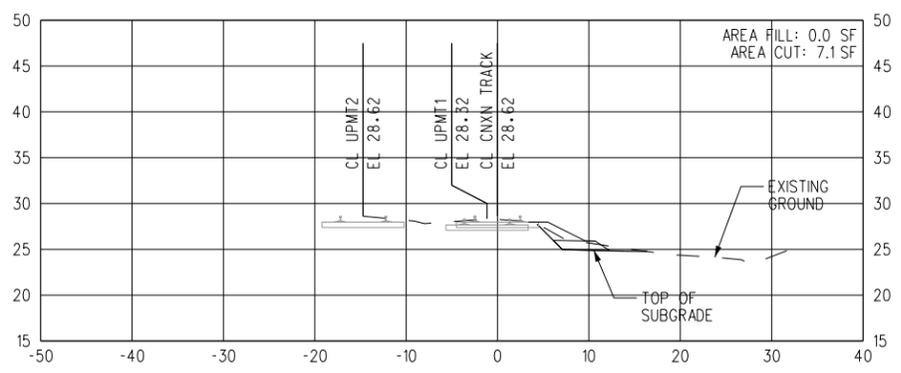
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DRAWING NO.	RX-04
REVISION	0 SHEET NO. 017
SCALE AS SHOWN	

REV	DATE	DESCRIPTION	BY	SUB	APP

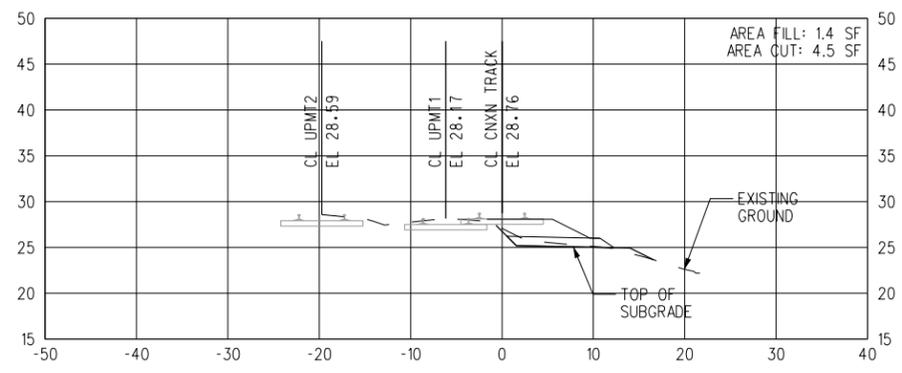
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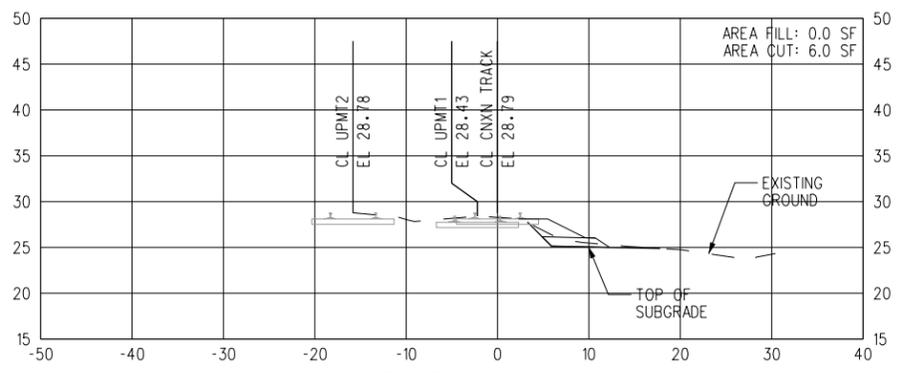
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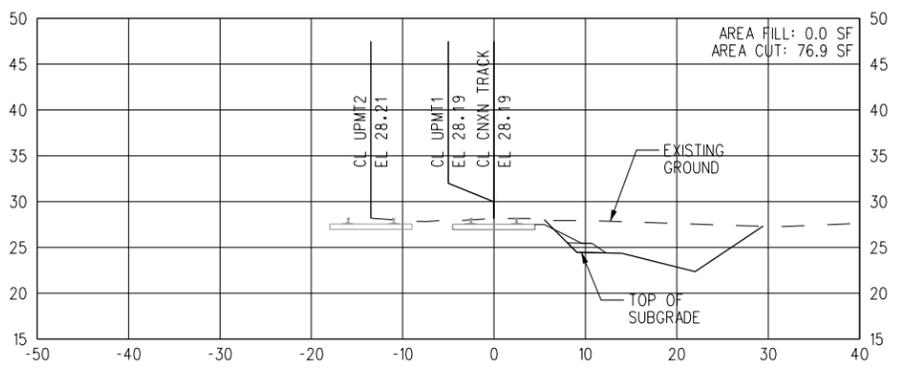
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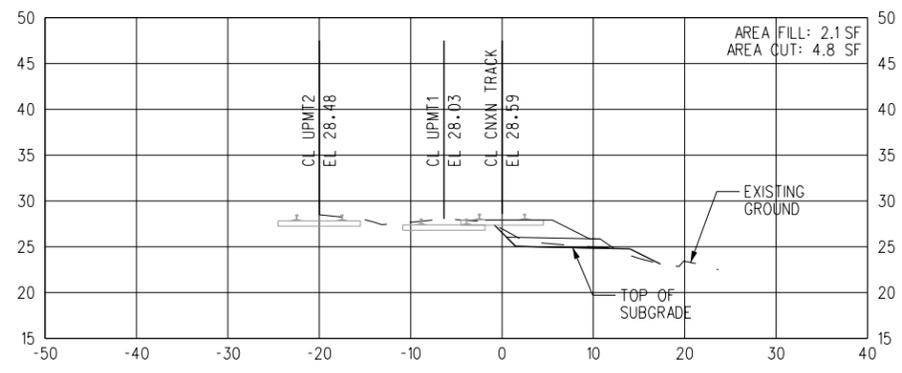
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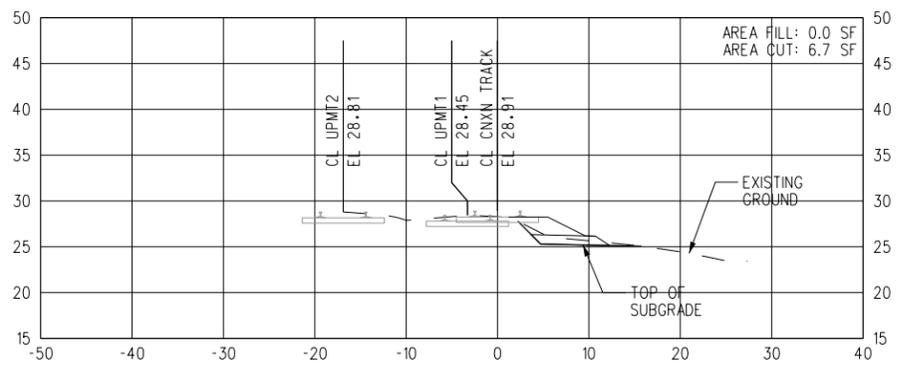
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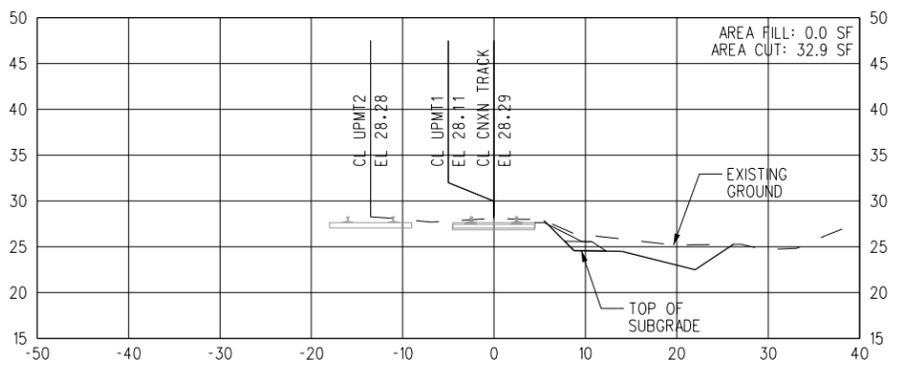
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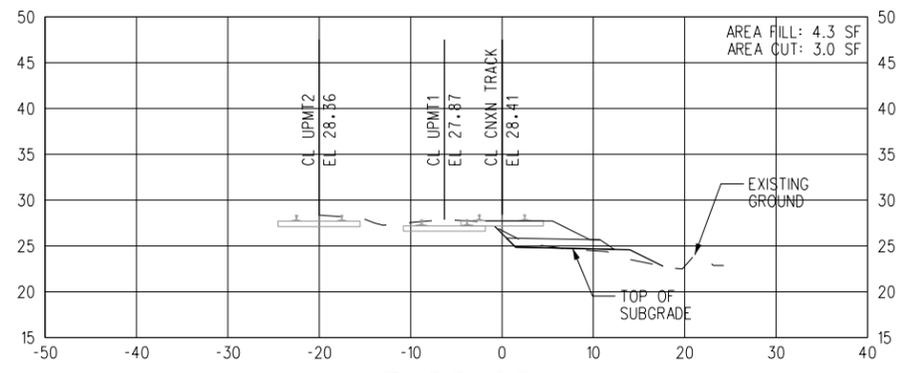
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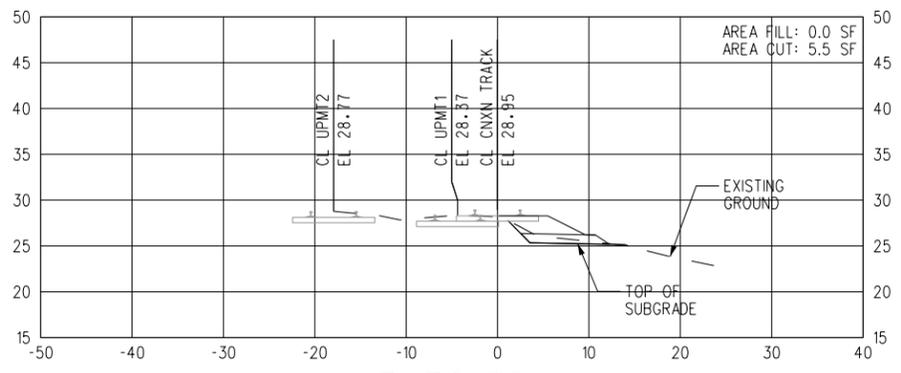
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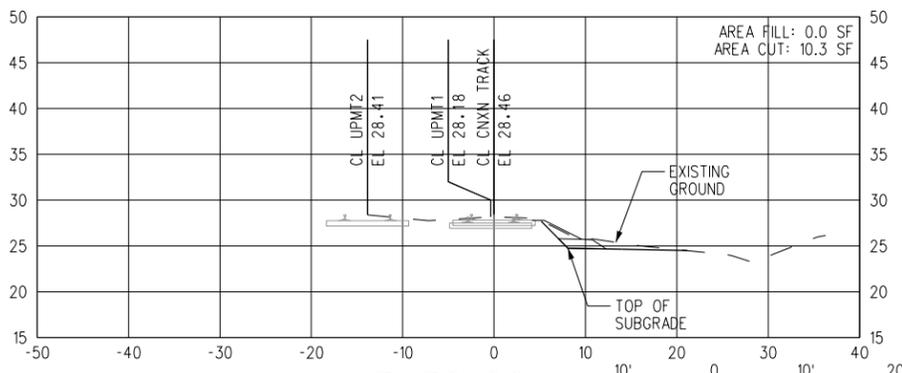
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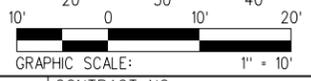
3428+00



3432+00



3436+00



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DESIGNED BY: A. CRAFT
DRAWN BY: A. COSS
CHECKED BY: M. CANAS
APPROVED BY: M. CANAS
DATE: SEPTEMBER 09, 2011



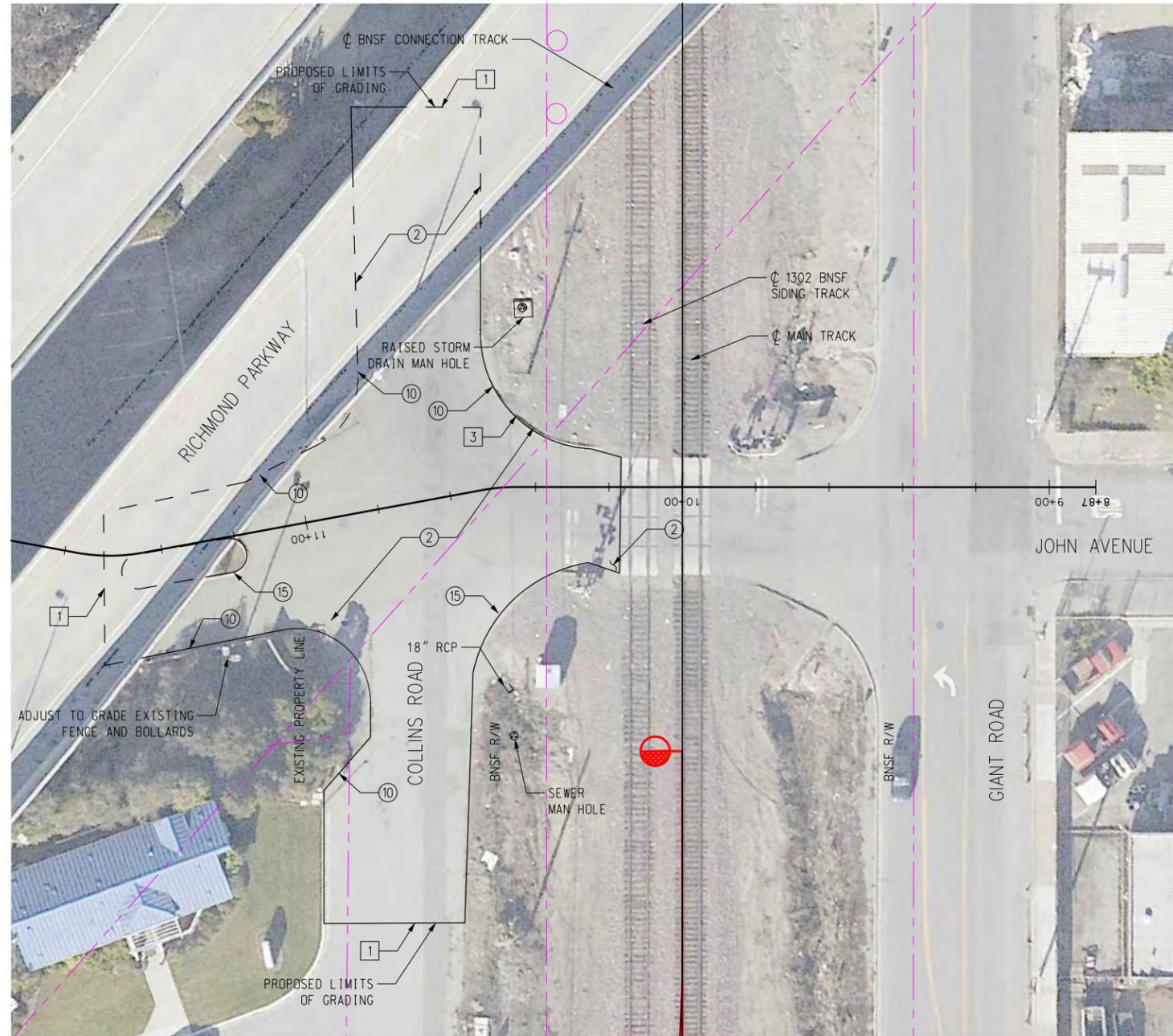
BNSF RAILWAY
RICHMOND RAIL CONNECTION
CROSS-SECTIONS - SHEET 5 OF 5
UP01 3428+00 TO UP01 3437+65

CONTRACT NO.
DRAWING NO. RX-05
REVISION 0 SHEET NO. 018
SCALE AS SHOWN

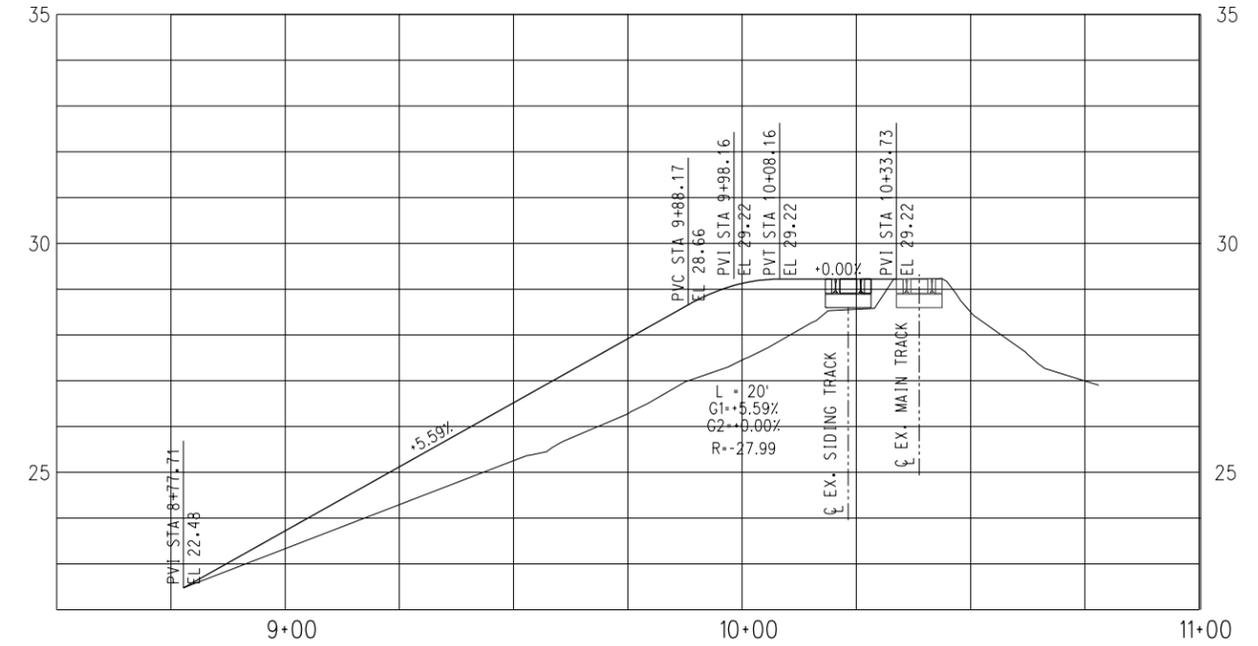
PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

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 10/18/2011



PLAN



PROFILE

REMOVAL NOTES:

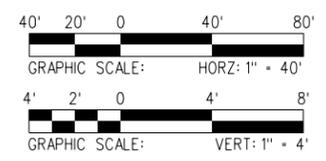
- 1 SAWCUT LINE.

CONSTRUCTION NOTES:

- 2 REMOVE AND CONSTRUCT NEW FULL DEPTH ASPHALT PAVEMENT, MATCH EXISTING SECTION (MINIMUM 4" AC/ 6" AB REQUIRED).
- 3 CONSTRUCT AC APRON AND JOIN EXISTING GROUND AT A MAXIMUM 8:1 SLOPE.
- 10 CONSTRUCT NEW CURB AND GUTTER
 CONSTRUCT TRACK SECTION PER BNSF STD. DWG NO. 2259 WITH 12" MIN. BALLAST
- 15 CONSTRUCT NEW CONCRETE CURB

NOTES

- 1. DETAILED SURVEY INFORMATION PENDING
- 2. DESIGN AS DEPICTED, SUBJECT TO CHANGE PENDING FINAL SURVEY



PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

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DESIGNED BY
 DRAWN BY
 CHECKED BY
 APPROVED BY
 DATE SEPTEMBER 09, 2011

PATTERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD SUITE 300
 ORANGE, CA 92668

BNSF RAILWAY
 RICHMOND RAIL CONNECTION
 JOHN AVENUE CROSSING
 PLAN AND PROFILE

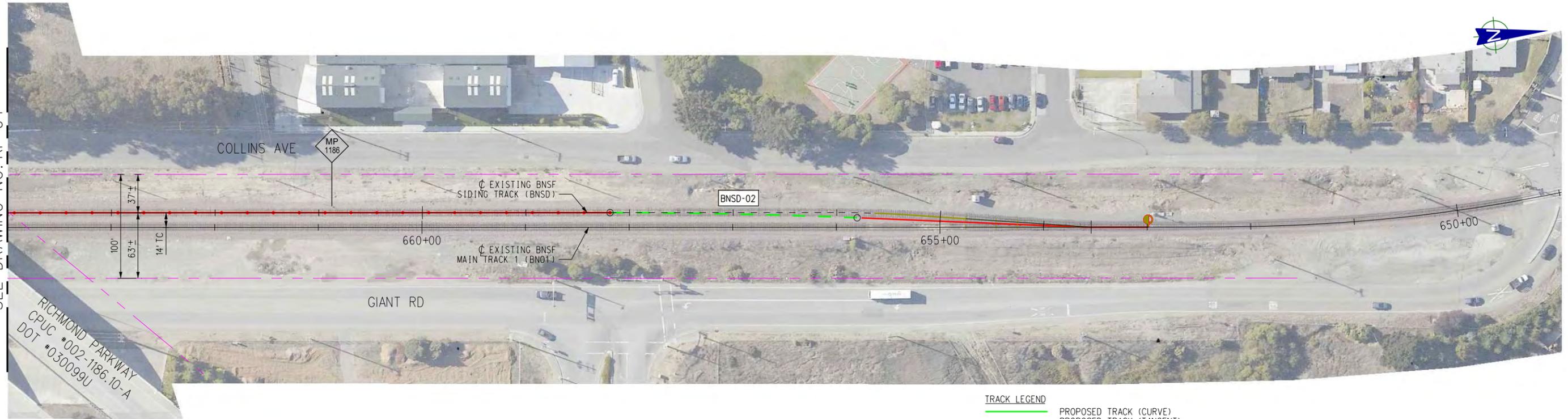
CONTRACT NO.	
DRAWING NO.	CP-01
REVISION	0 SHEET NO. 019
SCALE AS SHOWN	

TO RICHMOND, CA
RR SOUTH

TO CALWA, CA
RR NORTH

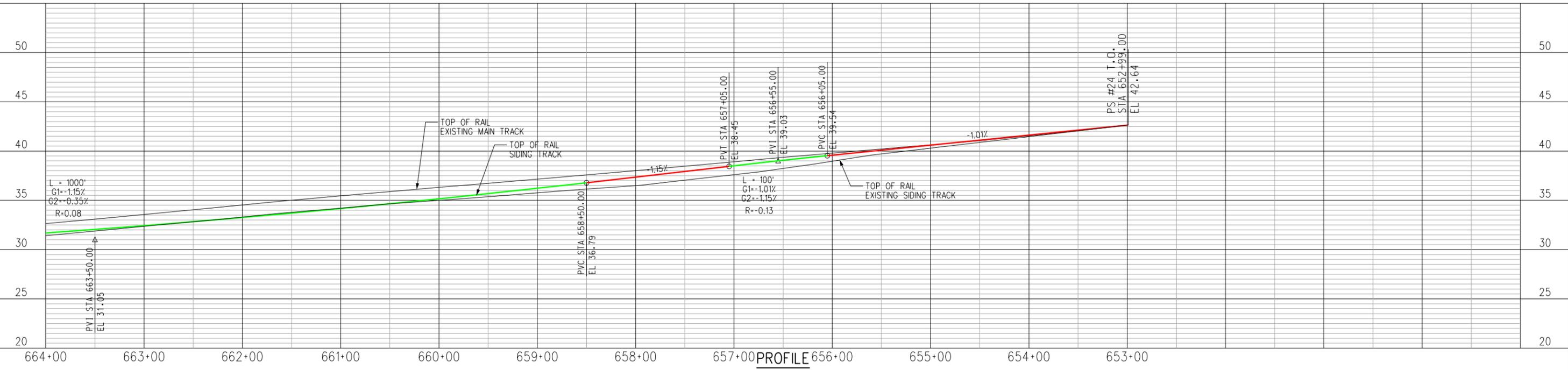
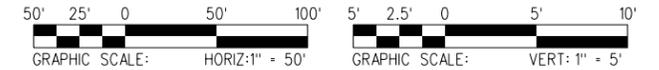


MATCH LINE - BNO1 664+00
SEE DRAWING NO. RP-04



PLAN

TRACK LEGEND	
	PROPOSED TRACK (CURVE)
	PROPOSED TRACK (TANGENT)
	EXISTING TRACK (TO REMAIN)
	EXISTING TRACK (TO BE REMOVED)



PROFILE

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10:30:51 AM
10/18/2011

PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

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DRAWN BY	A. COSS
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APPROVED BY	M. CANAS
DATE	SEPTEMBER 09, 2011

BNSF RAILWAY
RICHMOND RAIL CONNECTION
UTILITY PLAN - SHEET 1 OF 5
BNSD 664+00 TO BNSD 653+00
MP 1186.10 TO MP 1185.87 (BNSF)

CONTRACT NO.	
DRAWING NO.	UA-01
REVISION	0 SHEET NO. 020
SCALE AS SHOWN	

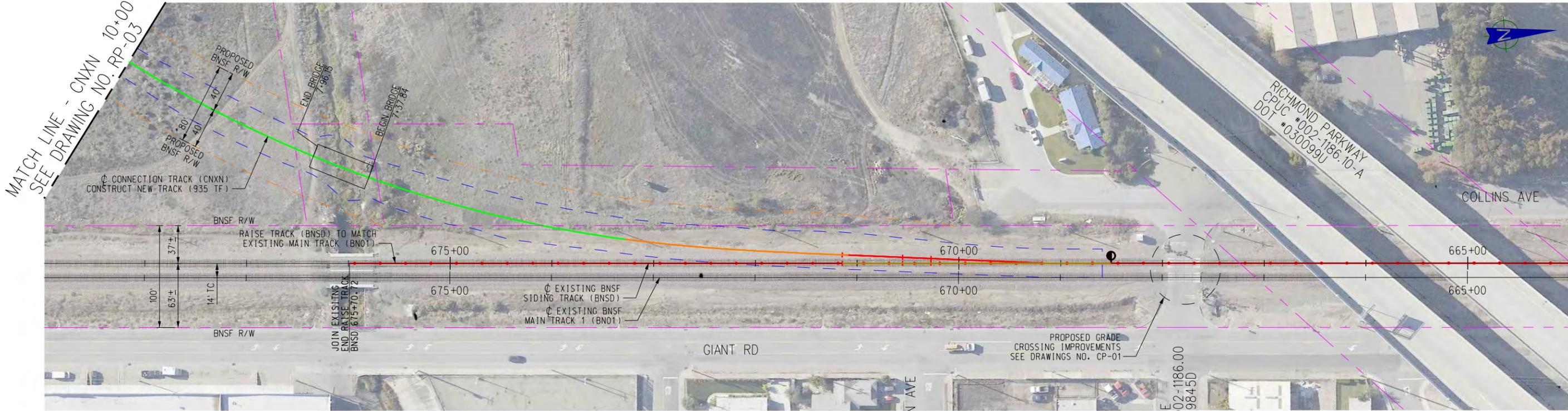
REV	DATE	DESCRIPTION	BY	SUB	APP

TO RICHMOND, CA

TO CALWA, CA

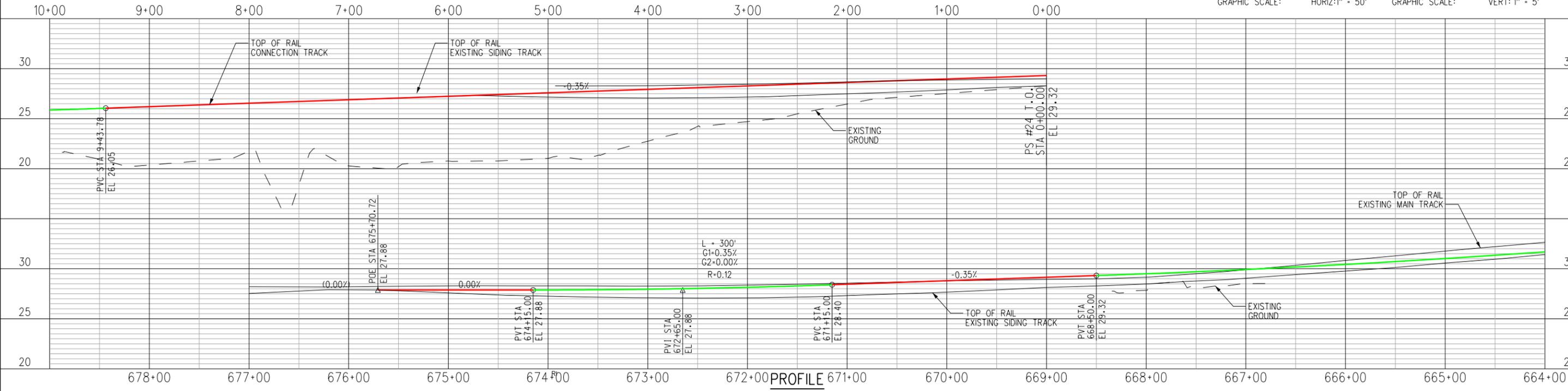
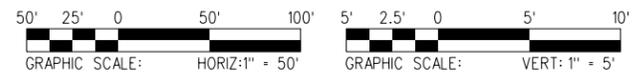
RR SOUTH

RR NORTH



PLAN

- TRACK LEGEND**
- PROPOSED TRACK (CURVE)
 - PROPOSED TRACK (TANGENT)
 - PROPOSED TRACK (SPIRAL)
 - EXISTING TRACK (TO REMAIN)
 - EXISTING TRACK (TO BE REMOVED)
 - - - PROPOSED RIGHT OF WAY (BNSF)



PROFILE

60% SUBMITTAL

Information confidential all plans, drawings, specifications, and/or information furnished here with shall remain the property of the Burlington Northern Santa Fe Railway and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Burlington Northern Santa Fe Railway.

DESIGNED BY
DRAWN BY
CHECKED BY
APPROVED BY
DATE SEPTEMBER 09, 2011



BNSF RAILWAY
RICHMOND RAIL CONNECTION
UTILITY PLAN - SHEET 2 OF 5
CNXN 10+00 TO BNSD 664+00
MP 1186.36 TO MP 1186.10 (BNSF)

CONTRACT NO.
DRAWING NO. UA-02
REVISION 0 SHEET NO. 021
SCALE AS SHOWN

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10/18/2011

PROJECT NUMBER	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

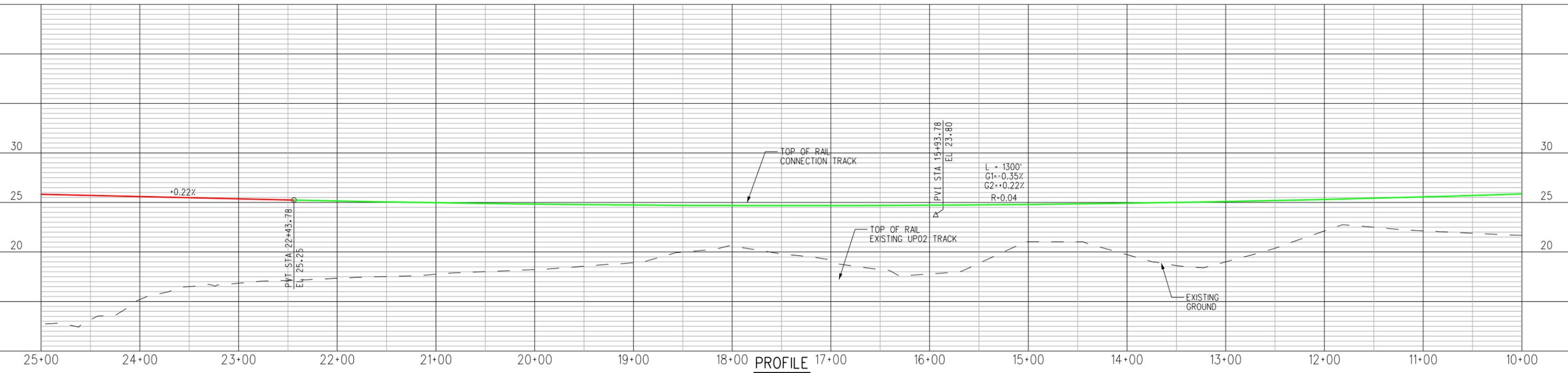
REV	DATE	DESCRIPTION	BY	SUB	APP



- TRACK LEGEND**
- PROPOSED TRACK (CURVE)
 - PROPOSED TRACK (TANGENT)
 - PROPOSED TRACK (SPIRAL)
 - EXISTING TRACK (TO REMAIN)
 - PROPOSED RIGHT OF WAY (BNSF)



PLAN



PROFILE

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 10:31:00 AM
 10/18/2011

PROJECT NUMBER	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

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60% SUBMITTAL

Information confidential all plans, drawings, specifications, and/or information furnished here with shall remain the property of the Burlington Northern Santa Fe Railway and shall be held confidential and shall not be used for any purpose not provided for in agreements with the Burlington Northern Santa Fe Railway.

DESIGNED BY	A. CRAFT
DRAWN BY	A. COSS
CHECKED BY	M. CANAS
APPROVED BY	M. CANAS
DATE	SEPTEMBER 09, 2011

BNSF RAILWAY

UNION PACIFIC RAILROAD

PATTERSON & ASSOCIATES, INC.
 725 TOWN & COUNTRY RD
 SUITE 300
 ORANGE, CA 92668

BNSF RAILWAY
RICHMOND RAIL CONNECTION

UTILITY PLAN - SHEET 3 OF 5
 CNXN 25+00 TO CNXN 10+00
 MP 1186.61 TO MP 1186.36 (BNSF)

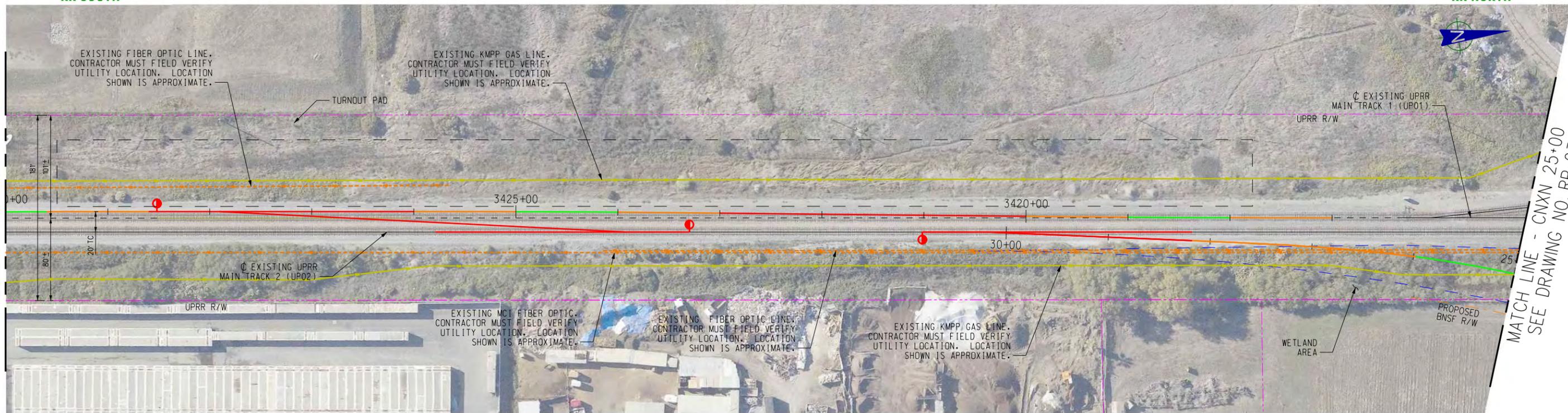
CONTRACT NO.	
DRAWING NO.	UA-03
REVISION	0 SHEET NO. 022
SCALE AS SHOWN	

TO RICHMOND, CA
RR SOUTH

TO CALWA, CA
RR NORTH

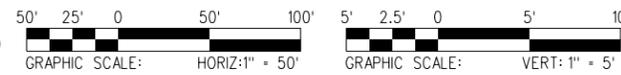
MATCH LINE - UP01 3430+00
SEE DRAWING NO. RP-01

MATCH LINE - CNXN 25+00
SEE DRAWING NO. RP-03

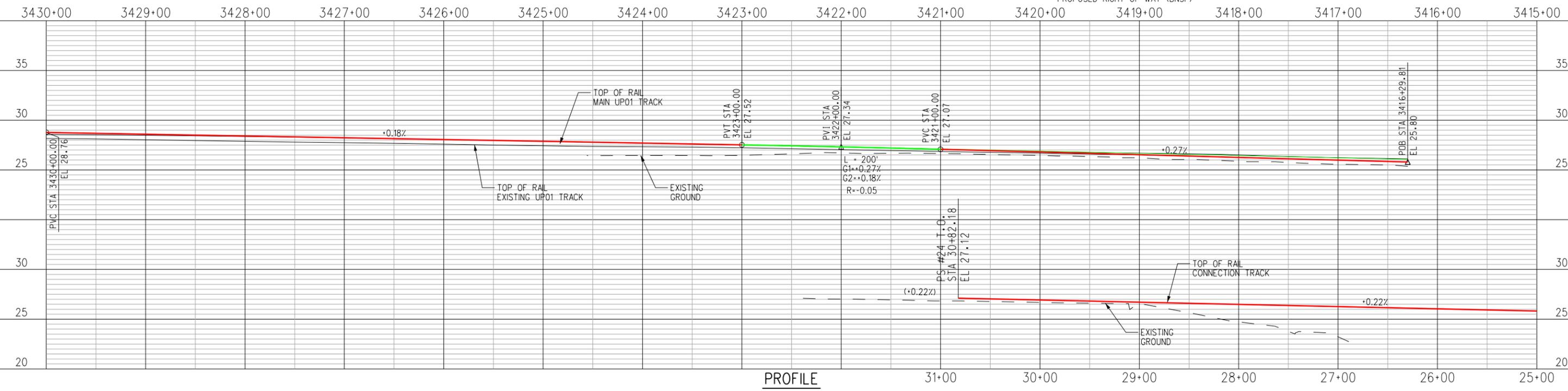


TRACK LEGEND

- PROPOSED TRACK (CURVE)
- PROPOSED TRACK (TANGENT)
- PROPOSED TRACK (SPIRAL)
- - - PROPOSED TRACK SHIFT (CURVE)
- - - PROPOSED TRACK SHIFT (TANGENT)
- - - PROPOSED TRACK SHIFT (SPIRAL)
- EXISTING TRACK (TO REMAIN)
- - - EXISTING TRACK (TO BE REMOVED)
- - - EXISTING TRACK (TO BE SHIFTED)
- - - PROPOSED RIGHT OF WAY (BNSF)



PLAN



PROFILE

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10/18/2011

PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

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DESIGNED BY: A. CRAFT
DRAWN BY: A. COSS
CHECKED BY: M. CANAS
APPROVED BY: M. CANAS
DATE: SEPTEMBER 09, 2011



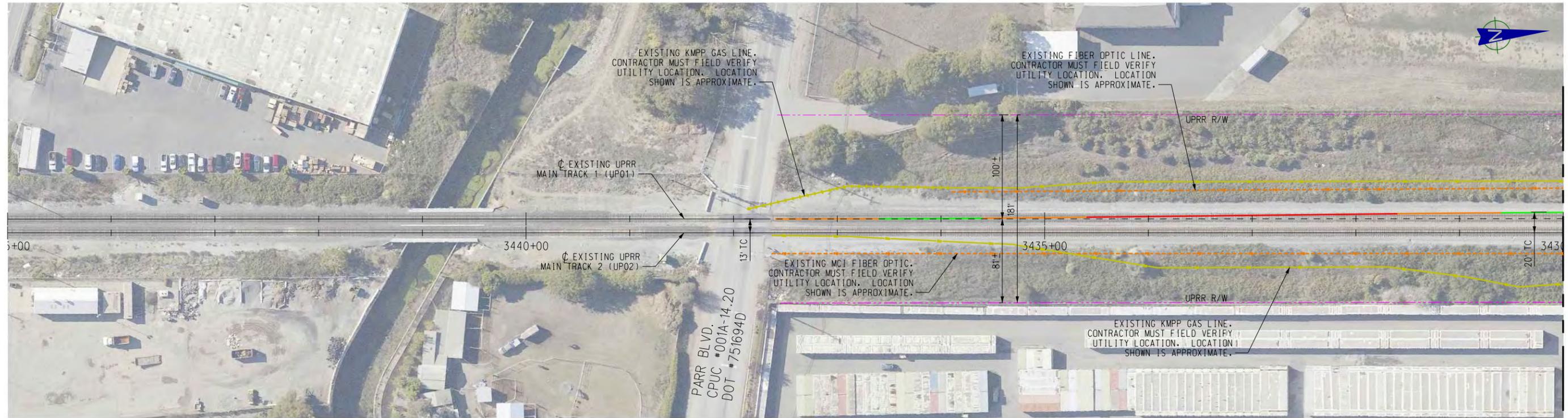
BNSF RAILWAY
RICHMOND RAIL CONNECTION
UTILITY PLAN - SHEET 4 OF 5
UP01 20+00 TO UP01 8+00
MP 17.36 TO MP 17.62 (UPRR)

CONTRACT NO.	
DRAWING NO.	UA-04
REVISION	0 SHEET NO. 023
SCALE AS SHOWN	

REV	DATE	DESCRIPTION	BY	SUB	APP

TO RICHMOND, CA
← RR SOUTH

TO CALWA, CA
→ RR NORTH



MATCH LINE - UP01 3430+00
SEE DRAWING NO. RP-02

- TRACK LEGEND**
- PROPOSED TRACK SHIFT (CURVE)
 - PROPOSED TRACK SHIFT (TANGENT)
 - PROPOSED TRACK SHIFT (SPIRAL)
 - EXISTING TRACK (TO REMAIN)
 - - - - EXISTING TRACK (TO BE SHIFTED)

PLAN



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PROJECT NUMBER	COST ELEMENT	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

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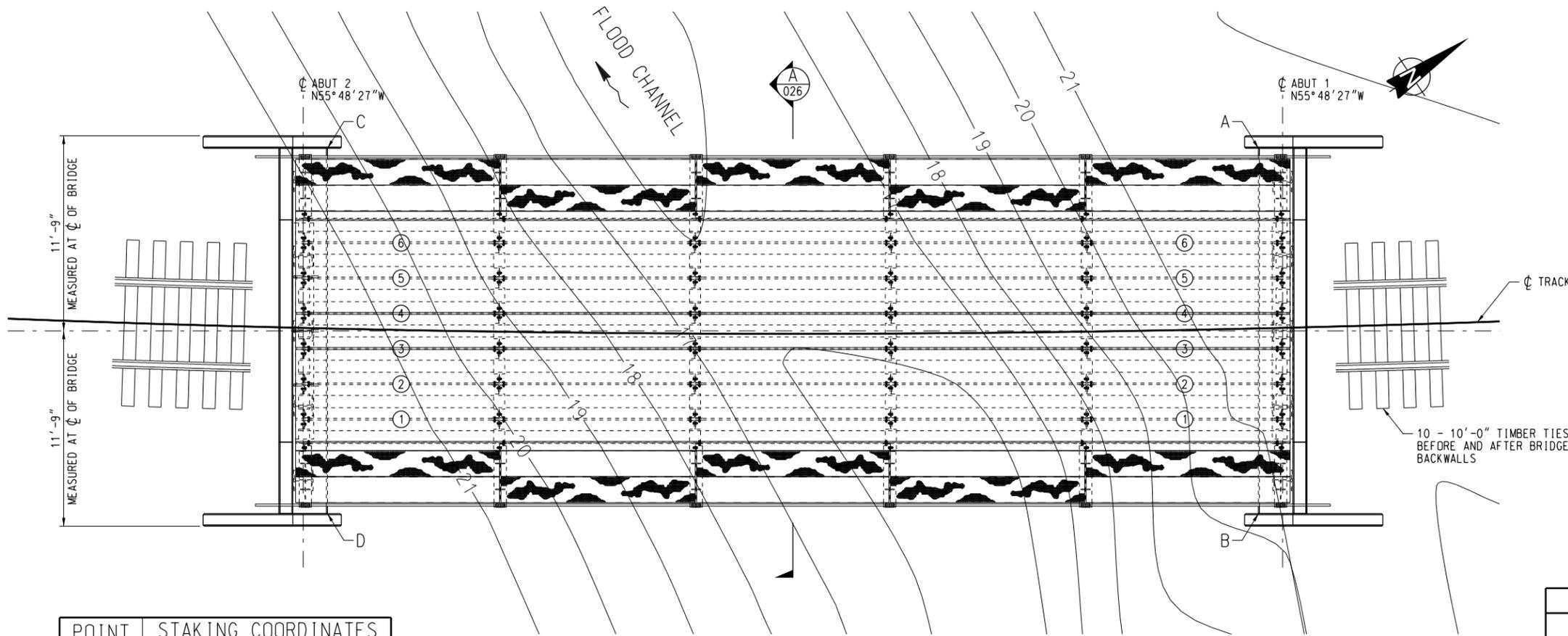
DESIGNED BY	A. CRAFT
DRAWN BY	A. COSS
CHECKED BY	M. CANAS
APPROVED BY	M. CANAS
DATE	SEPTEMBER 09, 2011

BNSF RAILWAY
RICHMOND RAIL CONNECTION
UTILITY PLAN - SHEET 5 OF 5
UP01 3445+00 TO UP01 3430+00
MP 17.20 TO MP 17.36

CONTRACT NO.	
DRAWING NO.	UA-05
REVISION	0 SHEET NO. 024
SCALE AS SHOWN	

REV	DATE	DESCRIPTION	BY	SUB	APP

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 Acraft



LIST OF DRAWINGS	
PLAN NO.	ABUT 1
XXXX-1186.3-01	GENERAL PLAN
XXXX-1186.3-02	PILING PLAN AND TYPICAL SECTION
XXXX-1186.3-03	ABUTMENT PLAN AND ELEVATION
XXXX-1186.3-04	PRECAST CONCRETE DETAILS (1 OF 2)
XXXX-1186.3-05	PRECAST CONCRETE DETAILS (2 OF 2)
XXXX-1186.3-06	BEAM SPAN - FRAMING PLAN
XXXX-1186.3-07	BEAM SPAN - DECK DETAILS
XXXX-1186.3-08	BEAM SPAN - DETAILS
XXXX-1186.3-09	HANDRAIL PANEL DETAILS
XXXX-1186.3-10	BEARING AND MISCELLANEOUS DETAILS
XXXX-1186.3-11	GENERAL NOTES AND BILL OF MATERIAL

TABLE OF ELEVATIONS		
LOCATION	ABUT 1	ABUT 2
TOP OF TIE	26.11*	25.91*
TOP OF CAP	21.09*	20.88*
PILE CUT-OFF	19.10*	18.89*

* ELEVATIONS TAKEN ALONG CENTERLINE OF BEARING

POINT NO.	STAKING COORDINATES	
	X	Y
A	6027271.357	2183633.569
B	6027289.555	2183621.206
C	6027239.795	2183587.113
D	6027257.992	2183574.750

PLAN

SLOPE = -0.35%

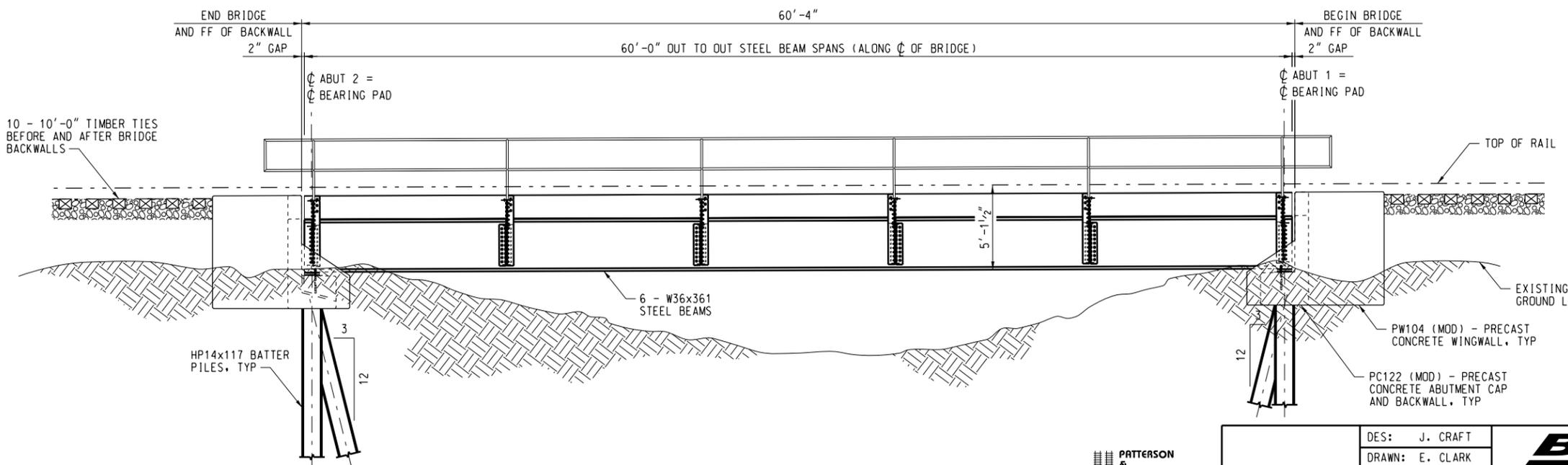
TABLE OF LIFTING WEIGHTS		
DESCRIPTION	MARK NO.	EST. WEIGHT (LBS)
W36x361 x 60'-0" STEEL BEAMS (6 TOTAL)	--	21,000
PRECAST CONCRETE ABUTMENT CAP AND BACKWALL	PC122 (MOD)	30,500 (EA)
PRECAST CONCRETE WINGWALL (4 TOTAL)	PW104 (MOD)	5,150

BNSF - BRIDGE STANDARD PLANS (REFERENCES)

PLAN NO.	DESCRIPTION	SHEET NO.
0000-10802-039 (MOD)	MISCELLANEOUS DETAILS	4 OF 20
0000-10802-040 (MOD)	SINGLE BENT - "H" PILES	5 OF 20
0000-10802-049	MISCELLANEOUS DETAILS	14 OF 20
0000-10802-052 (MOD)	PRECAST CONCRETE MEMBERS	17 OF 20
0000-10802-053 (MOD)	PRECAST CONCRETE MEMBERS	18 OF 20
0000-10802-054	STEEL DETAILS	19 OF 20
0000-10802-055	GENERAL NOTES	20 OF 20
0000-17000-001B	HANDRAIL PANEL DETAILS FOR MULTIPLE LENGTH BEAMS	1 OF 1

GENERAL NOTES:

- DESIGN LOADING: COOPER E80 WITH DIESEL IMPACT
- BRIDGE STATIONING AND ELEVATIONS ARE BASED ON SURVEY CONDUCTED BY WESTLAND GROUP, INC DATED MARCH 2010
- BRIDGE ERECTION SUBJECT TO APPLICABLE DETAILS AS SHOWN ON THE PLANS AND/OR REFERENCES AND AS DIRECTED BY THE ENGINEER
- CONTRACTOR SHALL SUBMIT BRIDGE LIFTING PLAN TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION BEGIN
- DETAIL DESIGN MAY VARY PENDING SURVEY INFORMATION



ELEVATION ALONG ϕ OF BRIDGE
WALKWAY NOT SHOWN FOR CLARITY

60% IN-PROGRESS

PATTERSON & ASSOCIATES, INC.
 CIVIL STRUCTURES ENGINEERING
 725 TOWN & COUNTRY RD
 SUITE 300
 ORANGE, CA 92868

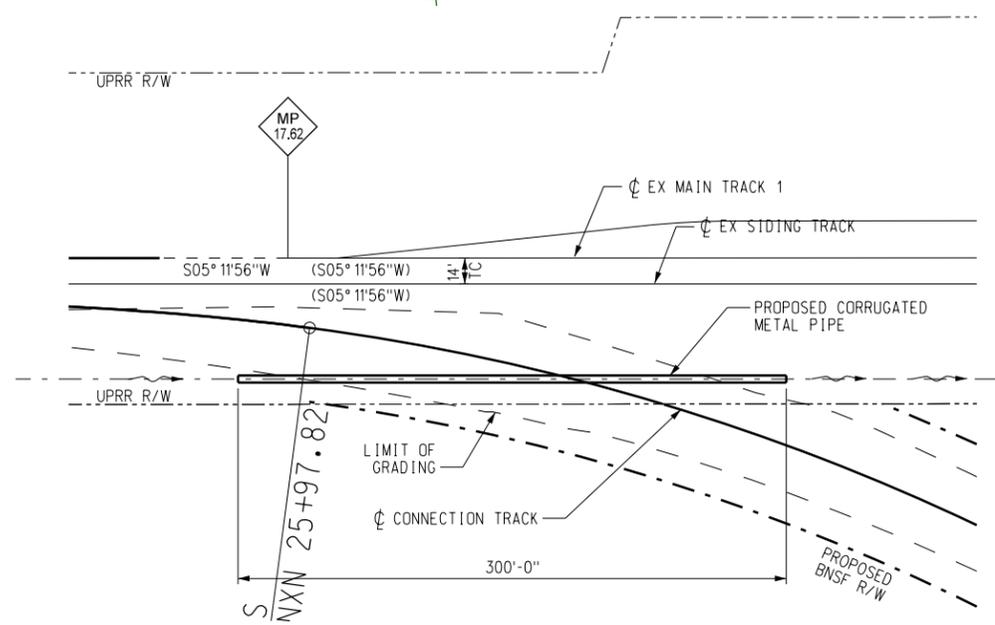
DES: J. CRAFT
 DRAWN: E. CLARK
 CHECK: H. SOLARTE
 DATE: 10/10/2011
 AUTH: XXX
 LINE SEG: 7200

BNSF
 RAILWAY
 BRIDGE ENGINEERING
 KANSAS CITY, KS
 APPROVED: _____
 ASST. DIRECTOR STRUCTURES DESIGN

RICHMOND RAIL CONNECTOR
 BRIDGE NUMBER 1186.3
 OVER FLOOD CONTROL CHANNEL EASEMENT
 GENERAL PLAN
 PLAN NO: _____ SHEET NO. 025

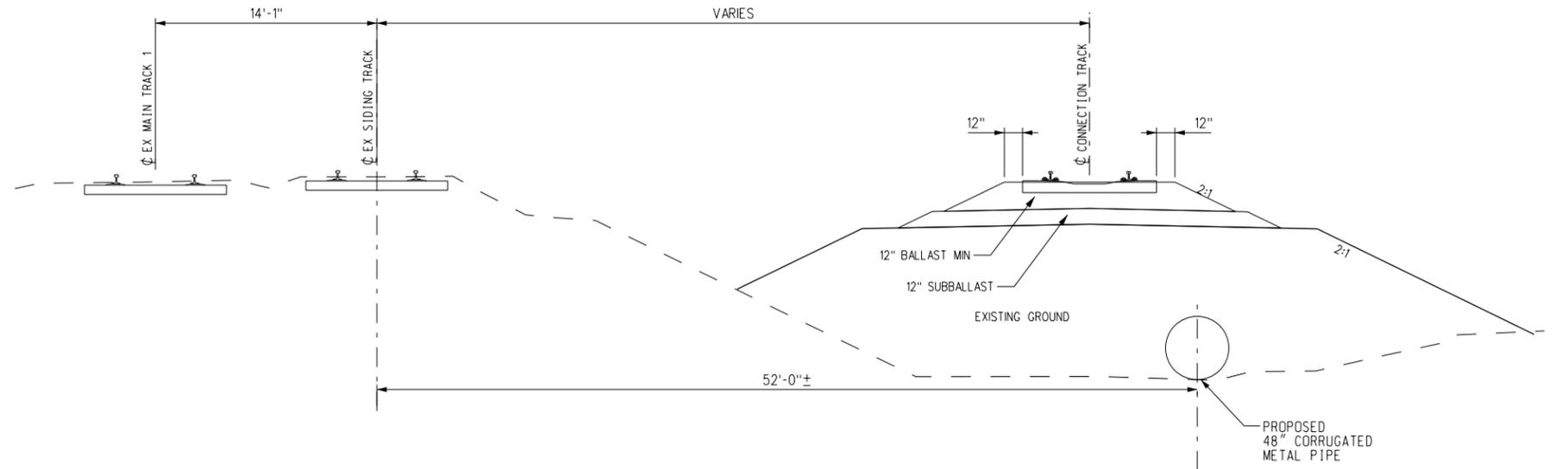
TO RICHMOND, CA
RR WEST

TO EAST ROSEVILLE
RR EAST



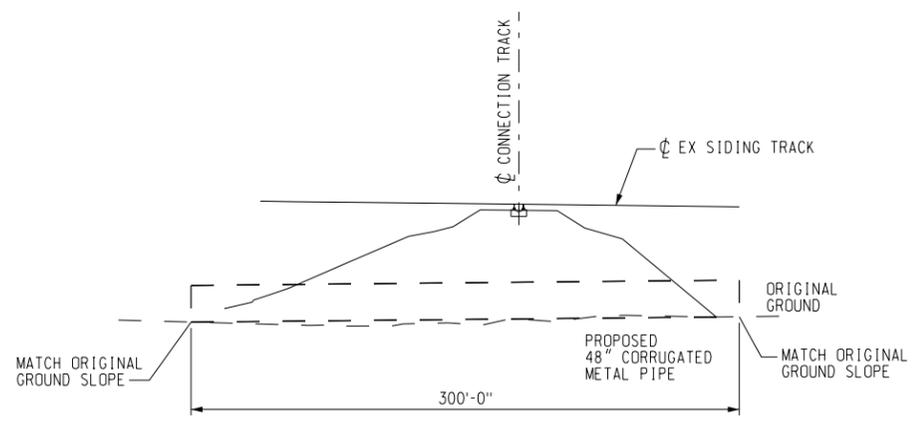
PLAN VIEW

SCALE: 1"=50'



TYPICAL SECTION

SCALE: NONE



ELEVATION

SCALE: HORZ. = 1"=50'
VERT. = 1"=10'

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10/18/2011

PROJECT NUMBER	LINE ITEM	CONTRACT DESIGNATOR	PHYSICAL ENTITY	WORK ELEMENT

REV	DATE	DESCRIPTION	BY	SUB	APP

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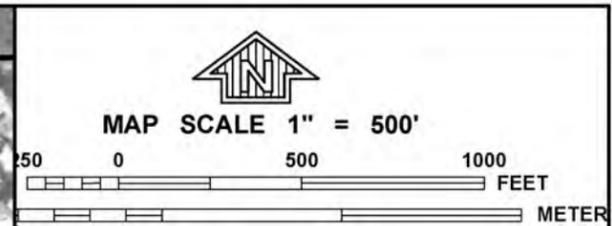
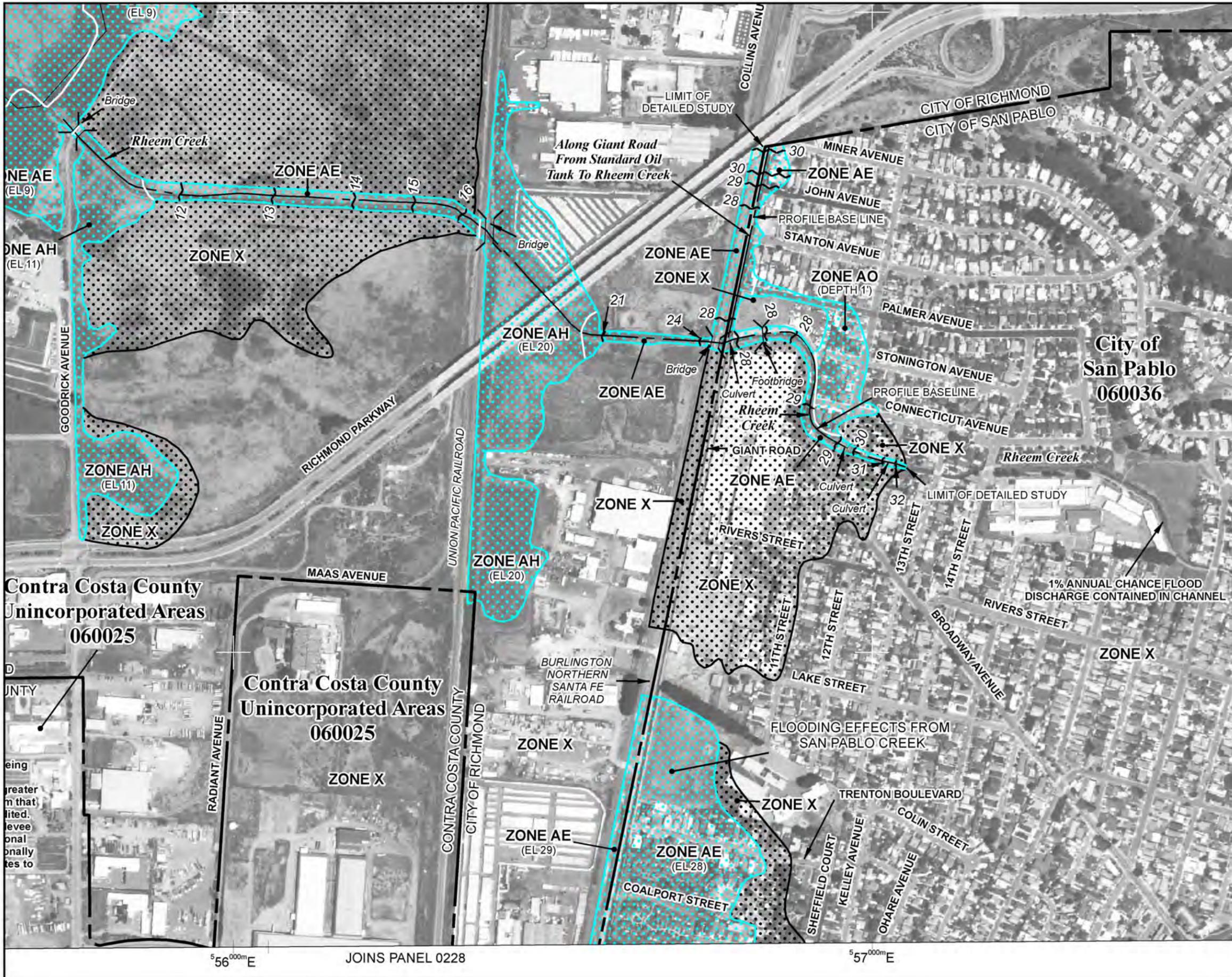
DESIGNED BY PM
DRAWN BY PZ
CHECKED BY TT
APPROVED BY MG
DATE SEPTEMBER 09, 2011



BNSF RAILWAY
RICHMOND RAIL CONNECTION
CORRUGATED PIPE CULVERT
GENERAL ARRANGEMENT
SHEET 1 OF 1

CONTRACT NO.
DRAWING NO. S-02
REVISION 0 SHEET NO. 026
SCALE AS SHOWN

APPENDIX 2
FEMA FIRM Panels



NFIP PANEL 0226F

FIRM
 FLOOD INSURANCE RATE MAP
 CONTRA COSTA COUNTY,
 CALIFORNIA
 AND INCORPORATED AREAS

PANEL 226 OF 602
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CONTRA COSTA COUNTY	060025	0226	F
RICHMOND, CITY OF	060035	0226	F
SAN PABLO, CITY OF	060036	0226	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06013C0226F

EFFECTIVE DATE
JUNE 16, 2009

Federal Emergency Management Agency

Contra Costa County
 Unincorporated Areas
 060025

Contra Costa County
 Unincorporated Areas
 060025

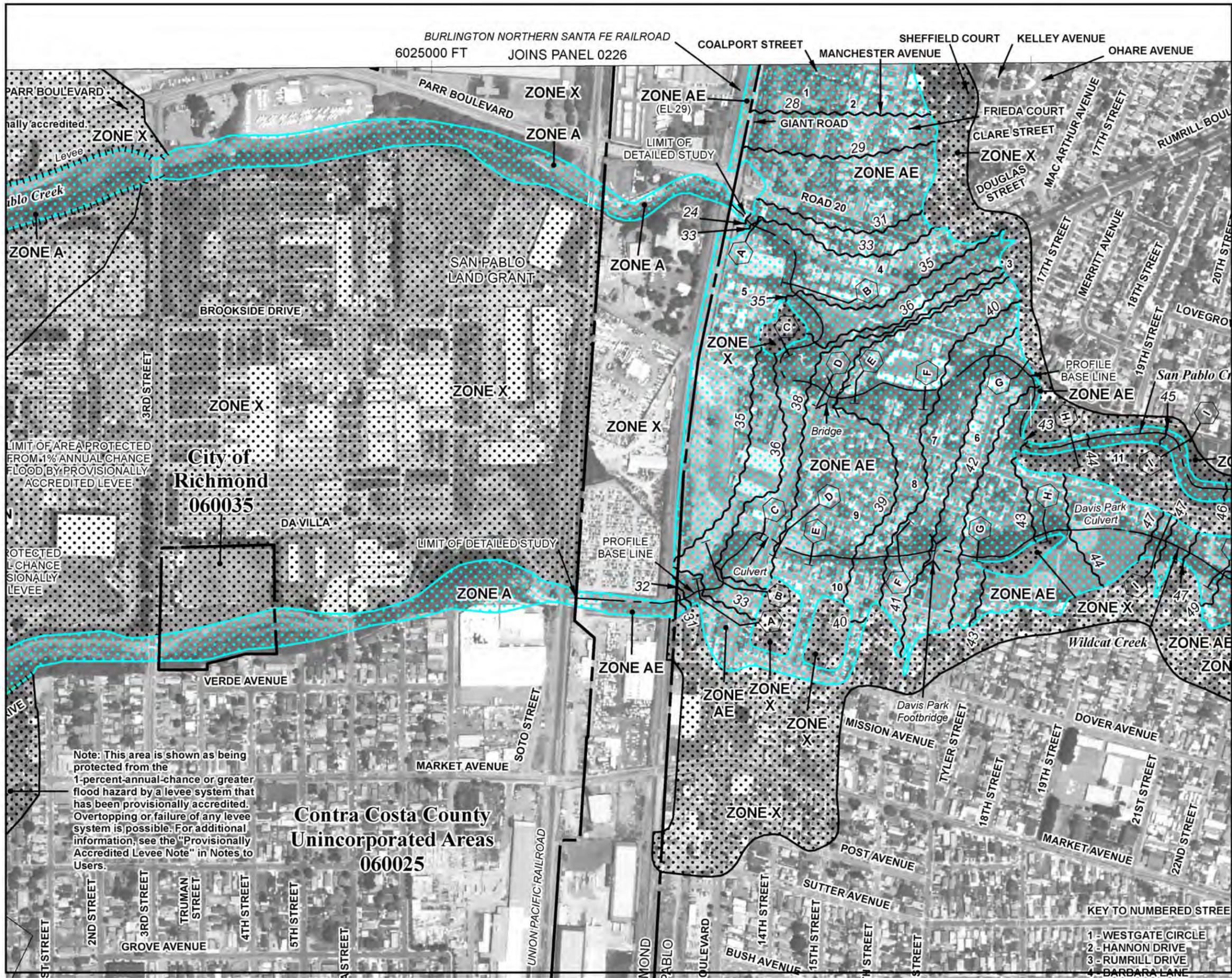
City of
 San Pablo
 060036

56°00'00"E

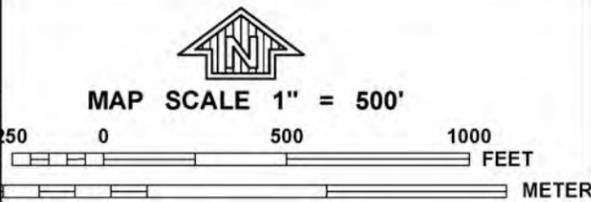
JOINS PANEL 0228

57°00'00"E

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



BURLINGTON NORTHERN SANTA FE RAILROAD
6025000 FT JOINS PANEL 0226



PARR BOULEVARD
San Pablo Creek
Levee
Zone X
Zone A
BROOKSIDE DRIVE
3RD STREET
LIMIT OF AREA PROTECTED FROM 1% ANNUAL CHANCE FLOOD BY PROVISIONALLY ACCREDITED LEVEE
PROTECTED 1% ANNUAL CHANCE FLOOD BY PROVISIONALLY ACCREDITED LEVEE

City of Richmond
060035

Contra Costa County
Unincorporated Areas
060025

Note: This area is shown as being protected from the 1-percent-annual-chance or greater flood hazard by a levee system that has been provisionally accredited. Overtopping or failure of any levee system is possible. For additional information, see the "Provisionally Accredited Levee Note" in Notes to Users.

COALPORT STREET
MANCHESTER AVENUE
SHEFFIELD COURT
KELLEY AVENUE
OHARE AVENUE
FRIEDA COURT
CLARE STREET
DOUGLAS STREET
MAC ARTHUR AVENUE
17TH STREET
RUMRILL BOULEVARD
ROAD 20
17TH STREET
MERRITT AVENUE
18TH STREET
20TH STREET
LOVEGROVE AVENUE
San Pablo Creek
PROFILE BASE LINE
ZONE AE
ZONE X
DAVIS PARK CULVERT
45
43
44
47
46
47
49
Wildcat Creek
ZONE AE
ZONE X
DAVIS PARK FOOTBRIDGE
MISSION AVENUE
TYLER STREET
18TH STREET
19TH STREET
DOVER AVENUE
21ST STREET
22ND STREET
MARKET AVENUE
POST AVENUE
SUTTER AVENUE
14TH STREET
15TH STREET
16TH STREET
17TH STREET
18TH STREET
19TH STREET
20TH STREET
21ST STREET
22ND STREET
BUSH AVENUE
MOND PABLO BOULEVARD
SOTO STREET
UNION PACIFIC RAILROAD

NFIP PANEL 0228F

FIRM
FLOOD INSURANCE RATE MAP
CONTRA COSTA COUNTY,
CALIFORNIA
AND INCORPORATED AREAS

PANEL 228 OF 602
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CONTRA COSTA COUNTY	060025	0228	F
RICHMOND, CITY OF	060035	0228	F
SAN PABLO, CITY OF	060036	0228	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06013C0228F

EFFECTIVE DATE
JUNE 16, 2009

Federal Emergency Management Agency

- KEY TO NUMBERED STREET
- 1 - WESTGATE CIRCLE
 - 2 - HANNON DRIVE
 - 3 - RUMRILL DRIVE
 - 4 - BARBARA LANE

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APPENDIX 3

**California Department of Transportation's
Title VI Policy Statement**

DEPARTMENT OF TRANSPORTATION

OFFICE OF THE DIRECTOR
P.O. BOX 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY 711
www.dot.ca.gov



*Flex your power!
Be energy efficient!*

March 16, 2012

**NON-DISCRIMINATION
POLICY STATEMENT**

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Mario Solis, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353, TTY 711, fax (916) 324-1869, or via email: mario_solis@dot.ca.gov.

A handwritten signature in blue ink, appearing to read "Malcolm Dougherty".

MALCOLM DOUGHERTY
Acting Director