Sacramento Intermodal Transportation Facility

Sacramento, California
HPL – 5002(090)
EA 03-0L0364L

Tier 1 and Tier 2 Environmental Assessment and Section 4(f) Evaluation

Prepared by the

U.S. Department of Transportation
Federal Highway Administration,
the State of California Department of Transportation,
and the City of Sacramento

March 2009

General Information About This Document

What's in this document?

The Federal Highway Administration (FHWA) has prepared this Environmental Assessment, which examines the potential environmental impacts of alternatives being considered for the proposed project located in Sacramento County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, and potential impacts from each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What should you do?

- Please read this Environmental Assessment. Additional copies of this document as well as the technical studies are available for review at the City of Sacramento Development Services Department, 300 Richards Boulevard, 3rd Floor, Sacramento, CA or at the FHWA office located at 650 Capitol Mall, 4th Floor, Sacramento, CA.
- The document is also available for review at the following website by visiting http://www.CityofSacramento.org/dsd/planning/environmental-review/eirs/.
- Attend the public information meeting (April 22, 2009)
- We welcome your comments. If you have any concerns regarding the proposed project, please send your written comments to FHWA or the City of Sacramento by the deadline.
  - Submit comments via U.S. mail to FHWA at the following address:
    Walter C. Waidelich, Jr., Division Administrator
    U.S. Department of Transportation Federal Highway Administration – California Division
    Attn: Scott McHenry
    650 Capitol Mall, Suite 4-100
    Sacramento, CA 95814
  - Submit comments via email to Scott.McHenry@fhwa.dot.gov.
  - Submit comments via U.S. mail to the City of Sacramento at the following address:
    City of Sacramento
    Development Services Department
    Attn: Lezley Buford
    300 Richards Boulevard, 3rd Floor
    Sacramento, CA 95811
  - Submit comments via email to lbuford@CityofSacramento.org.
  - Submit comments by the deadline: May 15, 2009

What happens next?

After comments are received from the public and reviewing agencies FHWA may 1) give environmental approval to the proposed project, 2) do additional environmental studies, or 3) abandon the project. If the project is given environmental approval and funding is appropriated, FHWA could design and construct all or part of the project.

It should be noted that at a future date, FHWA or another federal agency may publish a notice in the Federal Register, pursuant to 23 U. S. Code Section 139(l), indicating that a final action has been taken on this project by FHWA or another federal agency. If such notice is published, a lawsuit or other legal claim will be barred unless it is filed within 180 days after the date of publication of the notice (or within such shorter time period as is specified in the federal laws pursuant to which judicial review of the federal agency action is allowed). If no notice is published, then the lawsuit or claim can be filed as long as the periods of time provided by other federal laws that govern claims are met.

HPL – 5002 (090)
EA 03-0L0364L

Sacramento intermodal transportation facility, including relocating tracks and improving depot and related facilities in downtown Sacramento

ENVIRONMENTAL ASSESSMENT
and Section 4(f) Evaluation

Submitted Pursuant to:
(Federal) 42 U.S. Code 4332(2)(C) and 49 U.S. Code 303

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

THE STATE OF CALIFORNIA
Department of Transportation

3/27/09
Date of Approval

Susan D. Bauer for
John D. Webb, Chief
Office of Environmental Services
North Region Environmental Division
California Department of Transportation

3/27/09
Date of Approval

Gary Sweeten for
Walter C. Waidelich, Jr.
Division Administrator
Federal Highway Administration

Summary

The City of Sacramento (City) proposes to expand the existing Sacramento Valley Station (Station) to meet current needs and to establish a state-of-the-art regional transportation center to meet the future needs of rail and bus transit passengers and service operators in the Sacramento region through the year 2025 and beyond. The project site is located within the Central Business District (CBD) of the downtown area of the City and within the Railyards Specific Plan (RSP) area, just south of the historic Southern Pacific Railroad (SPRR) Sacramento Shops complex. The project site consists of approximately 33 acres and is generally bounded by I Street on the south, 2nd Street and the Sacramento River riverfront on the west, 7th Street on the east, and the Central Shops buildings on the north.

Developed in three phases, the Sacramento Intermodal Transportation Facility (SITF) (proposed project) would encompass a realignment of existing mainline rail tracks (Phase 1), improvements to the existing Sacramento Valley Station, which includes the current Southern Pacific Railroad Depot (Phase 2), and eventual transformation of the Station into a multimodal transportation center (future Phase 3). For Phases 1 and 2, design information is at a level sufficient for detailed, site-specific environmental analyses. Design information for future Phase 3 is currently only at a conceptual level. Therefore, this EA analyzes all three phases of the project at the Tier 1 programmatic level and the actual Environmental Effects of Phases 1 and 2 of the project at the Tier 2 project level of detail, providing the Federal Highway Administration (FHWA), as the lead agency under the National Environmental Policy Act (NEPA), sufficient information to reach a “programmatic” Tier 1 decision on whether to approve the entire three-phase project (i.e., Phase 1-3), as well as a specific Tier 2 decision authorize construction of Phases 1 and 2 upon completion of this Environmental Assessment (EA). Further, FHWA will not authorize, at the conclusion of this environmental process, the final design or Federal funding for any right-of-way acquisition for future Phase 3.

The project was addressed at a combined program/project level under the California Environmental Quality Act (CEQA) in the Sacramento Railyards Specific Plan (RSP) Environmental Impact Report (EIR). The RSP EIR addressed planned build out of the Railyards and was approved and adopted by the City on December 11, 2007.

This EA evaluates two build alternatives for future Phase 3, in addition to the no-build alternative: Alternative 1, “Don’t Move the Depot,” and Alternative 2, “Move the Depot.” These build alternatives are identical in design for Phase 1 and Phase 2 and differ only in the design of the ultimate project in future Phase 3. Following is a summary of the key project features by phase.

Phase 1—Track Relocation

Phase 1 consists of the following components, which are identical for both build alternatives. The environmental effects of these components are analyzed at the project level of detail in this EA.

- Preparing the new alignment for relocation of the existing mainline freight and passenger tracks.

- Installing new freight tracks, new passenger tracks, and associated equipment within the platform area.
- Constructing new double-sided passenger platforms.
- Constructing a new passenger platform tunnel under the relocated tracks.
- Constructing a pedestrian walkway from the passenger platform tunnel to the Depot building on the south side of the rail corridor.
- Constructing a pedestrian connection from the passenger platform tunnel to the north side of the rail corridor.
- Constructing a service access pathway from the Depot to the proposed new passenger tracks, consisting of a crossing of the tracks on the west side of the platforms, the service roadway between the platforms, and the paved drive between the Depot and the crossing.
- Constructing a pedestrian-bicycle tunnel west of the service access connecting the north and south areas that border the rail right of way.
- Removing the existing mainline tracks and passenger platforms behind the Depot once the new track alignment was operational. The ramps to the platform that are part of the existing pedestrian tunnel at the Depot would be subsequently demolished.

Phase 2—Sacramento Valley Station Improvements

Phase 2 would consist of improvements to the existing Station that would upgrade its facilities and relocate transportation uses for more efficient operations, including improvements to the existing Depot. Phase 2 consists of the following components, which are identical in both build alternatives. The environmental effects of these components are analyzed at the project level of detail in this EA.

- Relocating, reconfiguring, and repaving/restriping the existing Regional Transit (RT) and Amtrak bus berths.
- Relocating the existing light rail transit (LRT) station to a north-south alignment on the eastern edge of the site as planned by RT, which would create better internal site circulation and proximity to the bus berths and to the long-distance passenger rail service from LRT trains.
- Providing enhanced passenger connections, including walkway upgrades (e.g., street furniture, a shade/weather covering, and landscaping/lighting) from the new passenger platforms to the Depot and a tunnel extension that connects the existing Depot tunnel and the new passenger platform tunnel constructed in Phase 1.
- Relocating and reconfiguring passenger vehicle and bicycle parking to accommodate existing parking demand and improve the drop-off area in front of the Depot.
- Upgrading the electrical system at the station and within the Depot to meet functional needs and requirements.
- Providing a transit way along the north side of the site connecting the west side of the facility to the extension of F Street to facilitate bus circulation on site and provide shortcuts separate from congested city streets.

- The Phase 2 improvements would be constructed after the tracks had been relocated and would be implemented in stages as funding became available.

Future Phase 3—Intermodal Improvements

The environmental effects of future Phase 3 are analyzed at the program level in this EA. FHWA will not authorize construction of an alternative for future Phase 3 until a later date when more detailed design information and subsequent environmental review is completed for this phase. As noted previously, the differences in the two build alternatives would occur in future Phase 3. Under Alternative 1, future Phase 3 would consist of the following components.

- Converting the existing Station into a large, multimodal regional transportation facility that integrates a classic transportation building and a new terminal.
- Expanding bus bays.
- Expanding baggage facilities.
- Constructing multiple waiting areas.
- Expanding site features that serve passengers and providers.
- Meeting sustainable design objectives.

Table S-1 below summarizes the program-related effects for all three phases of the proposed action, as well as the specific effects identified in the tier 2-level analysis of Phases 1 and 2. For purposes of this analysis, the program-related effects apply to Phases 1, 2, and 3; project-related effects apply only to Phases 1 and 2. Table S-2 represents the estimated project costs by phase.

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Table S-1. Summary of Major Potential Impacts from the Project

Potential Impact	Tier 1 (Program-Level) Impacts				No-Build Alternative
	Tier 2 (Project-Level) Impacts		Future Phase 3 (includes Cumulative)		
	Phase 1	Phase 2	Build Alternative 1	Build Alternative 2	
Utilities/Emergency Services					
UES-1: Potential for construction to interfere with utility services in the project area	Minor	Minor	Minor	Minor	No program- or project-related effects
UES-2: Potential increased demand for utility services	Minor	Minor	Minor	Minor	No program- or project-related effects
Impact UES-3: Increased need for emergency services	None	None	Minor with RSP planned service expansions	Minor with RSP planned service expansions	No program- or project-related effects
Traffic and Transportation/Pedestrian and Bicycle Facilities					
TRANS-1: Potential increase in traffic volumes at study area intersections and deterioration of LOS	None	Increased delay at 2 intersections (minimized with stop controls and optimized signal timing)	Increased delay at up to 8 intersections (minimized with stop controls and optimized signal timing)	Same as Alternative 1	No program- or project-related effects
TRANS-2: Potential increase in traffic volumes at freeway mainline segments and deterioration of LOS	None	No perceptible effects	Increased delay at3 I-5 ramp locations	Same as Alternative 1	No program- or project-related effects
TRANS-3: Potential increase in traffic volumes that would affect freeway interchange operations and deterioration of LOS	None	No perceptible effects	Increased delay at 2 I-5 ramp locations	Same as Alternative 1	No program- or project-related effects
TRANS-4: Other adverse transportation effects in the project area, such as freeway ramp operations, bus or light rail system services, or pedestrian facilities	Minor during construction	Minor with traffic controls during construction	Storage capacity exceeded at 1 I-5 ramp location; cumulative contribution to substandard levels of service in study area; minor effects on pedestrian, bicycle, and parking facilities with adherence to City code.	Same as Alternative 1	No program- or project-related effects
Visual/Aesthetics					
VIS-1: Potential for adverse temporary visual effects caused by construction activities	Minor with shielded lighting if nighttime construction	Minor with shielded lighting if nighttime construction	Minor with shielded lighting if nighttime construction	Same as Alternative 1	No program- or project-related effects

Table S-1. Continued

Potential Impact	Tier 1 (Program-Level) Impacts				No-Build Alternative
	Tier 2 (Project-Level) Impacts		Future Phase 3 (includes Cumulative)		
	Phase 1	Phase 2	Build Alternative 1	Build Alternative 2	
VIS-2: Permanent changes to the existing visual character or quality of the site and its surroundings	None	None	Beneficial with the addition of open space, landscaping, and other planned aesthetics treatments	Larger change than Alternative 1, but also beneficial	No program- or project-related effects, including no improvements
VIS-3: Potential for a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area	Minor with compliance with City code	Minor with compliance with City code	Substantial change in exposure of residents to ambient light, minimized by adherence to City code	Same as Alternative 1	No program- or project-related effects
Cultural Resources					
CUL-1: Damage to portions of the 6th Street Levee resulting from removal of existing tracks	Adverse under Section 106	None	None	None	No program- or project-related effects
CUL-2: Physical disruption of the Sacramento SPRR Station District	Adverse under Section 106 due to loss of contributing elements	Not adverse under Section 106 with adherence to Secretary of the Interior treatment standards	Not adverse under Section 106 related to new buildings blocking views	Adverse under Section 106 due to separation from context and alteration of landscape	No program- or project-related effects
CUL-3: Damage to the Central Shops Historic District	Non adverse under Section 106 with track design incorporating vibration minimization elements (see Noise and Vibration)	None	Not adverse under Section 106	Similar to Alternative 1	No program- or project-related effects
Hydrology and Floodplain					
HYD-1: Alteration of existing drainage patterns that would cause flooding either on site or off site	None with adherence to City and County design standards	None with adherence to City and County design standards	None with adherence to City and County design standards	Same as Alternative 1	No program- or project-related effects

Table S-1. Continued

Potential Impact	Tier 1 (Program-Level) Impacts				No-Build Alternative
	Tier 2 (Project-Level) Impacts		Future Phase 3 (includes Cumulative)		
	Phase 1	Phase 2	Build Alternative 1	Build Alternative 2	
Water Quality and Storm Water Runoff					
WQ-1: Potential to violate water quality standards, waste discharge requirements, or substantially degrade water quality	None with compliance with SQIP and NPDES permit requirements	None with compliance with SQIP and NPDES permit requirements	None with compliance with SQIP and NPDES permit requirements	Same as Alternative 1	No program- or project-related effects
WQ-2: Substantial alteration of existing drainage patterns in a manner that would result in increasing the amount of pollution to the CSS	None with compliance with SQIP and NPDES permit requirements	None with compliance with SQIP and NPDES permit requirements	None with compliance with SQIP and NPDES permit requirements	Same as Alternative 1	No program- or project-related effects
WQ-3: Creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff that could affect the beneficial uses of the Sacramento or American Rivers	Minor, beneficial with landscaping	Minor, beneficial with landscaping	Moderate with cumulative development	Same as Alternative 1	No program- or project-related effects
WQ-4: Reduction in the amount of groundwater recharge potential from the impervious surfaces	None	None	None	None	No program- or project-related effects
Geology/Soils/Seismic/Topography					
GEO-1: Potential seismic hazards due to ground rupture, ground shaking, and liquefaction and settlement	Minor with conformance to building codes and geotech report recommendations	None with conformance to building codes and geotech report recommendations	Minor with conformance to building codes and geotech report recommendations	Same as Alternative 1	No program- or project-related effects
GEO-2: Potential seismic hazards due to soil compression, corrosion, erosion, and other geologic conditions	Minor with conformance to NPDES requirements	Minor with conformance to NPDES requirements	Minor with conformance to NPDES requirements	Same as Alternative 1	No program- or project-related effects
Paleontology					
PALEO-1: Minimal potential disturbance or destruction of paleontological resources	Minor, deposits unlikely to be present	Minor, deposits unlikely to be present	Minor, deposits unlikely to be present	Same as Alternative 1	No program- or project-related effects

Table S-1. Continued

Potential Impact	Tier 1 (Program-Level) Impacts				No-Build Alternative
	Tier 2 (Project-Level) Impacts		Future Phase 3 (includes Cumulative)		
	Phase 1	Phase 2	Build Alternative 1	Build Alternative 2	
Hazardous Waste/Materials					
HAZ-1: Potential to create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials during construction	Minor with measures to minimize exposure	Minor with measures to minimize exposure	Minor with measures to minimize exposure	Same as Alternative 1	No program- or project-related effects
HAZ-2: Potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during operation	Minor	None	None	Same as Alternative 1	No program- or project-related effects
HAZ-3: Potential of contaminated soils in unremediated areas to present a hazard to workers and the general public during construction	Moderate with measures to minimize exposure	Minor with measures to minimize exposure	Minor with measures to minimize exposure	Same as Alternative 1	No program- or project-related effects
HAZ-4: Potential to expose visitors to the project site to hazardous materials through the concurrent activities of project construction and soil remediation	Moderate with measures to minimize exposure	Minor with measures to minimize exposure	Minor with measures to minimize exposure	Same as Alternative 1	No program- or project-related effects
HAZ-5: Potential of the construction of project components to interfere with remediation efforts for remaining unremediated soils in or to compromise previous remediation efforts	Moderate with measures to minimize exposure	Minor with measures to minimize exposure	Minor with measures to minimize exposure	Same as Alternative 1	No program- or project-related effects
HAZ-6: Exposure of construction workers and residents to potentially hazardous materials in the historic Depot building	None	Moderate with abatement measures	Moderate with abatement measures	Same as Alternative 1	No program- or project-related effects

Table S-1. Continued

Potential Impact	Tier 1 (Program-Level) Impacts				No-Build Alternative
	Tier 2 (Project-Level) Impacts		Future Phase 3 (includes Cumulative)		
	Phase 1	Phase 2	Build Alternative 1	Build Alternative 2	
Air Quality					
AQ-1: Violation of PM 10 Standards	No exceedance because maximum area of disturbed acreage is under established SMAQMD threshold	No exceedance because maximum area of disturbed acreage is under established SMAQMD threshold	No exceedance because maximum area of disturbed acreage is under established SMAQMD threshold	No exceedance because maximum area of disturbed acreage is under established SMAQMD threshold	No program- or project-related effects
AQ-2: Construction emissions of NOx	Emissions exceed the SMAQMD threshold	Emissions exceed the SMAQMD threshold	Emissions exceed the SMAQMD threshold	Higher exceedance of SMAQMD threshold because of construction effort to move Depot	No program- or project-related effects
AQ-3: Generation of Criteria Pollutant Emissions during Project Operation	Beneficial decrease due to elimination of hold out rule	Emissions below established SMAQMD threshold	Emissions below established SMAQMD threshold	Same as Alternative 1	No program- or project-related effects
AQ-4: Creation of Carbon Monoxide Hot Spots during Project Operation	None	No violation of CO standards	No violation of CO standards	Same as Alternative 1	No program- or project-related effects
AQ-5: Creation of PM10/PM2.5 Hot Spots during Project Operation	Beneficial reduction of PM10/PM2.5 emissions due to reduced idling time	None	Negligible	Same as Alternative 1	No program- or project-related effects
AQ-6: Generate and Increase in Toxic Air Contaminants during Project Operation	Minor	Minor	Minor	Same as Alternative 1	No program- or project-related effects
AQ-7: Increase in Greenhouse Gas Emissions during Project Operation	No operational increase in CO2 emissions	Increase in CO2 emissions of 433 metric tons per year	Increase in CO2 emissions of 167 metric tons per year	Same as Alternative 1	No program- or project-related effects
AQ-8: Potential for project not to meet conformity requirements	Meets conformity requirements	Meets conformity requirements	Meets conformity requirements	Same as Alternative 1	No program- or project-related effects
Noise and Vibration					
N-1: Exposure of noise-sensitive land uses to increased noise	Exceeds FTA criteria for moderate impact, minimized with design options to reduce rail noise	Imperceptible	Barely perceptible	Same as Alternative 1	No program- or project-related effects

Table S-1. Continued

Potential Impact	Tier 1 (Program-Level) Impacts				No-Build Alternative
	Tier 2 (Project-Level) Impacts		Future Phase 3 (includes Cumulative)		
	Phase 1	Phase 2	Build Alternative 1	Build Alternative 2	
N-2: Exposure of noise-sensitive land uses and structures to vibration	Exposure at 91 VdB exceeds impact FTA threshold of 90 VdB, minimized with design options to limit vibration from train operations	None	None	Same as Alternative 1	No program- or project-related effects
Exposure of noise-sensitive land uses and structures to construction noise and vibration	Substantial, minimized with construction treatment measures	Substantial, minimized with construction treatment measures	Substantial, minimized with construction treatment measures	Same as Alternative 1	No program- or project-related effects
Animal Species					
BIO-1: Potential disturbance to nesting migratory birds during project construction	Minor disturbance with avoidance and minimization measures	Minor disturbance with avoidance and minimization measures	Minor disturbance with avoidance and minimization measures	Same as Alternative 1	No program- or project-related effects
BIO-2: Potential disturbance to roosting bats during construction	Minor disturbance with avoidance and minimization measures	Minor disturbance with avoidance and minimization measures	Minor disturbance with avoidance and minimization measures	Same as Alternative 1	No program- or project-related effects
Threatened and Endangered Species					
BIO-3: Potential disturbance to Valley Elderberry Longhorn Beetle	Disturbance minimized with project appended Programmatic Biological Opinion	None	None	Same as Alternative 1	No program- or program- or project-related effects
Invasive Species					
BIO-6: Prevent the introduction or spread of noxious weeds	Minor	Minor	Minor	Same as Alternative 1	No project-related effects

Table S-2. Estimated Project Costs by Phase

Phase	Preliminary Engineering	Estimated Total	Notes
1	Concept design	$3,777,000	Project planning & concept design expenditures
1	Environmental	$817,000	Federal environmental process
1	Engineering supporting environmental	$2,522,000	Track relocation & intermodal design up to 30%
1	Plans, specifications & estimates	$3,000,000	Estimated final design consultant cost for track relocation
1	Preliminary ROW support	$100,000	Estimate of support work to obtain easements, etc.
1	Administration	$600,000	Estimated at 10% of track relocation 1st Agmt + PS&E Agmt costs
1	Contingency	$600,000	Estimated at 10% of track relocation 1st Agmt + PS&E Agmt costs
	Subtotal	$11,416,000	
1	Construction		
1	Track relocation-site & passenger facilities	$31,219,000	2006 construction estimate less design + escalation @ 6% total for 2 years
1	UPRR Track work	$13,534,000	UPRR Construction Est, 11.05.08
	Subtotal	$44,753,000	
	Total	$56,169,000	
Phase	**Component**	**Cost Estimate ($ millions)**	**Notes**
2	Sacramento Valley Station Improvements		Components are assumed to be constructed sequentially except for components 2C and 2F. Phases are assumed to follow prior phases, but this is subject to change. Estimates include design, bidding, construction, inspection, contingency, administration, etc. Escalation to projected mid-point of construction; assumed at 6% per year.
2A	LRT tracks and platform relocation	10.3	
2B	Depot electrical system improvements	4.9	
2C	Baggage tunnel extension		Included in EA but not in the funded constructed project; Estimated additional funding needed to construct $10.2 million & 2F - $6.7 million.
2D	Local Bus and Amtrak bus relocation	3.4	
2E	Site circulation roadways	3.3	
2F	Depot plaza and landscaping		Included in EA but not in the funded constructed project; Estimated additional funding needed to construct $10.2 million & 2F - $6.7 million.
	Subtotal	21.9	

Table S-2. Continued

Phase	Component	Cost Estimate ($ millions)	Notes
3	Alternative 1: Don't Move the Depot		Components are assumed to be constructed sequentially except for components 2C and 2F. Phases are assumed to follow prior phases, but this is subject to change. Estimates include design, bidding, construction, inspection, contingency, administration, etc. Escalation to projected mid-point of construction; assumed at 6% per year. .
3A	New Terminal extension, site roadways, staged Depot renovation	175	
3B	Parking structure (on-site)	49.7	
3C	Pedestrian bridge terminal to tracks, final Depot renovation	<u>27.2</u>	
	Subtotal	251.9	
3	Alternative 2: Move the Depot		Components assumed to be constructed sequentially. Phases are assumed to follow prior phases, but this is subject to change. Estimates include design, bidding, construction, inspection, contingency, administration, etc. Escalation to projected mid-point of construction; assumed at 6% per year.
3A	Temporary boarding areas for intercity buses & local buses & westside access connection	4.7	
3B	New Terminal extension, intercity bus area, reconfiguration of platform tunnel access	93.6	
3C	Preparation & move of Depot & construction of adjacent plaza areas	122.6	
3D	Parking structure & removal of temporary facilities	41	
	Subtotal	261.9	

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List of Abbreviated Terms

ACMs	asbestos-containing materials
ADA	Americans with Disabilities Act
ADI	area of direct impact
APE	area of potential effects
BART	San Francisco Bay Area Rapid Transit District
Basin Plan	Water Quality Control Plan
Bay Area	San Francisco Bay Area
bgs	beneath the ground surface
BMPs	best management practices
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CBD	Central Business District
CEQ	Council on Environmental Quality
CHRIS	California Historical Resources Information System
City	City of Sacramento
CNEL	Community Noise Equivalent Level
CO_2	or carbon dioxide
CPRR	Central Pacific Railroad Company
CSS	Combined Sewer and Stormwater system
CVRWQCB	Central Valley Regional Water Quality Control Board
dB	decibels
dBA	A-weighted decibels
Depot	Southern Pacific Depot
DFG	California Department of Fish and Game
District	Sacramento SPRR Station District
DNA	Downtown-Natomas-Airport
DTSC	California Department of Toxic Substances Control
EA	environmental assessment
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESA	Environmentally Sensitive Area
ESCP	Erosion and Sedimentation Control Plan
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FSTIP	Federal Statewide Transportation Improvement Program
FTA	Federal Transit Administration
Geotechnical Report	Geotechnical Report: Sacramento Intermodal Transit Facility and Track Relocation
GHG	greenhouse gas
Hz	Hertz

I-5	Interstate 5
I-80	Interstate 80
in/sec	inches per second
kHz	kilohertz
LBPs	lead-based paints
L_{dn}	Day-Night Level
L_{eq}	Equivalent Sound Level
L_{eq}[h]	1-hour A-weighted equivalent sound level
L_{max}	Maximum Sound Level
L_{min}	Minimum Sound Level
LOS	level of service
Low-E	low emission
LRT	light rail transit
L_{xx}	Percentile-Exceeded Sound Level
MOU	2007 Tri-Party Memorandum of Understanding between the City of Sacramento, the California Department of Toxic Substances Control, and the project applicant
mPa	micro-Pascals
mph	miles per hour
MSATs	mobile-source air toxics
MSL	mean sea level
MTIP	Metropolitan Transportation Improvement Program
MTP	Metropolitan Transportation Plan
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
PA	programmatic agreement
PAHs	polynuclear aromatic hydrocarbons
PD	Police Department
PG&E	Pacific Gas and Electric Co.
PM10	particulate matter 10 microns or less in diameter
PM2.5	particulate matter 2.5 microns or less in diameter
POAC	projects of air quality concern
PPV	peak particle velocity
proposed project	Sacramento Intermodal Transportation Facility
Protocol	Noise Analysis Protocol
r.m.s.	root mean square
REA	Railway Express Agency
RSP	*Railyards Specific Plan*
RT	Sacramento Regional Transit District
SACMET	Sacramento Metropolitan
SACOG	Sacramento Area Council of Governments

SFD	Sacramento Fire Department
SHPO	State Historic Preservation Officer
SITF	Sacramento Intermodal Transportation Facility
SITF PA	project-specific Programmatic Agreement
SMUD	Sacramento Municipal Utility District
SPCCP	Spill Prevention and Countermeasure Control Plan
SPL	sound pressure level
SPRR	Southern Pacific Railroad
SRWTP	Sacramento Regional Wastewater Treatment Plant
SSPRR	Sacramento Southern Pacific Railroad
Station	Sacramento Valley Station
SVOCs	Semivolatile Organic Compounds
TACs	toxic air contaminants
TDA	Tire-derived aggregate
TeNS	Caltrans' Technical Noise Supplement
TNM	Traffic Noise Model
TPH	total petroleum hydrocarbons
UPRR	Union Pacific Railroad
USFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
v/c	volume-to-capacity
V>C	volume exceeds capacity
VdB	vibration in decibels
VELB	valley elderberry longhorn beetle
VOCs	Volatile Organic Compounds
WIA	Wilson Ihrig Associates

Chapter 1 Proposed Project

1.1 Introduction

The Federal Highway Administration (FHWA), the California Department of Transportation (Caltrans), and City of Sacramento (City), in cooperation with the Federal Transit Administration (FTA) and the Federal Railroad Administration (FRA), propose to expand the existing Sacramento Valley Station (Station) to meet current needs and to establish a state-of-the-art regional transportation center to meet the future needs of rail and bus transit passengers and service operators in the Sacramento region through the year 2025 and beyond. Developed in three phases, the Sacramento Intermodal Transportation Facility (SITF) (proposed project) would encompass a realignment of existing mainline rail tracks (Phase 1), improvements to the existing Station, which includes the current Southern Pacific Railroad Depot (Phase 2), and eventual transformation of the Station into a multimodal transportation center (future Phase 3). Funding for the proposed project is included in the FY 2007 Federal Statewide Transportation Improvement Program (FSTIP). The proposed project also is included in the Sacramento Area Council of Government's (SACOG's) 2008-2012 Metropolitan Transportation Improvement Program (MTIP) and 2035 Metropolitan Transportation Plan (MTP). FHWA is administering the majority of the project funding and is the NEPA lead agency. FRA and FTA are NEPA cooperating agencies.

The proposed project is located within the City's historic commercial and government center of the Sacramento region, north of the State Capitol. The project site lies within the Central Business District (CBD) of the downtown area of the City and within the *Railyards Specific Plan* (RSP) area, just south of the historic Southern Pacific Railroad (SPRR) Sacramento Shops complex (the remnants of which are known as the Central Shops buildings) (Figures 1-1 and 1-2). The project site is generally bounded by I Street on the south, 2nd Street and the Sacramento River riverfront on the west, 7th Street on the east, and the Central Shops buildings on the north. The privately owned Railway Express Agency (REA) building is located immediately adjacent to the project site (near the Depot) but is not part of the existing Station or proposed project.

The proposed project site consists of approximately 33 acres, including the existing Station facilities that are owned by the City. The City is in the process of acquiring additional land immediately north of the Station for the proposed project. The area to be acquired also contains the approximately 3,300-foot-long UPRR rail corridor (current alignment and proposed realignment) between the Sacramento River and 7th Street.

Thomas Enterprises, the Railyards developer, purchased the entire 237-acre Railyards site from UPRR in December 2006 and sold the portion of the site containing the Depot to the City, granting the City an option to purchase the remaining parcel for the track relocation alignment and for the expanded station facilities.

1.1.1 Purpose of Environmental Review and Tiering

The National Environmental Policy Act (NEPA) requires federal agencies to consider the environmental consequences of projects over which they have discretionary authority before taking action on those projects (e.g., new and continuing federal activities that are either financed, assisted, conducted, or approved by a federal agency) (40 CFR 1508.18). Because construction of the SITF involves the use of federal funds, FHWA must comply with NEPA before disbursing the funds for the proposed project.

This environmental assessment (EA) has been prepared pursuant to NEPA (42 USC 4321 et. seq.), Council on Environmental Quality (CEQ) NEPA Regulations (40 CFR 1500 et. seq.), and FHWA Environmental Impact and Related Procedures (23 CFR Part 771 et seq). The purpose of the EA is to determine the environmental consequences of the proposed federal action and whether the proposed action would significantly affect the quality of the human environment.

1.1.1.1 Tiering under NEPA

Tiering is a procedure for completing NEPA process in two separate stages, known as tiers. The use of tiering for highway projects is authorized under the regulations issued by CEQ (40 CFR Part 1500), and under the US Department of Transportation regulations issued jointly by FHWA and FTA (23 CFR Part 771). The first tier, or "Tier 1", allows a federal agency to focus on broad environmental issues at a program level, which may correlate directly to early planning decisions, such as the type of project, the general location of a project, and major design features of a project. The second tier, or "Tier 2", addresses site-specific details on project impacts, costs, and mitigation measures at a project level. Completing a Tier 2 NEPA review generally allows FHWA and other federal agencies to reach a decision (e.g., issuance of a record of decision or finding of no significant impact) and authorize release of federal funding or right-of-way acquisition, whereas Tier-1 level reviews generally are not far enough along in the planning and design process to support such decisions and authorizations (Malley and Dusenbury 2001).

1.1.1.2 Tier-1/Tier-2 Level Review

As described above, the proposed project will be implemented in three phases. Design information for Phase 1 (realignment of existing mainline rail tracks) and Phase 2 (improvements to the existing Sacramento Valley Station) is at a level sufficient to conduct detailed, site-specific environmental analyses. Design information for future Phase 3 (the eventual transformation of the station into a multimodal transportation center) is currently only at a conceptual level. Therefore, the environmental analysis in this EA is a Tier-1 level (broader programmatic level) for the entire three-phase project, and includes a site-specific, project-specific analysis for Phases 1 and 2 at a combined program/project specific level, commensurate with the level of detail available at this time.

This EA analyzes all three phases of the project at the Tier 1 programmatic level and the actual Environmental Effects of Phases 1 and 2 of the project at the Tier 2 project level of detail, providing FHWA, as the lead agency under NEPA, sufficient information to reach a "programmatic" Tier 1 decision for the entire three-phase project (i.e., Phases 1-3), as well as a specific Tier 2 decision on whether to authorize construction of Phases 1 and 2 on completion of

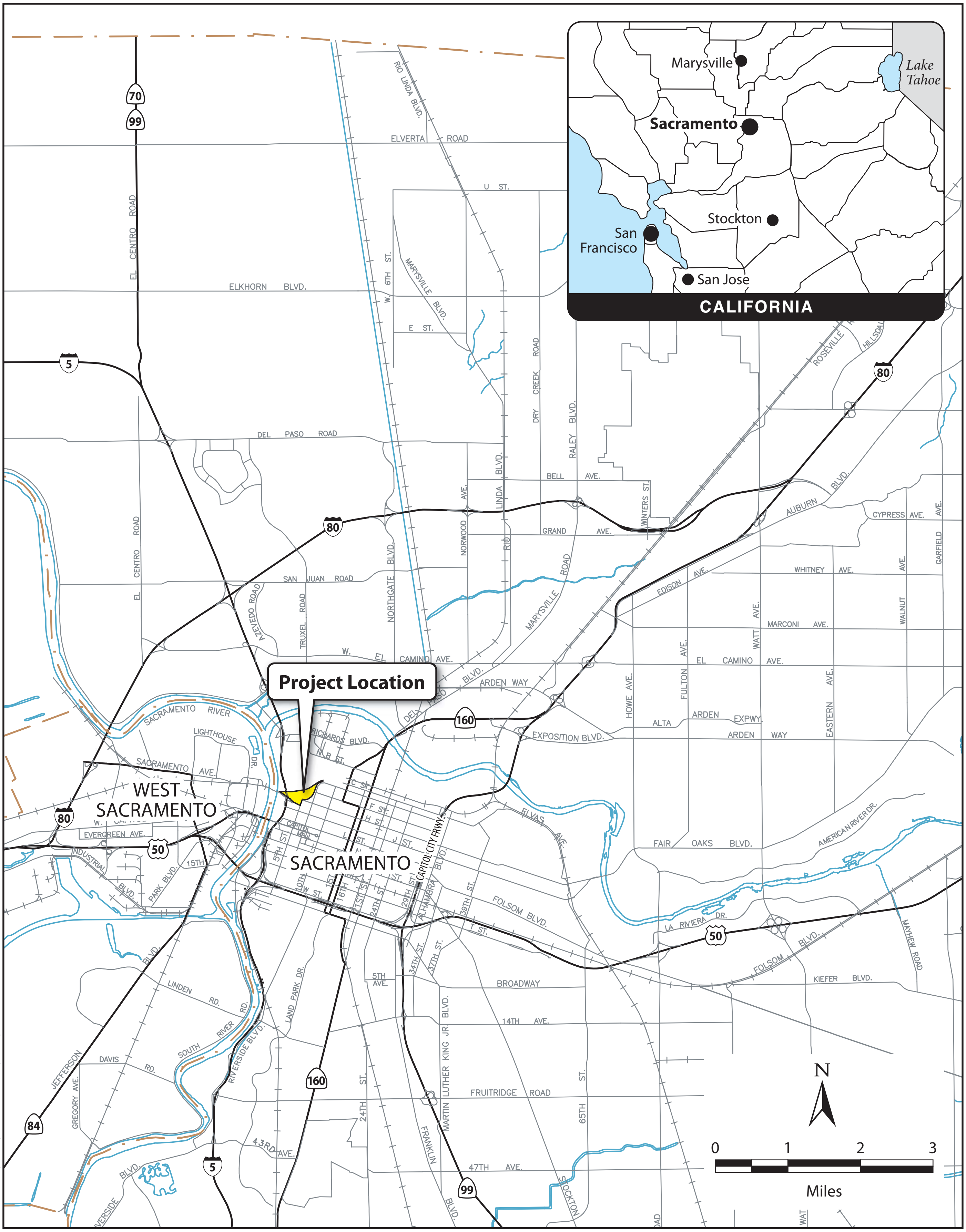

Figure 1-1
Project Vicinity

/Volumes/PUB/Graphics/Projects (Pub)/_2008_Project_Graphics/00121.08 Sacto-Intermodal_SITF/IS_EA (Task 100)/

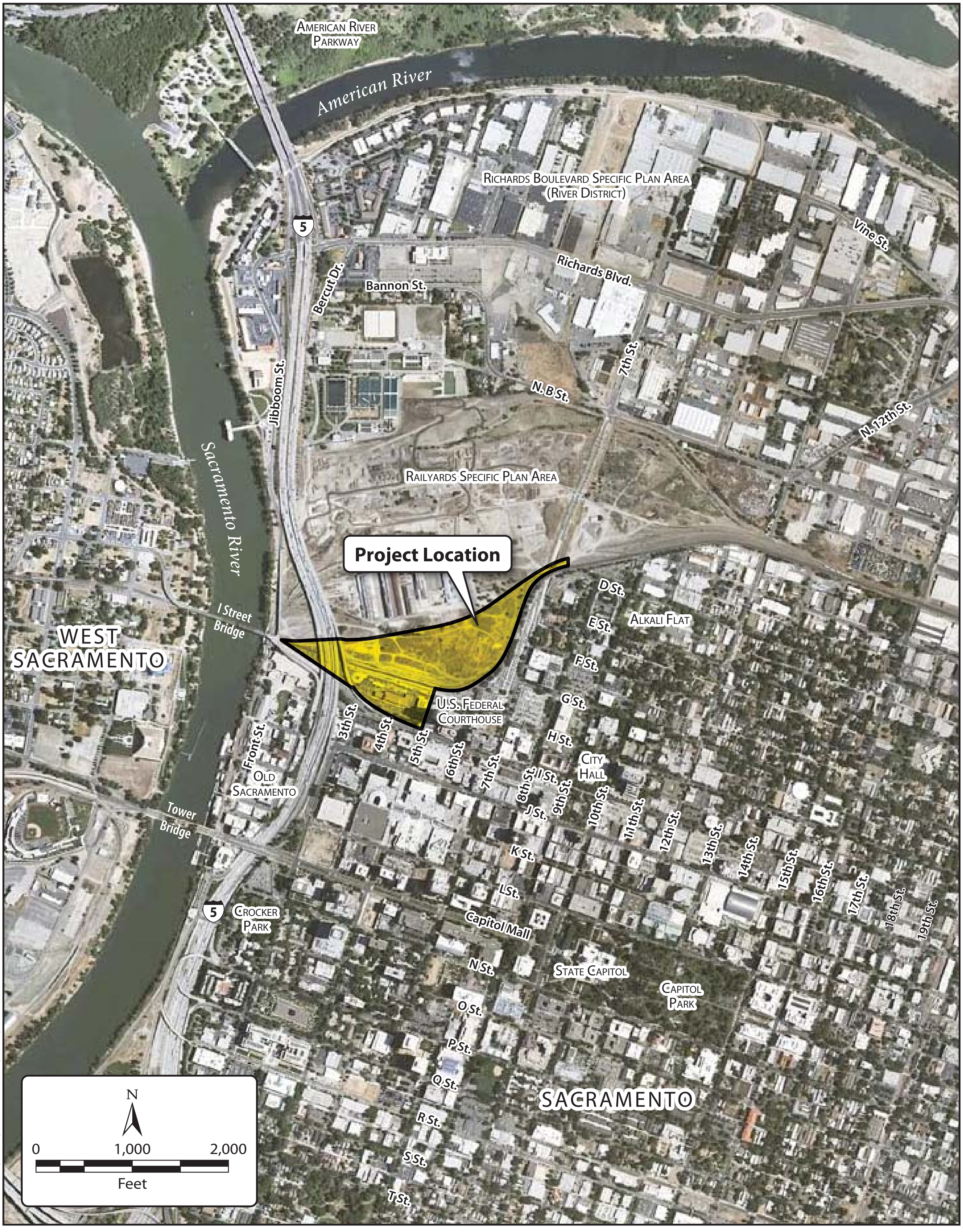

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Figure 1-2
Project Location

this EA. The EA analyzes Phase 3 of the project at the Tier 1 programmatic level, describing what Environmental Effects may be in this future phase. Further, FHWA will not authorize, at the conclusion of this environmental process, the final design or Federal funding for any right-of-way acquisition for future Phase 3.

1.1.2 Logical Termini and Independent Utility

The improvements proposed in Phase 1 and Phase 2 are independent of the future decision of whether or not to move the Depot. The Phase 1 track relocation (Figures 1-3a through 1-3e) activities do not depend on the implementation of Phase 2 (Figures 1-4a and 1-4b), nor do the Phase 1 improvements foreclose alternatives (location and size) of the Phase 2 improvements. Similarly, neither the Phase 1 nor Phase 2 improvements depend on or foreclose the alternatives for the future implementation of future Phase 3, irrespective of the future decision to relocate the Depot.

The FHWA regulations outline three general principles that are used to frame the analysis of a highway project:

(1) Connect logical termini and be of sufficient length to address environmental matters on a broad scope;

(2) Have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and

(3) Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. (23 CFR 771.111[f])

Although the proposed project is primarily a transit/rail project, not a highway project, each phase of the project meets FHWA's criteria for connecting logical termini and having independent utility. The initial phases (Phase 1 and Phase 2), which are evaluated at the project (Tier 2) level in this EA, would be funded primarily with local and state funding, as well as possibly FRA funding, in addition to FHWA funding. Implementation of future Phase 3, which along with Phases 1 and 2, is evaluated at the program (Tier 1) level in this EA, depends on future service expansion and passenger growth, and approval of future federal funding allocations.

The three-phase proposed project would accommodate future expansion of rail and bus services planned by providers that currently operate at the existing Depot: Amtrak, the Capitol Corridor, and the San Joaquin Corridor intercity rail and bus services, and Sacramento Regional Transit's light rail transit and bus system. It would provide a logical connection point for other intercity bus operators in the region, including Yolobus, Solano Transit, Yuba-Sutter Transit, Amador Regional Transit, El Dorado County Transit, Placer County Transit, Roseville Transit, and Elk Grove Transit, Greyhound's intercity and interstate operations, as well as bicycling, car rental vehicles, and taxicabs, and pedestrian facilities, a historic trolley system, regional rail service, and a high-speed rail system.

Each project phase has independent utility. For example, Phase 1 is needed to address the existing need to relocate the tracks irrespective of whether the station improvements occur in Phase 2 or the SITF is expanded in future Phase 3. The current alignment of the UPRR track does not meet the existing operational and capacity requirements of the freight and passenger operators because it constrains trains to one track over the I Street Bridge, requires freight trains to be slowed or held on the bridge while passenger trains are in the station, limits train length, and prohibits use of two in-line trains.

In Phase 2, the City plans to enhance the accessibility and use of the existing Station today, even if the Station is not expanded in future Phase 3. Phase 2 is necessary because the existing parking and current configuration of the LRT facilities are not optimal for bus, vehicle, and pedestrian access and safety and limit use of the site to accommodate multiple transit providers. Furthermore, irrespective of the decision to move the Depot, the existing electrical system is deteriorated and the interior of the Depot needs to be rehabilitated in accordance with the U. S. Secretary of Interior’s standards for historic structures.

Future Phase 3 is proposed to provide future capacity even if Phases 1 and 2 do not occur. Both Phase 1 and Phase 2 would accommodate a future Phase 3 alternative with the historic depot retained in its existing location or relocated and therefore do not foreclose future alternatives that may be considered for future Phase 3. For the above reasons, the Phase 1 track relocation activities do not depend on implementation of the improvements in Phase 2, nor do the Phase 1 improvements foreclose alternatives (location and size) of the Phase 2 improvements. Similarly, neither the Phase 1 nor Phase 2 improvements depend on nor foreclose the alternatives for the implementation of future Phase 3. Accordingly, each phase would have logical termini and demonstrates utility independent of the other project phases.

1.2 Purpose and Need

1.2.1 Purpose

The proposed project is a mass transportation project and is intended to enhance and upgrade existing mass transit facilities as well as provide new transit facilities, thereby meeting existing and projected future user and provider needs and facilitating multiple forms of transportation modes, including rail, transit, pedestrian, and bicycle. The project would also help to decrease the Sacramento region’s reliance on automobiles and remove traffic from the interstate and highway system, as well as accommodate a future high-speed-rail project, which may be developed by the state.

Specifically, the City intends to accomplish the following improvements.

1.2.1.1 Rail and Transit Service

- Improve capacity and reliability for freight and passenger rail service.
- Reduce rail and passenger conflicts and improve safety.

- Provide improved connectivity and ease of use for transit and rail users and providers.
- Accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers.
- Increase local and regional transit use by bringing together disconnected elements of the transit network into a single regional hub.
- Meet projected service levels and passenger growth.

1.2.1.2 Road and Highway System

- Help to decrease the Sacramento region's reliance on automobiles and remove traffic from the interstate and highway system. Although the City does not propose physical improvements to the state highway system or the local roads as part of the proposed project, improving rail and transit service would provide alternative modes of transportation to the Sacramento region.

1.2.2 Need

There have been five train terminals at various locations in downtown Sacramento, beginning with the first Central Pacific Terminal built in 1879 and culminating with the current Southern Pacific Depot (Depot) built in 1925, which is the only facility in Sacramento remaining in regular passenger service. As originally built, the Depot had a direct relationship to the main civic corridor of I Street, connecting arriving and departing passengers directly to the downtown core via 4th and I Streets. This connection has been compromised in a number of ways, including by construction of the Interstate 5 (I-5) on-ramp and the installation of heavy landscaping. Pedestrians wishing to access the Depot must navigate a heavily trafficked intersection and walk through several parking lots to reach the Depot main entrance.

Currently, the Depot houses the Sacramento Amtrak station; operations for interstate passenger rail service and the Capitol Corridor and San Joaquin Corridor intercity services; the existing Union Pacific Railroad (UPRR) freight rail lines, passenger platforms, and tunnel; Sacramento Regional Transit District's (RT's) light rail transit (LRT) line and station; bus loading areas for multiple service providers; and passenger parking. The Depot and all of its associated facilities are known as the Sacramento Valley Station (Station). The use of the Depot has increased substantially over the past several years with the addition of Capitol Corridor trains to meet the increasing commuter demand between the San Francisco Bay Area (Bay Area) and Sacramento and the addition of the LRT. The existing Depot facilities are undersized and deficient in ticketing, baggage handling, administrative areas, the number of berths for buses, and passenger amenities (such as food and services purveyors).

The UPRR mainline tracks located directly north of the Depot are shared by the Capitol Corridor intercity rail service, which operates passenger service between the Bay Area and Auburn; the Amtrak transcontinental passenger service; and the San Joaquin Corridor rail service, which operates between Sacramento and Bakersfield. The existing track configuration substantially reduces the velocity at which freight trains can pass through the area. Freight trains are also delayed ("held out") to wait for passenger trains at the Station to load and unload passengers.

The proposed project is needed for the following reasons.

1.2.2.1 Rail and Transit Service

- The current alignment of the UPRR track between 2nd Street and 7th Street does not meet the operational capacity requirements of the freight and passenger operators. As noted above, the UPRR mainline tracks are shared by the Capitol Corridor intercity rail service, which operates passenger service between the Bay Area and Auburn; the Amtrak transcontinental passenger service; and the San Joaquin Corridor rail service, which operates between Sacramento and Bakersfield. The existing track configuration substantially reduces the velocity at which freight trains can pass through the area and limits the maximum length of the trains, thereby reducing capacity. Freight trains are also delayed (“held out”) to wait for passenger trains at the station to load and unload passengers.
- The configuration of the LRT tracks immediately behind the Depot is not optimal for bus, vehicle and pedestrian access and safety.
- The current configuration of the LRT station and bus areas limits the ability of the site to accommodate additional transit providers.
- The existing Depot facilities are undersized and deficient in ticketing, baggage handling, administrative areas, the number of berths for buses, and passenger amenities (such as food and services purveyors).
- The existing demand for parking at the Depot exceeds the available supply.
- The existing baggage tunnel that extends from the north side of the Depot to the existing tracks is not compliant with the Americans with Disabilities Act (ADA). It cannot accommodate baggage carts with more than two trailers because of the 90-degree turns required to move between the tunnel and the ramps to the platforms. This requires multiple runs of cars for many Amtrak trains in the short time they stop at the Station.
- An all-weather and well-lighted pathway, including for the use of passenger carts and Red-Cap Service for mobility-impaired passengers, is needed to provide for passenger safety and convenience.

1.2.2.2 Road and Highway System

- Many of the Sacramento area freeway mainline study segments operate at unacceptable levels of service during peak periods, and many segments are near capacity. During congested conditions, drivers must divert to other routes, and fewer vehicles are able to get through than the actual demand would otherwise indicate, resulting in lower traffic counts and higher levels of service than are typically observed. (PBS&J/EIP 2007.)

1.3 Alternatives

This section describes the proposed project and the design alternatives that were developed by a multidisciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. Two build alternatives for future Phase 3 of the proposed project are evaluated, in addition to the no-build alternative, which was evaluated for the entire project.

1.3.1 Build Alternatives

This environmental document evaluates two build alternatives for future Phase 3, in addition to the no-build alternative: Alternative 1, "Don't Move the Depot", and Alternative 2, "Move the Depot." These build alternatives are identical in design for Phase 1 and Phase 2 and differ only in the design of the ultimate project in future Phase 3. Refer to Section 1.3.3, "Comparison of Alternatives," for a comparison of the two build alternatives in future Phase 3.

For all project phases, construction staging, equipment lay down, and access and material storage for all work would occur within the "footprint" of the project site (the area of ground disturbance) or on existing access roads. Track installation materials would be brought in by rail. Traffic control plans specifying signage, detours, flagmen, and other traffic control measures will be implemented to the satisfaction of the City Development Engineering Division to maintain access and safety for all modes of travel during construction of all phases.

If FHWA, as the lead agency under NEPA, reaches a Tier 1 decision for the entire three-phase project (i.e., Phases 1, 2, and 3) , as well as a Tier 2 decision authorizing construction of Phases 1 and 2 following completion of this EA, Phase 1 would be constructed and fully operational in 2010. Phase 2 would start construction in the first quarter of 2011, after the completion of Phase 1, and would be completed in approximately 3 years.

The timing of future Phase 3 is uncertain and depends on the build alternative selected and the availability of funding. FHWA will not authorize construction, at the conclusion of this environmental process, the final design or Federal funding for any right-of-way acquisition for future Phase 3.

1.3.1.1 Phase 1—Track Relocation

Phase 1 consists of the following components, which are identical for both build alternatives (Figures 1-3a through 1-3e). The environmental effects of these components are analyzed at the project level of detail in this EA. As detailed in Table S-2 of the Summary section of this EA, the estimated cost for design and construction of Phase 1 is $56.2 million.

- Preparing the new alignment for relocation of the existing mainline freight and passenger tracks.
- Installing new freight tracks, new passenger tracks, and associated equipment within the platform area.
- Constructing new double-sided passenger platforms.
- Constructing a new passenger platform tunnel (the Central Tunnel), service tunnel (West Service Tunnel), and pedestrian/bicycle tunnel (West Pedestrian/Bicycle Tunnel) under the relocated tracks.

- Constructing a pedestrian walkway from the passenger platform tunnel (Central Tunnel) to the Depot building on the south side of the rail corridor.
- Constructing a pedestrian connection from the passenger platform tunnel (Central Tunnel) to the north side of the rail corridor.
- Constructing a service access pathway from the Depot to the proposed new passenger tracks, consisting of a crossing of the tracks on the west side of the platforms (West Service Tunnel), the service roadway between the platforms, and the paved drive between the Depot and the crossing.
- Removing the existing mainline tracks and passenger platforms behind the Depot once the new track alignment was operational. The ramps to the platform that are part of the existing pedestrian tunnel at the Depot would be subsequently connected to the new walkway.

Track Work

New tracks, switches, and equipment would be installed within the relocated UPRR alignment for a distance of approximately 0.75 mile, as shown in Figure 1-3a. Freight tracks would be installed on the outer north and south sides of the alignment, while the passenger tracks would be located within the interior of the track corridor. After the new tracks were operational, the existing tracks would be removed, soil remediation would be undertaken pursuant to the 1988 Enforceable Agreement between the California Department of Toxic Substances Control (DTSC) and UPRR (City of Sacramento 2007b), and the ground level would be restored to grade. The realigned tracks on the west portion of the corridor would be designed to accommodate the California State Railroad Museum's need for a continued rail connection between its sites in Old Sacramento and the Central Shops buildings that are used for locomotive maintenance and repair currently, but would be developed with a railroad technology museum. Excavation would not exceed 3 feet below present grade for track removal or new track construction.

Utilities

An existing underground utility easement is located on the north side of the track realignment within the UPRR right-of-way. The existing storm drain and water systems would be upgraded and relocated to this utility corridor. The project is expected to possibly include some relocation of wet and dry utilities that serve the existing Central Shops buildings and existing Depot building in order for these facilities to remain in use. Where possible, existing utilities would be left in place until new replacement facilities could be built. New wet and dry utilities to serve the relocated platforms are included as part of this project. A diesel fuel-dispensing system will be installed on the platforms and connected via a dry pipe system to a fuel truck location at the west end of the platforms. The project also would include provisions for utility corridors for utilities that need to pass through the project area. New utilities associated with this project are envisioned as underground utilities. Excavation to install new utilities or remove buried utilities would not exceed 3 feet below current grade. Utilities buried deeper than 3 feet would be abandoned in place.

New Platforms and Tunnel Connections

Two new, straight double-sided passenger platforms would be constructed adjacent to the relocated passenger tracks. The platforms would be approximately 1,200 feet in length and would be approximately 25 feet in width, to accommodate more passengers and baggage and to improve accessibility for mobility-challenged passengers. In comparison, the existing platforms vary in length and width; the longest is about 960 feet long, and the width ranges from approximately 10 to 15 feet. On the north side of the corridor, the new passenger tunnel (Central Tunnel) would connect to grade in the adjacent Railyards development with stairs, an elevator, and possibly a future escalator. On the south side, a ramp would connect to grade and to a pedestrian walkway leading to the Depot. The tunnel, ramps, and pedestrian walkway would comply with the ADA. The asphalt walkway is not planned to have landscaping as part of Phase 1.

Baggage service between the Depot and the new platforms would be by carts that travel at grade from the Depot and cross the tracks using the West Service Tunnel along the west side of the site. Baggage carts also may use the pedestrian tunnel. Amtrak prefers to have both options for its baggage service; therefore, the new passenger platform tunnel (Central Tunnel) ramps may be configured to accommodate baggage carts. This baggage access from the Central Tunnel to the ramps would be equivalent to the existing tunnel and could only accommodate carts with a maximum of two trailers. Consistent with current operations, similar carts, providing what is known as Red-Cap Service, would also carry mobility-challenged passengers who are unable to walk to the passenger platforms, using either the west side West Service Tunnel or the Central Tunnel.

The Central Tunnel would extend from its northern terminus at the Central Shops to a point approximately 323 feet south, at which point the tunnel would merge to a ramp extending to the existing ground service, approximately 200 feet from the end of the tunnel. The Central Tunnel ramp will comply with ADA requirements, which include intermittent landings and handrails. Construction of the Central Tunnel would be accomplished via open-cut excavation with 1:1 side slopes, necessitating an initial swath of excavation measuring 80 feet wide that tapers with increasing depth. An 80-foot-wide excavation corridor is assumed for the tunnel. The finished tunnel would be lighted and concrete-lined. The concrete walls would be 2.25 feet thick and the ceiling 4.5 feet thick at its apex. (Figure 1-3c.)

The Central Tunnel ramp connecting the tunnel to the depot would commence at the bottom elevation of the Central Tunnel and slope upward at a 1:12 slope ratio on a southerly bearing. Excavation would be cut-and-cover. At a point 200 feet south of the tunnel's southern terminus, the ramp would reach the ground surface, connecting with a walking path to the Depot. The walking path would require no more than 3 feet of vertical excavation to build. An 80-foot wide excavation corridor is assumed for the Central Tunnel Ramp. The finished ramp would be lighted and concrete-lined. (Figure 1-3d.)

The West Pedestrian/Bicycle Tunnel will be located under I-5 and the I-5 ramp and will extend under the proposed railroad right-of-way. It will accommodate trolleys. The West Service Tunnel will be constructed along the outer edge of Caltrans' I-5 right-of-way, cross under the tracks, and tie into a proposed vehicle service road located between the tracks. These tunnels would be excavated to a maximum depth of 25 feet below present grade within corridors not to exceed 80 feet in width to allow for 1:1 side slopes. Excavation would be cut-and-cover. The finished tunnels would be lighted and concrete-lined. The concrete walls would be 2 feet thick and the arched ceilings 3 feet thick at the apex. (Figure 1-3e.)

In Phase 1, the walking distances between the Depot and the bus/LRT area would be approximately 645 feet and the distance from the Depot to the passenger rail platforms would be 965 and 1,035 feet, respectively (Figure 1-5a).

1.3.1.2 Phase 2—Sacramento Valley Station Improvements

Phase 2 would consist of improvements to the existing Station that would upgrade its facilities and relocate transportation uses for more efficient operations, including improvements to the existing Depot. Phase 2 consists of the following components, which are identical in both build alternatives (Figures 1-4a and 1-4b). The environmental effects of these components are analyzed at the project level of detail in this EA. As detailed in Table S-2 of the Summary section of this EA, the estimated cost for design and construction of Phase 2 is $21.9 million.

- Relocating, reconfiguring, and repaving/restriping the existing RT and Amtrak bus berths.
- Relocating the existing LRT station to a north-south alignment on the eastern edge of the site as planned by RT, which would create better internal site circulation and proximity to the bus berths and to the long-distance passenger rail service from LRT trains.
- Providing enhanced passenger connections, including walkway upgrades (e.g., street furniture, a shade/weather covering, and landscaping/lighting) from the new passenger platforms to the Depot and a tunnel extension that connects the existing Depot tunnel and the Central Tunnel constructed in Phase 1.
- Relocating and reconfiguring passenger vehicle and bicycle parking to accommodate existing parking demand and improve the drop-off area in front of the Depot.
- Upgrading the electrical system at the station and within the Depot to meet functional needs and requirements.
- Providing a transit way along the north side of the site connecting the west side of the facility to the extension of F Street to facilitate bus circulation on site and provide shortcuts separate from congested city streets.

The Phase 2 improvements would be constructed after the tracks have been relocated.

RT and Amtrak Bus Berths

The existing RT and Amtrak bus berths would be relocated and reconfigured from their current east-west orientation on the north side of the Depot to a north-south orientation west of the relocated LRT station to improve passenger access from the passenger rail platforms, the at-grade walkway, and the LRT station. The bus area would be a combination of front-in and platform-sided berths and would provide a similar number of spaces as are currently available. Permanent structures providing weather protection for the buses, passenger benches and shade structures, lighting, and similar enhancements would be incorporated into the relocated bus loading area. The bus berths would consist of paving and striping.

LRT Station Relocation

The existing LRT station would be relocated as planned by RT to improve internal circulation and proximity to the bus berths and the rail platforms. Currently, the LRT Gold Line terminates at a station located immediately north of the Depot along the H Street alignment. RT has long planned to relocate this existing station to accommodate its planned Downtown-Natomas-Airport (DNA) project (RT's locally preferred alternative for the DNA project would be routed through the proposed project area). The tracks and shelters at the LRT station were designed to be relocated. RT's draft program environmental impact report (EIR) for the DNA project assumed relocation of the tracks and LRT station as necessary for the DNA project's viability (Sacramento Regional Transit 2007), and the City and RT have already entered into an agreement to provide for such relocation.

This LRT station would be a major station and transfer point along the DNA line. In this area, from south to north, its ultimate routing would extend generally from H Street north along an alignment west of 5th Street to the future extension of F Street planned for in the RSP. Then LRT trains would travel east on F Street to 7th Street. To accommodate RT's future project, the existing LRT station would be rebuilt to orient in a north-south alignment through the project site, as shown on Figure 1-4a. The Phase 2 improvements would consist of construction of a single LRT side platform and a single track and removal of the existing station and tracks after the relocation of LRT operations to the new station. The project would accommodate RT's plans to construct a second track and platform at this LRT station in the future as part of RT's DNA project. Typical light rail construction depth would be 4.0 feet below present grade.

Enhanced Passenger Connections

Enhancements, such as benches, street furniture, a shade/weather covering, landscaping, and lighting, would be provided to serve the at-grade walkway and provide a bus waiting area to the relocated bus berths. The existing tunnel that extends north out of the Depot and currently connects to the existing passenger platforms would be extended to the new passenger platform tunnel constructed during Phase 1 to provide all-weather access for passengers; baggage carts; and Red-Cap Service, which, in compliance with ADA requirements, provides passenger carts to transport mobility-challenged passengers to the trains. The construction depth for the tunnel extension would range from 16.9 to 2.0 feet below present grade within an 80-foot-wide corridor. The tunnel extension would connect the southern terminus of the Phase 1 pedestrian tunnel to the existing passenger tunnels at the Station. The access to the north from the central tunnel would not handle baggage carts, but the access to the south toward the Depot would. In Phase 2, the walking distances between the Depot and the bus/LRT area would be approximately 645 feet and the distance from the Depot to the passenger rail platforms would be 965 and 1,035 feet, respectively (Figure 1-5a).

Passenger Parking and Site Access

The existing vehicle and bicycle parking facilities would be relocated and reconfigured to accommodate existing parking demand and to expand the size of the drop-off area in front of the Depot, including the work described below. Typical surface parking lot construction depth would be 3.5 feet below present grade.

- Reconfiguration of the existing parking lot under I-5 and creation of new parking between the former track alignment and the relocated tracks to provide approximately 180 parking spaces.
- Provision of temporary access from 2nd Street for this reconfigured parking lot under the freeway.

- Construction of an interim surface parking lot in the area north of the existing Depot and the new rail corridor to provide approximately 400–450 spaces. This parking would replace the spaces currently located in front of the Depot and the two lots along H Street and along 7th Street next to the existing tracks, which are privately owned and scheduled for redevelopment in the RSP, after implementation of Phase 1 of the proposed project
- Provision of a bicycle service area on the site, such as a bicycle station, offering services and secured bicycle storage for cyclists.

Depot Rehabilitation

During Phase 2, the Depot building would be rehabilitated to upgrade core building systems and infrastructure. Rehabilitation would focus on replacing the station's existing electrical system, which is worn, outdated, beyond repair, and cannot accommodate any additional loads. The proposed work, which will be conducted in accordance with the Secretary of the Interior's standards for mechanical and building systems, is listed below.

- Providing an electrical room with new transformers, switchboards, panels, and related equipment in accordance with codes and recommended practices.
- Providing subpanels, conduits, and distribution systems throughout the station to supply localized power and lighting.

1.3.1.3 Future Phase 3—Intermodal Improvements

The environmental effects of future Phase 3 are analyzed at the program level in this EA. As noted previously, the differences in the two build alternatives would occur in future Phase 3.

Under both Build Alternatives, future Phase 3 would consist of the following components (see Figures 1-6 and 1-7). Implementation of future Phase 3 would depend on the availability of funding allocations. As detailed in Table S-2 of the Summary section of this EA, the estimated cost for design and construction of future Phase 3 is estimated to cost between $251.9 (Build Alternative 1—"Don't Move the Depot") and $261.9 million (Build Alternative 2—"Move the Depot") (Table S-2).

- Converting the existing Station into a large, multimodal regional transportation facility that integrates a classic transportation building and a new terminal.
- Expanding bus bays.
- Expanding baggage facilities.
- Constructing multiple waiting areas.
- Expanding site features that serve passengers and providers.
- Meeting sustainable design objectives.

The ultimate SITF in future Phase 3 would include a new terminal building to accommodate projected service providers and passengers. The approximate sizes of the terminal improvements are shown in Table 1-1, which provides the program space needs and approximate square footages for a typical intermodal facility plan, as proposed by the current transit operators

(Amtrak and Greyhound) at the Station. The joint development square footage would range from 27,000 to 73,000 square feet.

Table 1-1. Assumptions for the SITF Terminal Program

Program Use	Operator Requested Program Square Footage
Ticketing	2,660
Baggage	6,520
Waiting area	18,120
Passenger amenities	10,690
Administration and employee uses	16,850
Total Terminal Building Transit Program	54,840

Source: SMWM/Arup and Associated Consultants 2008a.

Components Common to Both Build Alternatives in Future Phase 3

- Both build alternatives would include a new terminal building with passenger waiting areas, baggage drop-off and pickup, ticketing, and other passenger services to accommodate and/or connect to additional service providers (such as local and regional bus operators, Greyhound, trolley service, regional rail service, and high-speed rail). The new terminal also would provide for unmet travel-related passenger needs (such as food and services purveyors) and the needs of service providers (office lessees). Additional passenger ticketing and waiting areas would be needed to serve expansion and transit ridership growth for current operators (such as increased Capitol Corridor service), as well as new operators (such as regional rail).
- Upgraded connections, including a possible pedestrian overcrossing linking the new terminal building, passenger platforms, and Central Shops area, to supplement the tunnel connections constructed in earlier phases.
- State-of-the-art baggage services and ticketing for passenger rail and regional bus operators.
- Improved site access points and circulation, including west side access, an extension on the H Street alignment, and other on-site roadways and walkways.
- Renovation of the historic Depot in accordance with the Secretary of the Interior's standards for rehabilitation, subject to Section 106 processing in a future environmental document. Renovation may include, for example, relocating the ticket counter to its original location, restoring openings and building features, and other measures to enable areas to be functional.
- Upgraded bicycle access and storage facilities and passenger drop-off areas.
- On-site parking structures to meet future needs for additional parking, particularly for long-distance travelers and those who need to park close to their destinations.
- Passenger amenities focusing on Amtrak, RT, and possibly Greyhound customers (such as restrooms, telephones, food and vending services, custodial service, and an internal circulation system).
- Expanded local bus berths and waiting areas.
- Administrative operations and employee office areas.

- Plazas, public open spaces, passenger amenities, landscaping, and pedestrian connections.
- Way-finding, signage, and information systems.
- Public services and infrastructure as required for the facility.

Access to and from the surface parking areas for users and to and from the bus area for transit would be reconfigured to match future Phase 3 site development.

1.3.2 No-Build Alternative

Under the no-build alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses, would not be restored, and would remain difficult to access by the general public. The tracks would remain in their current configuration, and the platforms could not be expanded, resulting in deteriorating levels of service to passengers and providers. No upgraded Station facilities would be constructed, and consequently ongoing maintenance costs of the unimproved facilities would be likely to increase. Because of the track configuration, UPRR trains would continue to operate at lower-than-optimum speeds and at shorter overall length, under-using their potential freight movement capacity. Conflicts between passenger and freight trains would continue to occur, or increase, resulting in continued delay of freight trains. Freight trains forced to stop and wait as a result of passenger conflicts would further impede goods movement, and the idling locomotives would create localized and regional air quality impacts. The existing Depot facilities and platforms would not be able to accommodate projected increases in passengers, and use could decline or grow at a slower rate than anticipated, resulting in a corresponding higher use of the vehicles and highway system.

1.3.3 Comparison of Alternatives

1.3.3.1 Build Alternative 1—“Don’t Move the Depot”

Under Alternative 1 (Figure 1-6), the historic Depot would not be moved. The Depot would remain the grand entry portal to the transit facility and continue to serve transportation uses in conjunction with a new terminal expansion built extending toward the rail platforms that would accommodate space needed for operators and users. The extension would be a multilevel linear concourse that links the historic Depot with the realigned tracks. It would be similar to an airport concourse, with the second level consisting of boarding gates and passenger waiting areas interspersed with food and drink purveyors, shops, and other amenities, while the ground level would contain berths and staging areas for regional and intercity buses, passenger connections, and other transportation users. The roof of the concourse may be designed to recall the “great train shed” of major train stations or to echo the rooflines of the Central Shops to the north.

Although the historic Depot would be approximately 800 feet from the realigned heavy rail tracks (Figure 1-6), which is roughly two to three city blocks, the new extension would physically connect to all modes of transit, as well as adjacent joint development, city streets, and neighborhoods on multiple levels. A bridge is proposed to connect the concourse to the rail platforms and to the Railyards’ Market Plaza to the north, offering an alternative to the passenger tunnel. As a result, there would be multiple access points at the facility, and the actual distances passengers walk to transit services, to make connections, or to reach their destinations would vary. In some respects, this concept recalls the form of train stations built at the turn of the 20th century, with a main station, or "headhouse," and multiple rail lines ending at its back. In this case, however, the regional buses are in the traditional place of the rails while the tracks are located perpendicular to the concourse along the mainline.

The Depot would retain its historic function as a transit terminal and be integrated with the new facility. It also would be at the center of several public plazas that incorporate the REA building and extensive joint development opportunities. The massing concept used under this alternative would have smaller scale structures close to the Depot to complement the scale of the Depot and REA building. Higher density mixed-use joint development would be located northwest of the terminal and would link the new terminal extension to joint development. Access to the primary public parking garage is via linkages through the joint development. Jointly, the new concourse and the historic Depot set the stage for an important architectural project that would establish the tone for a new transit-oriented district.

Components Relevant Only to Alternative 1, "Don't Move the Depot"

Under Alternative 1 (Figure 1-6), the following additional major features would be constructed in future Phase 3.

- Expanded regional bus (Greyhound) and Amtrak bus facilities in a multilevel concourse north of the existing Depot that would contain ticketing, administrative and waiting areas, leased support areas, and direct vertical connections to the bus boarding. In future Phase 3 under Alternative 1, the walking distances between the Depot and the bus/LRT area would be approximately 655 feet and the distance from the Depot to the passenger rail platforms would be 765 and 835 feet, respectively (Figure 1-5b).
- A concourse with skywalk (upper level) connections to the second floor of the existing Depot, to commercial development to the east, and to future joint development and parking structures to the west.
- A bridge overcrossing extending from the concourse level across the rail corridor to the passenger platforms and to the Central Shops.
- Multilevel terminal areas with overlooks, open and enclosed roof areas, landscape planters extending through levels, passenger walkways, way-finding measures, and user-friendly features. Connections between levels would be by means of stairs, elevators, and escalators.
- Modifications to the local bus area developed in Phase 2 to accommodate increased berths.
- Upgrades and adjustments to the location of the passenger walkway between the Depot and the passenger rail platforms immediately to the west of its existing location, including improved cover, landscaping, and urban design features.
- On-site building pads for a parking structure used for transit passenger parking.

1.3.3.2 Build Alternative 2—"Move the Depot"

Under Alternative 2, future Phase 3 consists of the following components similar to those described for Alternative 1, but in a different design (Figure 1-7).

- Converting the existing Station into a large, multimodal regional transportation facility that integrates a classic transportation building and a new terminal
- Expanding bus bays.
- Expanding baggage facilities.
- Constructing multiple waiting areas.
- Expanding site features that serve passengers and providers.
- Meeting sustainable design objectives.

The ultimate SITF in future Phase 3 would include a new terminal building to accommodate projected service providers and passengers. The approximate sizes of the terminal improvements are shown in Table 1-1, which provides the program space needs and approximate square footages for a typical intermodal facility plan, as proposed by the current transit operators at the Station. The joint development square footage ranges from 27,000 to 73,000 square feet.

Under Alternative 2 (Figure 1-7), in future Phase 3 the Depot would be relocated approximately 300 feet to the north adjacent to the realigned tracks, convenient to multiple modes of transportation (Figure 1-5c). Moving the Depot would ensure that it would become the anchor for the new Depot District and would generally shorten the connections between passenger modes. In future Phase 3 under Alternative 2, the walking distances between the Depot and the bus/LRT area would be approximately 340 feet and the distance from the Depot to the passenger rail platforms would be 605 and 675 feet, respectively (Figure 1-5c). The new Depot District would enhance and emphasize the stature of the Depot by making it the centerpiece of the development, creating an open public entrance plaza oriented to I Street, and framing it with joint development. The joint development would visually buffer the project's public spaces from I-5 to the west.

The new transit facility would be composed of two distinct building elements: the rehabilitated Depot and a new terminal extension. A covered, open-air, landscaped plaza would connect the terminal extension and the historic Depot. Although the majority of the operator-requested program would be retained inside the Depot building, the terminal extension would provide pre-boarding waiting rooms for bus and rail passengers and other transit-related program elements, as well as spaces for joint development. The passenger tunnel constructed in Phase 1 would be connected to the terminal extension to provide direct passenger access to the rail platforms.

At the facility, the multiple modes of transit would be grouped based on general concepts that facilitate connections for passenger and efficiency for operators. Local service, such as LRT and transit buses, would be adjacent to pedestrian plazas and streets while regional transit, such as intercity (Greyhound) bus and passenger rail (Amtrak), would be adjacent and close to the rail tracks. The arrangement of transit operations allows for convenient transfers among all operators within minimal walking distance. Alternative 2 would be implemented in the following three phases.

Components Specific to Alternative 2, "Move the Depot"

In the "Move the Depot" Alternative (Figure 1-7), additional major features constructed in Future Phase 3 would consist of the following.

- Construction of a new terminal building for Amtrak and Greyhound buses, baggage, and administrative and leased support areas situated across a plaza from the newly relocated historic Depot.
- Relocation of the existing Depot building approximately 300 feet to the north; the building would be jacked and rolled onto a new foundation (SMWM/Arup and Associated Consultants 2008a).
- Modified passenger/baggage tunnel between the terminal/Depot and the passenger platform tunnel.
- Joint development and public open space on the former Depot site.
- Modification of certain Phase 2 improvements, such as in the parking on the site and areas south of the original station location and between the old and new station sites, as required.
- Relocation of the local bus area to on-street bus berths south of the terminal area.

1.3.4 Alternatives Considered but Eliminated from Further Discussion

This section describes the preliminary alternatives that were considered and the screening process and criteria that were used to eliminate alternatives from further consideration. The screening of alternatives occurred as part of the concept design process conducted for the SITF project. Through this planning and concept design work, which began in 2003, consensus was established for the facility; for the types of transportation center needed in Sacramento; and for its overall program needs, criteria, and goals. These elements provided the basis for the development of alternatives and, subsequently, after additional analyses, the basis for their screening. The major steps and results of the concept design process are documented in project reports listed in Table 1-2. The specific reports should be referred to for additional information; they are available through the SITF project website, at http://www.cityofsacramento.org/transportation/director/sitf.

Table 1-2. Intermodal Concept Design Process

Step	Report/Title	Major Focus/Results
1	Technical Report: Existing Site Conditions	Discussion of project needs, parameters, setting, etc.
2	Working Paper: *Armchair Tour of Intermodal Terminals*	Survey of transportation centers worldwide
3	Working Paper: *Transit Operational Requirements* (draft)	Discussion of operator needs and projections
4	Working Paper: *Transit Operational Requirements* (final)	Finalized plan of operator needs and projections
5	Working Paper: *Conceptual Programs for Transit and Joint Development and Evaluation Criteria*	Discussion of transportation center models for the SITF, spatial requirements for program needs, and evaluation criteria for facility
6	Technical Report: *Final Conceptual Transit and Joint Development Programs*	City Council–approved vision of regional transportation hub, serving all operators in a central site, long distance and local users, with park-and-ride, integration of historic Depot with new facilities, and evaluation criteria for SITF
7	Technical Report: *Baseline Traffic Simulation and Analysis*	Traffic study
8	Working Paper: *SITF Alternatives* (draft)	Comparison and evaluation of four design alternatives
9	Technical Report: *SITF Alternatives* (final)	Council-approved proceeding with studies on Alternative B, Sacramento Northern, which used northern track realignment and relocated the Depot close to tracks
10	Working Paper: *Proposed SITF Project* (draft)	Additional studies of Alternative B, Sacramento Northern
11	Technical Report: *Proposed SITF Project* (final)	Finalized report of Alternative B, Sacramento Northern

1.3.4.1 Transportation Center Concept Design Alternatives

Early in the concept design work, the City considered different type of transportation centers as potential models for Sacramento's facility. These are presented in Working Paper #5 and Technical Report #6, and included the regional hub, the commuter center, the park and ride station, and the transit district. After reviewing the features of each and the needs of the region, the City Council directed that the SITF would be a regional transportation hub with a park-and-ride component. It would be a central destination offering all types of transportation services. It would facilitate connections among modes and provide amenities to serve long-distance and local travelers, commuters, and local residents. Other concepts were eliminated.

1.3.4.2 Track Alignment Alternatives

In conjunction with determining the type of transportation center, the City considered several basic track positioning alternatives for the area between the existing historic Depot and the Central Shops and between the I Street Bridge and the 7th Street overcrossing. In addition to the track alignment that was ultimately moved forward for consideration in the environmental assessment, two other alternatives were considered. These varied the co-placement of the freight and passenger tracks:

- Alternative I, Separation of Freight and Passenger Track Alignments; and
- Alternative II, Parallel Placement of Freight and Passenger Tracks.

Alternative I—Separation of Freight and Passenger Track Alignments

In this alternative, the existing passenger tracks adjacent to the historic Depot would continue to be used, while the freight tracks would be straightened by relocating them to the north adjacent to the Central Shops. Benefits to freight service in this segment would include: operations with straighter, modern tracks and switches, higher speeds, and increased capacity; elimination of conflicts with passenger service and passengers; and the option of adding another mainline track, for a total of three. Passenger service also would have similar safety benefits because of the reduction in conflicts with freight trains and the ability to service passenger trains easier.

However, there would be fewer other benefits for passenger service. Continuing to use the existing passenger track would result in continued safety problems with curved platforms, limiting operator views of passengers on the platforms, inadequate platform length for the projected number of trains and numbers of cars in long-distance trains, ability to use only the south track on the I Street Bridge across the Sacramento River, and other operational issues. This alternative also would result in difficulty in providing additional needed space for support facilities, as well as constraining joint development opportunities. The existing Depot does not have sufficient space, and expansion would be difficult in the adjacent area south of the tracks. Yet, between the passenger and newly relocated freight tracks would be an area that would be hard to access and develop—it would be a “no man’s land.” Further, grade-separated street extensions to the north to link downtown to the Railyards and River District areas would not be possible because there would not be adequate distance to clear two sets of tracks.

Because this alternative did not result in high levels of improvement for multiple modes and did not meet the project purpose and need, it was determined to be infeasible and was eliminated from further consideration.

Alternative II—Parallel Placement of Freight and Passenger Tracks

In this alternative, the freight tracks would be placed on one side of the rail corridor, and the passenger tracks would be placed on the other. Presumably, the freight tracks would be on the north, and the passenger tracks would be on the south, to enable better ties to the passenger terminal and have improved access by users and operators. This would provide benefits of reducing conflicts between passenger and freight services similar to those noted in the above alternative. Various alignments for parallel track placement in the area between the Central Shops and the historic Depot were examined.

Regardless, they all resulted in similar problems. Multiple tracks would have to fan out from the existing tracks on the I Street Bridge on the west and the 7th Street overcrossing on the east. They also would have to weave their way through the I-5 freeway columns. There would be an eventual need for three freight tracks and four passenger tracks. In this approximately 0.75-mile stretch, there was not sufficient distance for all the tracks to diverge and merge.

Also, because the passenger tracks would switch from the mainline, they likely would not be able to be as straight, nor would the platforms be able to be as long, as desired. As in the above alternative, it was concluded that there would be limited operational benefits for passenger service, issues with facility expansion, and difficulties in extending streets and connecting communities.

Because this alternative presented disadvantages that overweighed its advantages, it was eliminated from further consideration.

1.3.4.3 Design Alternatives

The design alternatives that were developed and evaluated in the concept design process represent a range of reasonable alternatives that were based on the City Council–approved vision, project criteria, and programs for transportation and joint development. A summary of the alternatives and evaluation is provided below, while the complete process is documented in Technical Report #9.

The alternatives, shown in Figure 1-8, are listed below.

- Alternative A, Sunset Limited;
- Alternative B, Sacramento Northern;
- Alternative C, Overland Limited; and
- Alternative D, Valley Flyer.

The four alternatives were developed in a design charette and refined in several workshops with public participation. Major common elements among them included: development of expanded facilities to meet operator needs, enhanced transfer and connections among operators, continued use of the historic Depot as a transportation facility, upgraded passenger and support amenities, reestablishment of 4th Street as an entry to the facility, and the addition of west side access to the facility. Significant variables between these concept alternatives included: the location of the rail tracks, the nature of use or reuse of the existing Depot, the location of the transit components, and the joint development within and around the facility.

During concept design, the alternatives were developed to a conceptual level to enable comparisons to be made with respect to each other in accordance with the evaluation criteria that involve the following areas:

- program fulfillment;
- access and circulation;
- land use, development, and urban design;
- historic preservation;
- constructability and phasing feasibility; and
- cost, financing, and revenue potentials.

Two of the concept alternatives, Alternatives A and B, were determined to be feasible and have been carried forward for analysis in the environmental assessment. Alternative A, Sunset Limited, is now identified as Alternative 1, the “Don’t Move the Depot” build alternative; and Alternative B, Sacramento Northern, is now identified as Alternative 2, the “Move the Depot” build alternative. Both build alternatives are described above.

The remaining two concept alternatives, Alternative C, Overland Limited, and Alternative D, Valley Flyer, are described below. Both were determined during the conceptual design process to have major drawbacks in program accommodation, transit functionality, implementation, and urban design and development potential and were eliminated from further consideration. Both alternatives use rail alignments that are not approved by the rail operators, and both are inconsistent with the implementation of the Railyards development plans and the RSP EIR.

Alternative C—Overland Limited

Alternative C, Overland Limited, uses an alternative rail alignment proposed by a Sacramento community group interested in the proposed project, Save Our Rail Depot. This alternative would restore and expand the historic Depot at its existing location to accommodate additional transit functions. The rail alignment under this alternative would accommodate three dedicated freight lines and two 800-foot-long passenger platforms. This platform length is not sufficient to meet the project objectives to improve capacity and reliability for freight and passenger rail service and reduce rail and passenger conflicts and improve safety. Additionally, the rail alignment was not approved by UPRR or Capitol Corridor and would require condemnation and a lengthy entitlements process. The alternative is not consistent with currently adopted plans. For these reasons, it was eliminated from further consideration.

Alternative D—Valley Flyer

Alternative D, Valley Flyer, uses an alternative rail alignment developed by the Intermodal Concept Design Team. This alternative would restore and expand the historic Depot at its existing location to accommodate additional transit functions. The rail alignment under this alternative would accommodate three dedicated freight lines and two passenger platforms approximately 1,100 to 1,200 feet long. Although this alternative would provide the necessary longer passenger platforms, the rail alignment was not approved by UPRR or Capitol Corridor and would require condemnation and a lengthy entitlements process. The alternative is not consistent with currently adopted plans. For these reasons, it was eliminated from further consideration.

1.4 Permits and Approvals Needed

Table 1-3 describes the permits, reviews, and approvals that would be required for project construction.

Table 1-3. Permits, Reviews, and Approvals Required for Project Construction*

Agency	Permit/Approval	Status (Anticipated Date)
California Department of Transportation	Air space lease for work under I-5, modification of an existing cooperative agreement	March 2009
	Railroad Agreement with UPRR, pursuant to 23 CFR 646.216 (3)(d), as delegated under SAFTEA-LU	March 2009
Federal Transit Administration	Funding approval/National Environmental Policy Act (cooperating agency)	March 2009
Federal Railroad Administration	Funding approval/ National Environmental Policy Act (cooperating agency)	March 2009
Federal Highway Administration	Funding approval/ National Environmental Policy Act (federal lead agency)	March 2009
	– Approval of Phases 1 and 2	March 2009
	– Subsequent approval of future Phase 3 (later date)	2010
Union Pacific Railroad and operators signing July 2006 Track Relocation Agreement (Amtrak, Capitol Corridor, California State Railroad Museum)	Approval of track design, approval of private crossing (to be used for the baggage and train servicing)	March 2009
	Railroad Agreement with Caltrans, as delegated under SAFTEA-LU, pursuant to 23 CFR 646.216 (3)(d)	March 2009
U.S. Fish and Wildlife Service	Section 7 consultation, possibly resulting in an appended Programmatic Biological Opinion for Valley Elderberry Longhorn Beetle	March 2009
State Historic Preservation Officer	Section 106 consultation	March 2009
Advisory Council on Historic Preservation	Section 106 consultation	March 2009

* Apples to both Build Alternatives.

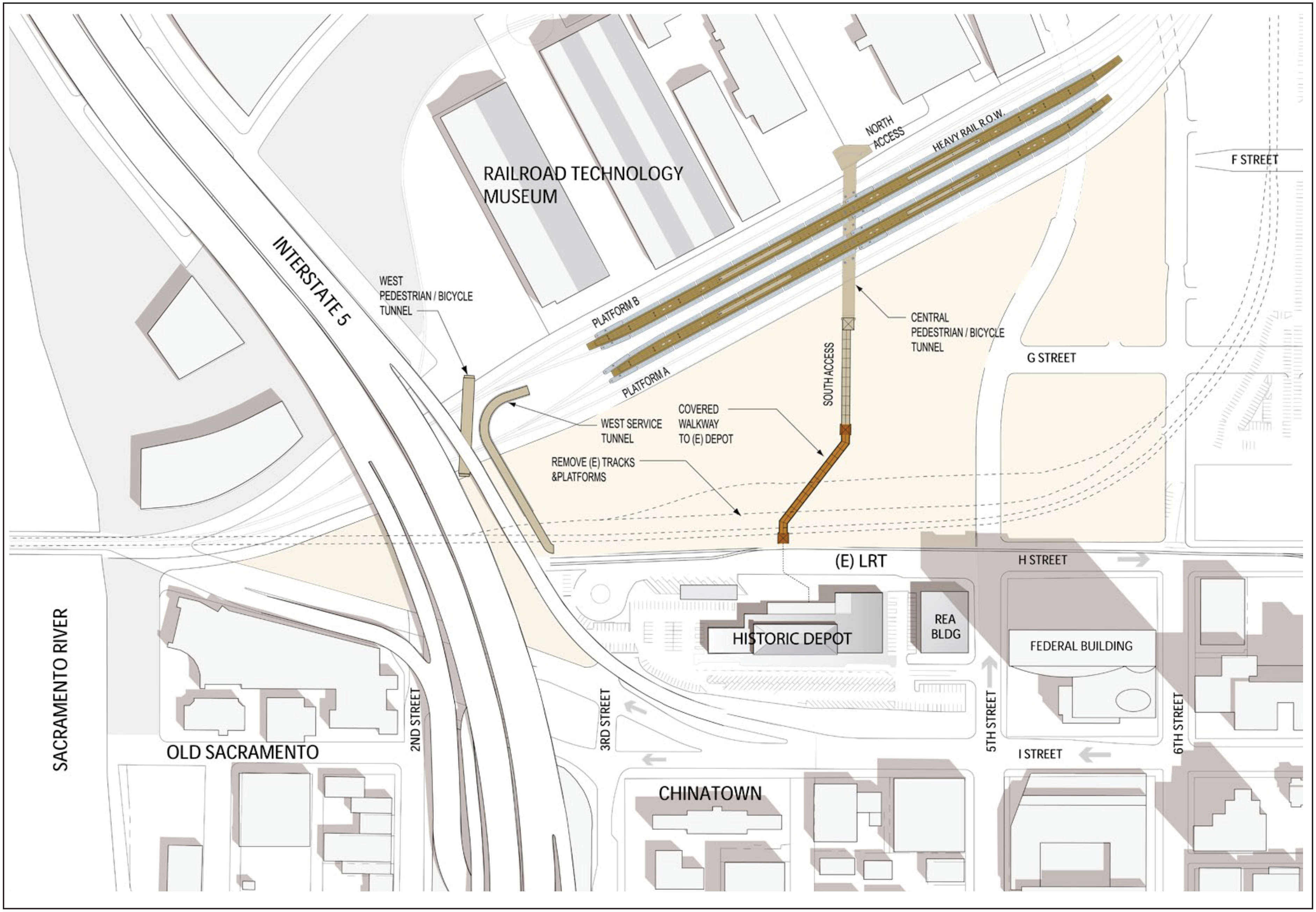

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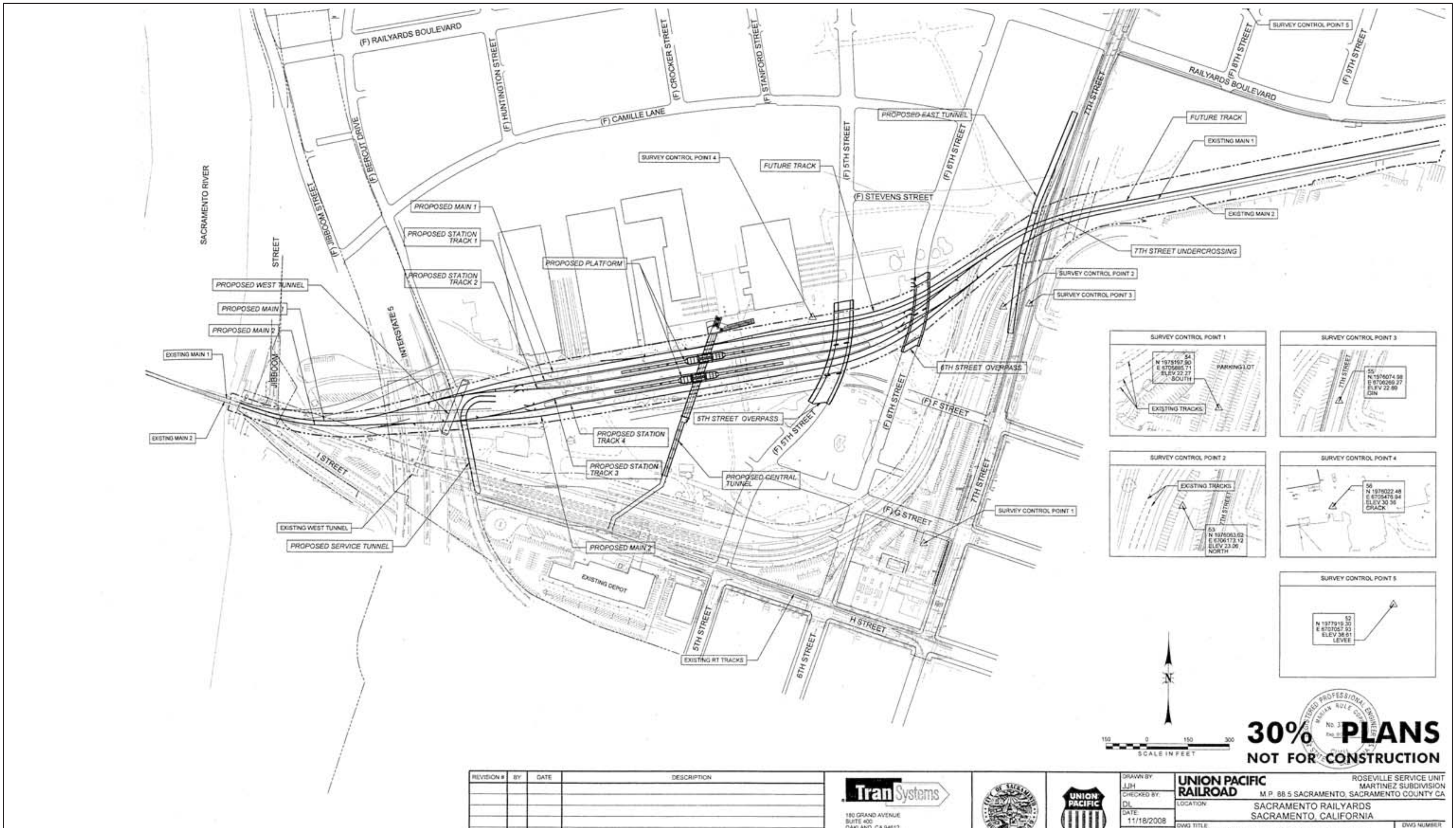
Figure 1-3a
Phase 1 Track Relocation



Source: Transystems 30% drawing

Figure 1-3b
Phase 1: General Arrangement Plan

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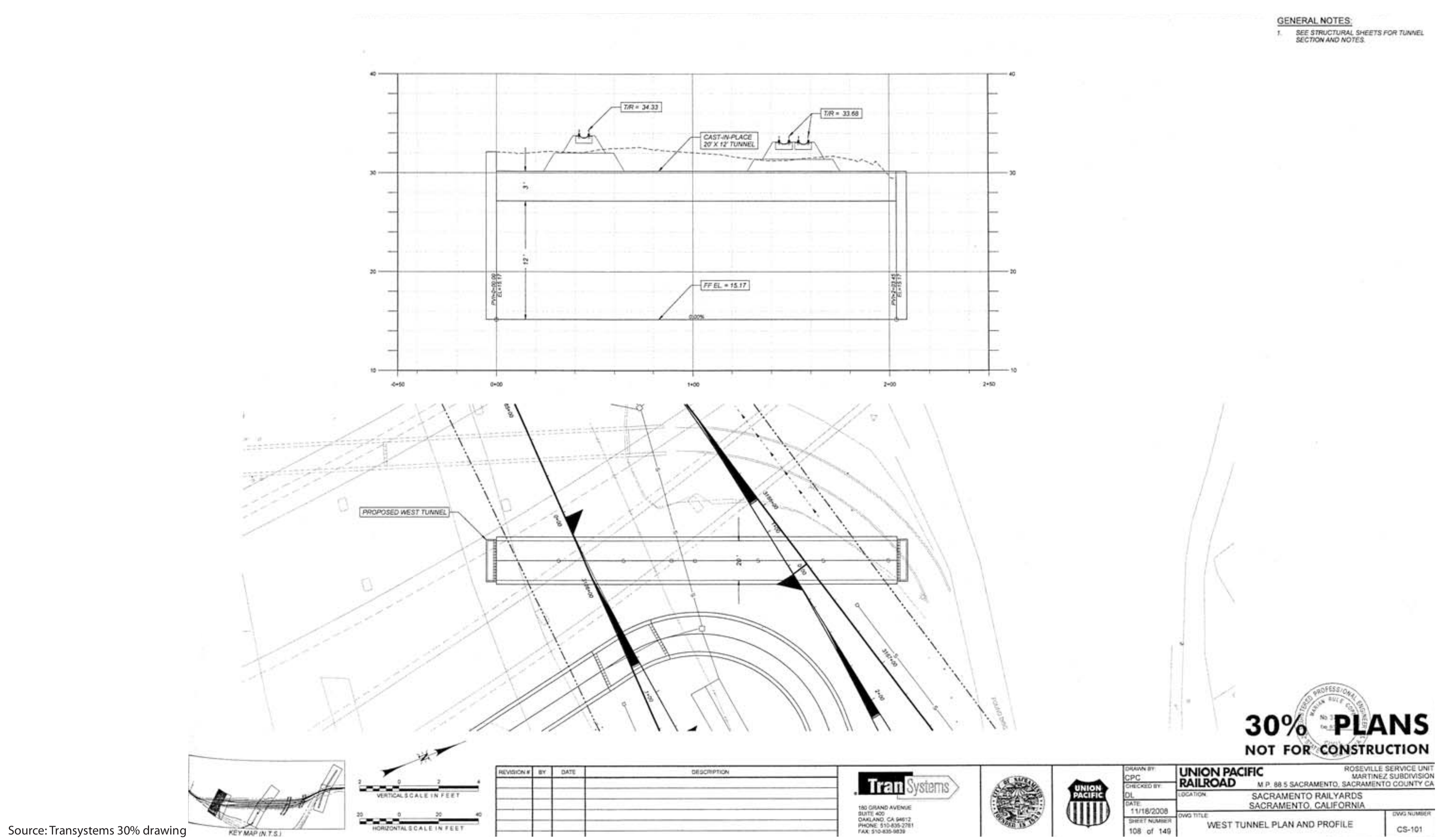
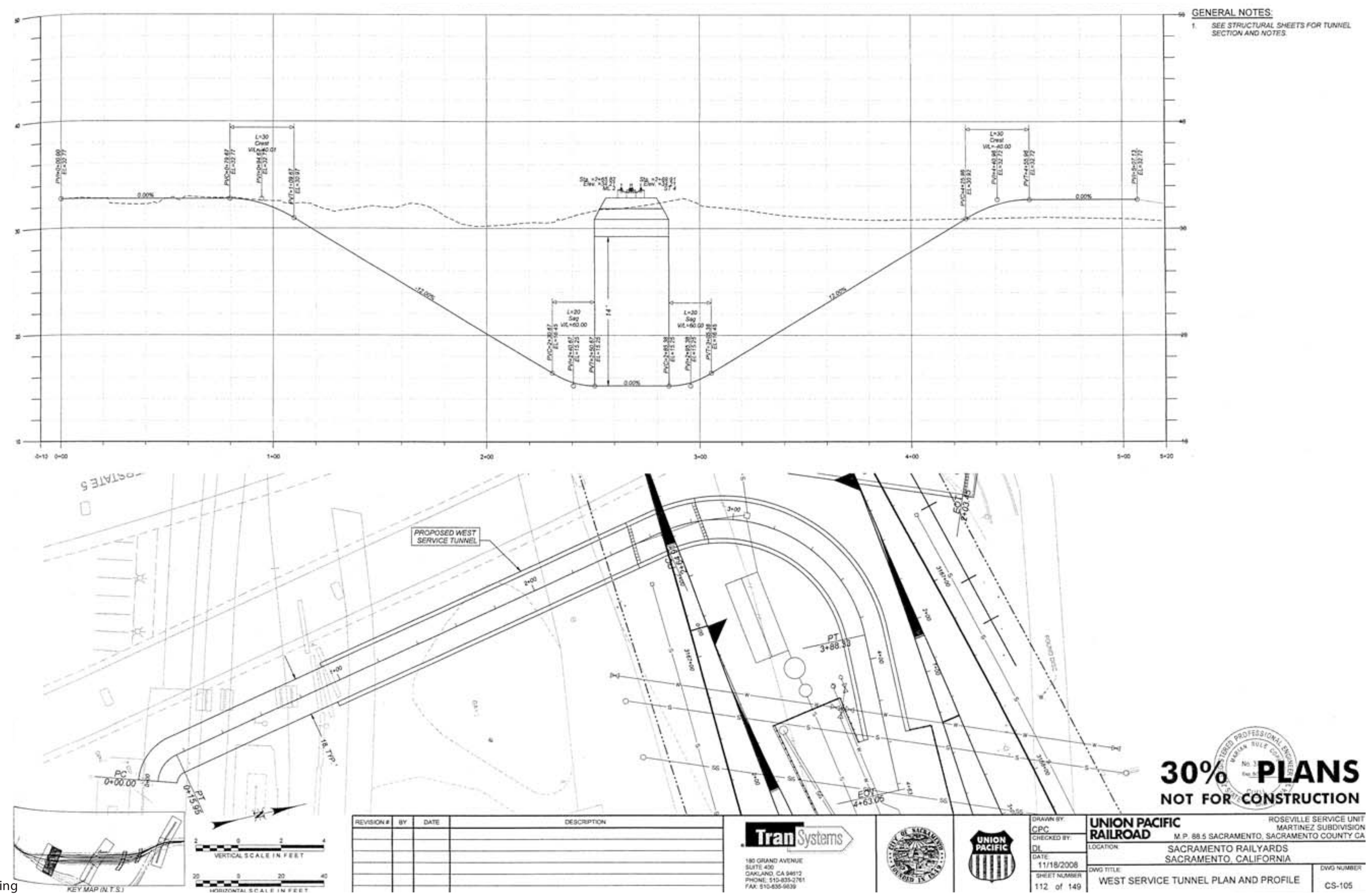


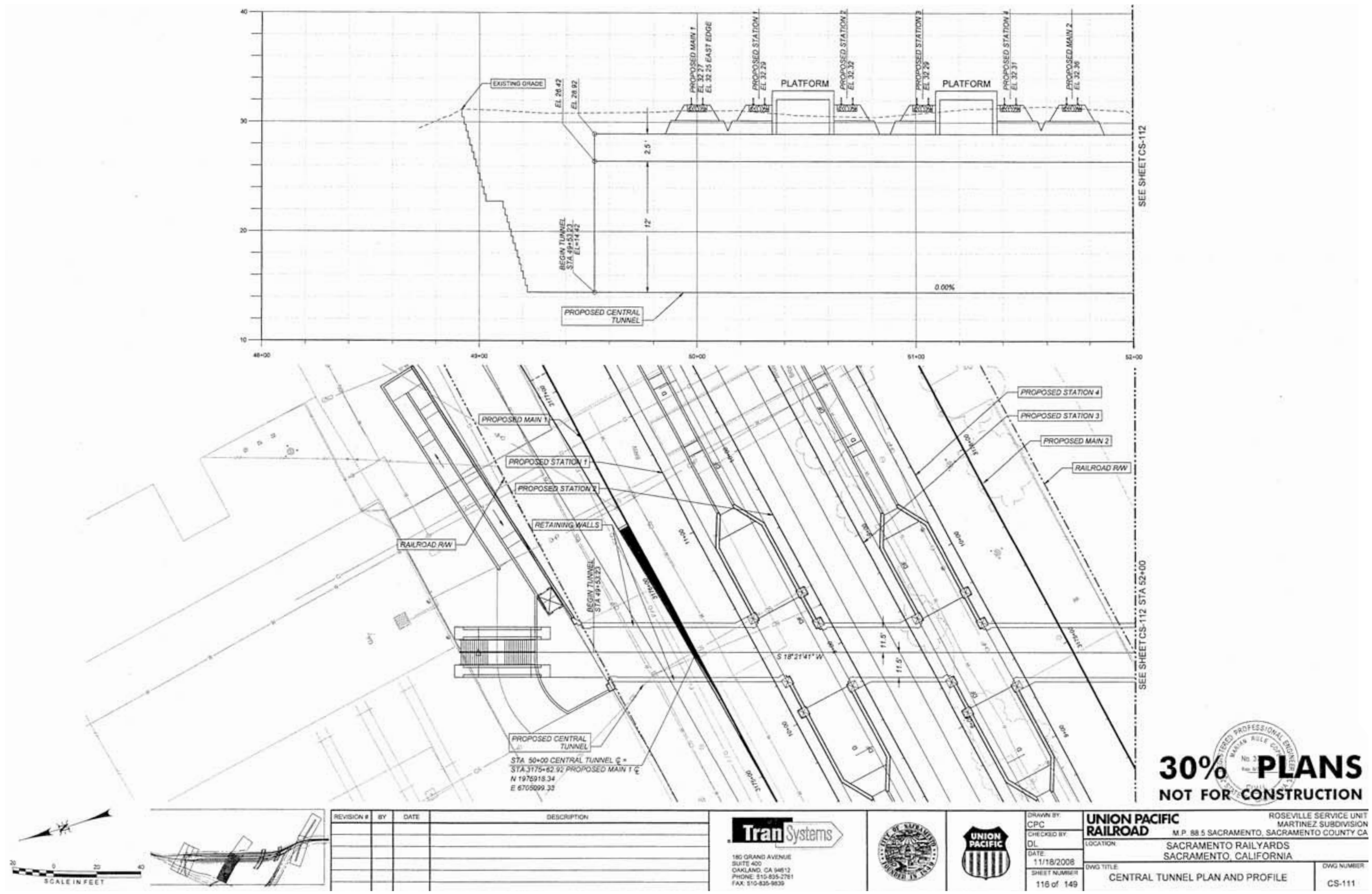
Source: Transystems 30% drawing

Figure 1-3c
Phase 1: West Pedestrian Tunnel Plan and Profile



Source: Transystems 30% drawing

Figure 1-3d
Phase 1: West Service Tunnel Plan and Profile



Source: Transystems 30% drawing

Figure 1-3e (page1)
Phase 1: Central Tunnel Plan and Profile

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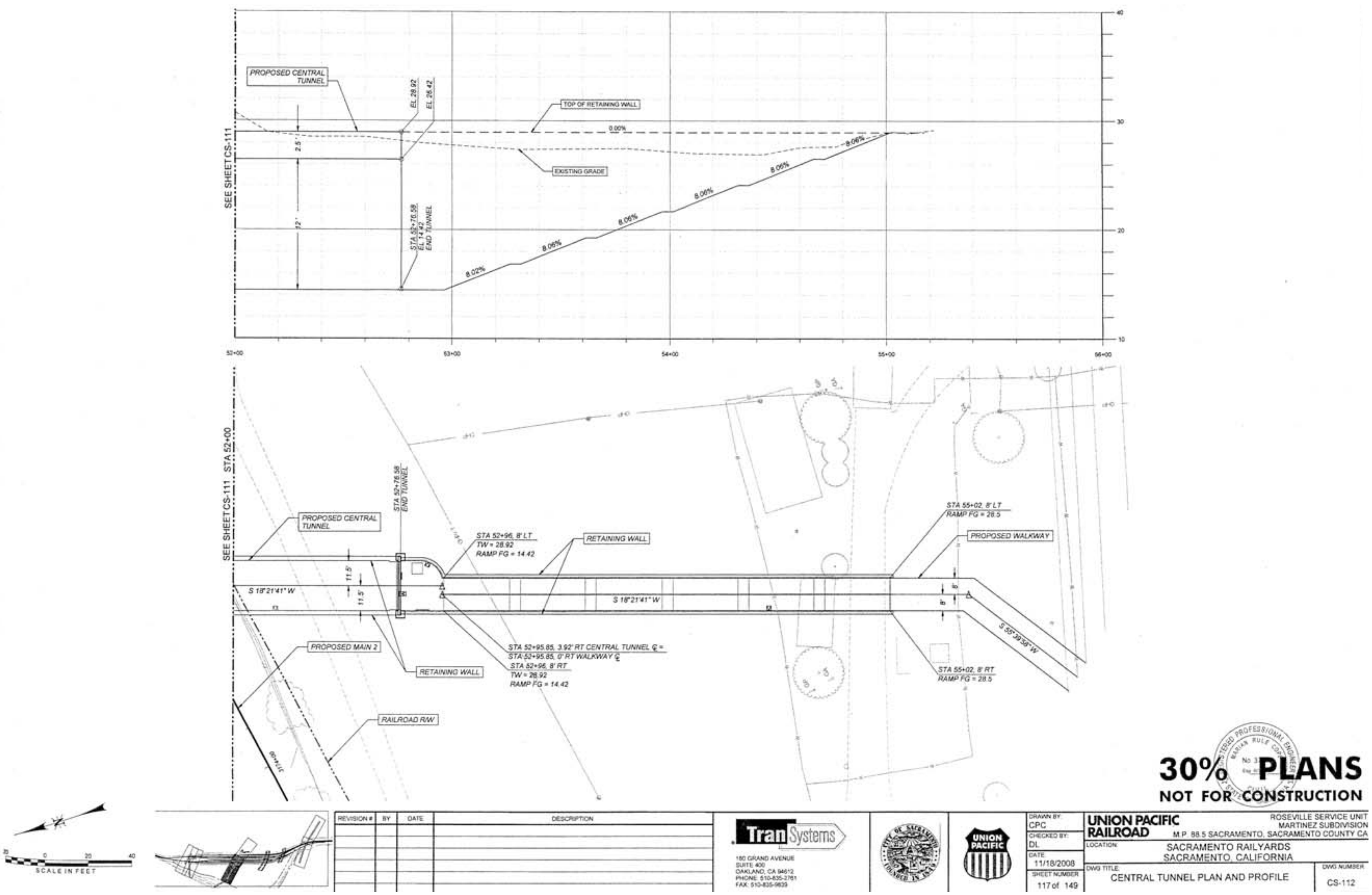
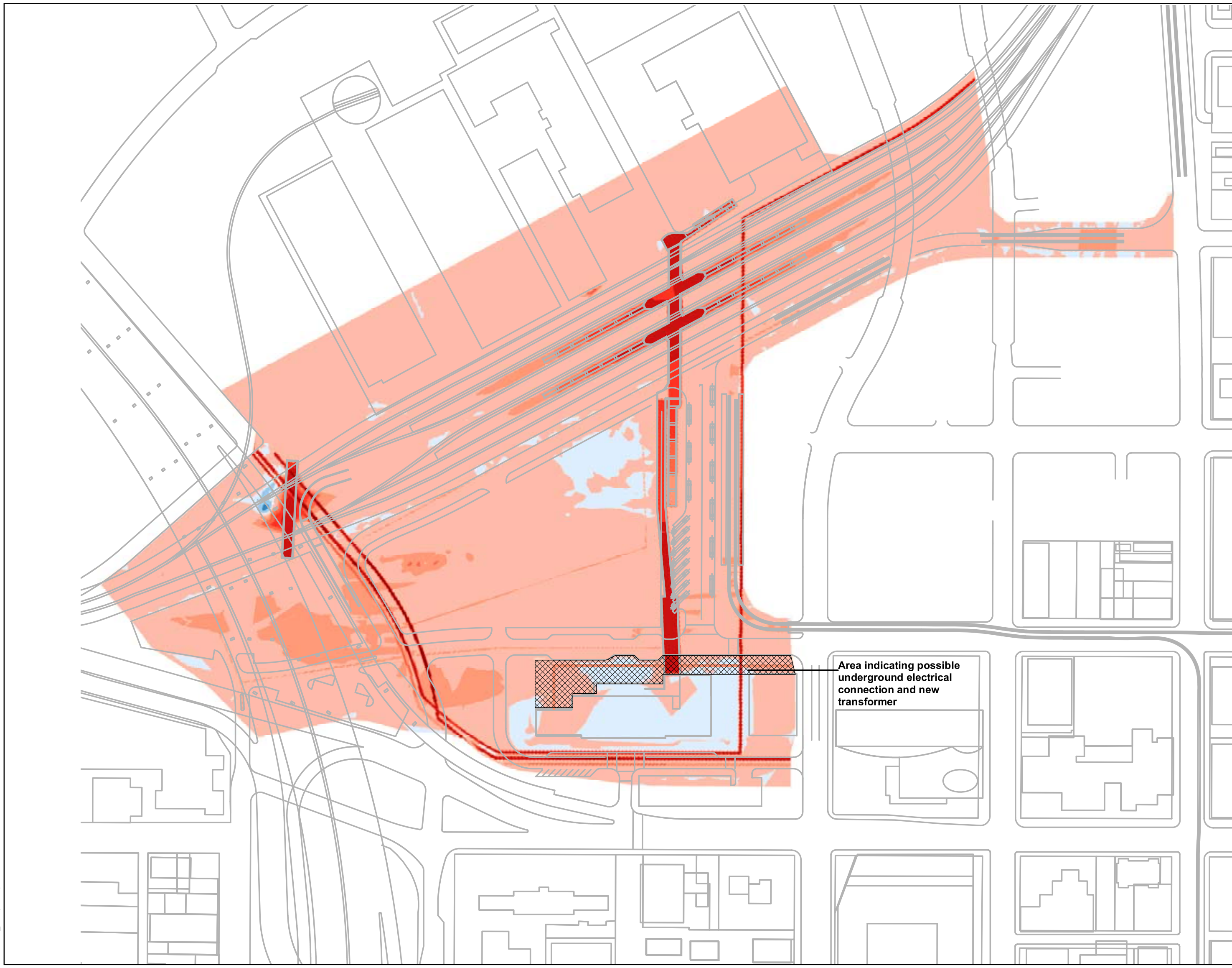


Source: Transystems 30% drawing

Figure 1-3e (page 2)
Phase 1: Central Tunnel Plan and Profile

Figure 1-4a
Phase 2 - Sacramento Valley Station Improvements



LEGEND

Electrical Utility Line

Construction Depth Impacts

- -28 to -25 ft (Cut)
- -25 to -20 ft (Cut)
- -20 to -15 ft (Cut)
- -15 to -10 ft (Cut)
- -10 to -5 ft (Cut)
- -5 to 0 ft (Cut)
- 0 to 5 ft (Fill)
- 5 to 10 ft (Fill)
- 10 to 15 ft (Fill)

NOTES:

1. This drawings shows the potential impacts of construction for Phase 2. Low Impact areas are shown in Blue and High Impact Areas are shown in Red

0 95 190 380
Feet

Issue	Date	By	Checked	Approved
B	Dec 2 2008	AGM	AGM	WB
A	Nov 21 2008	AGM	AGM	WB

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Client
City of Sacramento

Job Title
Sacramento Intermodal Transportation Facility Assessment of Cultural Impacts

Drawing Title
Phase 2 Depth of Construction Intensity Map

Plot ID \Drawings\GIS\Figures\EA-CI-021-A.mxd

Scale at 11" x 17"	Drawing Status	
1" : 200'	**Preliminary**	
Job No.	Drawing No.	Issue
130153-05	**EA-CI-021**	**B**

Figure 1-4b
Phase 2 Depth of Construction

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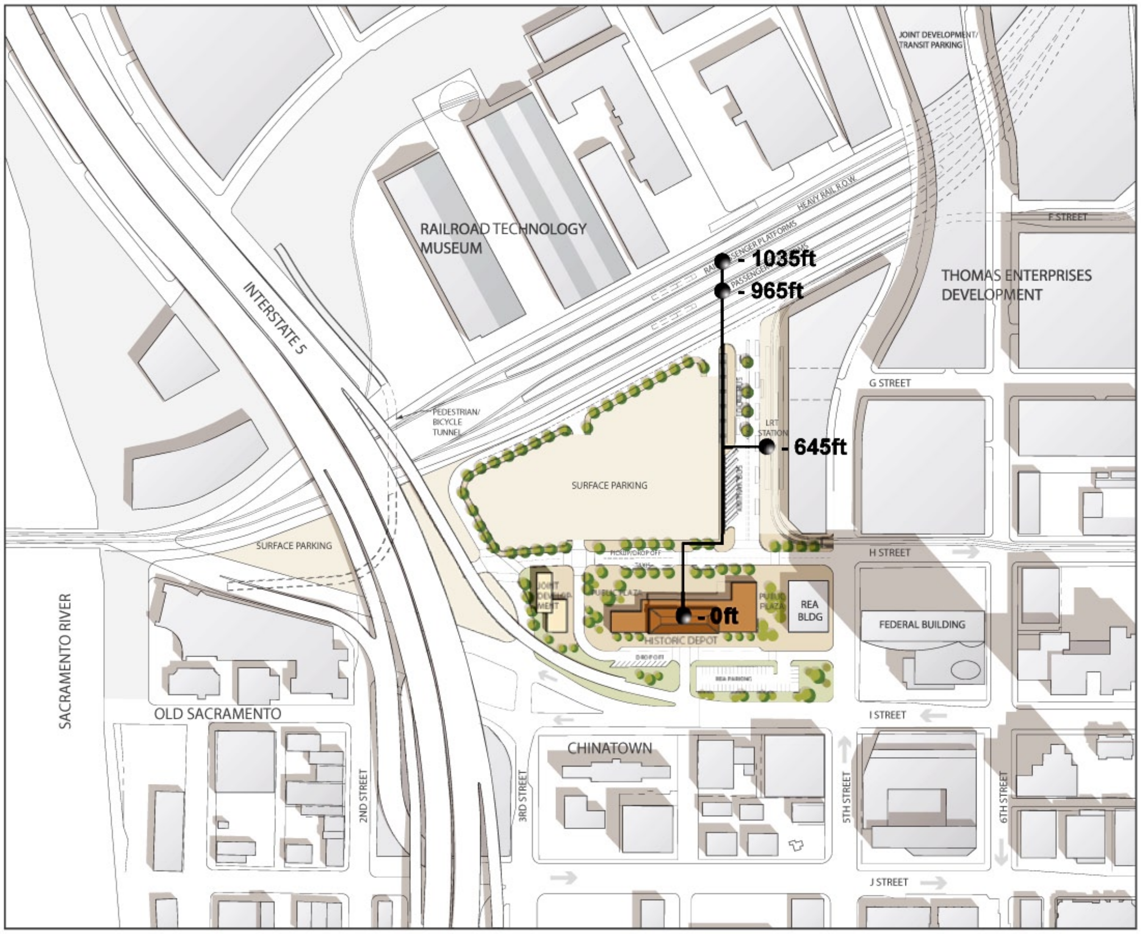
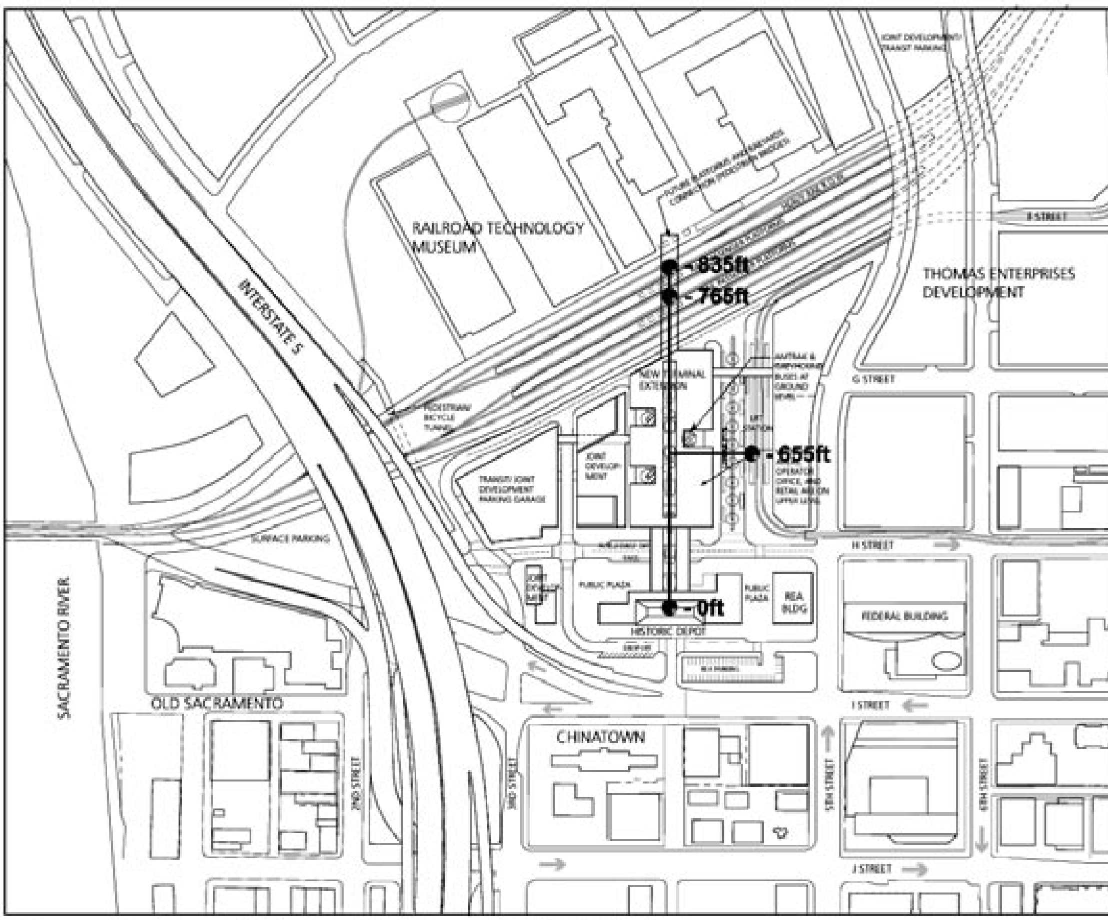


Phase 1 and Phase 2 Walk Distance
Measured from center of Historic Depot waiting area to vertical circulation for each platform

00121.08 IS (12-08)

Source: SMWM/Arup

Figure 1-5a
Phase 1 and Phase 2 Walk Distance



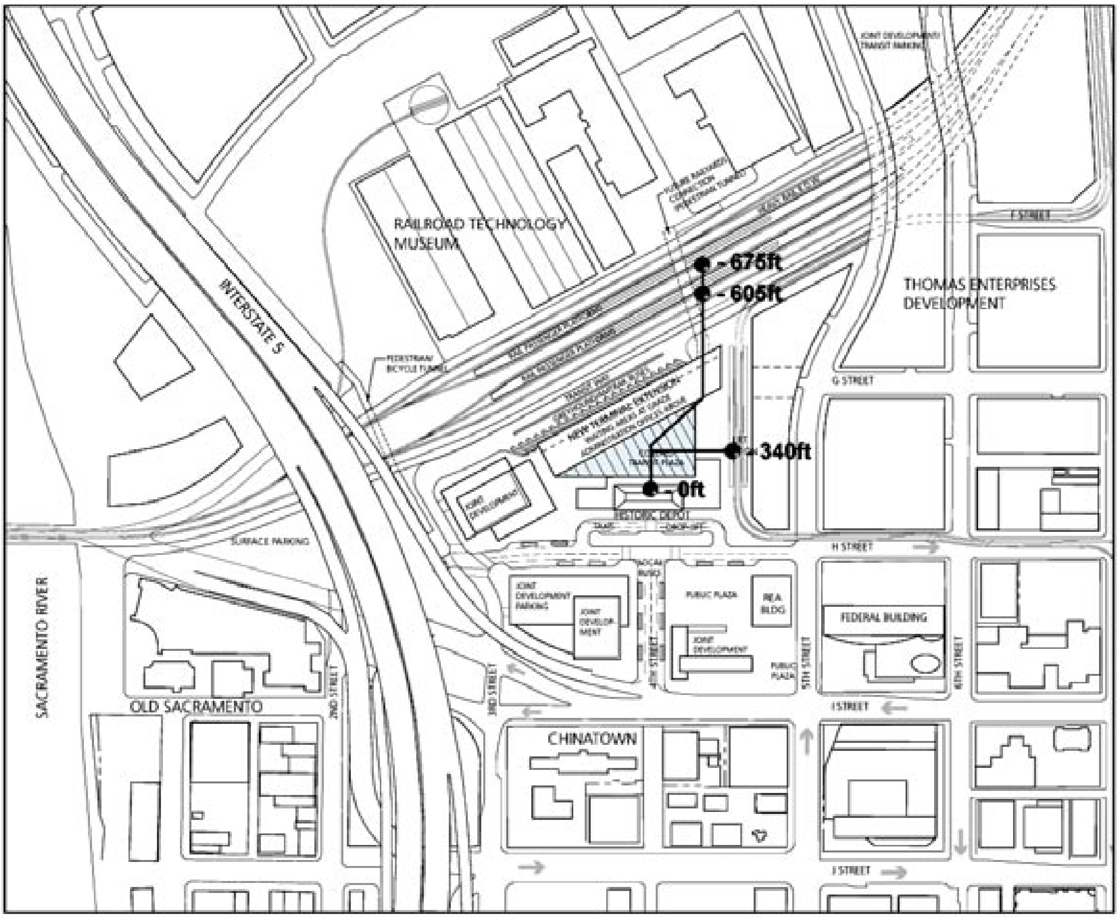
Phase 3 - Don't Move the Depot Walk Distance

Measured from center of Historic Depot waiting area to vertical circulation for each platform

Source: SMWM/Arup

00121.08 IS (12-08)

Figure 1-5b
Phase 3 - Don't Move the Depot Walk Distance



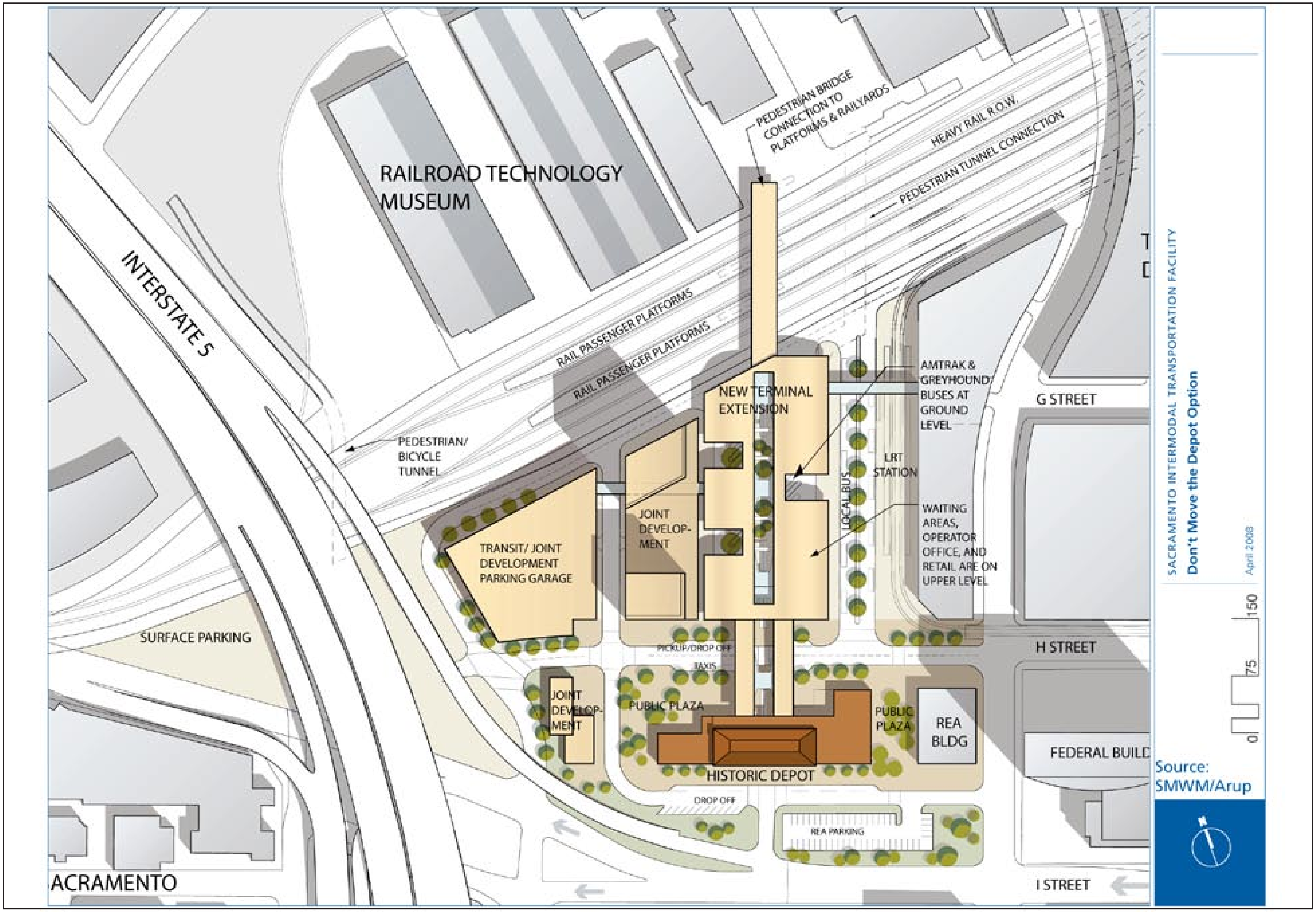
Phase 3 - Move the Depot Walk Distance

Measured from center of Historic Depot waiting area to vertical circulation for each platform

00121.08 IS (12-08)

Source: SMWM/Arup

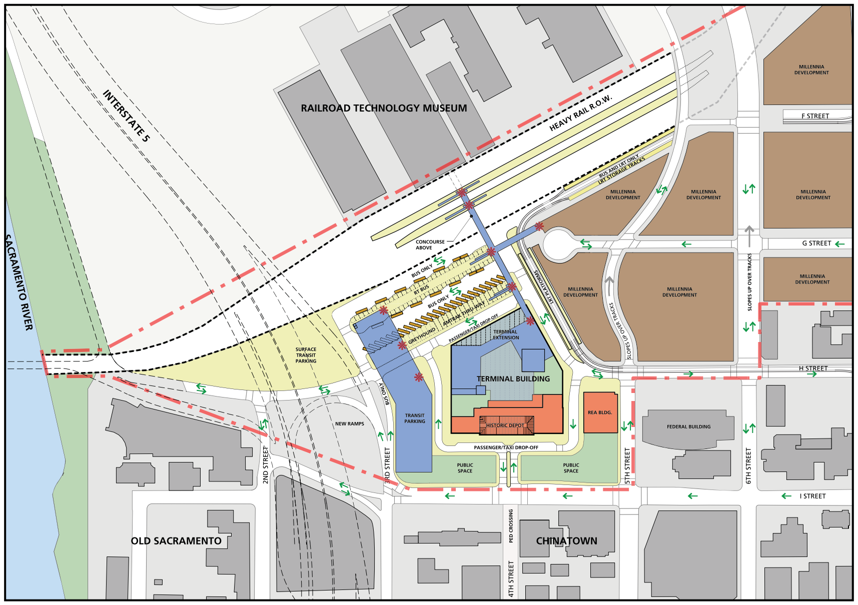
Figure 1-5c
Phase 3 - Move the Depot Walk Distance



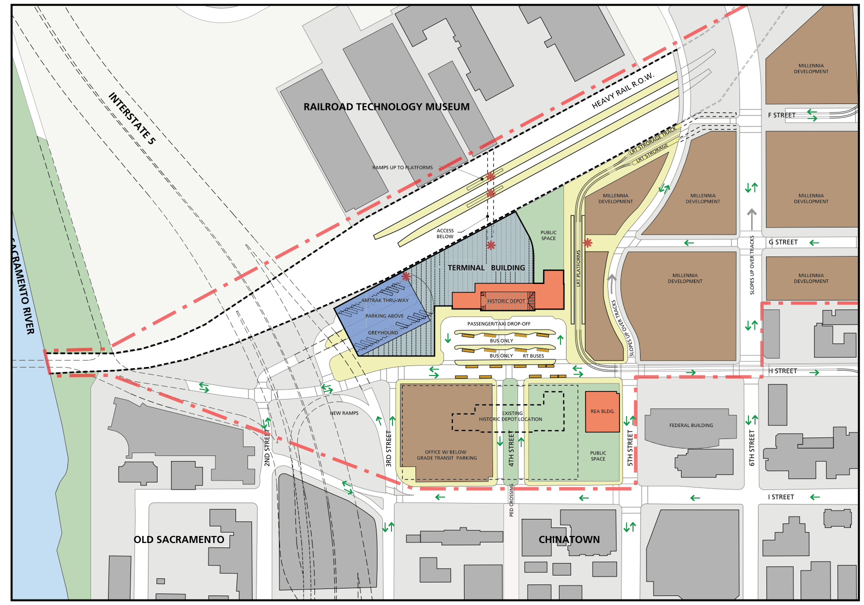
00121.08 Section 4(f) (09-08)

Figure 1-6
Phase 3 - Don't Move the Depot Option

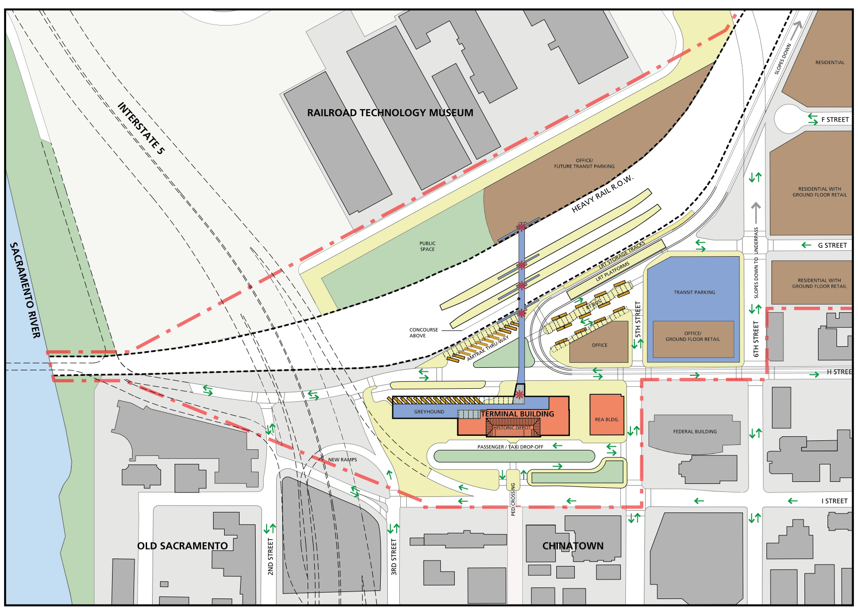
Figure 1-7
Phase 3 - Move the Depot Option



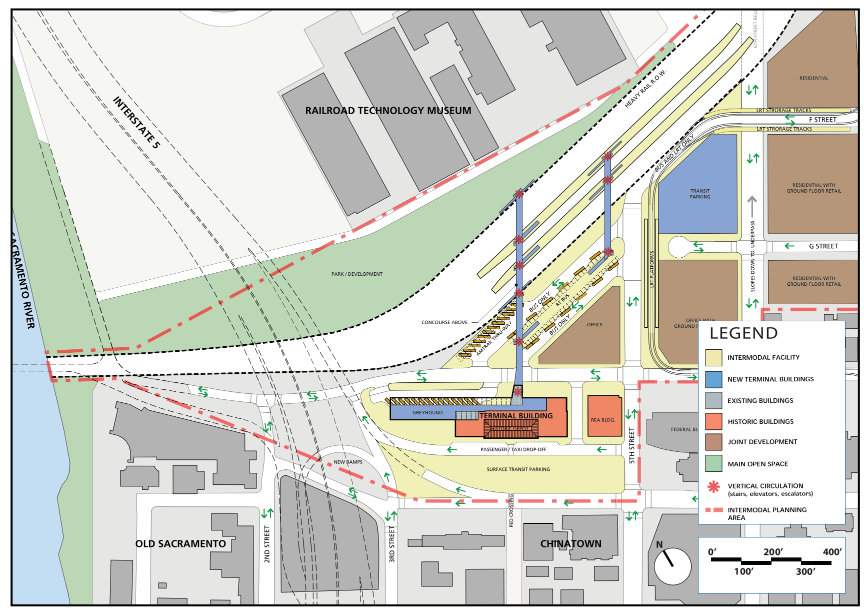
Alternative A: Sunset Limited



Alternative B: Sacramento Northern



Alternative C: Overland Limited



Alternative D: Valley Flyer

Source: SMWM/Arup and Associated Consultants 2004.

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Figure 1-8
Preliminary Concept Design Alternatives

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 proposed project area for all three project phases. It describes the existing environment that could be affected by the proposed project, potential impacts by phase, and proposed avoidance, minimization, and/or mitigation measures. Related regulatory information—the laws, regulations, and governmental and regulatory agencies involved for each impact area—is provided in Appendix C.

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

- **Land Use**—The project would continue existing use of the project site for rail-and transit-related services, and would not change land uses. The proposed project site is not located within a coastal zone or adjacent to any wild and scenic rivers (field review, May 21, 2008). Access to the parks and recreational facilities would not change or be restricted as a result of implementation of any phases of the proposed project. The proposed project, in all phases, would be consistent with applicable City General Plan, Specific Plan, and Community Plan policies and guidelines (Community Impact and Land Use Memorandum, August 1, 2008).
- **Growth**—The project does not include construction of new residential facilities or substantial commercial development. Implementation of the proposed project alone, without accompanying increases in capacity at stations to the north and south along the regional rail corridor, would not have the potential to induce unplanned growth in any project phase (Community Impact and Land Use Memorandum, August 1, 2008).
- **Farmlands/Timberlands**—The project site is located within the heavily urbanized Sacramento central city. It is not currently in farmland or timberland production and is not proposed for production (field review, May 21, 2008).
- **Community Impacts**—Much of the project site is vacant land, except for the Station in the south and the train tracks running east to west. The project does not include construction of new residential facilities or substantial commercial development. The project site would continue to be used for rail- and transit-related services. There are no existing residential uses on the project site and no need for relocations is anticipated as a result of any phase of the project. Residents of areas bordering the project site would experience any project effects equally (field review, May 21, 2008; Community Impact and Land Use Memorandum, August 1, 2008).
- **Natural Communities**—There are no natural communities located on the project site (field reviews, May 21-22, 2008; Natural Environment Study Report, November 2008).

- **Wetlands and other Waters**—There are no wetlands or other waters on the project site (field reviews, May 21-22, 2008; Natural Environment Study Report, November 2008).
- **Plant Species—**There are no sensitive plant species located on the project site (field reviews, May 21-22, 2008; Natural Environment Study Report, November 2008).

2.1 Human Environment

2.1.1 Utilities/Emergency Services

Affected Environment

Various sources were used to collect information on emergency services and utilities, including the 30% design review documents for the project (Transystems 2008), the City of Sacramento website, and the *Railyards Specific Plan EIR (2007)*.

Utilities

Existing utilities currently serving the project site include combined sewer, water, gas, and fiber optic. These utilities will not be removed or replaced, but will be encased per UPRR and City standards. All other existing utilities in the project area that are determined to be inactive will be removed. All new utilities for future development will be routed in utility corridors.

Storm Drainage and Water Systems

The proposed project site is in a portion of the city that is served by the City of Sacramento's Combined Sewer and Stormwater System (CSS) for wastewater and stormwater collection, treatment, and disposal. Designed to convey domestic sewage, commercial and industrial wastewater, and surface stormwater runoff to the Sacramento Regional Wastewater Treatment Plant (SRWTP), the CSS is approximately 5 miles south of the city in Freeport (PBS&J/EIP 2007b).

Sanitary sewage and stormwater runoff in the general project area currently flows directly to the CSS. Existing stormwater drainage treatment infrastructure serving the project site consists mainly of evaporation and passive infiltration into ground surfaces throughout the RSP area. Stormwater runoff and sanitary sewer flows are in the areas south around the existing Depot, and are served by a combination of surface runoff and combined drainage facilities, which discharge to the 3rd Street and 7th Street CSS pipelines. Currently, this system serves the existing Depot, associated platform, and main line track area. Along 7th Street, north of I Street and east of the existing main line railroad track embankment, drainage flows to the two existing CSS pipelines south in 7th Street (PBS&J/EIP 2007b).

The City of Sacramento obtains the majority of its water supply from two surface water sources, the Sacramento and American Rivers. Groundwater is blended with the surface water to allow for pumping flexibility and makes up the balance of supply (PBS&J/EIP 2007b). The City maintains 32 wells for potable use, of which 23 wells are actively used to supply drinking water. Numerous water mains exist throughout the project site, including water valves, fire hydrants, water manholes, and meters (Transystems 2008). A 12-inch water line crosses the site at the west end of the platform locations and will be maintained in place as part of the water system providing services to the platform area and existing buildings (Transystems 2008).

Energy and Natural Gas
Through an exclusive charter with Sacramento County, Sacramento Municipal Utility District (SMUD) provides electrical service to the central city, including the project site. SMUD is responsible for providing generation, transmission, and distribution of electrical power to a service area of 900 square miles. All electrical service to the project site originate from a substation and meter located north of the site near Jibboom Street (Transystems 2008).

Pacific Gas and Electric Company (PG&E) supplies gas service to the project site and is responsible for the transmission and distribution of gas to the majority of northern and central California (City of Sacramento 2007a). A 30-inch gas line extends north across the track alignment from a gas facility enclosure located near the railroad mainline southeast of the project area (Transystems 2008).

Fiberoptic Systems
A 10-foot utility easement runs east-west in the project area; the easement contains a number of fiber-optic lines, including Verizon, MCI, and Qwest, which stray from the easement at several locations (Transystems 2008).

Emergency Services
The central city, which includes the proposed project site, is served by the Sacramento Police Department (PD), which is staffed by approximately 798 sworn officers, 438 civilian staff, and 27 part-time non-career employees (PBS&J/EIP 2007b). The substation that serves the project site is the William J. Kinney Police Facility, approximately 5 miles from the RSP area, at 3550 Marysville Boulevard. This facility serves three districts, each with three beats. The project site is located in District 3, Beat A (City of Sacramento 2007a). The Sacramento PD has an unofficial goal of maintaining 2.0 to 2.5 sworn police officers per 1,000 residents and one civilian support staff member per two sworn officers (PBS&J/EIP 2007b).

Fire protection and emergency medical services would be provided to the project site by the Sacramento Fire Department (SFD). The SFD employs approximately 535 fire suppression personnel and 100 fire prevention personnel and support staff. Stations are staffed by four-person companies for engines and trucks, and two-person companies for each medic unit. In total, the SFD currently operates 23 fire stations throughout the city. Station 1, at 624 Q Street, and Station 2, at 1229 I Street, would serve the project site. In 2006, the SFD's average response time for approximately 69,000 calls was 4.5 minutes. Although the SFD does not have an adopted service level standard for response times, it does have a goal of less than 5 minutes for emergency medical response and a goal of less than 7 minutes for fire suppression response (PBS&J/EIP 2007b).

Environmental Consequences

Approach and Methodology
The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on utilities and emergency services, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below.

Impact UES-1: Potential for construction to interfere with utility services in the project area

Phase 1—Track Relocation

Phase 1 of the proposed project would not include the construction of any residences or retail and commercial space. Existing buried utilities facilities would be upgraded and relocated to a utility corridor to be constructed during Phase 1. Some of these facilities serve the existing central Shops and Depot building, and temporary interruptions in service could occur during construction. Where possible, existing buried utilities will be left in place until new replacement facilities could be built, and therefore lengthy interruptions in service during construction are not anticipated.

Phase 2—Sacramento Valley Station Improvements

All buried utility upgrades and relocations would occur in Phase 1 of the project. Existing electrical utilities in the Depot will be left in place until new replacement facilities are built in Phase 2, and therefore lengthy interruptions in service during construction are not anticipated.

Future Phase 3—Intermodal Improvements

Alternative 1

Utility systems may need to be expanded or extended to serve expansion of the Station and related facilities and the new retail and commercial development that could occur in future Phase 3, such as office lessees and food and drink vendors, shops, and other passenger-serving development in the expanded Station. Some of these systems may be in service for the central Shops and Depot building, and temporary interruptions in service could occur during construction.

Alternative 2

Because Alternative 2 would require relocating the Depot, there would be an increased potential for construction to interfere with utility services in future Phase 3, over Alternative 1. Utility systems would need to be relocated to the new Depot location.

Impact UES-2: Potential increased demand for utility services

Phase 1—Track Relocation

Phase 1 of the proposed project would not include the construction of any residences or retail and commercial space. Track work, utility relocations and upgrades, and new platforms and tunnel connections would not substantially increase the demand for utility services. The existing utility capacity would be sufficient to meet the needs of the project in Phase 1.

Phase 2—Sacramento Valley Station Improvements

Phase 2 of the proposed project would not include the construction of any residences or retail and commercial space and would not substantially increase the demand for utility services. The electrical system at the Depot would be upgraded but there would be no substantial increase in demand for utility services. The existing utility capacity would be sufficient to meet the needs of the project in Phase 2.

Future Phase 3—Intermodal Improvements

Alternative 1

New retail and commercial development and expansion of the Station facilities that could occur in future Phase 3 of the project could result in an increased demand on the existing utility system. At the initiation of future Phase 3 of the project, any utilities serving the project area will have been relocated and upgraded and the Depot electrical upgrades will have been completed. Utility improvements that could occur with buildout of the RSP EIR would provide additional capacity that could be used to serve future development and expansion of the project site in future Phase 3. This would include sufficient water supply to serve the RSP area, including the development and expansion of the Station in future Phase 3.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect would be similar to Alternative 1 and utility improvements that could occur with buildout of the RSP EIR would provide additional capacity that could be used to serve future development and expansion of the project site.

Impact UES-3: Increased need for emergency services

Phase 1—Track Relocation

Phase 1 of the proposed project would relocate the tracks, construction new platforms and tunnel connections, and relocate and install utilities, but would not include the construction of any residences or retail and commercial space and therefore would not increase the need for emergency services.

Phase 2—Sacramento Valley Station Improvements

Phase 2 of the proposed project would relocate the LRT station, improve parking and site access, and construct new transit ways, but would not include the construction of any residences or retail and commercial space and therefore would not increase the need for emergency services.

Future Phase 3—Intermodal Improvements

Alternative 1

Future Phase 3 of the project would entail the construction of the SITF, including expanded retail and commercial space, which could result in the need for additional emergency services to serve the future site development. The Sacramento PD's three existing stations are already staffed beyond capacity (City of Sacramento 2007a). However, expansion of police and fire services is anticipated as a result of buildout of the City's RSP (which includes future expansion of the SITF) and the City has identified two potential locations for a police substation—either at Railyards Boulevard and 7th Street or at Railyards Boulevard and North 10th Street. If one of these locations is selected to be developed into a substation, construction likely would include a fire station within the same building. In addition, the Sacramento PD is currently developing a master plan designed to accommodate the citywide police protection needs over the next 10 years. The City could establish Community Services Districts and levy taxes, if needed to fund additional staffing of facilities (Economic & Planning Systems 2007a). Such funds could be utilized for any expanded services needed as a result of implementation of future Phase 3.

The SFD is in the process of drafting a fire department master plan, which would discuss specific triggers for new fire stations. The City could establish Community Services Districts and levy taxes, if needed to fund additional staffing of facilities (Economic & Planning Systems 2007a). Such funds could be utilized for any expanded services needed as a result of implementation of future Phase 3.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect would be similar to Alternative 1. The City could establish Community Services Districts and levy taxes, if needed to fund additional staffing of needed facilities.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses and would not be restored. The tracks would remain in their current configuration, and the platforms could not be expanded. There would be no project-related increase in demand on emergency service or public utility systems.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are proposed.

2.1.2 Traffic and Transportation/Pedestrian and Bicycle Facilities

This section summarizes the effects on the transportation and circulation system resulting from vehicle trips associated with the proposed project. Phase 1 would involve realignment of existing mainline rail tracks and would not increase traffic volumes because it would not change site vehicular access and would not add new land uses or parking spaces. Phase 2 development will result in reconfiguration of site access and the addition of new parking spaces that are expected to generate new trips utilizing the surrounding transportation system, and was analyzed in the *Sacramento Intermodal Transportation Facility: Traffic and Transportation/Pedestrian and Bicycle Facilities Technical Report* (Dowling 2008). Future Phase 3 could also result in reconfiguration of site access, new parking, and new land uses that could generate new trips; a program level analysis of future Phase 3 of the project was included in the EIR for the RSP and is the basis for the analysis of Phase 3 in this EA.

A quantitative analysis of weekday a.m. and p.m. commuter hour conditions were conducted for Phase 2 for the following conditions:

- existing,
- baseline (no-project),
- baseline (no-project) with Phase 2 (Dowling 2008).

The analysis of baseline conditions considers the potential traffic impacts in the context of other projects in the study vicinity that have already been approved. The following is a list of projects that have been approved and may potentially affect traffic conditions:

- Crocker Art Museum Expansion,
- 500 Capitol Mall,
- 1012 K Street,
- Creamery,
- 601 Capitol Mall (partial development),
- Metro Place Office/Residential,
- 15th & L Street Hotel,
- Sutter Medical Center and the Trinity Cathedral, and
- Discovery Center.

Affected Environment

The existing and planned roadway, transit, bicycle and pedestrian components of the transportation system within the study area are described below. A map of the project vicinity and existing transportation system is provided in Figure 2.1.2-1.

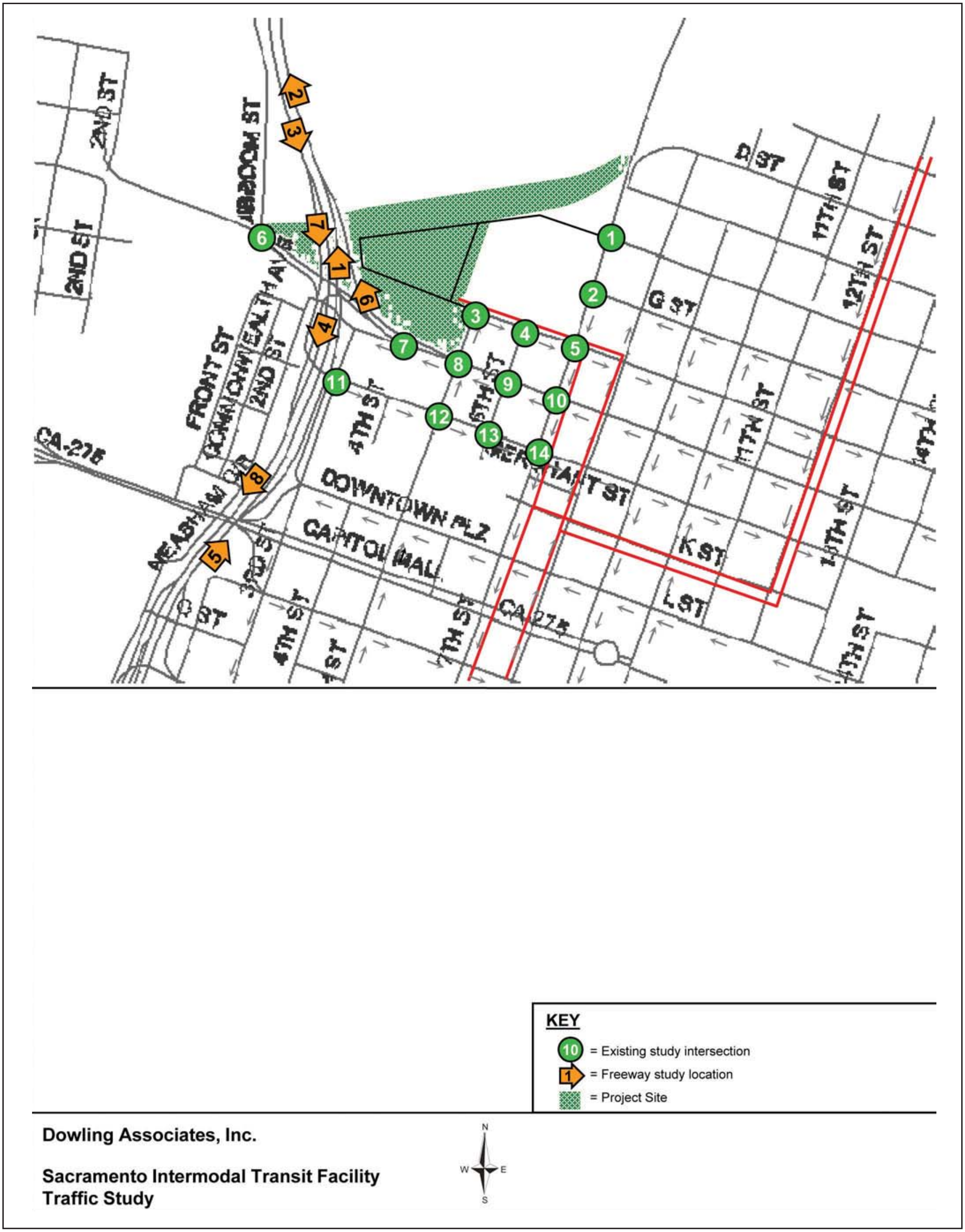


Figure 2.1.2-1
Roadway Network Existing Conditions

Existing Transportation System

Regional vehicular access to the project area is provided by Interstate 5 (I-5), a north-south facility located just west of the project site. Access from I-5 is provided primarily via J Street and access to I-5 is provided primarily via I Street. To the south, I-5 provides access to southern portions of the city and county, as well as to other Central Valley communities. To the north, I-5 provides access to I-80, northern portions of the city and county, Sacramento International Airport, and other Central Valley communities.

Downtown Sacramento is served by a grid street system. North-south streets have numbered street names and east-west streets have lettered street names. Many streets operate as one-way facilities and most major intersections in downtown are signal-controlled. In general, the one-way streets carry three travel lanes, with parking permitted along both curbs. Two-way streets generally have one lane in each direction with parking on both sides of the street. To accommodate critical traffic volumes and turning movements in selected locations, parking has been prohibited to provide additional lanes.

Primary downtown east-west streets for project area access include H and J Streets, which are one-way eastbound, and G and I Streets, which are one-way westbound. I Street provides a link across the Sacramento River via the I Street Bridge to West Sacramento.

Key downtown north-south streets for project area access include 3rd and 7th Streets, which are one-way southbound (except for a portion of 3rd Street between L and J Streets and 7th Street north of F Street), and 5th Street, which is one-way northbound (except for a portion of between J and L Streets).

Existing Transit System

The existing Amtrak depot is located on the southernmost portion of the project site and provides regional train service. Amtrak operates daily scheduled passenger train service from the downtown station to Richmond-Bay Area Rapid Transit-Oakland-San Francisco-San Jose, and to the San Joaquin Valley, Los Angeles, and Portland-Seattle. Reno-Denver-Chicago service is also available. Connections can be made to locations throughout the United States and Canada.

The Sacramento Regional Transit District (RT) is the major transit provider within Sacramento County, providing light rail service and fixed-route bus service on more than 70 routes. Light rail service and many of the bus routes are oriented to the downtown area. Current light rail service extends from the downtown area to the Watt/I-80 station to the northeast, to the Folsom Station to the east, and to Meadowview Station to the south, and light rail lines along 7th and 8th Streets connect to the existing depot.

Transit schedules are synchronized to provide “timed transfers” between bus routes and light rail at several stations. Many suburban stations include park-and-ride facilities. Light rail operates at 15-minute headways daily and on weekends, and at 30-minute headways during the evening. In addition to light rail service, many bus routes serve the downtown area including the Amtrak depot. Currently, Route 11 serves the project site directly along 7th Street and provides connection between Natomas and downtown Sacramento.

A number of other transit services connect downtown Sacramento with neighboring communities, providing primarily peak-period services designed to accommodate commuters. Such services include the following.

- El Dorado Transit operates commuter service from Placerville, Shingle Springs, Cameron Park, and El Dorado Hills to downtown Sacramento.
- Folsom Stage Lines operates commuter transit service from Folsom to downtown Sacramento.
- Roseville Transit provides commuter service from Roseville to downtown Sacramento.
- Yolobus operates bus routes connecting to downtown Sacramento from Davis, Woodland, Winters, and West Sacramento. Yolobus also operates transit service between downtown Sacramento and the Sacramento International Airport.
- Yuba-Sutter Transit provides commuter transit service from Yuba and Sutter Counties to downtown Sacramento, with connections to RT bus and light rail service.
- The San Joaquin Regional Transit District also provides service to Sacramento from park-and-ride locations in Stockton and Lodi.
- The Solano Transportation Authority provides service from Solano County to downtown Sacramento, through its Solano Express Intercity Transit Consortium.

Existing and Planned Pedestrian and Bicycle Facilities

Within downtown Sacramento, sidewalks are provided on both sides of virtually all streets. Pedestrian crossings of major streets are accommodated by pedestrian signals and marked crosswalks at signalized intersections.

A Sacramento City/County Bicycle Task Force developed the *2010 Sacramento City/County Bikeway Master Plan* for the region. The master plan is a policy document that was prepared to coordinate and develop a bikeway system that will benefit and serve the recreational and transportation needs of the public. Officially designated bicycle facilities are classified as Class I, II, or III.[1]

According to the Bikeway Master Plan map contained in the *City of Sacramento Parks and Recreation Master Plan 2005–2010,* existing bikeways may be found along the following roadways in the project area:

- E Street between 8th and 35th Streets;
- G Street between 16th Street and Alhambra Boulevard;
- H Street between 16th Street and Elvas Avenue;
- K Street between 14th Street and Alhambra Boulevard;

[1] Class I includes off-street bike trails or paths which are physically separated from streets or roads used by motorized vehicles. Class II includes on-street bike lanes with signs, striped lane markings, and pavement legends. Class III on-street bike routes are marked by signs and shared with motor vehicles and pedestrians. Optional four-inch edge lines may be painted on the pavement.

- Capitol Avenue between 15th Street and the city limit; and
- Front Street between Capitol Mall and Marina View Drive, and from J Street to North Sacramento.

Additional bikeways were proposed to further enhance the already extensive network. Proposed bikeways that pass near the project site include on-street bike lanes along 5th and H Streets. Bike trails are proposed around the perimeter of the Amtrak depot. The existing and proposed bikeway network is provided in Figure 2.1.2-2.

Study Area

A set of intersections, freeway mainline segments, freeway merge/diverge areas, and freeway ramps were selected for study based upon the anticipated volume and distributional patterns of traffic and known locations of operational difficulty; these are collectively referred in this report as the *study area*. This selection was made in collaboration with the City and Caltrans staff members. The following study locations are shown in Figure 2.1.2-1.

Intersections

- 7th Street & F Street
- 7th Street & G Street
- 5th Street & H Street
- 6th Street & H Street
- 7th Street & H Street
- Jibboom Street & I Street
- 4th Street & I Street
- 5th Street & I Street
- 6th Street & I Street
- 7th Street & I Street
- 3rd Street & J Street
- 5th Street & J Street
- 6th Street & J Street
- 7th Street & J Street

Freeway Segments

- I-5 Northbound
  - South of I Street on-ramp
  - North of I Street on-ramp

- I-5 Southbound
  - North of J Street off-ramp
  - North of I Street on-ramp

Freeway Merge/Diverge/Weave

- I-5 Northbound
  - P Street to J Street weave
  - I Street on-ramp
- I-5 Southbound
  - J Street off-ramp
  - I Street to Q Street weave

Freeway Ramps

- I-5 Northbound J Street off-ramp
- I-5 Southbound J Street off-ramp

Existing Traffic Operations

Traffic Volumes

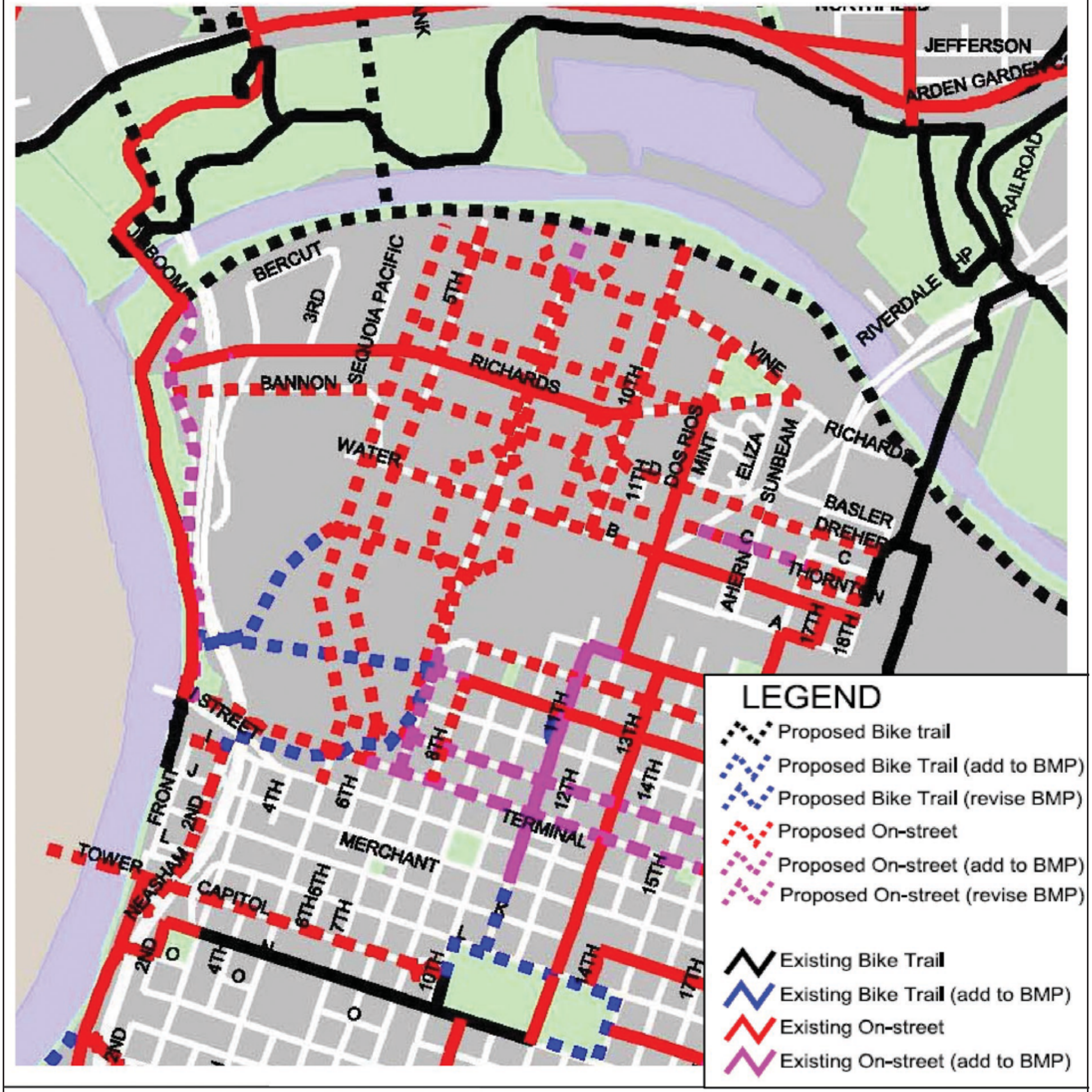
The existing traffic volumes, lane configurations, and traffic controls at study area intersections are shown on Figure 2.1.2-3. An inventory of traffic controls (signals, stop signs, and other traffic controls) was developed for each of the study area intersections, ramps, and street and freeway mainline segments.

Freeway mainline and ramp data were taken from the Caltrans Traffic and Vehicle Data Systems website, the Freeway Performance Measurement System, and from data provided directly from Caltrans staff.

Levels of Service

Levels of service (LOS) describe the operating conditions experienced by motorists and are a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, driving comfort and convenience. LOS are designated "A" through "F" from best to worst, and cover the entire range of traffic operations that might occur. LOS A through E generally represent traffic volumes at less than roadway capacity, while LOS F represents overcapacity and/or forced flow conditions.

The *Sacramento City General Plan* (1988) outlines the goals and policies that coordinate the transportation and circulation system with planned land uses. The general plan (Goal D, Street and Road section) identifies LOS C as the goal for the City's local and major street system, except at freeway ramp intersections, where the goal is LOS D. In addition, the General Plan's smart growth principles identify the need for a balanced transportation system, including walkability and improved bicycle infrastructure. The current LOS C goal is being reexamined as



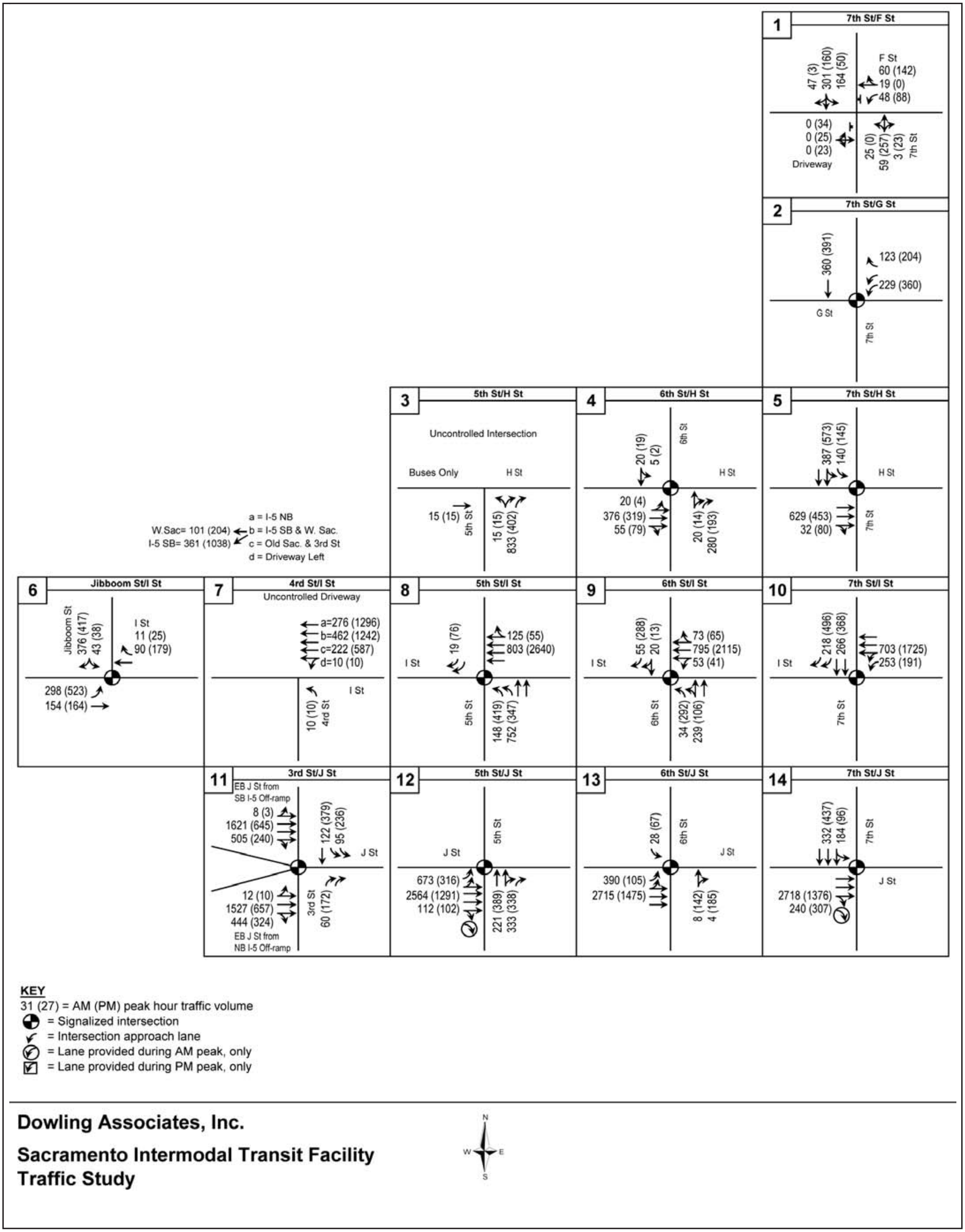
Dowling Associates, Inc.

Sacramento Intermodal Transit Facility Traffic Study

Source: Sacramento Bikeway Master Plan

00121.08 Sac Intermodal EA (10-08)

Figure 2.1.2-2
Existing and Proposed Bikeway Network



00121.08 Sac Intermodal EA (10-08)

Figure 2.1.2-3
Existing Traffic Volumes, Lanes, and Traffic Controls

part of the upcoming General Plan update. The revised policy is expected to recognize alternative mode opportunities and support developments in infill areas and near transit stations.

The City's pedestrian-friendly Street Standards (adopted in February 2004) provide guidelines on conceptual street standards to enhance and improve the pedestrian environment and encourage alternate mode use in the City of Sacramento. The key elements of the standards are the following:

- eliminate rolled curb,
- provide separated sidewalks on all streets,
- reduce widths of collector and arterial streets,
- reduce travel lane widths, and
- add bike lanes to all new collector and arterial streets.

Signalized Intersections System Analysis

Signalized intersection analyses were conducted using the operational methodology outlined in the *Highway Capacity Manual* (Transportation Research Board 2000, Chapters 10 and 16).

This procedure calculates an average stopped delay per vehicle at a signalized intersection, and assigns an LOS designation based upon the delay. The method also provides a calculation of the volume-to-capacity (v/c) ratio of the critical movements at the intersection. Table 2.1.2-1 shows LOS criteria for signalized intersections.

Table 2.1.2-1. Level of Service Criteria—Signalized Intersections

Level of Service	Average Delay (seconds/vehicle)	Description
A	≤ 10	Very Low Delay: This LOS occurs when progression is extremely favorable and most vehicles arrive during a green phase. Most vehicles do not stop at all.
B	> 10 and < 20	Minimal Delays: This LOS generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.
C	> 20 and < 35	Acceptable Delay: Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (to service all waiting vehicles) may begin to appear at this LOS. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	> 35 and < 55	Approaching Unstable Operation/Significant Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55 and < 80	Unstable Operation/Substantial Delays: These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	> 80	Excessive Delays: This level, considered unacceptable to most drivers, often occurs with oversaturation (that is, when arrival traffic volumes exceed the capacity of the intersection). It may also occur at nearly saturated conditions with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

Source: Transportation Research Board 2000:10-16 and 16-2.

Unsignalized Intersections Analysis

Stop-sign controlled intersections were analyzed utilizing the methodology outlined in the *Highway Capacity Manual* (Transportation Research Board 2000, Chapters 10 and 17). This methodology determines the LOS by calculating an average total delay per vehicle for each controlled movement and for the intersection as a whole. An LOS designation is assigned based on the average control delay of all movements. Table 2.1.2-2 presents the relationship of total delay to LOS for stop-controlled intersections.

Table 2.1.2-2. Level of Service Criteria at Stop-Controlled Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	0–10
B	>10–15
C	>15–25
D	>25–35
E	>35–50
F	>50

Source: Transportation Research Board 2000:10-16 and 16-2.

Freeway Segment Analysis

The freeway mainline was analyzed utilizing a methodology outlined in the *Highway Capacity Manual* (Transportation Research Board 2000, Chapters 13 and 23). Maximum service flow rates of 2,200 vehicles per lane per hour for typical freeway lanes and 1,600 vehicles per lane per hour for auxiliary lanes were used, based on data collected by Caltrans in the Sacramento urban area. Table 2.1.2-3 shows the relationship of freeway v/c ratios and density to LOS.

Table 2.1.2-3. Level of Service Criteria—Freeway Mainline

Level of Service	Maximum Volume-to-Capacity Ratio	Maximum Density (passenger vehicles per mile per lane)
A	0.32	11
B	0.53	18
C	0.74	26
D	0.90	35
E	1.00	45
F	Varies	Varies

Source: Transportation Research Board 2000:23-3 and 23-4.

Freeway Ramp and Merge/Diverge Analysis

Freeway ramps and merge/diverge areas were analyzed using a methodology outlined in the *Highway Capacity Manual* (Transportation Research Board 2000, Chapters 13 and 25). Freeway ramp operating conditions are dependent on traffic volumes and the ramp characteristics. These characteristics include the length and type of acceleration/deceleration lanes, free-flow speed of the ramps, number of lanes, grade, and types of facilities that the ramps interconnect. Table 2.1.2-4 shows the relationship of LOS to freeway density.

Table 2.1.2-4. Level of Service Criteria—Freeway Ramp Merge/Diverge Areas

Level of Service	Maximum Density (passenger vehicles per mile per lane)
A	10
B	20
C	28
D	35
E	> 35
F	Demand exceeds capacity

Source: Transportation Research Board 2000:25-5.

As shown in Table 2.1.2-4, the basic criterion used to determine Freeway Ramp LOS is vehicle density in the merge or diverge area. Note that the *Highway Capacity Manual*[2] (Transportation Research Board 2000) requires that several additional criteria be considered so that LOS F is automatically attained for a ramp if:

- at an on-ramp, volume exceeds capacity (V>C) in:
  - the segment of a freeway downstream, or
  - the merge-area defined by the on-ramp and the two adjacent freeway lanes;
- at an off-ramp, volume exceeds capacity (V>C) in:
  - the segment of a freeway upstream OR downstream,
  - the off-ramp itself, or
  - the diverge-area defined by the two adjacent freeway lanes approaching the ramp.

Table 2.1.2-5 shows maximum service flow rates for freeway ramps, based on information presented in the *Highway Capacity Manual* (Transportation Research Board 2000, Chapters 13 and 25; 1985, Chapter 5). This methodology is used in cases where the freeway ramp configuration governs the operating condition.

[2] See *Highway Capacity Manual*, Transportation Research Board 2000, pages 13-22 and 13-23.

Table 2.1.2-5. Level of Service Definitions—Freeway Ramps

Level of Service	Service Flow Rates for Single Lane/ Two Lane Ramps Ramp Design Speed (miles per hour)					Definition
	< 20	**21–30**	**31–40**	**41–50**	**> 51**	
A	(1)	(1)	(1)	(1)	800/ 1,550	Conditions of free flow; speed is controlled by driver's desires, speed limits, or physical conditions.
B	(1)	(1)	(1)	1,150/ 2,250	1,150/ 2,350	Conditions of stable flow; operating speeds beginning to be restricted; little or no restrictions on maneuverability from other vehicles.
C	(1)	(1)	1,400/ 2,600	1,600/ 3,100	1,700/ 3,350	Conditions of stable flow; speeds and maneuverability more closely restricted.
D	(1)	1,550/ 2,900	1,700/ 3,200	1,950/ 3,850	2,050/ 4,150	Conditions approach unstable flow; tolerable speeds can be maintained, but temporary restrictions may cause extensive delays; little freedom to maneuver; comfort and convenience low.
E	1,800/ 3,200	1,900/ 3,500	2,000/ 3,800	2,100/ 4,100	2,200/ 4,400	Conditions approach capacity; unstable flow with stoppages of momentary duration; maneuverability severely limited.
F	Widely Variable					Forced flow conditions; stoppages for long periods; low operating speeds.

Sources: Transportation Research Board 2000:25-5; Transportation Research Board 1985:5-15.
(1) LOS not attainable due to restricted design speed.

The freeway ramps were also analyzed in terms of the expected queues versus the storage capacity. The length of a vehicle is assumed to be 25 feet long.

Existing Levels of Service

Intersections

The existing a.m. and p.m. peak hour operating conditions at the study area intersections are shown in Table 2.1.2-6. A number of study intersections operate below the City's LOS C goal.

Table 2.1.2-6. Intersection Levels of Service—Existing Conditions

Intersection	Traffic Control	Peak Hour	Delay Type	Existing	
				LOS	Delay[a]
1. 7th Street & F Street	Minor Stop Controlled	a.m.	Average	A	4.7
			Worst Delay	C	16.1
		p.m.	Average	A	5.1
			Worst Delay	B	12.7
2. 7th Street & G Street	Signal	a.m.	Average	B	10.6
		p.m.		B	10.6
3. 5th Street & H Street	Minor Stop Controlled	a.m.	Average	A	0.5
			Worst Delay	C	18.1
		p.m.	Average	A	0.7
			Worst Delay	B	12.2
4. 6th Street & H Street	Signal	a.m.	Average	B	13.4
		p.m.		A	4.8
5. 7th Street & H Street	Signal	a.m.	Average	B	14.2
		p.m.		B	13.2
6. Jibboom Street & I Street	Signal	a.m.	Average	B	15.1
		p.m.		C	20.2
7. 4th Street & I Street	Signal	a.m.	Average	Intersection does not exist.	
		p.m.			
8. 5th Street & I Street	Signal	a.m.	Average	B	15.7
		p.m.		B	10.5
9. 6th Street & I Street	Signal	a.m.	Average	B	17.2
		p.m.		C	26.0
10. 7th Street & I Street	Signal	a.m.	Average	A	8.8
		p.m.		C	21.8
11. 3rd Street & J Street	Signal	a.m.	Average	**E**	**57.6**
		p.m.		C	26.0
12. 5th Street & J Street	Signal	a.m.	Average	B	11.8
		p.m.		B	11.2
13. 6th Street & J Street	Signal	a.m.	Average	B	11.1
		p.m.		A	7.3
14. 7th Street & J Street	Signal	a.m.	Average	**D**	**38.5**
		p.m.		A	9.9

Source: Dowling Associates 2008.
Note: **Bold** values indicate substandard traffic operations.
[a] Delay = Average Delay in seconds.

Freeway Mainline

Table 2.1.2-7 shows LOS for freeway mainline study segments. Detailed calculations are provided in the project traffic report (Dowling Associates, Inc. 2008). The analysis showed that many of the freeway mainline study segments operate acceptably during peak periods, although many of the freeway study segments operate at LOS F during peak periods. The analysis is based on the number of vehicles that can travel through each freeway segment. During congested conditions, drivers must divert to other routes, and fewer vehicles are able to get through than the actual demand would otherwise indicate, resulting in lower traffic counts and higher LOS than are typically observed. The analysis shows many segments are near capacity (v/c is close to 1.00), so the analysis of future conditions would identify impacts on segments that are already congested.

Table 2.1.2-7. Freeway Mainline Operations—Existing Conditions

Location	a.m. Peak Hour			p.m. Peak Hour		
	Volume	V/C[a]	LOS[b]	Volume	V/C[a]	LOS
Northbound I-5						
South of I Street on-ramp	6,689	0.83	D	7,836	0.97	**F**[b]
North of I Street on-ramp	6,965	0.73	C	9,132	0.96	**F**[b]
Southbound I-5						
North of J Street off-ramp	7,667	0.80	D	6,913	0.72	C
North of I Street on-ramp	5,730	0.71	C	5,646	0.70	**F**[b]

Source: Dowling Associates 2008.
Note: **Bold** values show substandard traffic operations.
[a] V/C = volume/capacity
[b] Queue extends from downstream bottleneck.

Freeway Interchanges

Table 2.1.2-8 provides a summary of traffic operations at study area interchanges and backup calculations are provided in the project traffic report (Dowling Associates, Inc. 2008).

Table 2.1.2-8. Freeway Interchange Operations—Existing Conditions

Ramp	a.m. Peak Hour			p.m. Peak Hour		
	LOS	Density[a]	Volume	LOS	Density[a]	Volume
Northbound I-5						
P Street to J Street weave	E	36.27	9,170	D	31.34	8,378
I Street on-ramp	B	14.35	276	C	24.73	1,296
Southbound I-5						
J Street off-ramp	B	19.92	1,937	B	17.96	1,267
I Street to Q Street weave	C	23.10	6,620	C	25.67	7,265

Source: Dowling Associates 2008.
Note: **Bold** values show substandard traffic operations.
[a] Density of passenger vehicles per mile per lane in the merge or diverge area

Freeway Ramp Queues

Queue summary of freeway off-ramp queues is provided in Table 2.1.2-9. Both study area off-ramps have adequate storage capacity.

Table 2.1.2-9. Freeway Ramp Queues—Existing Conditions

Location	Storage Capacity (feet)	a.m. Peak Hour		p.m. Peak Hour	
		Queue (feet)	Adequate Capacity	Queue (feet)	Adequate Capacity
I-5 Southbound J Street Off-Ramp	1300	537	Yes	118	Yes
I-5 Northbound J Street Off-Ramp	720	623	Yes	223	Yes

Source: Dowling Associates 2008.

Pedestrian and Bicycle Access

Pedestrian and bicycle access through the site is constrained due to the limited site access opportunities.

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on traffic and transportation and pedestrian and bicycle facilities, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below. Traffic forecasts for baseline conditions were prepared using travel demand models developed by Sacramento Area Council of Governments (SACOG), with modifications to land uses to include projects that have already been approved. Traffic forecasts for Phase 3 cumulative conditions were also prepared using travel demand models according to the procedures described in the RSP EIR.

Automobile Trip Generation

Phase 1 would not increase traffic volumes because it would not add new land uses or parking spaces and would not change existing access to the proposed project site. A program level analysis of future Phase 3 of the project was included in the EIR for the RSP and is the basis for the analysis of Phase 3 in this EA.

Daily trip generation for Phase 2 is based upon information compiled by the Institute of Transportation Engineers (*Trip Generation, Seventh Edition*, 2003, and *Trip Generation Handbook,* 2004). An assumption was made that 25% of the trips would occur during each of the a.m. and p.m. peak hours, and that 80% of the peak-hour trips would be inbound in the morning and 80% would be outbound during the afternoon peak hour.

Trip generation was performed in two steps. First, the number of trips for the existing facility was computed, and those trips were removed from the existing site access points and the larger transportation system. Second, the number of trips expected to be generated by Phase 2 of the project was estimated, and those trips were assigned to the proposed new access points. The net increase in trip generation associated with a 153-space increase in onsite parking is shown in Table 2.1.2-10. The gross trip generation for the existing Depot and Phase 2 of the project is provided in the project traffic report (Dowling Associates, Inc. 2008).

Table 2.1.2-10. Trip Generation Summary for Phase 2

Land Use Category	Amount		Source	Trips Generated						
				Weekday	a.m. Peak Hour			p.m. Peak Hour		
					In	Out	Total	In	Out	Total
Long Distance Transit Service	153	New parking spaces	ITE(093)	384	77	19	96	19	77	96
Adjustments										
Adjustment for transit access to Depot (-11.1%)				-43	-9	-2	-11	-2	-9	-11
Adjustment for walk, bike, other access to Depot (-2.8%)				-11	-2	-1	-3	-1	-2	-3
New external auto trips				330	66	16	82	16	66	82

Source: Dowling Associates 2008.

Phase 2 would generate approximately 330 new daily trips at the project site, with approximately 82 trips during each of the peak commute hours.

Adjustments to the Institute of Transportation Engineers trip generation estimates were made to account for higher transit ridership and higher levels of walking and bicycle use within the highly urbanized project setting. Adjustments for the higher use of transit and walk, bike, and other non-auto travel were based on information contained in the *Pre-Census Travel Behavior Report: Analysis of the 2000 SACOG Household Travel Survey* (DKS 2001).

Details of the trip generation estimates and the adjustments made are provided in the project traffic report (Dowling Associates, Inc. 2008).

Transit Trip Generation

In Phase 2 of the proposed project, the existing LRT station and track would be relocated to improve internal circulation and proximity to the bus berths and rail platforms and to accommodate RT's plans to construct a second track and platform in the future as part of their DNA project. No new local transit trip ridership is expected to be generated in Phase 2 of the project because the new parking spaces would be used for Amtrak service instead of local transit service.

Travel Demand Modeling

The SACOG Sacramento Metropolitan (SACMET) model is a mathematical tool that estimates the general travel choices people will make, based upon the primary social, demographic, and physical conditions that affect such choices. The travel demand models used for the analysis of baseline conditions were based on the SACMET model, with modifications made as necessary to reflect projects that have already been approved. The travel demand models were used to produce forecasts of roadway link traffic volumes and turning movements at study intersections.

The first step in the travel forecasting process was to develop estimated traffic volumes for existing and baseline conditions. The differences in the two travel models reflect the changes in traffic associated with the transportation system modifications described above and the effects of developments that have already been approved (baseline conditions), listed below. The differences in traffic volumes produced by the travel model for existing and baseline conditions were added to existing traffic volumes observed in the field to develop baseline no-project traffic volume estimates. Additional detail on the travel demand modeling process is provided in the RSP EIR.

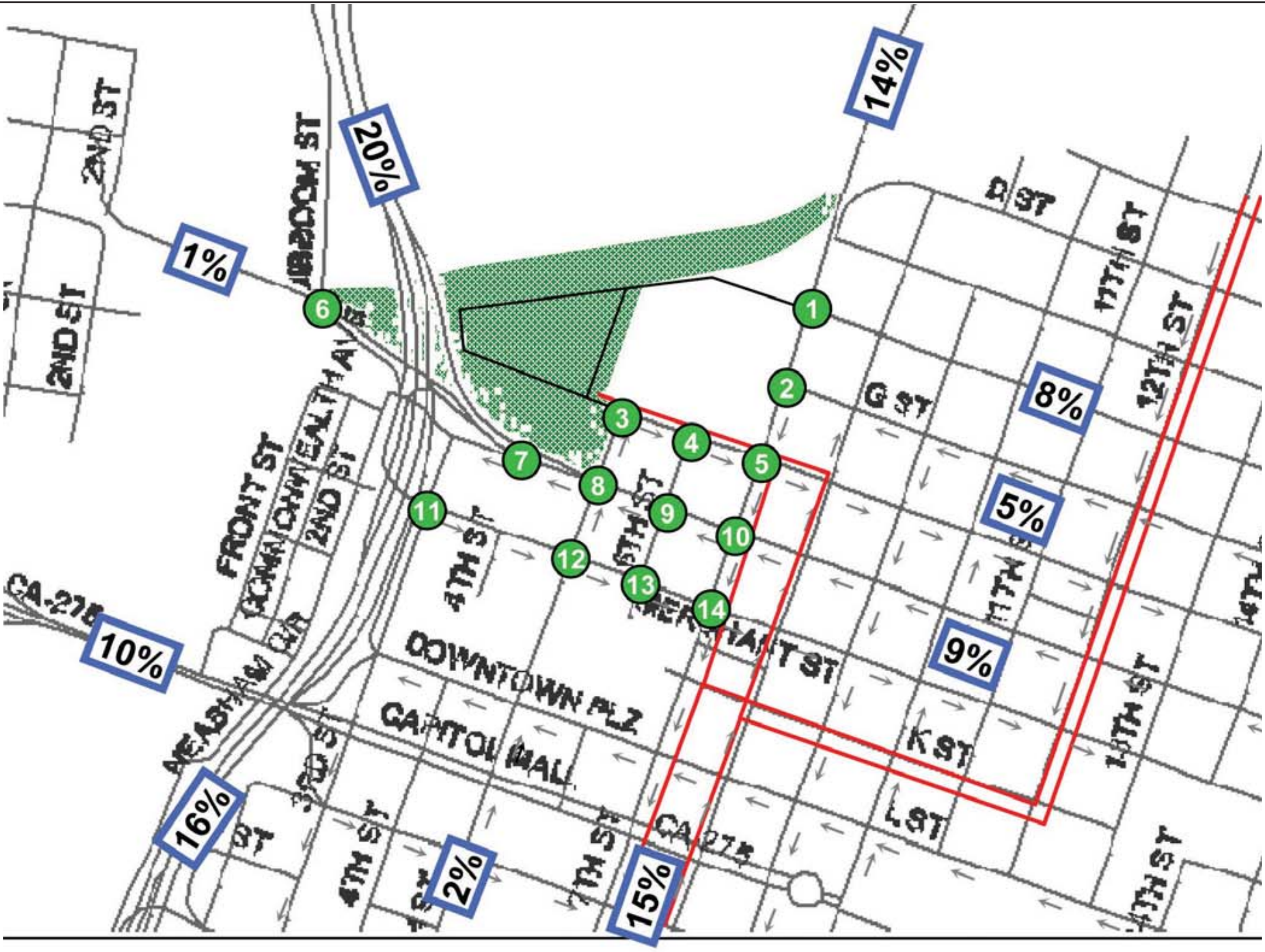
Trip Distribution and Assignment

The removal of trips from the existing Depot and the assignment of new trips for Phase 2 of the project were performed using the Traffix software package, with the assumption that motorists would use the shortest path to their destinations. The distribution of peak-hour project trips (Figure 2.1.2-4) was estimated based on trip distribution patterns identified from the travel demand model for office trips.

Impact TRANS-1: Potential increase in traffic volumes at study area intersections and deterioration of LOS

Phase 1—Track Relocation

Phase 1 would primarily involve rail tracks and related work and would not result in changes to site vehicular access or result in development that would generate new trips. There would be no



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Sacramento Intermodal Transit Facility
Traffic Study

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Figure 2.1.2-4
Trip Distribution for Phase 2

changes in traffic volumes or deterioration of LOS at study area intersections from implementation of Phase 1.

Phase 2—Sacramento Valley Station Improvements

A comparison of intersection operations between baseline (no-project) and Phase 2 is provided in Table 2.1.2-11.

Table 2.1.2-11. Intersection Levels of Service—Phase 2

Intersection	Traffic Control	Peak Hour	Delay Type	Baseline (No-Project)		Phase 2	
				LOS	Delay[a]	LOS	Delay[a]
1. 7th Street & F Street	Minor Stop Controlled	a.m.	Average	A	4.7	A	5.0
			Worst Delay	C	16.1	C	16.7
		p.m.	Average	A	5.0	A	5.2
			Worst Delay	B	12.9	B	13.0
2. 7th Street & G Street	Signal	a.m.	Average	B	10.6	B	10.8
		p.m.		B	10.9	B	10.9
3. 5th Street & H Street	Minor Stop Controlled	a.m.	Average	A	0.5	A	2.9
			Worst Delay	C	18.1	**D**	**34.2**
		p.m.	Average	A	0.7	A	4.5
			Worst Delay	B	12.3	B	14.2
4. 6th Street & H Street	Signal	a.m.	Average	B	13.3	B	13.9
		p.m.		A	4.8	A	5.6
5. 7th Street & H Street	Signal	a.m.	Average	B	14.2	B	14.4
		p.m.		B	13.4	B	13.6
6. Jibboom Street & I Street	Signal	a.m.	Average	B	15.1	B	15.1
		p.m.		C	21.1	C	20.2
7. 4th Street & I Street	Signal	a.m.	Average	Intersection does not exist		B	11.9
		p.m.				A	4.1
8. 5th Street & I Street	Signal	a.m.	Average	B	15.8	B	15.9
		p.m.		B	10.6	B	10.7
9. 6th Street & I Street	Signal	a.m.	Average	B	17.3	B	17.5
		p.m.		C	27.5	C	27.2
10. 7th Street & I Street	Signal	a.m.	Average	A	8.9	A	9.0
		p.m.		C	22.1	C	22.1
11. 3rd Street & J Street	Signal	a.m.	Average	**E**	**58.2**	**E**	**63.5**
		p.m.		C	26.0	C	28.1
12. 5th Street & J Street	Signal	a.m.	Average	B	11.8	B	11.8
		p.m.		B	11.3	B	11.3
13. 6th Street & J Street	Signal	a.m.	Average	B	11.2	B	11.1
		p.m.		A	7.2	A	7.2
14. 7th Street & J Street	Signal	a.m.	Average	**D**	**41.4**	**D**	**41.3**
		p.m.		A	10.1	A	10.1

Source: Dowling Associates 2008.
Note: **Bold** values indicate substandard traffic operations.
[a] Delay = Average delay in seconds.

While most of the intersections would operate at LOS D or better, under Phase 2 traffic volumes would increase at study area intersections and would result in increased delays at the following intersections:

- 5th Street/H Street (a.m. peak hour), and
- 3rd Street/J Street (a.m. peak hour).

While 5th Street/H Street would operate at LOS D, the proposed project would increase delay by 16.1 seconds, from 18.1 to 34.2 seconds. In addition, delay would be increased at the 3rd Street/J Street by 5.2 seconds, from 58.2 to 63.5, and would operate at LOS E. As such, under Phase 2 intersection operating conditions would deteriorate. Mitigation Measures TRANS-1 and TRANS-2 would eliminate this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

Implementation of future Phase 3 of the project could contribute to effects associated with development of the RSP area by increasing traffic volumes at study area intersections. Development of the RSP area would cause the level of service at intersections to deteriorate. Future Phase 3 would generate approximately 5% of the traffic that would be generated by the RSP.

After development of the RSP, intersection operating conditions would deteriorate at the following study intersections:

- 7th Street / G Street (AM and PM peak hours)
- 6th Street / H Street (AM peak hour)
- 7th Street / H Street (PM peak hour)
- 6th Street / I Street (PM peak hour)
- 7th Street / I Street (PM peak hour)
- 3rd Street / J Street (AM and PM peak hours)

Intersection operating conditions would deteriorate at the following intersections without the RSP development:

- 6th Street / H Street (AM peak hour)
- 3rd Street / J Street (AM and PM peak hours)

Alternative 2

The effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1 because the land uses, number of parking spaces, and access to the public street system would be similar.

No-Build Alternative

As described in Chapter 1, under the No-Build Alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses, would not be restored, and would remain difficult to access by the general public. The tracks would remain in their current configuration, and the platforms could not be expanded, resulting in deteriorating levels of service to passengers and providers.

The No-Build Alternative peak-hour traffic volumes were analyzed to determine the delay or V/C ratio and corresponding LOS for each of the analyzed intersections under the no-build conditions, taking into account average annual traffic growth. Table 2.1.2-11 above summarizes these results. The proposed No-Build Alternative would not result in any project-related changes to intersection operations, as the alternative would not result in changes within the existing project area.

Impact TRANS-2: Potential increase in traffic volumes at freeway mainline segments and deterioration of LOS

Phase 1—Track Relocation

Phase 1 would primarily involve rail track and related work and would not result in changes to site vehicular access or result in development that would generate new trips. There would be no changes in traffic volumes or deterioration of LOS at freeway mainline segments from implementation of Phase 1.

Phase 2—Sacramento Valley Station Improvements

A comparison of freeway mainline operating conditions to baseline (no project) conditions is provided in Table 2.1.2-12. Phase 2 would add traffic to mainline I-5 northbound, north of the I Street on-ramp (p.m. peak hour), which is already operating at LOS F. Phase 2 would add 13 trips (0.14% of the total volume) to this freeway segment. Phase 2 would have no perceptible effect on freeway segment operations.

Table 2.1.2-12. Freeway Mainline Operations—Phase 2

Location	Time Period	Measure	Baseline (No-Project)	Phase 2
Northbound I-5				
South of I Street on-ramp	a.m. Peak Hour	Vol	6,755	6,755
		V/C	0.74	0.74
		LOS	C	C
	p.m. Peak Hour	Vol	7,957	7,957
		V/C	0.97	0.97
		LOS	**F**[a]	**F**[a]
North of I Street on-ramp	a.m. Peak Hour	Vol	7,040	7,044
		V/C	0.84	0.84
		LOS	D	D
	p.m. Peak Hour	Vol	9,268	9,281
		V/C	0.99	0.99
		LOS	**F**[a]	**F**[a]
Southbound I-5				
North of J Street off-ramp	a.m. Peak Hour	Vol	7,674	7,688
		V/C	0.80	0.81
		LOS	D	D
	p.m. Peak Hour	Vol	7,089	7,092
		V/C	0.74	0.74
		LOS	D	D
North of I Street on-ramp	a.m. Peak Hour	Vol	5,748	5,748
		V/C	0.95	0.95
		LOS	E	E
	p.m. Peak Hour	Vol	5,794	5,794
		V/C	0.96	0.96
		LOS	**F**[a]	**F**[a]

Source: Dowling Associates 2008.
Note: **Bold** values show substandard traffic operations.
[a] Queue extends from downstream bottleneck.

Future Phase 3—Intermodal Improvements

Alternative 1

Implementation of future Phase 3 of the project would contribute to the effects associated with development of the RSP area by adding traffic to the study freeway mainline segments. Development of the RSP area would cause the level of service to degrade below LOS E. Future Phase 3 would generate approximately 5% of the traffic that would be generated by development of the RSP area.

After development of the RSP area, levels of service would degrade at the following freeway mainline segments:

- Northbound I-5 South of I Street on-ramp (PM peak hour)
- Northbound I-5 North of I Street on-ramp (PM peak hour)
- Southbound I-5 North of J Street on-ramp (PM peak hour)

Alternative 2

The effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1 because the land uses, number of parking spaces, and access to the public street system would be similar.

No-Build Alternative

As described in Chapter 1, under the No-Build Alternative, no phases of the project would be constructed.

The No-Build Alternative peak-hour traffic volumes were analyzed to determine the freeway mainline segment operating conditions under No-Build conditions, taking into account average annual traffic growth. Table 2.1.2-13 summarizes these results. Three of the freeway segments would operate at LOS F during the p.m. peak hour. These include the northbound I-5 segment south of the I Street on-ramp and the segment north of the I Street on-ramp, and the southbound I-5 segment north of the I Street on-ramp. In addition, the southbound I-5 segment north of I Street on-ramp would operate at LOS E during the a.m. peak hour. The No-Build Alternative would not result in any project-related construction activities that could potentially affect freeway segment operations.

Table 2.1.2-13. Intersection Levels of Service—No-Build Alternative (Baseline)

Location	Time Period	Measure	Baseline (No-Project)
Northbound I-5			
South of I Street on-ramp	a.m. Peak Hour	Vol	6,755
		V/C	0.74
		LOS	C
	p.m. Peak Hour	Vol	7,957
		V/C	0.97
		LOS	**F**[a]
North of I Street on-ramp	a.m. Peak Hour	Vol	7,040
		V/C	0.84
		LOS	D
	p.m. Peak Hour	Vol	9,268
		V/C	0.99
		LOS	**F**[a]
Southbound I-5			
North of J Street off-ramp	a.m. Peak Hour	Vol	7,674
		V/C	0.80
		LOS	D
	p.m. Peak Hour	Vol	7,089
		V/C	0.74
		LOS	D
North of I Street on-ramp	a.m. Peak Hour	Vol	5,748
		V/C	0.95
		LOS	E
	p.m. Peak Hour	Vol	5,794
		V/C	0.96
		LOS	**F**[a]

Source: Dowling Associates 2008.
Note: **Bold** values indicate substandard traffic operations.
[a] Queue extends from downstream bottleneck.

Impact TRANS-3: Potential increase in traffic volumes that would affect freeway interchange operations and deterioration of LOS

Phase 1—Track Relocation

Phase 1 would primarily involve rail tracks and related work and would not result in changes to site vehicular access or result in development that would generate new trips. There would be no changes in traffic volumes that would affect weave operations at freeway interchanges from implementation of Phase 1.

Phase 2—Sacramento Valley Station Improvements

Freeway interchange operations under Phase 2 are compared to baseline (no project) in Table 2.1.2-14. Phase 2 would add traffic to the P Street to J Street weave on northbound I-5, where Phase 2 would add 12 vehicles or 0.13% of the total volume in the weaving area. Phase 2 would have no perceptible effect on freeway weaving operations.

Table 2.1.2-14. Freeway Interchange Operations—Phase 2

Ramp	Time Period	Measure	Baseline (No-Project)	Phase 2
Northbound I-5				
P Street to J Street weave	a.m. Peak Hour	LOS	E	E
		Density[a]	36.67	36.72
		Volume	9242	9254
	p.m. Peak Hour	LOS	D	D
		Density[a]	31.93	31.95
		Volume	8509	8512
I Street on-ramp	a.m. Peak Hour	LOS	B	B
		Density[a]	14.54	14.57
		Volume	285	289
	p.m. Peak Hour	LOS	C	C
		Density[a]	25.08	25.19
		Volume	1311	1324
Southbound I-5				
J Street off-ramp	a.m. Peak Hour	LOS	B	C
		Density[a]	19.94	20.00
		Volume	1937	1951
	p.m. Peak Hour	LOS	B	B
		Density[a]	18.42	18.42
		Volume	1295	1298
I Street to Q Street weave	a.m. Peak Hour	LOS	C	C
		Density[a]	23.17	23.19
		Volume	6640	6644
	p.m. Peak Hour	LOS	C	C
		Density[a]	26.44	26.49
		Volume	7445	7457

Source: Dowling Associates 2008.
Note: **Bold** values show substandard traffic operations.
[a] Numbers with decimals indicate the density of passenger vehicles per mile per lane in the merge or diverge area. Whole numbers indicate the ramp flow rate in passenger car equivalents where a lane is added to the freeway at an on-ramp.

Future Phase 3—Intermodal Improvements

Alternative 1

Implementation of future Phase 3 of the project would contribute to the effects associated with development of the RSP area by adding traffic to study freeway interchanges. Development of the RSP area would cause the level of service to degrade below those of the freeway mainline. Future Phase 3 would generate approximately 5 percent of the traffic that would be generated by the RSP.

After development of the RSP area, levels of service would deteriorate at the following freeway interchanges:

- Northbound I-5 I Street on-ramp (PM peak hour)
- Southbound I-5 J Street Off-ramp (PM peak hours)

Alternative 2

The effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1.

No-Build Alternative
Under the No-Build Alternative, no phases of the project would be constructed and there would be no project-related effects to freeway interchanges.

Impact TRANS-4: Other transportation effects in the project area, such as freeway ramp operations, bus or light rail system services, or pedestrian facilities

Phase 1—Track Relocation
Phase 1 would primarily involve rail tracks and related work, including tunnel construction, and would not result in changes to site vehicular access or result in development that would generate new trips or affect freeway ramp operations. Phase 1 would not increase demand on the bus or light-rail transit system, interfere with the implementation of proposed bikeways, increase the number of pedestrians on the transportation system, or increase the number of long-distance transit riders expected to walk to and from the project site. As described in Chapter 1, traffic control plans will be implemented to the satisfaction of the City Development Engineering Division to maintain safety for all modes of travel during construction., including pedestrian and bicycle modes. Pedestrian and bicycle facilities will be constructed to maintain access to other facilities that serve an existing function.

Phase 2—Sacramento Valley Station Improvements
Freeway interchange operations under Phase 2 are compared to baseline (no project) conditions in Table 2.1.2-15.

Table 2.1.2-15. Freeway Ramp Queues—Phase 2

Location	Storage Capacity (feet)	Baseline (No Project)				Phase 2			
		a.m. Peak Hour		p.m. Peak Hour		a.m. Peak Hour		p.m. Peak Hour	
		Queue (feet)	Adequate Capacity	Queue (feet)	Adequate Capacity	Queue (feet)	Adequate Capacity	Queue (feet)	Adequate Capacity
I-5 South-bound J Street off-ramp	1,300	540	Yes	122	Yes	545	Yes	122	Yes
I-5 North-bound J Street off-ramp	720	623	Yes	223	Yes	607	Yes	223	Yes

Source: Dowling Associates 2008.

Phase 2 would add traffic to the study freeway off-ramps but would not cause freeway off-ramp queues to exceed the available storage capacity, as shown in Table 2.12-15.

The new parking spaces would be used for Amtrak service instead of local transit service. Relocation of the existing LRT station and tracks and repaving of the bus berths in Phase 2 would not increase demand on the bus or light-rail transit system. Enhancements to the passenger connections and passenger parking and site access reconfigurations would not interfere with the implementation of proposed bikeways.

Phase 2 would not increase the number of pedestrians on the transportation system or create unsafe conditions for pedestrians. Phase 2 would not increase the number of long-distance transit riders expected to walk to and from the project site. A related project at the intersection of 4th Street and I Street would provide a traffic signal to accommodate pedestrian access and auto egress from the site to the area south and west of the proposed project. Pedestrian crosswalks at this intersection have been proposed on the north, east and south sides of the intersection. No new pedestrian crossings would be located closer to the I-5/I Street freeway on-ramp and no sidewalks would be placed along the freeway on-ramp west of 4th Street.

Pedestrian access between the proposed project site and points south and west are currently provided at the east side of the 5th Street and I Street intersection. A sidewalk along I Street provides pedestrian access to Old Sacramento. The sidewalk between 5th Street and 3rd Street is separated from I Street by a tree-lined planter area and parking spaces. A crosswalk at 3rd Street guides pedestrians to the north side of I Street where an attached sidewalk leads under the I-5 overcrossing to Old Sacramento. The related project at the intersection of 4th Street and I Street would provide a new signalized crosswalk across I Street and would shorten the walking distance to Old Sacramento.

Pedestrian access is provided between I Street and J Street along a sidewalk on the east side of 3rd Street that is separated from the street by a tree-lined planter area. At the 3rd Street and J Street intersection, signalized pedestrian crosswalks are provided along the north, west and south sides of the intersection. A sidewalk extends south of J Street along the east side of 3rd Street and sidewalks extend east of 3rd Street along both the north and south sides of J Street.

As described in Chapter 1, traffic control plans will be implemented to the satisfaction of the City Development Engineering Division to maintain safety for all modes of travel during construction, including pedestrian and bicycle. In addition, pursuant to Title 16 (Subdivisions) and Title 18 (Development Requirements) of the City of Sacramento Municipal Code, the project will be conditioned to provide all frontage improvements, which include sidewalks, gutters and planters to the satisfaction of Development Engineering Division, as part of Phase 2.

Future Phase 3—Intermodal Improvements

<u>*Alternative 1*</u>
New retail and commercial development and expansion of the Station facilities that could occur in future Phase 3 of the project would contribute to the effects associated with development of the RSP area by adding traffic to the study freeway off-ramps. Development of the RSP area would cause freeway off-ramp queues to exceed the available storage capacity. Future Phase 3 would generate approximately 5% of the traffic that would be generated by development of the RSP area.

After development of the RSP area, available storage capacity would be exceeded at the following freeway off-ramps:

- Northbound I-5 to J Street (AM peak hour)

No analysis of roadway segments was performed for future Phase 3; however, implementation of this phase of the project would contribute to the effects associated with development of the RSP area by adding traffic to the study roadway segments that result in substandard levels of service.

Implementation of Phase 3 of the project would contribute to the effects associated with development of the RSP area by increasing demand on the public transit system. However, RSP development will be coordinated with RT to provide modifications to both bus and light rail services and to help fund necessary improvements in order to serve the transit demand generated by the development.

The bikeways that would be constructed as part of the project may not precisely match the existing bike plan and implementation of Phase 3 of the project may contribute to the effects associated with development of the RSP area by potentially interfering with the implementation of proposed bikeways. All bikeway facilities will comply with City of Sacramento standards and the Bikeway Master Plan.

Implementation of Phase 3 of the project could contribute to the effects associated with development of the RSP area by increasing the number of pedestrians on the roadway system and some proposed project design elements could result in unsafe conditions for pedestrians. The specific design elements for pedestrian access have not been defined at a level sufficient to ensure that unsafe conditions for pedestrians would not occur. Pursuant to Title 16 (Subdivisions) and Title 18 (Development Requirements) of the City of Sacramento Municipal Code, development of the RSP shall be conditioned to provide all frontage improvements which include sidewalks, gutters and planters to the satisfaction of Development Engineering Division.

Implementation of Phase 3 of the project could contribute to the effects associated with development of the RSP area by resulting in inadequate vehicle parking and bicycle parking capacity. Parking demand will be monitored during build out of the RSP (including future Phase 3 of the project) and parking standards will be adjusted as needed. Sufficient parking spaces will be provided in compliance with City code requirements.

Alternative 2

The effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1 because the land uses, number of parking spaces, and access to the public street system would be similar.

No-Build Alternative

As described in Chapter 1, under the No-Build Alternative, no phases of the project would be constructed. As such, the No-Build Alternative would have no project-related effects on freeway interchanges.

Avoidance, Minimization, and/or Mitigation Measures

The potential for disruptions to vehicular and pedestrian movement in the project area as a result of construction activities and operation of the proposed project in all phases would be minimized with the implementation of the following mitigation measures, including construction staging and detour plans, if needed. As described in Chapter 1, the traffic control plans for each project phase would include signage, detours, flagmen, and other traffic control measures to maintain access and safety in the local area.

Mitigation Measure TRANS-1: Install all-way stop control at the 5th Street/H Street intersection during construction of Phase 2.

At the 5th Street/H Street intersection, the City will install all-way stop control as part of Phase 2. With implementation of this mitigation measure, the LOS would be improved to LOS B (11.7 seconds delay) in the a.m. peak hour and would operate at LOS A (7.6 seconds delay) in the p.m. peak hour. These results are shown in Table 2.1.2-16.

Mitigation Measure TRANS-2: Optimize the signal timing in the a.m. peak hour at the 3rd Street/J Street intersection during construction of Phase 2.

At the 3rd Street/J Street intersection, the City will optimize the signal timing in the a.m. peak hour as part of Phase 2. With implementation of this mitigation measure, the LOS would be improved to LOS D (54.0 seconds delay) in the a.m. peak hour. Although the delay at this intersection would be greater than the City standard, there would be less delay than without the project. These results are shown in Table 2.1.2-16.

Table 2.1.2-16. Intersection Levels of Service with Mitigation—Phase 2

Intersection	Traffic Control	Peak Hour	Delay Type	Baseline		Phase 2		With Mitigation	
				LOS	Delay[a]	LOS	Delay[a]	LOS	Delay[a]
3. 5th Street & H Street	Minor Stop Controlled	a.m.	Average	A	0.5	A	2.9	B	11.7
			Worst Delay	C	18.1	**D**	**34.2**	n/a: all-way stop	
		p.m.	Average	A	0.7	A	4.5	A	7.6
			Worst Delay	B	12.3	B	14.2	n/a: all-way stop	
11. 3rd Street & J Street	Signal	a.m.	Average	**E**	**58.2**	**E**	**63.5**	**D**	**54.0**
		p.m.		C	26.0	C	28.1	C	28.1

Source: Dowling Associates 2008.
Note: **Bold** values indicate substandard traffic operations.
[a] Delay = Average delay in seconds.

2.1.3 Visual/Aesthetics

Affected Environment

Visual Setting

The visual character of the project region is characterized by office, commercial, and governmental uses, including mixed-use, one- to three-story buildings and multistory skyscrapers. Sacramento's downtown skyline is visible from miles around the city, including from eastbound Interstate 80 (I-80) from the Sacramento-Yolo Causeway, from westbound I-80 east of the City of Roseville, from westbound U.S. 50 east of the City of Folsom, from northbound Interstate 5 (I-5) between Elk Grove and Sacramento, and from southbound I-5 north of the downtown area. High-rise buildings are the distinctive features of the skyline. Developments in the City of West Sacramento on the west bank of the Sacramento River, across from Old Sacramento and the Docks area and between the I Street Bridge and the Pioneer Bridge are also visible.

In the project vicinity, views are characterized by a mix of residential, commercial, and industrial uses in the Alkali Flat neighborhood east of the project site and intensive development in the Central Business District of Sacramento on the South.

The Alkali Flat neighborhood east of the project site is characterized by a mix of Victorian homes and more modern architecture, small neighborhood parks, and tree-lined streets. The typical low-rise buildings, ranging from one to three stories in height, include single-family residences, apartments, retail shops, restaurants, commercial and office facilities, and warehouse-type industrial buildings. The area is characterized by its tree-lined streets, and there has been an emphasis on the preservation and enhancement of the Victorian structures.

The Central Business District of downtown Sacramento, south of the project site, is characterized by of a mix of building types and sizes, interspersed with parks and municipal uses. As discussed previously, the downtown area is distinguished by existing and planned high-rise office towers in excess of 40 stories high. Building designs run from 1920s architecture to modern structures. Most blocks in the Central Business District are dominated by a few large buildings.

Particular buildings tend to represent distinct areas of downtown, such as the Ping Yuen Building, across I Street from the Depot south of the project site, which represents Sacramento's historical Chinatown. Other buildings south of the project site include the federal courthouse, the county jail, the county administrative building, and, farther to the east, Sacramento City Hall, representing the civic center portion of downtown.

Old Sacramento, a U.S. National Historic Landmark District and 28-acre State Historic Park, is located south of the project site. Located on the river in the downtown area, Old Sacramento offers a mix of retail shops, offices, and museums. The district has 53 historic buildings and is generally characterized by Gold Rush-era and post-Gold Rush-era western-style structures, complete with plank sidewalks and cobbled streets. The historic I Street Bridge, which crosses the Sacramento River, frames the northern boundary of Old Sacramento, connecting the cities of Sacramento and West Sacramento.

The Sacramento River is located on the western edge of the proposed project area and represents a primary natural scenic resource in the city. The river is difficult to see from the proposed project site. Because of the undeveloped nature of the site, only the elevated portions of Jibboom Street and I-5 are presently visible. A new Sacramento River water intake facility was developed approximately 700 feet downstream from the original 1920s intake facility, which was approximately 0.5 mile downstream of the confluence with the American River. The new concrete and glass intake facility is lined with lights, providing a visual attraction along the waterfront at night.

Located across the river, West Sacramento is visually connected by the Sacramento River Parkway, a predominantly undeveloped area. Downstream, on the west bank of the river, the City of West Sacramento has approved several high-rise projects that are or will be very visible from the river corridor. In 1993, the 11-story, 158-foot-tall Ziggurat Building was constructed in the Raley’s Landing area, north of the Tower Bridge. More recently, West Sacramento approved three additional high-rise buildings in the Raley’s Landing area, including the 245-foot-tall River 1 mixed-use tower adjacent to the Tower Bridge; the 268-foot-tall, 24-story River 2 residential tower immediately north of the Ziggurat Building; and the 19-story, 300-foot-tall River 3 office tower immediately south of the I Street Bridge. All of these building sites are located across the river from Old Sacramento.

The visual character of the project site is dominated by reminders of its historic railroad operations, including the UPRR’s main railroad lines, rail spur lines that traverse the site, the red-brick Depot, the recently renovated red brick REA building, and the remnants of the Central Shops buildings. The Depot and nearby REA building are distinguished by red brick façades with symmetrical elevations and patterned bricks that frame the windows. Common elements that these buildings share include pale bases, parapet cornices, and metal canopies. Both structures incorporate two-story arched openings and patterned metal window mullions. Other than the Depot, rail lines, and remnants of the Central Shops, the RSP area, which encompasses the project site, is undeveloped. Remediation efforts in the project area and vicinity have been underway for many years, and efforts are ongoing, leaving fenced-off areas and large dirt mounds scattered throughout the RSP area.

Figure 2.1.3-1 provides an overview of the existing visual characteristics of the project site.

Viewshed

Views to and from the project site are limited in number and range. A continuous levee, approximately 20 feet high, lying north and southeast of the project area forms a partial barrier and visually separates the project site from the Alkali Flat neighborhood to the southeast and the Richards Boulevard Redevelopment Area to the north and east. West of the proposed project site, the elevated section of Jibboom Street runs parallel to the river, directly west of I-5, which is also elevated, effectively blocking views of the river from most of the project site.

Views to the site are most visible from the elevated section of I-5 where drivers and passengers in vehicles can see the site in both the northbound and southbound directions. The site is also

Photo 1: This photo depicts the view from the southeast corner of 6th and I Streets northwest toward the project site. The Depot is visible in the background.

Photo 2: This photo depicts the view from the southeast corner of 5th and H Streets looking west toward the project site. The outdoor waiting areas and tracks are visible to the north.

00121.08 Sac Intermodal EA (12-08)

Figure 2.1.3-1
Photographs of the Project Area

Photo 3: This photo depicts the view of the north side of the Depot. Construction is visible and current traveler access is shown at the left of the photo.

Photo 4: This photo depicts the view looking northeast of the Depot structure and parking area.

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Figure 2.1.3-1
Photographs of the Project Area (continued)

Photo 5: This photo depicts the view looking southwest of the Depot structure and parking area.

Photo 6: This photo depicts the view looking east toward the Depot from beneath the overpass.

Figure 2.1.3-1
Photographs of the Project Area (continued)

Photo 7: This photo depicts the view looking north across the parking area toward the boarding areas.

Photo 8: This photo depicts the view vegetation to the south of the Depot, looking north along I Street.

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Figure 2.1.3-1
Photographs of the Project Area (continued)

visible from higher floors of high-rise buildings in downtown. Views from ground and street level are much more limited, generally from I Street and 4th Street, where the existing Depot and the adjacent REA building are the most visible structures. Limited views beyond those buildings and the trains traveling on the tracks provide glimpses of the Central Shops buildings and scattered ruderal vegetation on the site. Views to the site from Alkali Flat are limited by the height of the railroad embankment as well as large buildings, including the U.S. Courthouse. Views from West Sacramento and the Sacramento River are very limited due to the height of the Sacramento River levee, the elevated section of Jibboom Street, and the elevated I-5 structure.

Viewer Groups

People in area parks and along the Sacramento River, visitors to Old Sacramento, residents of Alkali Flat, and pedestrians along protected view corridors would generally have high concern regarding the scenic quality in the proposed project area. Receptors considered most sensitive to development include people who travel along the nearby protected view corridor, local residents, and recreational users. People and uses within protected view corridors are considered sensitive because large numbers of individuals use these routes, which have been identified as areas of outstanding scenic quality. The designated protected view corridor along 7th Street would fall into this category. Local residents are considered sensitive due to the duration of their exposure to change, their familiarity with the existing landscape, and their ability to detect change. Consequently, residents of the Alkali Flat neighborhood would be considered highly sensitive to visual change, although their view of the proposed project site is limited by various buildings west of the neighborhood. Scenic quality also generally carries importance for recreational users who enjoy activities such as bicycling, hiking, picnicking, and water-related uses, such as fishing and boating. The Sacramento River is a heavily used recreational area, and people who visit the area would be considered sensitive receptors.

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on visual resources, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below.

Impact VIS-1: Potential for temporary visual effects caused by construction activities

Phase 1—Track Relocation

Construction of the track work, utility relocations, and new platforms and passenger connections in Phase 1 of the project would introduce considerable heavy equipment and associated vehicles into the viewshed for a temporary period. Viewer groups in the project area and vicinity are accustomed to seeing construction activities due to the previous and ongoing projects in the area; their sensitivity to such effects would overall be moderate. There are few residences within direct view of the Phase 1 activities. Employees of neighboring businesses and public buildings would likely be focused on their work activities and their sensitivity to construction activity effects would be low. Roadway user views of the proposed project site are limited and available for only a short amount of time at normal roadway speeds. Levees block much of the view of the project site from recreationists on the river and trail systems. Overall, effects on all viewer groups would be minimal because of the limited views of the site and the temporary nature of construction. If nighttime construction is proposed, it would introduce high-intensity lighting to an area that presently has moderate streetlight-type lighting. The higher intensity light has the potential to distract travelers. Mitigation Measure VIS-1 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements
As with Phase 1 of the project, construction activities associated with Phase 2 of the project, including relocation of the LRT station and tracks, constructing new passenger connections and amenities, relocating and restriping bus births and parking, would require some heavy equipment use and add light or glare. However, effects on all viewer groups would be minimal because of the limited views of the site and the temporary nature of construction. If nighttime construction is proposed, it would introduce high-intensity lighting to an area that presently has moderate streetlight-type lighting. The higher intensity light has the potential to distract travelers. Mitigation Measure VIS-1 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1
Construction of the project in future Phase 3 would create temporary changes related to views to and from the proposed project area. The new concourse would be constructed along with the mixed-use structures, pedestrian bridges, and associated improvements. As with Phases 1 and 2 of the project, construction activities would require heavy equipment use and add light or glare but the effects on all viewer groups would be minimal because of the limited views of the site and the temporary nature of construction. If nighttime construction is proposed, it would introduce high-intensity lighting to an area that presently has moderate streetlight-type lighting. The higher intensity light has the potential to distract travelers. Mitigation Measure VIS-1 would minimize this effect.

Alternative 2
Construction of the project in future Phase 3 under Alternative 2 would create similar temporary changes related to views to and from the proposed project area as Alternative 1. Moving the Depot under Alternative 2 would likely require use of more construction equipment and vehicles and the construction period would likely be extended compared to Alternative 1, intensifying the impact. Mitigation Measure VIS-1 would minimize this effect.

No Build Alternative
Under the No-Build Alternative, no phases of the proposed project would be constructed and therefore there would be no potential for temporary project-related changes to the visual character or setting during construction.

Impact VIS-2: Permanent changes to the existing visual character or quality of the site and its surroundings

Phase 1—Track Relocation
Relocating the existing tracks, installing or relocating buried utilities, constructing tunnel connections, and constructing new platforms to replace the existing platforms in Phase 1 of the

project would not introduce new elements into the project site that would substantially change the visual character of the project site or surroundings.

Phase 2—Sacramento Valley Station Improvements

Repaving and reconfiguring existing parking and bus berths and relocating the existing LRT station in Phase 2 of the project would not introduce new elements into the project site that would substantially change the visual character of the project site or surroundings. The street furniture, shading, and landscaping and lighting that would occur in Phase 2 would introduce some new elements to the landscape that would enhance the existing passenger connections.

Future Phase 3—Intermodal Improvements

Alternative 1

Implementation of future Phase 3 of the project would result in permanent visual changes would occur with respect to views of the proposed project area. However, the design and landscape aesthetic of the new project components in future Phase 3 would be designed to enhance and be consistent with the existing visual environment and would also create a sense of being more connected to neighboring areas. For example, the 4th Street pedestrian link to the Depot would connect existing and future downtown employees to the retail and cultural core via the K Street Mall. This link would have retail continuity and streetscape amenities that would make it a pleasing pedestrian environment. The RSP development guidelines stipulate that buildings would be designed in keeping with local architecture to maintain the area's visual continuity. The use of building materials and colors similar to those found in nearby buildings would help the new construction to blend with the local surroundings. This would be a beneficial effect.

In future Phase 3 of the project, the addition of open space areas, landscape and streetscape improvements, and other aesthetics treatments consistent with the development standards in the RSP would improve the visual quality of the overall project area and vicinity. All future development on the project site, including expansion of the intermodal facility and related components in future Phase 3, would be guided by and would be required to be in conformance with the General Development Standards of the proposed Specific Plan, which would result in new buildings with common architectural design and that would be compatible in scale, mass, and density.

Alternative 2

Although moving the Depot would present a somewhat larger change in the existing visual characteristics, the effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1.

No-Build Alternative

Under the No-Build Alternative, no phases of the proposed project would be constructed and there would be no project-related change in the existing visual character of the site or its surroundings.

Impact VIS-3: Potential for a new source of substantial light or glare that would affect daytime or nighttime views in the area

Phase 1—Track Relocation

The project components that would be constructed in Phase 1, such as the service and passenger connections would have associated new lighting; however, these new light sources would not constitute substantial new sources of light or glare. Lighting type and placement will ensure that the effects of security and other outdoor lighting are minimized on adjacent uses and do not create spillover effects. Any new exterior lighting would be in conformance with the City's Municipal Code.

Phase 2—Sacramento Valley Station Improvements

The project components that would be constructed in Phase 2, such as the new lighting that would be installed with the enhanced passenger connections, would not create substantial new sources of light or glare. Lighting type and placement will ensure that the effects of security and other outdoor lighting are minimized on adjacent uses and do not create spillover effects. Any new landscape illumination and exterior lighting would be in conformance with the City's Municipal Code.

Future Phase 3—Intermodal Improvements

Alternative 1

Future Phase 2 could include new light sources associated with the new terminal building, new plazas, passenger information areas, and similar facilities. This would increase the amount of ambient light radiating into the night sky from the site. Viewers in the area are presently subject to nighttime light from the surrounding cityscape, and additional light would not significantly affect views of the night sky. Lighting type and placement will ensure that the effects of security and other outdoor lighting are minimized on adjacent uses and do not create spillover effects. Any new exterior lighting would be in conformance with the City's Municipal Code. Mitigation Measures VIS-2 and VIS-3 would minimize this effect.

Alternative 2

The effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1.

No-Build Alternative

Under the No-Build Alternative, no phases of the proposed project would be constructed. The existing Depot would remain under its existing uses and would not be moved or expanded. The No-Build Alternative would not create any new project-related sources of light and glare.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure VIS-1: Limit construction to daylight hours or shield nighttime lighting.

When possible, construction activities scheduled to occur after 6:00 p.m. or on weekends will not continue past daylight hours (which vary according to season). If construction must occur after daylight hours, the City will require the contractor to prepare a lighting plan that demonstrates to the extent feasible that project lighting and vehicle lights from construction will not increase ambient nighttime lighting conditions for residential properties by more than 0.5-foot candles, the recommended level of illumination for a walkway along a residential roadside. Designs for shields and directional lighting will be included in this plan. Shields and directional lighting will be used to minimize the distance at which light emanating from the proposed action is visible and to mitigate the effects of glare.

Mitigation Measure VIS-2: Construct walls with low-sheen and non-reflective surface materials.

Consistent with the RSP development guidelines, highly reflective mirrored glass walls shall not be used as a primary building material (no more than 35 percent) for building facades adjacent to major roadways. Instead, low emission (Low-E) glass shall be used in order to reduce the reflective qualities of the building, while maintaining energy efficiency.

Mitigation Measure VIS-3: Apply minimum lighting standards.

Consistent with the RSP development guidelines, light structures for surface parking areas, vehicular access ways, and walkways shall not exceed a height of 25 feet. Monument lighting and night-lit signage is prohibited on building facades that face existing residential neighborhoods.

2.1.4 Cultural Resources

Affected Environment

The following cultural resources studies have been conducted for the proposed project:

- *Archaeological Survey Report for the Sacramento Intermodal Transportation Facility, City of Sacramento, Sacramento County, California* (ICF Jones & Stokes 2008d).
- *Historic Property Survey Report for the Sacramento Intermodal Transportation Facility, City of Sacramento, Sacramento County, California* (ICF Jones & Stokes 2008c).
- *Historic Resources Evaluation Report for the Sacramento Intermodal Transportation Facility, City of Sacramento, Sacramento County, California* (ICF Jones & Stokes 2008e).
- *First Supplemental Archaeological Survey Report for the Sacramento Intermodal Transportation Facility, City of Sacramento, Sacramento County, California* (ICF Jones & Stokes 2008f).
- *First Supplemental Historic Property Survey Report for the Sacramento Intermodal Transportation Facility, City of Sacramento, Sacramento County, California* (ICF Jones & Stokes 2008g).
- *Sacramento Intermodal Transportation Facility, Phase 1 and 2 Finding of Effect* (ICF Jones & Stokes 2008h, draft in SHPO review).

Approach and Methodology

The effort to identify cultural resources potentially affected by the project consisted of establishment of the project's area of potential effects (APE), a records search at the North Central Information Center (NCIC) California Historical Resources Information System (CHRIS) and literature review, correspondence with Native Americans and historical societies, an archaeological reconnaissance of the direct APE, and an architectural inventory of the APE. The results of these efforts are described below.

Due to the long lead-time for implementation of Phase 3 of the proposed Undertaking, FHWA determined that a project-specific Programmatic Agreement (SITF PA) is the most appropriate tool for ensuring compliance with Section 106. Preparation of a project-specific PA is consistent with the provisions of 36 CFR 800.13(a)(1), which permit federal agencies to use PAs as a tool to plan for the treatment of archaeological resources and other historic properties subsequent to Section 106 consultation. FHWA, FTA, FRA, SHPO, Caltrans, and the City are currently negotiating the terms of a SITF PA. Execution of the SITF PA would constitute compliance with Section 106.

The following four resources are considered eligible for listing under Section 106: the Central Shops Historic District-Casting Shop Kilns, the 6th Street levee, the Sacramento Southern Pacific Railroad (SSPRR) Station District, and the Southern Pacific Railroad Company's Sacramento Depot.

Area of Potential Effects

The APE for this undertaking was established by Caltrans in accordance with Stipulations VI.B.7 and VIII.A of the 2004 Section 106 Programmatic Agreement (see Appendix C, "Regulatory Setting," for further information). The direct APE follows the maximum possible area of direct impact resulting from the proposed project, including all new construction, easements, and staging areas. Areas of direct impact (ADIs) for Phases 1 and 2 of the project also were delineated. The vertical limits of the ADIs are described below.

- Phase 1 track removal: After the new tracks are operational, the existing tracks would be removed, soil remediation would be undertaken and the ground level would be restored to grade. Excavation would not exceed 3 feet below present grade.
- Phase 1 new track construction: Freight tracks would be installed on the outer north and south sides of the alignment, while the passenger tracks would be located within the interior of the track corridor. Excavation to prepare surface for trackage would not exceed 3 feet below present grade.
- Central Tunnel construction: Excavation would be 20 feet below present grade within a 40-foot-wide corridor. The tunnel would extend from its northern terminus at the Central Shops to a point 323 feet south, at which point excavation would not exceed 3 feet in depth to accommodate the Depot–tunnel pedestrian walkway. Construction of the Central Tunnel would be accomplished via open-cut excavation with 1:1 side slopes, necessitating an initial swath of excavation measuring 80 feet wide that tapers with increasing depth. An 80-foot-wide excavation corridor is assumed for the tunnel. The finished tunnel would be lighted and concrete-lined. The concrete walls would be 2.25 feet thick and the ceiling 4.5 feet thick at its apex. (Figure 1-3c.)
- Central Tunnel Ramp construction: The Central Tunnel ramp connecting the tunnel to the depot would commence at the bottom elevation of the Central Tunnel and slope upward at a 1:12 slope ratio on a southerly bearing. Excavation would be cut-and-cover. At a point 200 feet south of the tunnel's southern terminus, the ramp would reach the ground surface, connecting with a walking path to the Depot. The walking path would require no more than 3 feet of vertical excavation to build. An 80-foot wide excavation corridor is assumed for the Central Tunnel Ramp. The finished ramp would be lighted and concrete-lined. (Figure 1-3d.)
- West Pedestrian/Bicycle Tunnel and West Service Tunnel: These tunnels would be excavated to a maximum depth of 25 feet below present grade within corridors not to exceed 80 feet in width to allow for 1:1 side slopes. Excavation would be cut-and-cover. The West Service Tunnel would be located on the west side of the site and a pedestrian/bicycle tunnel (West Pedestrian/Bicycle) would be located under I-5 and the I-5 ramp and would extend under the proposed railroad right-of-way). The finished tunnel would be lighted and concrete-lined. The concrete walls would be 2 feet thick and the arched ceiling 3 feet thick at its apex. (Figure 1-3e.)
- Buried utilities: Excavation to remove or install buried utilities would not exceed 3 feet below current grade. Utilities buried deeper than 3 feet would be abandoned in place.
- Phase 2 typical roadway construction depth: 3.5 feet below present grade.
- Phase 2 typical light rail construction depth: 4.0 feet below present grade.

- Phase 2 typical surface parking lot construction depth: 3.5 feet below present grade.
- Phase 2 tunnel extension construction depth: 16.9–22.0 feet below present grade. The tunnel extension would connect the southern terminus of the Phase 1 pedestrian tunnel to the existing passenger tunnels at the Station. An 80-foot wide corridor is assumed.

The vertical extent of excavation has not yet been determined for future Phase 3 of the project.

In consideration of the Tier 1 analysis for the two proposed build alternatives for future Phase 3, the APE for potential indirect effects (e.g., visual, auditory, and vibratory) includes parcels adjacent to the direct APE that contain buildings, structures, or objects of sufficient age to warrant evaluation for listing in the NRHP. Because the year for construction of future Phase 3 has not been determined, the project HRER considers any building constructed in or prior to 1972.

Records Search and Literature Review

On May 28, 2008, a records search was conducted at the NCIC of the CHRIS. The records search was conducted for the APE as well as a 0.25-mile buffer surrounding the APE. A 0.25-mile radius was adequate to characterize the range of cultural resources likely to occur in the APE, as it covers the entire Railyards, of which the APE is a part. In addition, bibliographic sources were consulted and are outlined in the technical reports (ICF Jones & Stokes 2008c, 2008d, 2008e). The records search and literature review indicates that 40 previous cultural resources studies have been conducted in the present APE. No archaeological resources have been recorded in the APE as a result of previous pedestrian surveys. Tremaine and Nelson (2006), through electromagnetic surveying, map research, presence/absence testing, and construction monitoring, recorded the following four archaeological resources in the direct APE:

- 7th Street Historic-Era Refuse Deposit (P-34-1563/CA-SAC-942-H);
- 7th Street Railroad Trestle Bents (P-34-1562/CA-SAC-941-H);
- 6th Street Levee (P-34-1561/CA-SAC-940-H); and
- Chinese artifacts, railroad refuse, and prehistoric isolate (West Sutter Lake-01).

In 2006, Tremaine & Associates documented a Nisenan archaeological site adjacent to the direct APE. Given the shallow depth (3 feet) of excavation involved in the track relocation relative to the depth of fill in the area of the direct APE where Nisenan site was discovered, however, this archaeological site does not extend into the ADIs for Phase 1 and 2 of the project.

In total, previous cultural resource studies resulted in the recordation of several cultural resources in the APE, the majority of which are historic buildings, structures, and archaeological sites (see the discussion under "Identified Cultural Resources" below). In addition, the following five prehistoric archaeological sites have been recorded in downtown Sacramento: CA-SAC-34, CA-SAC-36, CA-SAC-37, CA-SAC-38, and an unnumbered site (Gross 2000:Figure 4; Walker et al. 2006:G-6). The proximity of the project APE to the latter discovery and CA-SAC-38 is consequential to an assessment of the prehistoric archaeological sensitivity of the APE. Based on the depth of the two sites, the APE has the potential to contain prehistoric archaeological deposits below the historic-period fill covering the area. High historic archaeological sensitivity for the APE is indicated, with numerous historic archaeological deposits and building foundations having been identified in the Railyards. Historic archaeological deposits and structural remnants in the Railyards are located beneath and within historic fill layers (Gross 2004; Jones & Stokes 2007a, 2007b; Tremaine and Nelson 2006; Kim Tremaine pers. comm.).

Native American Contacts

On May 23, 2008, a search of the Sacred Lands File and a list of local Native American contacts were requested via electronic mail from the Native American Heritage Commission (NAHC). A second, facsimile request was sent on August 19, 2008, because no response had been received by that time. The NAHC responded by facsimile on August 20, 2008, indicating that the Sacred Lands File contained no record of Native American cultural resources in the APE. The NAHC also provided contact information for four individuals and one organization to correspond with concerning cultural resources. On August 27, 2008, letters were mailed, with project maps, describing the proposed project and requesting direct communication about cultural resources information and project concerns. Follow-up telephone calls were placed on September 24, 2008. No responses to the letters or phone calls have been received to date.

Historical Society Contacts

On July 28, 2008, letters were sent requesting any information on potential cultural resources in the APE to the California State Railroad Museum, Center for California Studies, Sacramento Old City Association, Sacramento Archives and Museum Collection Center, and Sacramento County Historical Society. These letters provided a brief description of the project and included a map of the APE. No responses to the letters or telephone calls have been received to date.

Archaeological Survey

A qualified archaeologist conducted an archaeological reconnaissance of the direct APE on June 27, 2008. The purpose of the archaeological reconnaissance was to determine whether mapped, historic railroad features were in fact present at ground surface or exposed in recent cut banks and other exposures, recognizing that the bulk of archaeological resources in the direct APE would not be discernible through surface survey. The archaeologist conducted a general walkover of the direct APE, beginning in the south-central portion of the APE and working northeastward to the eastern extremity of the direct APE, and then westward just south of the Central Shops to the western end of the direct APE. Observations were made of the ground surface and compared with aerial photographs, copies of historic lithographs, and an overlay of Sanborn map data (Sanborn-Perris Map Co. 1895; Sanborn Map Co. 1915, 1951, 1952) onto the draft APE map. The recorded locations of P-34-1563, P-34-1562, P-34-1561, and CA-SAC-478-H were also examined to determine whether any surface manifestations of these resources were present in the direct APE or made visible through recent ground disturbance.

The direct APE was found to be largely denuded, except for a few stands of trees in the western and eastern portions of the APE and occasional ruderal vegetation. Much shallow grading was evident throughout the direct APE. As part of the soil remediation effort underway north of the Central Shops, a 10-foot-tall sediment stockpile was placed for approximately 3 or 4 weeks prior to the reconnaissance. The presence of the sediment stockpile prevented a determination of whether the following mapped historic features were visible on the ground surface: the Office and Store Room, Print Shop, and Signal Service structure (Sanborn Map Co. 1915:Sheet 6).

Architectural Survey

Qualified architectural historians surveyed and recorded built-environment cultural resources in the APE according to guidelines established in Caltrans' 2001 draft *Environmental Handbook, Volume 2*: *Cultural Resources* (California Department of Transportation 2001 [as amended]). The built-environment survey was conducted on May 22 and June 4, 2008, although access to the north of the Central Shops was limited due to ongoing soil remediation. Formal recordation of appropriate properties was made via digital photographs and handwritten notes.

Identified Cultural Resources

The cultural resource studies listed earlier in this section resulted in the identification of four historic properties. These properties are listed in Table 2.1.4-1 and described briefly below.

Table 2.1.4-1. Historic Properties Identified in the Project APE

Name	Street Address/ Assessor's Parcel Number	Year Built	NRHP Status	Description
Sacramento Southern Pacific Railroad Station District	401 I Street	1925	Eligible (2008)	The Sacramento Southern Pacific Railroad Station District consists of the historic train depot and three contributing elements.
Sacramento Southern Pacific Railroad Station Depot	401 I Street	1925	Individually listed under Criteria A and C (1975); contributing element of SPRR Station district (2008)	Core building of the SPRR Station District
6th Street Levee (P-34-1561/CA-SAC-940-H)	401 I Street 002-0010-051	1852–1880	Eligible (2008)	Historic levee
Central Shops Historic District	401 I Street/ 002-0010-051	1868–1937	Eligible (2001)	The Central Shops Historic District comprises a core of 10 historic structures and encompasses a number of structural ruins.

In addition to the historic properties listed in Table 2.1.4-1, a number of non-eligible properties were identified in the APE (Table 2.1.4-2). Section 106 of the NHPA only concerns *historic properties*, those cultural resources listed or eligible for listing on the NRHP; the non-eligible properties, therefore, are not discussed further in this EA. For additional details, see ICF Jones & Stokes (2008c, 2008d, 2008e).

Table 2.1.4-2. Non-Eligible Properties in the APE

Name	Street Address/ Assessor's Parcel Number	Year Built	NRHP Status
Bridge 24C0364L	N/A	1936	Not eligible[1]
Bridge 24C0006	N/A	1937	Not eligible[1]
Southern Pacific Tunnel/Pedestrian Subway	002-0010-047	1925–1926	Not eligible; non-contributing element of the Station District[2]
7th Street Railroad Trestle Bents (P-34-1562/CA-SAC-941-H)	401 I Street 002-0010-051	1867	Not eligible[2]

Note: N/A = not applicable. 1. NRHP status based on California Department of Transportation (2008). 2. NRHP status determined by consensus among Caltrans and SHPO (Exhibit 3.1).

Sacramento Southern Pacific Railroad Station's Depot (P-34-1004)

Entirely contained within the NRHP-eligible Sacramento SPRR Station District (see immediately below), the 1975-listed NRHP portion of the historic resources is composed of two buildings, the Depot and adjacent Railway Express Agency (REA) Building. The Sacramento Depot NRHP Property was listed under Criteria A and C for its association with events in local, state, and national history and as two structures of distinguished architectural merit. A more detailed consideration of the Depot's significance is presented below in conjunction with the description of the entire district.

Sacramento Southern Pacific Railroad Station District (P-34-1004)

The District includes Assessor Parcels 002-0010-044 and 002-0010-042, and is bound at the north by the property immediately north of the UPPR right of way, at the east by 5th Street, at the south by I Street, and at the west by Interstate 5. The Sacramento SPRR Station District (District) embodies a consistent association of two buildings and associated structures that are vital to its character and role as a prominent railway transportation hub. The District includes the Southern Pacific Railroad Company's Sacramento Depot building at 401 I Street, the Platform Amenity structures at 401 I Street, the Union Pacific Railroad (UPRR) Tracks immediately north of the Depot passenger platform, and the Railway Express Agency (REA) Building, which is located directly east of the Depot building at 431 I Street—these are all contributing elements to the District. There is one non-contributing feature to the District: the SPRR Tunnel/Pedestrian Subway. The SPRR District appears eligible for the National Register of Historic Places (NRHP) under Criteria A and C for its association with events in local and national history, and for its distinguished works of architecture. Its significance is at the local level (Sacramento) during the period 1925–1929. Concerning Criterion C, character-defining features of the Depot itself are its brick and terracotta construction, modified rectangle, flat and truncated hipped tile roof sections; a projecting center block with five identical multiple entrances in tall round-arched recesses each with iron canopy, surmounted by corbelled cornice and lettered frieze, full-height pilasters, and iron platform canopies; and interior features marble fittings and murals by artist John A. MacQuarrie. The building possesses elements of the Renaissance Revival architectural style (National Park Service 2008). The constellation of contributing elements, which retain their original locations and materials, contribute importantly to the recognition of the district as a historically substantive transportation hub and therefore to the district's ability to convey its significance under Criterion A. (ICF Jones & Stokes 2008e.) SHPO concurred with these findings concerning the eligibility status of contributing and non-contributing elements in a letter dated February 2, 2009 (see Exhibit 3-1 in Chapter 4, "Comments and Coordination").

Electrical upgrades and replacements proposed in Phase 2 of the project would affect the Depot, a contributing structure of the Sacramento SPRR Station District. The upgrades would affect an electrical room and subpanels, conduits, and distribution systems throughout the station to supply localized power and lighting. Rewiring and other safety and fire upgrades would be made to historic fixtures in the main waiting room as well as in ancillary spaces with pendant lights. Missing glass globes on pendant lights will be replaced with glass globes approximating an original example on the second floor. The electrical room and electrical boxes that are original to the building, even though all or most will be out of service after improvements, will be kept *in situ*. The proposed improvements will meet the 10 standards for rehabilitation found in the Secretary of Interior's *Standards for the Treatment of Historic Properties* at 36 CFR 68.3(b). Pursuant to Stipulation I.B.2 of the draft SITF PA, the City will submit plans to a Caltrans Principal Architectural Historian at the 30%, 60%, and 90% design stages to ensure that the proposed improvements meet the Secretary of the Interior's *Standards*. In so doing, it is anticipated that Caltrans a determination of No Adverse Effect with Standard Conditions pursuant to the 2004 Section 106 PA will result.

6th Street Levee (P-34-1561/CA-SAC-940-H)

P-34-1561 consists of a portion of the 6th Street Levee, exposed in cross-section in the sidewalls of a 3-foot-wide backhoe trench (Tremaine and Nelson 2006:23, Figure 14) revealing the multistage construction of the 6th Street Levee. The 6th Street Levee as appears to be eligible for listing in the NRHP under criteria A and C (ICF Jones & Stokes 2008a:4, 2008b:27). Eligibility under Criterion A is recommended due to the levee's association with Sacramento's' decades-long struggle with flooding caused by the Sacramento and American rivers. Eligibility under Criterion C is recommended as P-34-1562 represents three distinct episodes of levee construction, documenting the city residents' technological response to different and repeated flood events. The historic integrity of P-34-1561 was judged to be excellent, although the crown of the levee had been truncated by recent grading activities. The recorded portion of P-34-1562 was destroyed during construction of the 7th Street Extension Project (Tremaine and Nelson 2006:23; Tremaine et al. 2002). SHPO concurred with the determination of eligibility in a letter dated February 2, 2009 (see Exhibit 3-1 in Chapter 4, "Comments and Coordination").

On June 27, 2008, a qualified archaeologist surveyed the recorded location of P-34-1561 and a 100-foot radius from the site location. The purpose of this examination was to seek any subsurface exposures that would facilitate a determination of whether P-34-1561 extends west or east of its recorded location. No such exposures or surface artifacts were identified. (ICF Jones & Stokes 2008d, 2008e.)

Central Shops Historic District

The Central Shops Historic District consists of 10 of the core buildings that formed the Central and Southern Pacific Railroad companies' Railyards, where all aspects of train manufacture, repair, and maintenance occurred from 1868 to 1937. In 2001, FHWA submitted to SHPO an HPSR for the 7th Street Extension Project (Ziesing 2001), and received concurrence with the determination that the Central Shops Historic District is eligible for inclusion in the NRHP under Criteria A and C because the "structures have strong associations with the development of the Central Pacific Railroad Company (CPRR), the creators of the western portion of the historic transcontinental railroad. The structures were also central features in what became one of the largest manufacturing complexes in the western United States" (Mellon 2001:2). Historic

Environment Consultants (1998:14) adds that the "Sacramento Shops were highly notable for their construction and maintenance of all types of railroad cars and locomotives."

The following are the core features of the Central Shops Historic District.

- Paint Shop/Car Shop 3/Electric Shop
- Locomotive Wheel Shop Annex/Car Machine Shop
- Locomotive Wheel Shop/Car Shop
- Three-story Water Closet
- Blacksmith Shop/Repair Gang, Machine Shop
- Locomotive Machine Shop/Erecting Shop
- Turntable
- Transfer Table #2
- Locomotive Truck Shop: Fabrication Shop/Tank & Boiler Shop

According to Historic Environment Consultants (1998:11), approximately 85 buildings and structures were present at the Railyards ca. 1998, 39 of which were built during the period of significance (1868–1937); only 10 buildings and structures were considered contributors to the historic district. In addition, the district includes as a contributor the Water Tower, situated northeast of the Central Shops (ICF Jones & Stokes 2008e:4). These Central Shops buildings convey the large-scale, self-contained locomotive construction, repair, and maintenance operations of the Central and Southern Pacific railroads, but do not contain (as noted by Historic Environment Consultants 1998) all of the functions requisite to the purpose of the Central Shops Historic District. Historic archaeological resources in the Railyards, including structural remnants lacking superstructure, would be potential contributors to the historic district if they amplify the district's ability to convey its manner of functioning during its period of significance, particularly where a given archaeological resource represents a specific function not presently represented among the 10-building Central Shops Historic District's contributors (Criterion C). Similarly, such archaeological resources would also contribute to the district's significance under Criterion A. If information-bearing archaeological deposits are present at these structures, then the individual features may also be eligible under Criterion D. An historic properties treatment plan explaining what would constitute important information is being prepared as a stipulation of the Programmatic Agreement proposed for this undertaking. One archaeological contributor has been identified and evaluated under criteria A and C. The contributor is:

- **Casting Shop Kilns:** Eight brick-lined kilns were identified in the APE for the proposed project, four below ground surface in the profile of an excavated pit and four in plan at the ground surface immediately east of the kilns identified in profile. The location of the kilns corresponds to the SPRR Casting Shop, an ancillary structure to the SPRR Foundry (Sanborn Map Co. 1951:Sheet 5; Southern Pacific 1920). A number of ceramic forms or patterns are located in the pit stratigraphically beneath the kilns; these artifacts were used in the manufacture of numerous railroad parts, such as springs. (ICF Jones & Stokes 2008d, 2008e.)

> The Casting Shop Kilns are the only known surviving feature of the Foundry complex responsible for the manufacture of parts essential to operations of the Central Shops. Moreover, the Casting Shop Kilns enabled the Central Shops to maintain self-sufficiency in manufacturing. The Casting Shop Kilns are the sole representative of parts-casting operations extant at the Railyards. They also provide a unique representation of casting operations in that four of the kilns are preserved intact (visible in plan at the ground surface), whereas four have been truncated, permitting observation of the kilns and their contents in cross-section. The Casting Shop Kilns retain most aspects of integrity: location, workmanship, materials (comprised), setting (compromised), feeling (compromised), association (compromised), and design. The Casting Shop Kilns appear to contribute to the significance of the Central Shops District under Criteria A and C for its representation of a critical function of the district. (ICF Jones & Stokes 2008e.) SHPO concurred with the determination of eligibility in a letter dated February 2, 2009 (see Exhibit 3-1 in Chapter 4, "Comments and Coordination").

According to previous discussions between Caltrans, FHWA, and the City's consultants, Caltrans will establish an Environmentally Sensitive Area (ESA) around the Casting Shop Kilns to avoid any potential effect caused by Phases 1 and/or 2 of the undertaking (determination of No Adverse Effect with Standard Conditions pursuant to the 2004 Section 106 PA). The City or its agent will install the ESA and monitor it during construction to ensure that the ESA is not breached. The project engineer and the City or its agent will ensure that the environmentally sensitive area is clearly described and identified on project plans and in any specific actions outlining ground-disturbing or any other construction activities. The project engineer or construction contractor will install temporary plastic fencing along the boundaries of the environmentally sensitive area prior to initiating any work or staging materials or equipment. The project engineer or construction contractor will coordinate fence installation with the City or its agent. This ESA would lead to a no adverse effect for this resource.

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on cultural resources, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below. Adverse effects occur when those characteristics of a historic property that qualify it for inclusion in the NRHP are altered in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association (36 CFR 800.5[a]). The potential adverse effects are as follows:

- physical destruction of or damage to all or part of the property;
- alteration of the property that is not consistent with the Secretary of the Interior's standards for the treatment of historic properties (36 CFR 68);
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- neglect of a property that causes its deterioration;
- transfer, lease, or sale of the property out of federal ownership or control.

Impact CUL-1: Damage to portions of the 6th Street Levee resulting from removal of existing tracks

Phase 1—Track Relocation

Under Phase 1 of the proposed project, removal of the current UPRR tracks (which overlay the alignment of the 6th Street Levee) would involve excavation to 3 feet below the present ground surface. Because the levee is buried by only 1.5–2.0 feet of fill, excavation to 3.0 feet below ground surface could result in damage to the 6th Street Levee. As much as 1,100 feet of the 6th Street Levee could be damaged as a result of track removal, as this is the approximate length of levee that coincides with the track relocation ADI (Tremaine et al. 2002). Because the 6th Street Levee is considered a historic property, damage to this cultural resource would be an adverse effect under Section 106.

Phase 2—Sacramento Valley Station Improvements

Phase 2 of the project would not require excavation over the 6th Street Levee and there would be no adverse effect under Section 106.

Future Phase 3—Intermodal Improvements

Phase 3 of the project would not require excavation over the 6th Street Levee under either Alternative 1 or 2 and there would be no adverse effect under Section 106.

No-Build Alternative

The No-Build Alternative would not result in project-related effects on the 6th Street Levee, because current UPRR operations do not require excavation over the 6th Street Levee.

Impact CUL-2: Physical disruption of the Sacramento SPRR Station District or Depot

The proposed undertaking would result in an adverse effect on the Sacramento SPRR Station District by virtue of the destruction of half of the district's contributing elements (see *Phase 1—Track Relocation* below).

Phase 1—Track Relocation

The Sacramento SPRR Station District is composed of five buildings and structures, including the Depot building. The district is connected by historic operations and by associated elements. Under Phase 1, the platform amenities (specifically the passenger platforms, canopies, and railings) and UPRR tracks would be demolished. The loss of nearly half of the district's contributing elements would disrupt the historic functional layout of the district, a character-defining feature of the district. The effect on the District would be adverse under Section 106. No work on the Depot building would occur and thus there would be no adverse effect on the Sacramento Depot under Section 106.

Phase 2—Sacramento Valley Station Improvements

Phase 2 would result in changes to the setting of the district, such as the construction of a parking lot north of the UPRR right-of-way and the reconfiguration of bus berths and light rail facilities. The historic setting of the district is not a character-defining feature of this historic property (ICF Jones & Stokes 2008h). Rather, the spatial and functional relationships of the district contributors are character-defining features, which are not altered by construction of the parking lot and other activities requisite for reconfiguration of Sacramento Valley Station. Furthermore, the historic setting of the district already is compromised by modern transportation facilities and the demolition of buildings and structures associated with the Central Shops District immediately north of the UPRR tracks. The setting that Phase 2 would alter does not resemble the setting during the Station District's period of significance. Therefore, the facilities proposed under Phase 2 would not result in an adverse effect on the Sacramento SPRR Station District under Section 106.

The electrical upgrades and replacements that will occur in Phase 2 will meet the 10 standards for rehabilitation found in the Secretary of Interior's Standards for the Treatment of Historic Properties at 36 CFR 68.3(b), resulting in no adverse effect on the Sacramento Depot under Section 106.

Future Phase 3—Intermodal Improvements

<u>*Alternative 1*</u>

The setting and association of the Sacramento SPRR Station District will be altered by the introduction of several new buildings and facilities, including the transit/joint development parking, the new terminal extension, and other structures. These buildings will largely block the view between the Central Shops Historic District and the Depot and REA buildings. The placement in this alternative of the new construction behind the Depot and REA buildings, as viewed from I Street, creates less substantial impairment to the NRHP-eligibility than if new construction were to be built between the Depot and REA buildings and I Street. Based on the conceptual level design for this phase, the effect on the District would likely be considered adverse under Section 106.

Based on the conceptual level design for this phase, no work would occur that would breach the structure of the Depot building. Therefore, the effect on the Sacramento Depot under this Phase 3 alternative would likely not be considered adverse under Section 106.

<u>*Alternative 2*</u>

Relocation of the Depot building approximately 300 feet north of its original and current location would remove the axial structure of the Sacramento SPRR Station District. The break in historic association would be most apparent in the removal of the contributing element to the District from direct relationship and alignment with the REA building and from the viewshed of I Street. Relocation of the Depot building would substantially impair the NRHP eligibility of both the District and Depot. The move would leave the original basement space behind and may lead to the loss of additional original building material. In addition, this alternative would surround the historic Depot with new construction, effectively removing it from view outside the new transportation facility itself. The historic setting also will be altered by the introduction of new buildings and facilities. These changes would constitute an adverse effect on both the SPRR Station District and Depot under Section 106.

No-Build Alternative

Under the No-Build Alternative, the Depot would not be relocated or renovated, no new terminal facilities would be constructed, and the track, platforms, and canopies would not be replaced. Therefore, there would be no project-related effect on the Sacramento SPRR Station District.

Impact CUL-3: Damage to the Central Shops Historic District

The proposed undertaking would result in vibration damage and the introduction of built-environment features foreign to the historic setting of the Central Shops Historic District, as described below. These effects, for reasons discussed in subsequent paragraphs, would not be considered adverse under Section 106.

Phase 1—Track Relocation

As described in section 2.2.7, "Noise and Vibration," passenger and freight trains on tracks relocated adjacent to the southern boundary of the Central Shops Historic District under Phase 1 of the proposed undertaking would result in vibration in decibels (VdB) of 91 VdB (PBS&J/EIP 2007b). The estimated degree of vibration for trains running on the relocated tracks is just above the 90 VdB or 0.12 PPV (in/sec) threshold for historic buildings that may be considered fragile. The FTA (Federal Transit Administration 2006) has developed criteria pertaining to vibration impacts on "buildings extremely susceptible to vibration damage" (e.g., fragile older buildings). Vibration from use of the tracks following Phase 1 relocation, therefore, could damage the Central Shops Historic District buildings (ICF Jones & Stokes 2008d). However, there are several noise minimization measures that are under consideration to help reduce the vibration level to at least below the 90VdB threshold (see Section 2.2-57 to 59). With implementation of design measures to reduce vibration, the effect on the Central Shops District would not be considered be adverse under Section 106.

Parallel to the southern border of the Central Shops District, the new heavy rail and passenger rail lines and new passenger platforms are expected to be of no substantial impairment. The new rail would be located approximately in the former location of historic rail service. Also in Phase 1 of the proposed undertaking, construction of the Central Tunnel will include surface access elements such as stairs, an elevator, and perhaps an escalator at the north end of the proposed tunnel. These above ground structures will add non-contributing features within the southern boundary of the Central Shops Historic District. The setting has, however, little of its built environment, historic-period elements remaining and the new elements are on a small scale in relation to the contributing structures of the Central Shops Historic District to the north. Therefore, this impact does not constitute an adverse effect on the Central Shops District under Section 106.

Phase 2—Sacramento Valley Station Improvements

No changes are proposed at the Central Shops under Phase 2 of the project and there would be no adverse effect under Section 106.

Future Phase 3—Intermodal Improvements

Alternative 1

Damage to the Central Shops Historic Districts would occur at the southern margin of the district where the conceptual design indicates a pedestrian bridge could connect to the platforms and Railyards northern terminus. No buildings or structures will be altered or damaged but the proposed pedestrian bridge would create a visual intrusion into a portion of the district. The new passenger tunnel that would connect to grade in the adjacent Railyards development with stairs, an elevator, and possibly a future escalator would not pose an adverse effect where it surfaces by the Central Shops Historic District. Because the area between the platform amenities constructed in Phase 1 lacks historical integrity, the effect on the Central Shops District of these general access and ADA compliant project components would not be considered adverse under Section 106

Alternative 2

Alternative 2 entails moving the Depot to a location near the Central Shops Historic District, in addition to construction of joint development projects and a railroad terminal extension between the relocated Depot and the Central Shops. Construction of the joint development and the terminal extension would be similar to the effect of construction of the pedestrian bridge connection described above for Alternative 1. Construction of a railroad terminal extension is broadly compatible with the historic layout of the Railyards with respect to uses surrounding the Central Shops. Based on the conceptual level design, the impact on the Central Shops District would not be considered adverse under Section 106.

No-Build Alternative

The No-Build Alternative would not result in project-related effects on the Central Shops Historic District.

Impact CUL-4: Damage to or destruction of as-yet-unidentified archaeological resources as a result of ground-disturbing activities

Phase 1—Track Relocation

Historic maps of the CPRR/SPRR Railyards, including the Central Shops Historic District, indicate that numerous buildings and structures were present in the direct APE of the proposed project (Elliott 1890; Sanborn-Perris Map Co. 1895; Sanborn Map Co. 1915, 1951, 1952; Southern Pacific 1920). Although most of these historic buildings and structures are not evident on the present ground surface, remnants of some are likely buried under fill, based on archaeological discoveries made in the Railyards during soil remediation (Gross 2004; Jones & Stokes 2007a, 2007b). In addition, several mapped buildings and structures comprise or include hollow-filled features such as privy pits (outhouses), which were commonly used as trash receptacles in historic times. As such, privy pits provide information on the consumer habits and living standards of those persons responsible for depositing the artifacts. Depending upon the specific resource and its location in the APE, archaeological deposits have the potential to yield important information concerning the life ways of three groups of people presently underrepresented in local historical and historical archaeological literature: the overseas Chinese community in Sacramento, residents of the historic Slater’s Addition neighborhood, and Central Shops workers. Each of these groups are either the subject of concerted research with significant data gaps (overseas Chinese) or are almost completely unrepresented in historical and historical archaeological literature. In addition, the discards resulting from operation of the Central Shops is expected to provide insights into manufacturing, reuse, and disposal practices of possibly the largest single industrial complex west of the Mississippi River (the CPRR/SPRR Central Shops) through the 19th and much of the 20th centuries. Finally, portions of the direct APE may contain Native American archaeological sites below the ground surface (Walker et al. 2007:G-53–G-63). Damage to or destruction of archaeological resources with the information potential outlined immediately above would likely constitute an adverse effect under Section 106. However, as stated earlier in this section, the project-specific PA stipulates the preparation of a historic properties treatment plan, which defines the tasks necessary to identify, determine the eligibility of, and treat archaeological properties in the APE.

Phase 2—Sacramento Valley Station Improvements

Construction activities for an extension between the pedestrian tunnel constructed in Phase 1 and the existing passenger tunnels at the Station are proposed in archaeologically sensitive areas under Phase 2. For the purposes of this analysis, therefore, Phase 2 construction effects would be identical to those described under Phase 1 above.

Future Phase 3—Intermodal Improvements

Alternative 1

Specific archaeological resources that could be affected by implementation of future Phase 3 of the project have not been identified because construction details for future Phase 3 have not been developed to the specificity required to locate the resources on the ground that could be affected. Construction activities are proposed in archaeologically sensitive areas under Alternative 1 of future Phase 3 and therefore the effects are likely to be similar to those described for Phase 1.

Alternative 2

The effects under Alternative 2 in future Phase 3 of the project would be similar to those described for Alternative 1.

No-Build Alternative

The No-Build Alternative would not result in project-related effects on as-yet-unidentified archaeological resources because there would be no project-related excavation within archaeologically sensitive areas.

Avoidance and Minimization Measures

As stated earlier in this section, the resolution of any adverse effects will be determined in accordance with the stipulations of the SITF PA and in consultation among Caltrans, FHWA, and SHPO. Because the SITF PA is presently in preparation, no mitigation measures are discussed in this portion of the EA.

2.2 Physical Environment

2.2.1 Hydrology and Flooding

Affected Environment

The following sources were consulted in preparation of this section:

- Central Valley Regional Water Quality Control Board (CVRWQCB): *Basin Plan for the Sacramento and San Joaquin Valleys* – 1998, revised in 2007;
- DWR: "California's Groundwater – Bulletin 118 – 2006"; and
- *Railyards Specific Plan and EIR* – August 2007

Surface Water Hydrology

There are two major surface water bodies located near the proposed project site, the Sacramento River and the American River. The two rivers converge at Discovery Park, located north of the project site. The Sacramento River is located west of the project site, and the American River is located to the north. Average annual rainfall in this region is 14 inches near the Sacramento River and 20 inches near the base of the Central Sierra Nevada Mountains (California Department of Water Resources 2004).

The Sacramento River is approximately 327 miles long and covers approximately 27,210 square miles (Central Valley Regional Water Quality Control Board 2007). The Sacramento River watershed is bounded by the Sierra Mountains to the east, the Coastal Range to the west, the Trinity Mountains and Cascade Range to the north, and the Sacramento–San Joaquin Delta to the south. The principal tributaries to the Sacramento River are the Pit, Feather, Yuba, Bear, and American rivers, with the smaller tributaries being the Cottonwood, Stony, Cache, and Putah creeks (Central Valley Regional Water Quality Control Board 2007). The Sacramento River headwaters are near the California–Oregon border, and the river's terminus is at the I Street Bridge where it becomes the Sacramento–San Joaquin Delta (California Water Code 12220).

The American River headwaters are near the crest of the Central Sierra Nevada Mountains, near Lake Tahoe in Placer County, below which the river splits into three forks—the north, the middle, and the south. The confluence of the north and middle forks is above Folsom Lake Reservoir, before the north and middle forks join with the south fork at Folsom Lake. Below Folsom Lake Dam, there is a secondary reservoir, Nimbus Lake. After the river is released from Nimbus Dam, it is considered the Lower American River. The Lower American River flows for approximately 24 river miles before its confluence with the Sacramento River at Discovery Park. In total, the American River drains approximately 1,875 square miles and roughly 2.7 million acre-feet annually.

The water levels of the Sacramento and American Rivers vary depending on the time of year, location, diversions, and releases from dams upriver. Both water bodies have Clean Water Act

303(d) List impairments and beneficial uses designated by the Central Valley RWQCB's Basin Plan, which are discussed more in section 2.2.2, "Water Quality and Stormwater Runoff."

Groundwater Hydrology

The proposed project overlies the South American Subbasin, which is part of the larger Sacramento Valley Groundwater Basin. The basin is bounded by the Central Sierra Nevada on the east, the Sacramento River on the west, the American River to the north, and the Cosumnes and Mokelumne Rivers on the south (California Department of Water Resources 2004). The groundwater aquifers are of multiple types, ranging from unconfined to semi-confined layers. The type of aquifer depends on the depth, below ground surface, from which the water is drawn. The unconfined aquifer is closer to the surface, while the semi-confined aquifer is deeper. The groundwater levels within the RSP project area, which encompass the project site, range from 14–33 feet beneath the ground surface (bgs) (PBS&J/EIP 2007a). Within the City of Sacramento, groundwater levels fluctuate but generally range at 10 feet bgs (California Department of Water Resources 2004). The quality and impairments of the groundwater in the project area are discussed further in section 2.2.2, "Water Quality and Stormwater Runoff."

Flooding

Major storm events can produce high flows in the Sacramento and the American River systems. Flood controls along the rivers consist of comprehensive measures including levees, dams, and bypass channels. The proposed project site is located in Zone 'X', defined by FEMA as "Areas outside of the 500-year floodplain" (Federal Emergency Management Agency 2005). This assessment was made in 2005, after structural improvements to the levees were performed. A Letter of Map Revision was sent out by FEMA on February 18, 2005, to re-assign the level of flooding within the City of Sacramento. This letter removed the project site and surrounding areas from within the 100-year flood zone to outside the 500-year flood zone. Figure 2.2.1-1 below shows the level of flood hazards for the project site and vicinity.

In addition to the levees that provide flood protection, dams located upstream of the project site provide a level of flood protection by controlling the release of water from the reservoirs. Dams can fail for a variety of reasons and the effects are often catastrophic. If Folsom Dam were to fail, or be over-topped during a rain event, the proposed project site likely would experience extensive flooding because it is located in the dam inundation zone.

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project related to hydrology and flooding, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below.

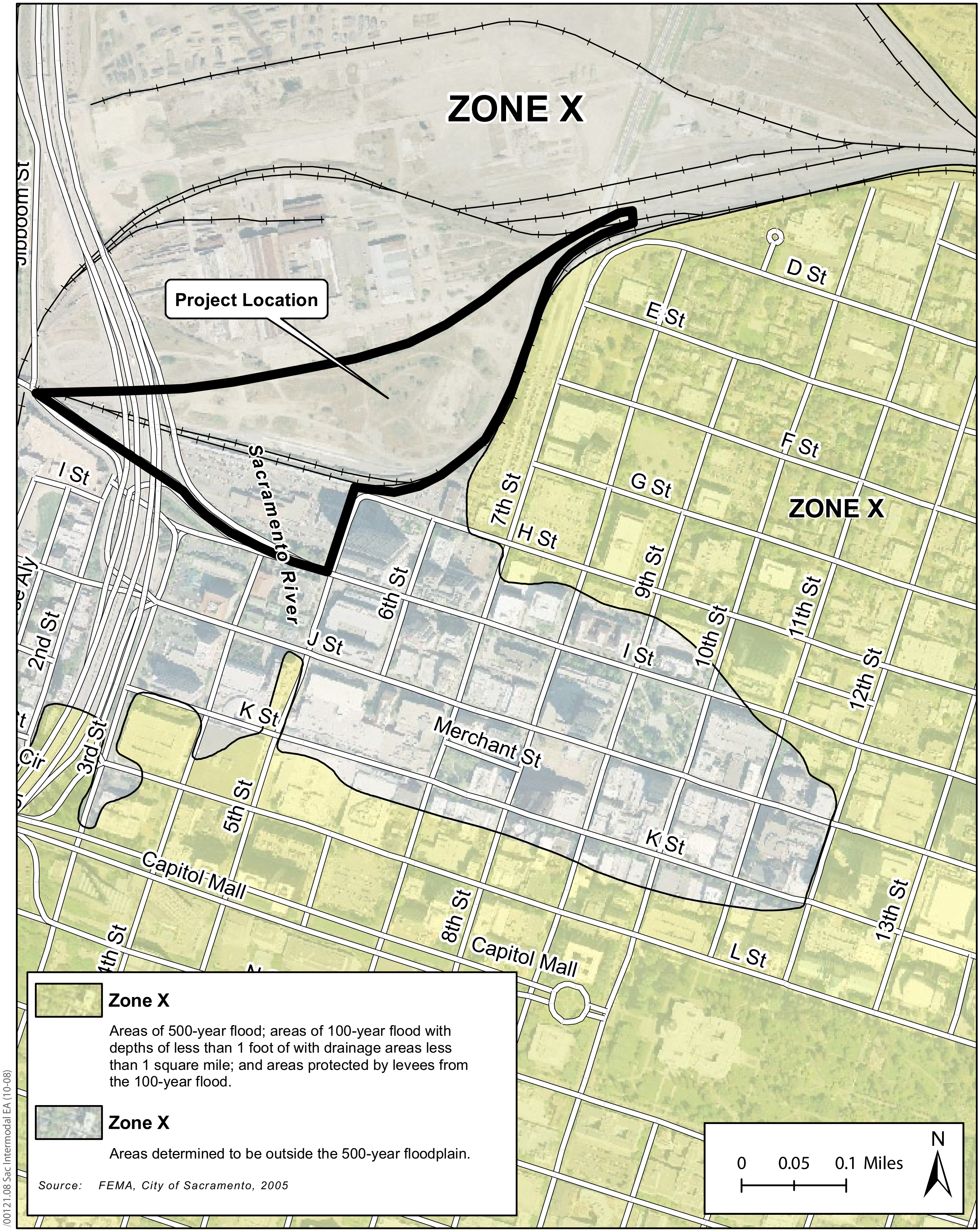

Figure 2.2.1-1
Floodplain Map

Impact HYD-1: Alteration of existing drainage patterns that would cause flooding either on site or off site

Phase 1—Track Relocation

Construction of Phase 1 of the project, including track work, new utility installation, and new platforms and tunnel connection, would change existing drainage patterns on the project site. However, the drainage infrastructure will be designed in compliance with both City and County standards so that flooding does not occur either on site or off site (see section 2.2.2, "Water Quality and Stormwater Runoff.") Compliance with City and County design standards will ensure that the runoff from the proposed project site will not exceed the Combined Sewer and Stormwater (CSS) current capacities or the capacity of any newly constructed separate stormwater drainage system and cause flooding either on site or off site.

Phase 2—Sacramento Valley Station Improvements

Construction of Phase 2 of the project, including LRT station relocation, parking and site access reconfigurations, and new transit ways, would change existing drainage patterns on the project site. However, construction activities in Phase 2 of the project would be subject to the same City and County design standards as Phase 1 and therefore runoff from the project site during Phase 2 would not exceed the stormwater drainage system capacities or cause flooding on or off site.

Future Phase 3—Intermodal Improvements

Alternative 1

Construction of future Phase 3 of the project, including Depot renovation and expansion, a new terminal building, upgraded parking and bicycle facilities, passenger drop off areas, and new plazas and pedestrian connections, would change existing drainage patterns on the project site, contributing to effects of other development in the CSS service area and in the watershed area outside the City limits. However, construction activities in future Phase 3 of the project would be subject to the same City and County design standards as Phases 1 and 2 and therefore runoff from the project site during Phase 3 would not exceed the stormwater drainage system capacities or cause flooding on or off site.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effects on the existing drainage patterns would be the same as with Alternative 1. The drainage infrastructure for this alternative would also be compliant with the City and County of Sacramento requirements.

No-Build Alternative

Under the No-Build Alternative, none of the project phases would be constructed and there would be no project-related potential to change existing drainage patterns, resulting in exceedances of stormwater drainage system capacities or causing flood on or off site.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are proposed.

2.2.2 Water Quality and Stormwater Runoff

Affected Environment

The following technical reports were consulted in preparation of this section:

- The Water Quality Control Plan (Basin Plan), Central Valley Regional Water Quality Control Board (2007);
- 1988 City of Sacramento General Plan, amended 2004;
- California Department of Water Resources Groundwater Bulletin 118, Update 2004; and
- Railyards Specific Plan (December 2007).

Project Setting

The proposed project site lies within the Sacramento Valley between two rivers, the Sacramento River and the American River, within a small watershed known as the Specific Plan Drainage Shed, which is defined as roughly 244 acres confined by an old levee on North B Street, along the northern border, the main line railroad track near the southern and eastern border, and the Sacramento River Levee on the west. The site is drained by a combination of methods. Some of the surface drainage follows the natural courses, some of it percolates into the soil, and the rest of it collects into the stormwater drainage pipes that discharge to both the 3rd and 7th Streets CSS pipelines (PBS&J 2007a, 2007b).

The proposed project currently has buildings, parking areas, and other structures but is mostly unpaved and on a relatively flat surface. The total amount of disturbed area for the project is estimated to be approximately 33 acres. The drainage flows currently conveyed in the existing pipelines are estimated to be 10 cubic-feet per second (PBS&J 2007a). All piping connecting to the CSS are conveyed to the Sacramento Regional Wastewater Treatment Plant (SRWTP). The SRWTP treats storm water and the sanitary sewage prior to discharging into the Sacramento River.

The City operates and maintains the CSS system, including all pipes, drain inlets, and detention basins. The CSS system can transport up to 60 million gallons a day of wastewater to the SRCSD.

Surface Water Quality

The Sacramento River is the major water body that receives runoff from the proposed project. The water in the Sacramento River and American River is designated as having multiple beneficial uses, including, municipal, agricultural, and recreational uses (Central Valley Regional Water Quality Control Board 2007).

The Sacramento and the American Rivers have been placed on the CWA Section 303(d) list of impaired water bodies. The American River is listed from Nimbus Dam to the confluence with the Sacramento River as being impaired for mercury and unknown toxicity, and the Sacramento River, from Knights Landing to the Sacramento–San Joaquin Delta, is listed as being impaired for mercury and unknown toxicity (Central Valley Regional Water Quality Control Board 2006).

Mercury sources are thought to be a result of the historical gold mining activities in the California.

Groundwater Quality

The proposed project overlies the Sacramento Valley Basin, North American Subbasin (California Department of Water Resources 2003). The groundwater is typically a sodium magnesium bicarbonate type near the confluence of the Sacramento and the American Rivers (California Department of Water Resources 2004). There are impairments within the project area from historical activities that affected the groundwater aquifer. Known disposal activities of the waste include burial, use of unlined ponds for waste containment, and the discharge of effluent wastes to the combined sewer system (CSS) via an unlined ditch.

Remediation activities to restore the groundwater quality back to baseline conditions have occurred over the previous several years. There are a number of groundwater monitoring wells and extraction wells in the Specific Plan area. Seventy out of 113 wells installed have been abandoned to accommodate soil remediation activities. Table 2.2.2-1 contains a list of contaminates within the project area that are likely to occur.

Table 2.2.2-1. Groundwater Contaminates Located in the Railyards Specific Plan Area

Constituents	EPA Analytical method	Max Practical Quantitation limit (µg/l)
Volatile Organic Compounds (VOC's)	8021 or 8260B	0.50
Total Petroleum hydrocarbons	8015M	50
Semi-Volatile Compounds	8270	0.5-10
1,4- Dioxane	8270C	0.50
Total lead	7421	1.0
Total Arsenic	7060	
Total Cadmium	6010	0.20
Total Nickel	6010	1.0

Source: City of Sacramento 2007a.

Urban Runoff Quality

The quality of urban runoff depends on a number of factors including, but not limited to, the amount of rainfall, duration between events, known uses of the area, geography, and the amount of impervious surfaces. In the Sacramento area, rain events vary depending on the time of year and location. The northern portion of the city can experience heavy rainfall while the southern portions of the city experience little or no rainfall during the same event. Generally, Sacramento experiences its wet season from October through April, while the dry season is from May through September. During the dry season, pollutants can build up and accumulate until the first rain event, when they get washed away with the runoff. This is regarded as the 'first flush,' when pollutant levels are higher in the initial wet weather runoff.

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project related to water quality, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below.

Impact WQ-1: Potential to violate water quality standards, waste discharge requirements, or substantially degrade water quality

Phase 1—Track Relocation

Construction activities associated with Phase 1 of the project would result in earth-disturbing actions such as grading, clearing, and grubbing of the vegetation from the ground surface. In addition, excavating, trenching for the wet and dry utilities, and other related actions could create the potential for contaminates to enter nearby waterways. Limited dewatering could be necessary for construction of underground facilities. Groundwater in the project area is known to contain contaminates that could violate the permit requirements if discharged into stormwater drainage system before being treated to acceptable levels. Additionally, the heavy machinery used for these construction activities require the use of fuel, oils, lubricants, and other materials that, if not properly handled, could leak and enter the waterways. Through stormwater runoff, the sediments and contaminates could be transported into the stormwater drainage system and eventually to the Sacramento River.

The City will require the contractor to comply with the requirements outlined in the SQIP and to notify SRCSD of potential additional pollutants during construction and additional flows (which will be determined after the more detailed drainage study is performed) after construction. Before construction activities, the contractor will obtain coverage under the NPDES general Construction Permit. The NPDES General Construction Plan would require an Erosion and Sedimentation Control Plan (ESCP), as well as a Spill Prevention and Countermeasure Control Plan (SPCCP). As a standard, the SQIP requires that the contractor use control devices to reduce the amount of pollutants by utilizing the best available technologies that are economically feasible. Also, the best pollutant controls available are also required to reduce the amount of pollutants before entering a waterway or drainage system. BMPs may consist of a wide variety of items to control point and non-point source pollutants from entering the waterways. They may include, but are not limited to, the following:

- drainage facilities or detention basins to settle out pollutants and sediments;
- vegetative cover, straw waddles, hydroseeding, inlet protection devices, silt/sediment basins traps, check dams, and/or silt fences; and
- street sweeping and vacuuming, coarse-rock construction site entrances, graveled staging areas, and tire washes of vehicles and equipment before leaving construction site.

The City will require that the contractor provide an ESCP, file an NOI with the Central Valley RWQCB, and prepare a SWPPP before construction activities begin. Throughout the construction phases, the City will inspect the BMPs in place, along with other pollutant control measures, to ensure that they are properly installed and maintained. If an issue is found with any of the pollutant control devices by the City inspector, the City will notify the contractors so that immediate actions would be implemented to ensure continued compliance with the permit. The correction measures or actions requested by the City inspector, if needed, are the responsibility of, and should be performed by, the contractor.

The City will also require that the contractors have a SPCCP in place to minimize the chance of spills of hazardous materials or other toxic substances. The SPCCP will show where the construction equipment will be fueled and serviced, as well as where the hazardous materials will be stored. The SQWPPP will include on a map the locations of refueling areas, storage sheds housing the hazardous materials, and the staging areas for the equipment. Other City or County requirements will be included with in the SWPPP, as needed.

A federal reportable spill quantity of petroleum products, as defined by 40 CFR 10, is any oil spill that:

- violates applicable water quality standards;
- causes a film or sheen on, or discoloration of, the water surface; or
- causes a sludge or emulsion to be deposited beneath the surface of the water.

If a spill were to occur, the contractor would be responsible for notifying the City and for contacting the appropriate cleanup crews to ensure the spill would be properly handled. A written description would be sent to the Central Valley RWQCB and the California Department of Toxic Substances by the contractor. The letter would include a description of the material spilled, the amount, where the spill occurred, the date the spill happened, a description of why it occurred, and the steps taken to clean it up and to prevent and control future occurrences.

Phase 2—Sacramento Valley Station Improvements
Earth-disturbing construction activities in Phase 2 of the project, such as LRT station relocation, construction of parking, and new passenger connections, could result in transport of sediments and contaminates into the stormwater drainage system. However, construction activities in Phase 2 of the project would be subject to the same requirements for complying with the NPDES and City's SQIP as Phase 1 and therefore would not violate water quality standards or waste discharge requirements.

Future Phase 3—Intermodal Improvements

Alternative 1
Earth-disturbing construction activities in future Phase 3 of the project, including Depot renovation and expansion, construction of a new terminal building, upgraded parking and bicycle facilities, passenger drop off areas, and new plazas and pedestrian connections, could result in transport of sediments and contaminants into the CSS, contributing to effects of other construction in the CSS service area and in the watershed area outside the City limits. However, construction activities in future Phase 3 of the project would be subject to compliance with the NPDES permit and City's SQIP in order to connect to the CSS system and therefore would not violate water quality standards or waste discharge requirements.

Alternative 2
Construction of Alternative 2 in future Phase 3 of the project would have similar effects to Alternative 1. Similar amounts of impervious areas, building sizes, and drainage improvements would be constructed to serve either of the alternatives. As with Alternative 1, construction activities in future Phase 3 of the project would be subject to compliance with the NPDES permit

and City's SQIP in order to connect to the CSS system and therefore would not violate water quality standards or waste discharge requirements.

No-Build Alternative
Under the No-Build Alternative, the track would not be relocated, the Depot would not be moved or expanded, and the LRT station would not be reconfigured. The current stormwater discharges from the project area would remain the same and there would be no project-related effect on water quality or stormwater runoff.

Impact WQ-2: Substantial alteration of existing drainage patterns in a manner that would result in increasing the amount of pollution to the CSS

Phase 1—Track Relocation
Construction of Phase 1 of the project, including track work, new platforms and tunnel connections, and new service and pedestrian walkways would change the ground surface at the project site, reducing unpaved surface and thereby potentially reducing the amount of sediment currently entering the CSS. This is considered a beneficial effect of the proposed project on the CSS system. Compliance with the SQIP and NPDES permit will ensure that construction of Phase 1 of the project will not alter existing drainage patterns in a manner that increases the amount of pollution to the combined sewer and stormwater services.

Phase 2—Sacramento Valley Station Improvements
Construction of Phase 2 of the project, including LRT station relocation, parking and site access enhancements, and new transit ways, would change the ground surface at the project site, adding landscaping and reducing unpaved surface and thereby potentially reducing the amount of sediment currently entering the CSS. This is considered a beneficial effect of the proposed project on the CSS system. Compliance with the SQIP and NPDES permit will ensure that construction of Phase 2 of the project will not alter existing drainage patterns in a manner that increases the amount of pollution to the combined sewer and stormwater services.

Future Phase 3—Intermodal Improvements

Alternative 1
Construction of future Phase 3 of the project, including Depot renovation and expansion, a new terminal building, upgraded parking and bicycle facilities, passenger drop off areas, and new plazas and pedestrian connections, would change the ground surface at the project site, adding landscaping and reducing unpaved surface and thereby potentially reducing the amount of sediment currently entering the CSS. Compliance with the SQIP and NPDES permit will ensure that construction of future Phase 3 of the project will not alter existing drainage patterns in a manner that increases the amount of pollution to the combined sewer and stormwater services, contributing to effects of other development in the CSS service area and in the watershed area outside the City limits.

Alternative 2
Construction of Alternative 2 in future Phase 3 would change the location of the Depot; however, application of the standards for the pollution controls from the City's SQIP and the NPDES permit would still be required. Compliance with the SQIP and NPDES permit will ensure that

construction of future Phase 3 of the project will not alter existing drainage patterns in a manner that increases the amount of pollution to the combined sewer and stormwater services, contributing to effects of other development in the CSS service area and in the watershed area outside the City limits.

No-Build Alternative
Under the No-Build Alternative, no structures would be built and no infrastructure changes would occur in the project area as a result of the project. There would be no project-related effects on the City's CSS system.

Impact WQ-3: Creation or contribution of runoff water that would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff that could affect the beneficial uses of the Sacramento or American Rivers

Phase 1—Track Relocation
Construction of Phase 1 of the project, including track work, new platforms and tunnel connections, and new service and pedestrian walkways would increase the amount of impervious surfaces on the project site, thereby increasing the amount of stormwater entering the CSS and the Sacramento River compared to existing conditions. This source water is not anticipated to increase any pollutant loads to the Sacramento River because the landscaping will likely be beneficial in reducing the amount of pollutants entering the drainage conveyances, compared to current conditions.

Phase 2—Sacramento Valley Station Improvements
Construction of Phase 2 of the project, including LRT station relocation, parking and site access enhancements, and new transit ways, would change the ground surface at the project site, adding landscaping and increasing the amount of impervious surface on the project site, thereby increasing the amount of stormwater entering the CSS and the Sacramento River compared to existing conditions. This source water is not anticipated to increase any pollutant loads to the Sacramento River because the landscaping will likely be beneficial in reducing the amount of pollutants entering the drainage conveyances, compared to current conditions.

Future Phase 3—Intermodal Improvements

Alternative 1
Construction of future Phase 3 of the project, including Depot renovation and expansion, a new terminal building, upgraded parking and bicycle facilities, passenger drop off areas, and new plazas and pedestrian connections, would change the ground surface at the project site, adding landscaping and reducing unpaved surface and increasing the amount of impervious surface on the project site, thereby increasing the amount of stormwater entering the CSS and the Sacramento River. Although the contribution of the project to stormwater entering the CSS in future Phase 3 is not anticipated to be substantial, combined with other development anticipated in the project area, the CSS could be overwhelmed. Mitigation Measure WQ-1 would minimize this effect.

<u>*Alternative 2*</u>
Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effects would be similar to Alternative 1. Although the contribution of the project to stormwater entering the CSS in future Phase 3 is not anticipated to be substantial, combined with other development anticipated in the project area, the CSS could be overwhelmed. Mitigation Measure WQ-1 would minimize this effect.

No-Build Alternative
Under the No-Build Alternative, no structures would be built and no infrastructure changes would occur in the project area as a result of the project. Thus, there would be no project-related effects on the City's CSS system.

Impact WQ-4: Reduction in the amount of groundwater recharge potential from the impervious surfaces

Phase 1—Track Relocation
Construction of new platforms and tunnel connections would result in an increase in the amount of impervious surfaces in Phase 1 of the project. However, this increase in impervious surface is unlikely to block groundwater recharge because the groundwater aquifer in the project area is recharged by deep percolation of water from the Sacramento and American Rivers. Additionally, the project area is not considered to be a primary groundwater recharge area (City of Sacramento 2007a).

Phase 2—Sacramento Valley Station Improvements
Construction of Phase 2 of the project, including LRT station relocation, parking and site access enhancements, and new transit ways, would change the ground surface at the project site, adding landscaping and increasing the amount of impervious surface on the project site; However, any increase in the amount of impervious surfaces in Phase 2 of the project is unlikely to block groundwater recharge because the groundwater aquifer in the project area is recharged by deep percolation of water from the Sacramento and American Rivers. Additionally, the project area is not considered to be a primary groundwater recharge area (City of Sacramento 2007a).

Future Phase 3—Intermodal Improvements

<u>*Alternative 1*</u>
Construction of future Phase 3 of the project, including Depot renovation and expansion, a new terminal building, upgraded parking and bicycle facilities, passenger drop off areas, and new plazas and pedestrian connections, would change the ground surface at the project site, adding landscaping and reducing unpaved surface and thereby increasing the amount of impervious surface on the project site. The increase in the amount of impervious surfaces in future Phase 3 of the project is unlikely to block groundwater recharge because the groundwater aquifer in the project area is recharged by deep percolation of water from the Sacramento and American Rivers. Additionally, the project area is not considered to be a primary groundwater recharge area (City of Sacramento 2007a).

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect would be similar to Alternative 1. The increase in the amount of impervious surfaces is unlikely to block groundwater recharge because the groundwater aquifer in the project area is recharged by deep percolation of water from the Sacramento and American Rivers and the project area is not considered to be a primary groundwater recharge area.

No-Build Alternative

Under the No-Build Alternative, there would be no change in the amount of impervious surfaces as a result of the project. Thus, there would be no project-related effects on the groundwater recharge potential.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure WQ-1: Implement the requirements of the Drainage Master Plan in accordance with Sacramento City/County Drainage Manual

The City will prepare a drainage study for future Phase 3 of the project to determine the amount of runoff generated. The drainage study shall conform to the requirements outlined by the City and County. Based on the drainage study, the contractors or engineers would develop a Drainage Master Plan for the project that would include BMPs to keep pollutants from entering the CSS. These BMPs can be found in the *Storm Water Quality Design Manual* for Sacramento and the South Placer regions. The Drainage Master Plan will also include improvements for the proposed project to eliminate the risk of overwhelming the CSS.

2.2.3 Geology/Soils/Seismic/Topography

Affected Environment

A preliminary geologic report and assessment, Geotechnical Report: Sacramento Intermodal Transit Facility and Track Relocation, describing the local geologic conditions and their potential to affect the project site, was prepared for the proposed project by ENGEO in May 2008. The geotechnical report focuses on the identification of specific geologic hazards (unstable slopes and landslide deposits, faulting and seismicity, expansive soil, and collapsible/compressible or corrosive soil) that may affect the construction planned for the project site (ENGEO 2008).

Site Geology and Subsurface Conditions

The project site is located in the Great Valley geomorphic province. According to a field reconnaissance of the project, the existing topography at the project site is generally flat across the northern and central portions of the property and slopes gently toward a depression at the southern portion of the property. Elevations range from approximately 30 to 32 feet above mean sea level (MSL) in the northeast and west portions of the property, to 27 to 28 feet MSL in the east and southeast portions of the property, respectively. The proposed project site is underlain by Cenozoic alluvium and sediments and sedimentary rocks of the Mesozoic and early Cenozoic-aged Great Valley Sequence, which generally consists of sandstone shale and conglomerates. According to subsurface soil explorations, the project site generally contains a mixture of silt, sand, and gravel fill ranging from 1- to 9-feet thick in the majority of the site. Beneath the fill, the site appears to contain dense to loose silty sand and stiff to soft silt and sandy silt at a depth of approximately 20 to 35 feet below the existing grade. A 27- to 59-foot thick layer of very dense to loose sand and silty sand is found beneath the sand and silt. According to the geotechnical report, the site's gravel layer is likely to contain cobbles, and in some areas gravel was observed interbedded with sand and silty sand. Deeper soil explorations also indicate that the gravel is underlain by very stiff silty clay and clayey silt, as well as by very dense to dense sand and silty sand to the maximum depth explored. (ENGEO 2008) Due to the age of roads and buildings in the area—all generally more than 50 years old—undocumented fill may be encountered during project construction.

Lateral Spreading

Lateral spreading is a seismic failure that results in overlying soil mass moving toward a free face or down a gentle slope. Due to the site's topography, which is relatively flat with minor changes in elevation, lateral spreading is unlikely to occur.

Ground Rupture and Ground Shaking

California is a seismically active region as a result of the San Andreas Fault and other branching fault systems. According to the geotechnical report, the project site is not located in an area of California that is subject to fault rupturing and ground shaking, as there are no known active faults crossing the property (ENGEO 2008). In addition, conformance with the current building code recommendations would minimize hazards that would occur as a result of seismic ground shaking.

Soil Compression and Soil Corrosion

According to the geotechnical report, the soil at the project site consists of some layers of soft sandy silt and clayey silt soil deposits, and is found to be compressible and subject to primary and secondary consolidation settlements from aerial fill and other structural loads. In addition, some of the soil samplings tested low for resistivity, indicating that it is moderately to highly corrosive to buried metal. (ENGEO 2008)

Liquefaction and Settlement

Liquefaction is the phenomenon in which saturated granular sediments temporarily lose their shear strength during periods of strong earthquake-induced ground shaking. According to the geotechnical report, variable strata of loose to dense silty sand and clean sand were encountered at depths of 25 to 65 feet below the ground surface. The geotechnical report also indicates that sand and silty sand layers, approximately 5 to 20 feet thick, may be potentially liquefiable. Due to the relatively flat site topography, surface disruption in the form of liquefaction induced settlement is most likely to occur. (ENGEO 2008)

Groundwater

Groundwater was encountered at depths of 26 to 31 feet at some portions of the project site, and shallower groundwater was encountered in one area. In addition, there is the potential for groundwater to rise in relation to the close proximity of the Sacramento and American Rivers.

Environmental Consequences

Approach and Methodology

A geologic and seismic profile of the proposed project was prepared based on analysis conducted by ENGEO (2008) and documented in the geotechnical report. The analysis presented in the geotechnical report is based on a review of existing data, field reviews, field methods such as exploratory drilling, sampling, and laboratory testing of soil/rock properties. The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project related to geology, soils, seismicity, and topography, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below.

Impact GEO-1: Potential seismic hazards due to ground rupture, ground shaking, and liquefaction and settlement

Phase 1—Track Relocation

According to the geotechnical report, the project site is not located in an area of California subject to fault rupturing, as there are no known active faults crossing the property (ENGEO 2008). In the City of Sacramento, commercial, institutional, and large residential buildings and all associated infrastructure are required to reduce the exposure to potentially damaging ground shaking through seismic resistant design, in conformance with Chapter 16, Structural Design Requirements, Division IV, Earthquake Design, of the California Building Code. Conformance to standard building codes and the recommendations of the site-specific geotechnical report would ensure that the track work, utility installation, and construction of new platforms and tunnel connections that would occur in Phase 1 of the project would not present an increased seismic hazard due to ground shaking. According to the geotechnical report, sand and silty sand layers up to approximately 5 to 20 feet thick may be potentially liquefiable and, while the non-liquefiable surface soil layer would provide significant capping effect and reduce the theoretical settlements, liquefaction-induced total and differential settlements on the order of 1 to 5 inches over the life of the project could occur. (ENGEO 2008) Mitigation Measures GEO-1 and GEO-2 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements

According to the geotechnical report, the project site is not located in an area of California subject to fault rupturing, as there are no known active faults crossing the property (ENGEO 2008). Conformance to standard building codes would ensure that the repaving, restriping and reconfiguring of bus, vehicle, and bike parking, relocation of LRT facilities, enhanced passenger connections, and upgrading of electrical systems that would occur in Phase 2 of the project area would not present an increased seismic hazard due to ground shaking. According to the geotechnical report, sand and silty sand layers up to approximately 5 to 20 feet thick may be potentially liquefiable and, while the non-liquefiable surface soil layer would provide significant capping effect and reduce the theoretical settlements, liquefaction-induced total and differential settlements on the order of 1 to 5 inches over the life of the project could occur. (ENGEO 2008) Mitigation Measures GEO-1 and GEO-2 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

According to the geotechnical report, the project site is not located in an area of California subject to fault rupturing and ground shaking, as there are no known active faults crossing the property (ENGEO 2008). Conformance to standard building codes and the recommendations of the site-specific geotechnical report would ensure that the Depot expansion, new terminal construction, pedestrian connections, and other development would not present an increased seismic hazard related to ground shaking in future Phase 3. According to the geotechnical report, sand and silty sand layers up to approximately 5 to 20 feet thick may be potentially liquefiable and, while the non-liquefiable surface soil layer would provide significant capping effect and reduce the theoretical settlements, liquefaction-induced total and differential settlements on the order of 1 to 5 inches over the life of the project could occur. (ENGEO 2008) Mitigation Measures GEO-1 and GEO-2 would minimize this effect.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the impact would be similar to Alternative 1. Conformance to standard building codes and the recommendations of the site-specific geotechnical report would ensure that the Depot relocation, new terminal construction, pedestrian connections, and other development would not present an increased seismic hazard related to ground shaking. Liquefaction-induced total and differential settlements on the order of 1 to 5 inches over the life of the project could occur and Mitigation Measures GEO-1 and GEO-2 would minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses and would not be restored, the tracks would remain in their current configuration, the platforms would not be expanded, and no upgraded Station facilities would be constructed. Because the existing Station facilities would not be upgraded to the current building code, the No-Build Alternative would be more likely to expose people on or in the vicinity of the site to seismic-related hazards.

Impact GEO-2: Potential seismic hazards due to soil compression, corrosion, erosion, and other geologic conditions

Phase 1—Track Relocation

According to the geotechnical report, some soil explorations encountered layers of soft sandy silt and clayey silt soil deposits between 5 and 30 feet in depth, which are compressible and subject to primary and secondary consolidation settlements from aerial fill and other structural loads. In addition, some of the silts tested low resistivity, indicating a potential for moderately to highly corrosive soil potential. (ENGEO 2008) Construction of Phase 1 of the project, including track work, new utility installation, and new platforms and tunnel connection, would require clearing, grubbing, and grading. To minimize and control the erosion of soils disturbed and exposed by these activities, best management practices (BMPs) would be implemented in compliance with NPDES permit requirements and the SWPPP. Mitigation Measures GEO-1 and GEO-2 would further minimize this effect.

Phase 2—Sacramento Valley Station Improvements

According to the geotechnical report, some soil explorations encountered layers of soft sandy silt and clayey silt soil deposits between 5 and 30 feet in depth, which are compressible and subject to primary and secondary consolidation settlements from aerial fill and other structural loads. In addition, some of the silts tested low resistivity, indicating a potential for moderately to highly corrosive soil potential (ENGEO 2008). Construction of Phase 2 of the project, including LRT station relocation, parking and site access enhancements, and new transit ways, would require some clearing, grubbing, and grading. To minimize and control the erosion of soils disturbed and exposed by these activities, best management practices (BMPs) would be implemented in compliance with NPDES permit requirements and the SWPPP. Mitigation Measures GEO-1 and GEO-2 would further minimize this effect.

Future Phase 3—Intermodal Improvements

<u>*Alternative 1*</u>

Substantial earthwork and ground disturbance activities due to the construction of several elements of the project in future Phase 3, such as depot expansion, new terminal construction, and other structural development could result in substantial soil erosion. These project components would be located on soils that have been determined in the geotechnical investigation to be subject to primary and secondary consolidation settlements from aerial fill and other structural loads, and have a potential for moderately to highly corrosive soil. To minimize and control the erosion of soils disturbed and exposed by clearing, grubbing, and grading activities, BMPs would be implemented in compliance with NPDES permit requirements and the SWPPP. Mitigation Measures GEO-1 and GEO-2 would further minimize this effect.

<u>*Alternative 2*</u>

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change, increasing the amount of earthwork and ground disturbance. To minimize and control the erosion of soils disturbed and exposed by clearing, grubbing, and grading activities, BMPs would be implemented in compliance with NPDES permit requirements and the SWPPP. Mitigation Measures GEO-1 and GEO-2 would further minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed. Because the project would not be constructed under this alternative, no project-related effects related to soil compression, corrosion, and erosion would occur. However, because the existing Station facilities would not be upgraded to the current building code, the No-Build Alternative would be more likely to subject existing structures to some structural damage and expose some people on or in the vicinity of the project to geologic hazards. This exposure would be minor.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure GEO-1: Implement the recommendations of the site-specific geotechnical investigation

Prior to the commencement of any earthwork for the proposed project, the City will implement the recommendations of the site-specific geotechnical investigation. The geotechnical investigation presents grading and design recommendations to address slope, channel-wall, and foundation instability; groundwater level and need for dewatering; erosion control; expansive soils; and differential settlement and the recommendations in the geotechnical report are reflected in final project design. Site-specific geotechnical investigation will provide recommendations for all the various structures and facilities that would be constructed in all phases of the project. The geotechnical investigation recommendations will be provided in an engineering report produced by a California Registered Civil Engineer (Geotechnical) or Engineering Geologist to the City's Development Services Department for review prior to project construction. The report must address and make recommendations on the following topics, as applicable to each phase of the project:

- Road, pavement, and parking area design
- Structural foundations, including retaining wall design (if applicable)
- Grading practices
- Erosion control
- Special problems discovered on-site, (i.e., shallow groundwater, expansive/unstable soils, corrosive characteristics, etc.)
- Slope stability, including excavation walls

Mitigation Measure GEO-2: Stabilize Historic Structures and Protect from Damage during Construction

To minimize the potential for effects of earthwork on historic buildings, such as the Central Shops and Depot, the City would implement the following measures:

a) To the extent feasible, the historic buildings shall be stabilized and reinforced prior to trenching or other construction activities adjacent to the buildings.

b) Take reasonable precautions to protect historic structures from damage, such as settlement, caused by excavation, trenching, dewatering, or other construction activities that could affect the integrity of the buildings or expose workers to physical hazards.

c) Reduce or eliminate potential ground settlement of the areas surrounding the historic buildings due dewatering, excavation, or adjacent construction. A pre-excavation settlement-damage survey shall be prepared that shall include, at a minimum, visual inspection of existing vulnerable structures for cracks and other settlement defects, and establishment of horizontal and vertical control points on the buildings. A monitoring program of surveying horizontal and vertical control points on structures and shoring shall be followed to determine the effects of dewatering, excavation, and construction on the particular building site. If it is determined by the engineer that the existing buildings could be subject to damage, work shall cease until appropriate remedies to prevent damage are identified.

2.2.4 Paleontology

Affected Environment

A preliminary geologic report and assessment of the local geologic conditions was prepared for the proposed project by ENGEO in May 2008 (ENGEO 2008).

The proposed project site is located in the Great Valley geomorphic province. The proposed project site is underlain by Cenozoic alluvium and sediments and sedimentary rocks of the Mesozoic and early Cenozoic-aged Great Valley Sequence, which generally consists of sandstone shale and conglomerates. According to subsurface soil explorations, the project site generally contains a mixture of silt, sand, and gravel fill ranging from 1 to 9 feet thick in the majority of the site.

Beneath the fill, the site appears to contain dense to loose silty sand and stiff to soft silt and sandy silt at a depth of approximately 20 to 35 feet below the existing grade. A 27- to 59-foot thick layer of very dense to loose sand and silty sand is found beneath the sand and silt. According to the Geotechnical Report, the site's gravel layer is likely to contain cobbles, and in some areas gravel was observed interbedded with sand and silty sand. Deeper soil explorations also indicate that the gravel is underlain by very stiff silty clay and clayey silt as well as very dense to dense sand and silty sand to the maximum depth of explored.

The surficial and underlying deposits appear to have no potential to contain paleontological resources. Test excavations indicated that deposits were uniform throughout (ENGEO 2008).

Environmental Consequences

<u>*Approach and Methodology*</u>

In evaluating a proposed project's potential to disturb or damage significant paleontological resources, it is important to keep two points in mind. First, most vertebrate fossils are rare and thus are considered important paleontological resources. Second, unlike archaeological sites, which are narrowly defined, paleontological sites are defined by the entire extent (both areal and stratigraphic) of a unit or formation. Once a unit is identified as containing vertebrate fossils or other rare fossils, the entire unit is a paleontological site (Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee 1995). The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on paleontological resources, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below.

Impact PALEO-1: Minimal potential disturbance or destruction of paleontological resources

Phase 1—Track Relocation

Construction of Phase 1 of the project, including track work, new utility installation, and new platforms and tunnel connection would require subsurface excavation. Based on site-specific borings conducted for the geotechnical report (ENGEO 2008), the entire project area is not considered sensitive for significant fossils because excavation would be within sandy/silty units, which generally do not contain significant fossils. Furthermore, the deposits within the project area are not sensitive for paleontological resources. However, even though this area appears to be disturbed, fossil-bearing subsurface deposits could be encountered during excavation associated with track relocation, utility installation, or tunnel construction. Mitigation Measure PALEO-1 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements

Based on site-specific borings conducted for the geotechnical report (ENGEO 2008), the entire project area is not considered sensitive for significant fossils because excavation would be within sandy/silty units, which generally do not contain significant fossils. Furthermore, the deposits within the project area are not sensitive for paleontological resources. However, even though this area appears to be disturbed, fossil-bearing subsurface deposits could be encountered during excavation for repaving, tunnel extension, and other subsurface construction activities in Phase 2. Mitigation Measure PALEO-1 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

Based on site-specific borings conducted for the geotechnical report (ENGEO 2008), the entire project area is not considered sensitive for significant fossils because excavation would be within sandy/silty units, which generally do not contain significant fossils. Furthermore, the deposits within the project area are not sensitive for paleontological resources. However, even though this area appears to be disturbed, fossil-bearing subsurface deposits could be encountered during excavation for bridge and parking structure supports, new terminal construction, and other subsurface construction activities. Mitigation Measure PALEO-1 would minimize this effect.

Alternative 2

Because it includes relocating the Depot, Alternative 2 would have a similar, but slightly increased potential to encounter previously unknown fossil bearing subsurface deposit. Mitigation Measure PALEO-1 would minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed and there would be no project-related potential to disturb paleontological resources.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure PALEO-1: Stop work if unique geologic or paleontological materials are discovered during construction.

If unique geological or paleontological materials are inadvertently discovered during ground-disturbing activities, the construction contractor will stop work in that area and within 100 feet of the find until a qualified geologist/paleontologist can assess the significance of the find and develop appropriate treatment measures. Treatment measures will be made in consultation with Caltrans and may include excavation and removal.

2.2.5 Hazardous Waste/Materials

Affected Environment

Several technical reports have been prepared for the study area that document the results of widespread soil and groundwater investigations and cleanup efforts. The primary documents from which information was compiled for this assessment include the following: the draft Railyards Specific Plan (City of Sacramento 2007a); the 2007 Railyards Specific Plan EIR (PBS&J/EIP 2007b); and the 2007 Tri-Party Memorandum of Understanding between the City of Sacramento, the California Department of Toxic Substances Control, and the Railyards development project applicant (MOU) (City of Sacramento 2007b), which identifies the respective roles and responsibilities of the vested parties.

Soil and Groundwater Contamination

For over 100 years, many different industrial operations have taken place at the project site and vicinity, principally the construction, assembly, repairing, and refurbishing of railroad cars and locomotives. Actions associated with these operations included brick making, copper and tin smithing, steel fabrication, machine work, carpentry, blacksmithing, metal plating, upholstering, washing, painting and paint removal, and sand blasting. Lead and various other heavy metal wastes are often associated with many of these activities. Other industrial activities took place in or near the site that were associated with specific buildings in the Railyards. Further procedures or operations may have taken place that were not recorded or did not occur in one location long enough to necessitate discussion by historians. For these reasons, it is difficult to acquire accurate chemical storage, use, and disposal information. From what is known, it appears that paints, solvents, fuels, caustic solutions, and metal alloys comprise the majority of chemicals used at the project site. In addition, numerous underground storage tanks were installed over the history of the Railyards to store chemicals associated with operations.

Although industrial activities no longer take place on the site, the Railyards is currently listed as a California Superfund site due to the previous release of hazardous chemical products into soil and groundwater. The Railyards is also included on the state Hazardous Waste and Substance List, or Cortese List, compiled pursuant to Government Code 65962.5 and referenced as Public Resources Code 21092.6 (California Environmental Protection Agency 2008).

Exploration and cleanup activities are currently being carried on the proposed project site pursuant to a 1988 Enforceable Agreement between DTSC and UPRR. The function of this agreement is to ensure that releases or threatened releases of hazardous substances from the Railyards area are adequately investigated and that appropriate remedial actions are taken. These actions include the production and submittal of documentation to the DTSC for review and approval for each study area as part of the remediation process.

This process has been completed for a large part of the project site (PBS&J/EIP 2007b).

Status of Soil and Groundwater Remediation

Testing has revealed five classes of chemicals present in the soils of the Railyards:

- Asbestos
- Metals
- Volatile Organic Compounds (VOCs)
- Petroleum Hydrocarbons
- Semivolatile Organic Compounds (SVOCs)

As mentioned previously, the remedial investigations have been completed for the majority of the project site. The following discussion briefly summarizes the sources, distribution, and potential remediation methods of these five types of chemicals in the project area. The areas as yet unremediated are under the tracks, the pedestrian tunnel area, (Area A), near the Depot in the loading ramp area (Area B), and a 25-foot strip of land next to the Central Shops buildings.

Asbestos

Many of the historic buildings and structures within the Railyards contain materials that contain asbestos. Construction, demolition, and renovation activities have the capability to disturb asbestos and cause emissions of asbestos fibers. Asbestos is regulated as a hazardous air pollutant under the Clean Air Act and is also regulated as a potential worker safety hazard under OSHA.

There are several federal laws in place to manage the use, removal, and disposal of materials that contain asbestos. These include the Toxic Substance Control Act (15 U.S.C. 2601 et seq.), Title 40 CFR Part 763 and 61, and the Clean Air Act (42 U.S.C. 7401 et seq.).

Metals

Many of the historic activities on project site involved the extensive use of metals. Metals including nickel, zinc, copper, antimony, and mercury are found in many areas of the site and are almost always accompanied by lead. Lead is relatively immobile, so it generally remains where it was deposited in the soil. Therefore, concentrations of lead tend to be highest on the surface where the majority of industrial activities occurred. Monitoring results from several locations in the Railyards indicates that lead has not degraded groundwater quality.

Lead cleanup typically involves one of the following approaches:

- Encapsulation by creating a barrier to prevent human contact
- Rendering the lead immobile by stabilizing to prevent migration
- Excavating the affected soil from the site followed by treatment or disposal of soil

Volatile Organic Compounds

Volatile organic compounds are found in the paint /thinners, degreasers, and solvents used to clean the railroad cars and machine parts at the Railyards since the 1800s. Unlike lead, VOCs are found in surface soils in very low concentrations but are highly mobile and can move quickly through soils and into the groundwater. Groundwater contamination frequently occurs since many VOCs are fairly water soluble. In addition, the movement of tainted groundwater can contaminate clean soil with which it comes into contact.

A frequently utilized method of soil remediation for VOCs involves circulating air through the soil to extract the VOCs in vapor form. The extracted vapors are then treated to remove the VOCs and the purified air is vented to the atmosphere under a regulated process. In addition, other methods such as biodegradation and in-situ chemical oxidation are sometimes employed.

VOCs can be removed from groundwater through the use of extraction and treatment techniques, natural attenuation; and/or in-situ treatment.

Petroleum Hydrocarbons

Hydrocarbons present in soil and groundwater at the Railyards consist mainly of petroleum products such as lubricating oils and diesel fuel. Leaks from storage tanks and spills during locomotive maintenance and refueling are the main sources of hydrocarbons in the project area.

There are several approaches to cleaning up hydrocarbons in soil:

- soil vapor extraction;
- encapsulation within or below a barrier;
- excavation and recycling for road surfacing material, roadbed material, or engineered foundations;
- bioremediation; and
- in-situ chemical oxidation and other similar methodologies.

Hydrocarbons can be removed from groundwater through extraction and treatment, natural biodegradation, or in-situ treatment.

Semivolatile Organic Compounds

SVOCs are strongly adsorbed to soils and they tend to stick to the surface of the soil rather than entering its deeper structure. This means they are quite immobile in the environment and stay close to the point where they were originally discharged. There are certain types of SVOCs that are more volatile, such as naphthalenes and phenols, which are more mobile in the environment. Contamination by SVOCs is not widespread at the Railyards and occurs in limited locales. The most common SVOCs at the Railyards are polynuclear aromatic hydrocarbons (PAHs), which are characteristically found in the top few feet of soil, like lead.

The cleanup methods for PAHs are also similar to those methods used for lead. They include:

- encapsulation by creating a barrier to prevent human contact,
- rendering the lead immobile by stabilizing to prevent migration, and
- excavating the affected soil from the site followed by treatment or disposal of soil.

PAHs have also been identified in groundwater under certain areas under the Railyards. The PAHs can be remediated using the same methods used to remove VOCs from groundwater.

Status of Contaminated Soil Cleanup

Soils in the SITF project area were contaminated with total petroleum hydrocarbons (TPH) and lead, but have been remediated. A variety of cleanup procedures were used including excavation of contaminated soils, confirmation sampling, excavation and exploratory trench sampling, and site restoration. No post operation and maintenance or monitoring of soils was deemed necessary; however, a deed restriction was established as part of the closure process (Department of Toxic Substances Control 1994). This restriction identifies acceptable levers of TPH and lead in soils for future development on the site, and requires the DTSC to be notified if construction or future development plans would disturb the integrity of clean fill overlying the site.

There are small areas of soil contamination at the SITF project site known as Area A (the pedestrian tunnel area) and Area B (the loading ramp area) that still contain TPHs, lead, and possibly other unknown contaminants. The groundwater under these areas is also contaminated. These areas are described in Exhibit B of the deed restriction (Department of Toxic Substances Control 1994). No remediation has been performed for soils under the existing tracks, or for a 25-foot strip of land next to the Central Shops buildings. These areas are permitted by the DTSC in the deed restriction to be remediated prior to the commencement of any redevelopment activities in those areas.

The remediation Action Plan for the SITF area is expected to be certified in 2009.

Hazardous Materials Use

Hazardous materials are no longer used at the project site; however, they may be transported through this area via train along the UPRR main line tracks that run through the project area. Household-type cleaning products are used at the Depot building for maintenance and cleaning activities.

Surrounding land uses where hazardous substances could transported, used, or stored include a former PG&E transformer station in a narrow parkway between the Sacramento River and the Railyards to the west of the site, and the Sims Metals leased property east of the site.

Hazardous Materials Transportation

The UPRR tracks that will be relocated as part of the proposed project routinely carry both freight and passenger trains. There are approximately 12 to 14 freight trains (80 to 100 cars each) daily in the Sacramento Station. Shippers wishing to ship hazardous materials via rail must ensure rail cars carrying the materials meet all federal rail safety transportation requirements for hazardous materials. The number of train cars containing hazardous materials, along with the type and amount of hazardous materials, varies greatly and is largely unpredictable. For the most part, freight trains carrying hazardous materials do not idle at the Sacramento Station for any premeditated reason; however, they may stop for a short period of time in order to yield to passenger trains. Such happenings are entirely unpredictable.

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project related to hazardous material, as well the actual environmental effects of

Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below.

Impact HAZ-1: Potential to create a significant hazard to the public or environment through the routine transport, use, or disposal of hazardous materials during construction

Phase 1—Track Relocation
Track work, utility installation, and tunnel construction could create a hazard to workers, the public, or the environment though the transport, use or disposal of hazardous materials associated with construction equipment used in Phase 1 of the project. Small quantities of potentially toxic substances (such as diesel fuel and hydraulic fluids) would be used at the project site and transported to and from the site during construction. Accidental releases of small quantities of these substances could further contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard. Construction workers will be required to routinely work with potentially hazardous materials throughout the building of the proposed project. Due to the relatively small volumes of materials on-site and the limited duration of construction, the potential for release and exposure is limited. Mitigation Measure HAZ-1 would further minimize this effect.

Phase 2—Sacramento Valley Station Improvements
Pavement work, parking and site access improvements, and passenger connection construction could create a hazard to workers, the public, or the environment though the transport, use or disposal of hazardous materials associated with construction equipment used in Phase 2 of the project. Small quantities of potentially toxic substances (such as diesel fuel and hydraulic fluids) would be used at the project site and transported to and from the site during construction. Accidental releases of small quantities of these substances could further contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard. Construction workers will be required to routinely work with potentially hazardous materials throughout the building of the proposed project. Due to the relatively small volumes of materials on-site and the limited duration of construction, the potential for release and exposure is limited. Mitigation Measure HAZ-1 would further minimize this effect.

Future Phase 3—Intermodal Improvements

<u>Alternative 1</u>
Depot expansion, new terminal construction, and other heavy construction activities could create a hazard to workers, the public, or the environment though the transport, use or disposal of hazardous materials associated with construction equipment used in future Phase 3 of the project. Small quantities of potentially toxic substances (such as diesel fuel and hydraulic fluids) would be used at the project site and transported to and from the site during construction. Accidental releases of small quantities of these substances could further contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard. Construction workers will be required to routinely work with potentially hazardous materials throughout the building of the proposed project. Due to the relatively small volumes of materials on-site and the limited duration of construction, the potential for release and exposure is limited. Mitigation Measure HAZ-1 would further minimize this effect.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change, requiring more extensive construction activity and thereby increasing the potential for accidental releases of potentially toxic substances. . Due to the relatively small volumes of materials on-site and the limited duration of construction, the potential for release and exposure is limited. Mitigation Measure HAZ-1 would further minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed and there would be no project-related change in the condition of hazardous materials and their effect on the local environment.

Impact HAZ-2: Potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during operation

Phase 1—Track Relocation

There would be no substantial change in the current transport, use, or disposal of hazardous materials during station operation in Phase 1 of the project. Hazardous materials are occasionally brought through the project area via train along the UPRR main line tracks. Currently, there are approximately 12 to 14 freight trains (80 to 100 cars each) daily in the Sacramento Station. The probability of an accident involving a train car carrying hazardous materials is and will continue to be very low in Phase 1. In the event of an emergency involving an accidental or threatened release of hazardous substances, information would be made immediately available to emergency personnel via a coordinated federal, state, and local emergency response system.

Phase 2—Sacramento Valley Station Improvements

There would be no change in the current transport, use, or disposal of hazardous materials during station operation in Phase 2 of the project. Hazardous materials are occasionally brought through the project area via train along the UPRR main line tracks. Currently there are approximately 12 to 14 freight trains (80 to 100 cars each) daily in the Sacramento Station. The probability of an accident involving a train car carrying hazardous materials is and will continue to be very low in Phase 2. In the event of an emergency involving an accidental or threatened release of hazardous substances, information would be made immediately available to emergency personnel via a coordinated federal, state, and local emergency response system.

Future Phase 3—Intermodal Improvements

Alternative 1

There would be no change in the current transport, use, or disposal of hazardous materials during station operation in future Phase 3 of the project. Hazardous materials are occasionally brought through the project area via train along the UPRR main line tracks. Currently there are approximately 12 to 14 freight trains (80 to 100 cars each) daily in the Sacramento Station. The probability of an accident involving a train car carrying hazardous materials is and will continue to be very low in future Phase 3. In the event of an emergency involving an accidental or threatened release of hazardous substances, information would be made immediately available to emergency personnel via a coordinated federal, state, and local emergency response system.

<u>Alternative 2</u>

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect would be similar to Alternative 1.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed and there would be no project-related change in the current transport, use, or disposal of hazardous materials during station operation.

Impact HAZ-3: Potential of contaminated soils in unremediated areas to present a hazard to workers and the general public during construction

Phase 1—Track Relocation

Soils in unremediated areas, including under the tracks, Area A (the pedestrian tunnel area), Area B (the loading ramp area), and a 25-foot strip of land next to the Central Shops buildings, have not yet been remediated and may contain TPHs, lead, and possibly unknown contaminates. Construction workers could be exposed to heavy metals, SVOCs, VOCs, or hydrocarbons during the track work, new utility installation, and new platforms and tunnel connections that would be constructed in Phase 1. This could result in harmful short-term or long-term human health or environmental effects. Excavation, grading, trenching, and other construction activities that move soil could expose construction workers to contaminants on the surface and deeper in the soil column. Mitigation Measure HAZ-2 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements

Track work will be completed in Phase 1; however, some unremediated soils may still be present immediately under the tunnel areas and loading ramp and may contain TPHs, lead, and possibly unknown contaminates. Construction workers could be exposed to heavy metals, SVOCs, VOCs, or hydrocarbons. This could result in harmful short-term or long-term human health or environmental effects. Excavation, grading, trenching, and other construction activities that move soil could expose construction workers to contaminants on the surface and deeper in the soil column. Mitigation Measure HAZ-2 would minimize this effect.

Future Phase 3—Intermodal Improvements

<u>Alternative 1</u>

Remediation is anticipated to be completed before initiation of future Phase 3; however, if remediation is not complete, site visitors could be exposed to potential risks associated with chemicals in the soil that could be encountered when the remaining remediation activities are implemented. Mitigation Measure HAZ-2 would minimize this effect.

<u>Alternative 2</u>

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change. Although remediation is anticipated to be completed before initiation of this phase, if it is not completed, hazardous chemicals in soils could be encountered during activities to move the Depot. Mitigation Measure HAZ-2 would minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed and there would be no project-related change in the condition of hazardous materials and their effect on the local environment.

Impact HAZ-4: Potential to expose visitors to the project site to hazardous materials through the concurrent activities of project construction and soil remediation

Phase 1—Track Relocation

Construction of Phase 1 of the project, including track work, new utility installation, and new platforms and tunnel connection will take place concurrent with the remediation of contaminated soils and groundwater. Users of the Depot, parking facilities, and site visitors could be exposed to potential risks associated with chemicals in the soil that could be encountered when the remaining remediation activities are implemented. Mitigation Measure HAZ-3 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements

Construction of some components of Phase 2 of the project would occur simultaneously with the DTSC cleanup plan for the known contaminated soils. Activities such as site preparation, grading, and excavation are examples of the types of earthwork that could encounter other site remediation systems. Site visitors could be exposed to potential risks associated with chemicals in the soil that could be encountered when the remaining remediation activities are implemented. Mitigation Measure HAZ-3 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

Remediation is anticipated to be completed before initiation of future Phase 3; however, if remediation is not complete, site visitors could be exposed to potential risks associated with chemicals in the soil that could be encountered when the remaining remediation activities are implemented. Mitigation Measure HAZ-3 would minimize this effect.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change. Although remediation is anticipated to be completed before initiation of this phase, if it is not completed, hazardous chemicals in soils could be encountered during activities to move the Depot. Mitigation Measure HAZ-3 would minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed. There would be no project-related change in the condition of hazardous materials and their effect on the local environment.

Impact HAZ-5: Potential of the construction of project components to interfere with remediation efforts for remaining unremediated soils in or to compromise previous remediation efforts

Phase 1—Track Relocation

The proposed project consists of the construction and installation of numerous structural components, many of which are in areas of contaminated soils. In addition to the railroad tracks, potentially contaminated soils are located immediately under the tunnel areas and loading ramp. As previously discussed, the construction of some components of the project would occur simultaneously with the DTSC cleanup plan for the known contaminated soils. Activities such as site preparation, grading, and excavation are examples of the types of earthwork that could encounter other site remediation systems. There could be an increased danger of damaging or interfering with remediation site controls such as soil containment areas, or groundwater remediation facilities such as extraction and monitoring wells, pumps, or pipelines. Such occurrences could compromise and hinder remediation efforts or measures intended to control inadvertent releases of contaminants into the environment. Mitigation Measures HAZ- 3 and 4 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements

Construction of some components of Phase 2 of the project would occur simultaneously with the DTSC cleanup plan for the known contaminated soils. Activities such as site preparation, grading, and excavation are examples of the types of earthwork that could encounter other site remediation systems. There could be an increased danger of damaging or interfering with remediation site controls such as soil containment areas, or groundwater remediation facilities such as extraction and monitoring wells, pumps, or pipelines. Such occurrences could compromise and hinder remediation efforts or measures intended to control inadvertent releases of contaminants into the environment. Mitigation Measures HAZ- 3 and 4 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

Remediation is anticipated to be completed before initiation of future Phase 3; however, if remediation is not complete, earthwork that could encounter other site remediation systems, increasing the danger of damaging or interfering with remediation site controls. Mitigation Measures HAZ- 3 and 4 would minimize this effect.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change. Although remediation is anticipated to be completed before initiation of this phase, if remediation is not complete, earthwork to move the Depot could increase the potential to interfere with site remediation efforts. Mitigation Measures HAZ-3 and HAX-4 would minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed and there would be no project-related effect of interference with remediation efforts.

Impact HAZ-6: Exposure of construction workers and residents to potentially hazardous materials in the historic Depot building

Phase 1—Track Relocation

Phase 1 of the project does not include rehabilitation or relocation of the Depot.

Phase 2—Sacramento Valley Station Improvements

Because it is an older building, the Depot is likely to contain hazardous substances such as asbestos, lead-based paint, mercury, and PCBs. As a result, construction workers and visitors could be potentially exposed to hazardous materials during Depot rehabilitation. Mitigation Measures HAZ-5 through HAZ-6 would minimize this effect.

Future Phase 3—Intermodal Improvements

<u>Alternative 1</u>

Because it is a historic building, the Depot is likely to contain hazardous substances such as asbestos, lead-based paint, mercury, and PCBs. As a result, in addition to the exposure of construction workers and visitors to potentially hazardous materials, future residents could be potentially exposed to hazardous materials if the building were renovated. Mitigation Measures HAZ-5 through HAZ-6 would minimize this effect.

<u>Alternative 2</u>

Future Phase 3 of Alternative 2 includes relocation of the existing historic Depot building approximately 300 feet to the north. Because it is an older building, the Depot is likely to contain hazardous substances such as asbestos, lead-based paint, mercury, and PCBs. Relocation of the structure could expose construction workers, site visitors, and potentially future residents of the RSP area to potentially hazardous materials. Mitigation Measures HAZ-5 through HAZ-6 would minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed and there would be no project-related potential for exposure to hazardous materials and their effect on the local environment.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure HAZ-1: Apply measures to minimize exposure of people and the environment to potentially hazardous materials.

To minimize the exposure of people and the environment to potentially hazardous materials, the following measures will be included in the construction specifications and project performance specifications:

- **Encounters with Contaminated Soil.** If contaminated soil and/or groundwater are encountered during project construction, the City will halt work in the area, and the type and extent of the contamination will be identified. A qualified professional, in consultation with the appropriate federal, state, and/or local regulatory agencies will then develop an appropriate method to remediate the contamination. If necessary, a remediation plan in conjunction with continued project construction will be implemented.

Hazardous or contaminated materials may only be removed from the project site in accordance with the following provisions:

- All work is to be completed in accordance with the following regulations and requirements:
- Chapter 6.5, Division 20, California Health and Safety Code.
- California Administration Code, Title 22, relating to Handling, Storage and Treatment of Hazardous Materials.
- The Uniform Building Code, 1997 edition.
  Coordination will be made with the Environmental Health Department, and the necessary applications will be filed.

  All hazardous materials will be disposed of at an approved disposal site and will only be hauled by a current California registered hazardous waste hauler using correct manifesting procedures and vehicles displaying a current Certificate of Compliance. The contractor will identify by name and address the site where toxic substances are to be taken for disposal. No payment for removal and disposal services will be made without a valid certificate from the approved disposal site that the material was delivered.

  None of the aforementioned provisions will be construed to relieve the contractor from the contractor's responsibility for the health and safety of all persons (including employees) and from the protection of property during the performance of the work. This requirement will be applied continuously and not be limited to normal working hours.

- **Hazardous Materials Handling.** The City will ensure, through the enforcement of contractual obligations, that all contractors transport, store, and handle construction-related hazardous materials in a manner consistent with relevant regulations and guidelines. The City will also ensure that all contractors immediately control the source of any leak and immediately contain any spill utilizing appropriate spill containment and countermeasures. If required by any regulatory agency, contaminated media will be collected and disposed of at an offsite facility approved to accept such media. In addition, all precautions required by the RWQCB-issued National Pollutant Discharge Elimination System construction activity storm water permits will be taken to ensure that no hazardous materials enter any storm drains or nearby waterways, which will reduce any potential effects.

- **Immediately Contain Spills, Excavate Spill-Contaminated Soil, and Dispose at an Approved Facility.** In the event of a spill of hazardous materials in an amount reportable to the Sacramento Fire Department (as established by fire department guidelines), the City will require that the contractor immediately control the source of the leak, contain the spill and contact the Sacramento Fire Department through the 911 emergency response number. If required by the fire department or other regulatory agencies, contaminated soils will be excavated, treated and/or disposed of off-site at a facility approved to accept such soils.

Mitigation Measure HAZ-2: Apply measures to minimize exposure of construction workers to potentially hazardous materials.

DTSC has established levels of residual contaminants that are allowed to remain in on-site soils to make certain that construction workers will not be in danger of unacceptable levels of exposure. In addition, no soil-moving activities will occur in areas at the project site until DTSC-approved Target Cleanup Levels are achieved. In addition:

- The City will require that the contractor will prepare a site-specific plan detailing construction worker health and safety requirements based on the levels of remediation already performed in each area of the project site.
- Contractors will be given a worker health and safety guidance document at the time of grading or building permit application to assist them in preparing the site-specific plan for workers. Pursuant to the requirements of state and federal law, the site-specific plan may include other precautions such as requiring the use of personal protective equipments and continuous air quality monitoring onsite during construction.
- Through the tri-party MOU (City of Sacramento 2007b), DTSC will supply environmental oversight during construction, including measures for detecting previously unknown contamination, site inspection, and contingency plans for investigation, remediation, and removal of such contamination.

Mitigation Measure HAZ-3: Apply measures to minimize exposure of visitors to the project site to potentially hazardous materials during project construction.

To minimize the exposure of people to potentially hazardous materials, the following measures will be included in the construction specifications and project performance specifications:

- Dust control will be implemented for active cleanup sites.
- If required by site-specific conditions, construction site air monitoring will be conducted.
- Fencing will prevent access to soil in areas of the site that have not yet been remediated (e.g., Areas A and B, area under the tracks, the 25-foot strip by the Central Shops).
- Should it become necessary, the City will require the contractor to employ construction dewatering techniques that minimize potential for pulling groundwater contaminants to the surface. Contingency plans for pretreatment of tainted groundwater will be in place preceding the start of construction in the event that extracted water cannot be sent to the regional wastewater treatment plant.
- Prior to approval of any grading permit, the contractor will demonstrate access to a nearby secure holding area for temporary storage of contaminated soil that could be exposed during construction. In addition, the contractor will provide a plan for the transportation of affected soil to the holding area.
- Prior to issuance of a grading permit, the contractor will demonstrate compliance with all applicable protective measures.

Mitigation Measure HAZ-4: Apply measures to minimize the interference of project construction with remediation efforts.

To minimize the disturbance of remediation systems, the City will ensure the contractor is made aware of the location, timing, and types of remediation activities so as not to inadvertently affect cleanup activities. The contractor will coordinate with the DTSC, the City of Sacramento, and other involved agencies to ensure that project construction will not interfere with any onsite remediation activities or inadvertently delay any site remediation activities. In addition, the their contractor will abide by all relevant site controls established for site remediation activities through the approved RAPs and RDIP, and will ensure that project construction does not prevent such compliance.

Mitigation Measure HAZ-5: Prepare a hazardous materials specification for the abatement of asbestos-containing materials and lead-based paints prior to Depot renovation or relocation.

A California-certified asbestos consultant and California Department of Health Services-certified lead project designer shall prepare a hazardous materials specification for the abatement of the asbestos-containing materials (ACMs) and lead-based paints (LBPs). This specification will be the basis for selecting qualified contractors to perform the proposed asbestos and lead abatement work.

Mitigation Measure HAZ-6: Retain a state-licensed asbestos abatement contractor to perform hazardous materials abatement prior to Depot renovation or relocation.

LBPs and ACMs observed in “good condition” can be “managed in place” unless the materials are disturbed, repaired, or removed. Nonetheless, the City will retain a California-licensed asbestos abatement contractor to perform the abatement of the ACMs, ACCMs, and LBPs deemed potentially hazardous. These materials include the thermal system insulation material located in the wall cavity throughout the building and the LBP damaged by fire along the stairway ceiling deck located on the first floor.

2.2.6 Air Quality

Affected Environment

The following is the air quality technical report applicable to the proposed project:

- *Air Quality Analysis for the Sacramento Intermodal Transportation Facility*, Tim Rimpo, Rimpo and Associates, Inc., August 22, 2008.

Climate and Meteorological Conditions

The Mediterranean climate of the Sacramento Valley is characterized by hot, dry summers and mild, rainy winters. Temperatures throughout the year range from 20 to 115 degrees Fahrenheit. Summer highs are usually in the 90s, while in the winter, lows are occasionally below freezing. The average annual rainfall is about 20 inches, with snowfall being very rare (PBS&J/EIP 2007b).

Prevailing winds are moderate in strength and range from clean, moist breezes from the south to dry land flows from the north. Often a warm layer of air overlays a cool layer of air from the San Francisco Bay and delta. This causes inversions, which can occur at any time of the year. Inversions inhibit air from mixing in the atmosphere. This can keep air pollution from dispersing, which can cause higher concentrations of pollutants (PBS&J/EIP 2007b).

The Sacramento Valley between May and October is characterized by stagnant air or light afternoon winds out of the southwest. The evening breeze often pushes airborne pollutants northward and out of the valley. From July to September, however, the “Schultz Eddy” prevents this from happening about half of the time. The Schultz Eddy causes the wind pattern to circle back to the south instead of transporting the pollutants northward and away from the valley. This worsens pollution levels in the Sacramento area (PBS&J/EIP 2007b).

Attainment Status

The project is located in Sacramento County, which is within the Sacramento Valley Air Basin. Sacramento County’s air quality is classified as being in nonattainment for the federal O_3 and PM standards (i.e., particulate matter 10 microns or less in diameter [PM10] and particulate matter 2.5 microns or less in diameter [PM2.5]). The county is an attainment/maintenance area for the federal CO standards. Sacramento County is also a nonattainment area for O_3, PM10, and PM2.5 California Ambient Air Quality Standards (CAAQS).

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on air quality, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below. The SMAQMD has several air quality significance thresholds. This analysis compares the proposed project’s construction and operational O_3 precursor emissions to the SMAQMD's significance thresholds, as shown in Table 2.2.6-1 (Sacramento Metropolitan Air Quality Management District 2004).

Table 2.2.6-1. SMAQMD Significance Thresholds

Pollutant	Pounds per Day
Construction oxides of nitrogen (NO_x)	85
Operational NO_x	65
Operational reactive organic gases (ROGs)	65

For construction-related exhaust emissions, the NO_x thresholds listed in Table 2.2.6-1 were used. For construction-related dust effects, the SMAQMD recommendations for evaluating PM10 dust were used. The SMAQMD recommends that PM10 air quality dispersion modeling be conducted, depending on the amount of acreage disturbed per day (Sacramento Metropolitan Air Quality Management District 2004). See Figure 2.2.6-1 for a map of the receptors used in this analysis.

For the evaluation of operational emissions, the following approaches were used.

- For ROGs and NO_x, operational emissions were estimated and compared to the SMAQMD's thresholds listed in Table 2.2.6-1.
- To evaluate CO hot-spot effects, CO concentrations were estimated for the worst-case intersection affected by the proposed project. The California Department of Transportation's (Caltrans') CO modeling protocol was used to conduct that evaluation (Garza et al. 1997).
- For PM (PM10/PM2.5) hot-spot effects, a qualitative evaluation was conducted using U.S. Environmental Protection Agency (EPA) and FHWA guidance (U.S. Environmental Protection Agency and U.S. Department of Transportation 2006).
- The FHWA guidance was used to evaluate the proposed project's potential to generate a significant increase in toxic air contaminants (TACs), also called mobile-source air toxics (MSATs) (U.S. Department of Transportation 2006).
- The project's increase in greenhouse gas (GHG) emissions was estimated using the same models used to estimate criteria pollutant emissions.
- Finally, the project was evaluated to determine if it meets regional and project-specific conformity.

Construction Emissions

Construction emissions would be generated as exhaust from diesel internal combustion equipment and as fugitive dust from equipment operating over exposed earth. These emissions were quantified using the URBEMIS2007 model, version 9.2.4. For each phase, start and end dates as well as types of construction equipment were entered into URBEMIS2007.

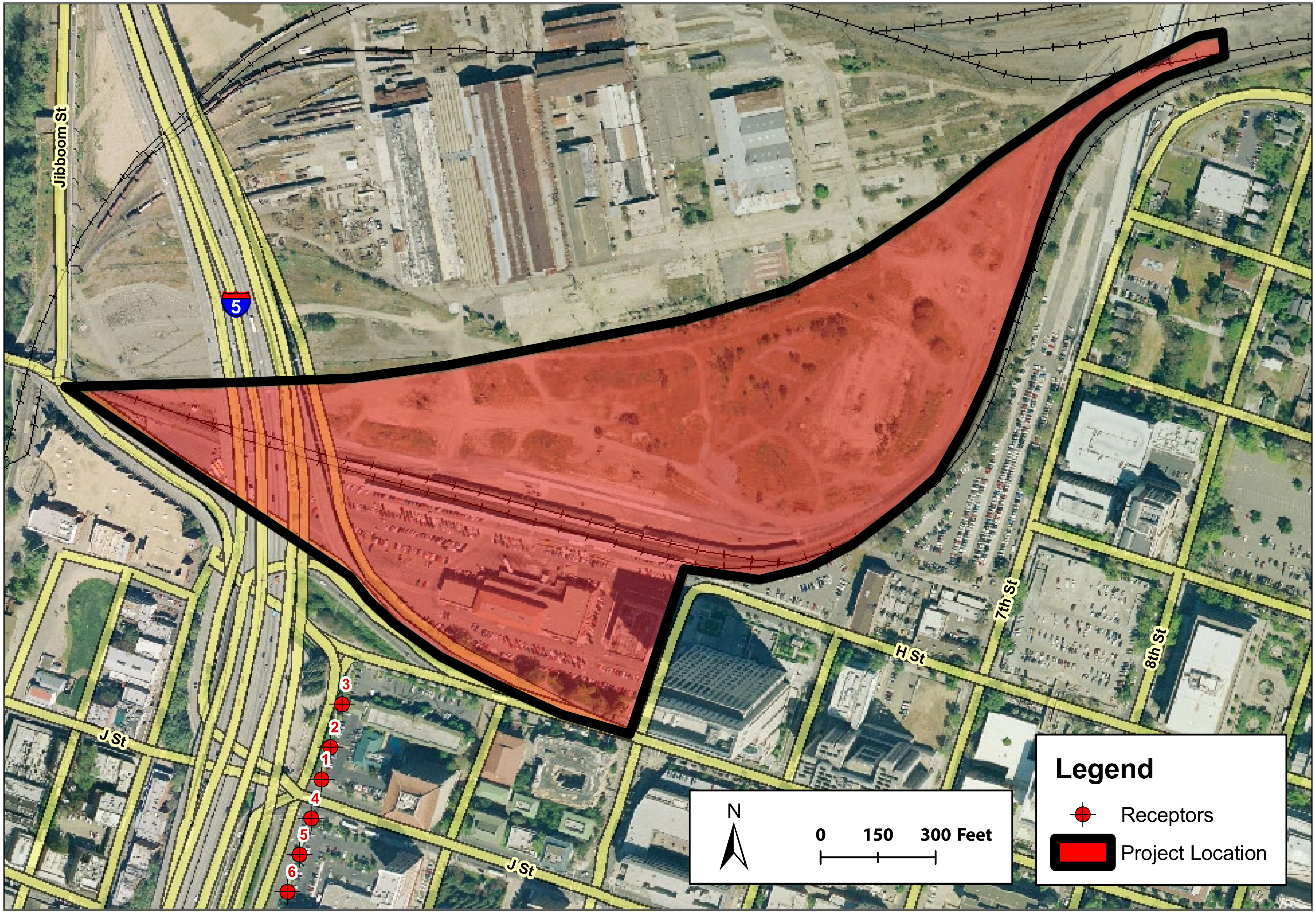

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Figure 2.2.6-1
Receptor Locations

Impact AQ-1: Violation of PM 10 Standards

Phase 1—Track Relocation
Construction of Phase 1 of the project, including track work, new utility installation, and new platforms and tunnel connection would require grading and other ground disturbance. The SMAQMD requires that PM10 emissions be modeled to determine whether those emissions would violate the state or federal PM10 standards (Sacramento Metropolitan Air Quality Management District 2004). However, neither modeling nor fugitive dust mitigation is required if the maximum disturbed area is 5 acres or less. The maximum area of disturbed acreage would equal 5 acres per day for Phase 1 (Breiger pers. comm.). Consequently, PM10 modeling is not required. Construction-related emissions would not violate PM10 standards.

Phase 2—Sacramento Valley Station Improvements
Construction of Phase 2 of the project, including LRT station relocation, pavement work, parking and site access improvements, and passenger connections, would require grading and other ground disturbance. The SMAQMD requires that PM10 emissions be modeled to determine whether those emissions would violate the state or federal PM10 standards (Sacramento Metropolitan Air Quality Management District 2004). However, neither modeling nor fugitive dust mitigation is required if the maximum disturbed area is 5 acres or less. The maximum area of disturbed acreage would equal 5 acres per day for Phase 2 (Breiger pers. comm.). Consequently, PM10 modeling is not required. Construction-related emissions would not violate PM10 standards.

Future Phase 3—Intermodal Improvements
The SMAQMD requires that PM10 emissions be modeled to determine whether those emissions would violate the state or federal PM10 standards (Sacramento Metropolitan Air Quality Management District 2004). However, neither modeling nor fugitive dust mitigation is required if the maximum disturbed area is 5 acres or less. The maximum area of disturbed acreage would equal 5 acres per day for future Phase 3 (Breiger pers. comm.). Consequently, PM10 modeling is not required. Construction-related emissions would not violate PM10 standards.

Impact AQ-2: Construction emissions of NO_x

Phase 1—Track Relocation
Construction of Phase 1 of the project, including track work, new utility installation, and new platforms and tunnel connection would require the use of construction vehicles. Table 2.2.6-2 shows the maximum number of pounds per day of NOx that would be emitted during construction in all project phases. Emissions in Phase 1 of the project would exceed the SMAQMD significance threshold of 85 pounds of NO_x per day. Mitigation Measure AQ-1 would reduce this impact.

Table 2.2.6-2. Construction Emissions

Construction Phase	Maximum NOx Emissions (pounds per day)
Phase 1: January–December 2010	169.3
Phase 2: January 2011–December 2013	210.6
Phase 3: October 2013–December 2017	168.6

Note: For each phase, emissions were estimated using URBEMIS2007, version 9.2.4, and the construction phase lengths, equipment lists, amount of imported and exported soil, and amount of daily disturbed acreage. Phase 3 assumes the Depot will be moved. Emissions associated with not moving the Depot would be slightly lower than Phase 3 but would still exceed the SMAQMD's significance thresholds.

Phase 2—Sacramento Valley Station Improvements

Construction of Phase 2 of the project, including LRT station relocation, pavement work, parking and site access improvements, and passenger connections, would require the use of construction vehicles. As shown in Table 2.2.6-2, emissions in Phase 2 of the project would exceed the SMAQMD significance threshold of 85 pounds of NO_x per day. Mitigation Measure AQ-1 would reduce this impact.

Future Phase 3—Intermodal Improvements

Alternative 1

Table 2.2.6-2 shows construction emissions for future Phase 3. Emissions for Alternative 1 would exceed the SMAQMD significance threshold of 85 pounds of NO_x per day. Mitigation Measure AQ-1 would reduce this impact.

Alternative 2

As shown in Table 2.2.6-2, emissions for future Phase 3 would exceed the SMAQMD significance threshold of 85 pounds of NO_x per day. Construction emissions for Alternative 2 would be higher than those of Alternative 1 because, under Alternative 2, the Depot would be moved. Mitigation Measure AQ-1 would reduce this impact.

No-Build Alternative

Under the No-Build Alternative, no project-related construction emissions would occur, and the SMAQMD threshold would not be exceeded by the project.

Operational Emissions

Each operational phase of the proposed project has the potential to generate criteria pollutants (ROGs and NO_x), CO, PM10/PM2.5, TACs, and GHGs. Each of the project alternative is therefore evaluated for the following:

- criteria pollutant emissions,
- CO hot spots,
- PM10/PM2.5 hot spots,
- TACs,
- GHG emissions, and
- conformity (regional and project-specific).

Impact AQ-3: Generation of Criteria Pollutant Emissions during Project Operation

Phase 1—Track Relocation

In Phase 1, the existing tracks would be relocated and realigned. Phase 1 would not increase, and would likely decrease, operational emissions. By separating the freight and passenger tracks, Phase 1 would reduce the amount of freight train idling time that currently results due to the "hold-out" rule. The hold-out rule requires all freight trains to stop outside of the passenger platform area if a passenger train is loading or unloading passengers. The proposed project will allow Union Pacific Railroad (UPRR) trains to avoid idling, as mandated by the hold-out rule; operate at higher speeds; increase their freight movement capacity; and provide relief from truck congestion along Interstates 5 and 80. The track relocation project will allow greater volumes of freight to move faster through the Sacramento Valley Station (Station) while improving safety and reducing both congestion and air emissions.

Removing the freight bottleneck would likely shift some amount of freight transport away from trucks traveling on Interstates 5 and 80 onto the UPRR mainline. Because rail transport has lower emissions per ton of freight moved as compared to truck transport, the switch from truck to train will lower emissions in the Sacramento area, reducing both criteria pollutant and GHG emissions.

Phase 2—Sacramento Valley Station Improvements

In Phase 2, several improvements would be made to the Station, including reconfiguring existing parking, which will add 153 parking spaces and 330 auto trips per day. Table 2.2.6-3 summarizes the emissions associated with those trips. As Table 2.2.6-3 shows, emissions would be less than the SMAQMD's significance thresholds established for ROG and NO_x. The SMAQMD has not established thresholds for CO, PM10, PM2.5, or carbon dioxide (CO_2).

Table 2.2.6-3. Phase 2 Operational Emissions (pounds per day)

	ROG	NO_x	CO	PM10	PM2.5	CO_2
Phase 2	1.7	2.0	22.9	4.2	0.8	2,626.5
SMAQMD threshold	65	65	–	–	–	–
Exceed threshold	No	No	NA	NA	NA	NA

Notes: Emissions estimated using trip generation rates from project traffic report (Dowling Associates 2008) and URBEMIS2007 model version 9.2.4 for 2014.
NA = not applicable (the SMAQMD has not established a mass emissions threshold for this pollutant).

Future Phase 3—Intermodal Improvements

Alternative 1

The proposed project was evaluated as part of the RSP EIR. That analysis used the same terminal square footage figures that are used for the proposed project. The traffic analysis for the SITF portion of the RSP EIR assumed no incremental increase in vehicle trips for the SITF site (PBS&J/EIP 2007b). Consequently, future Phase 3 would not increase vehicle trips or vehicle emissions.

Future Phase 3 would increase area-source emissions associated with natural gas combustion, from space and water heating, and gasoline combustion, from landscape maintenance equipment.

Table 2.2.6-4 shows the area-source emissions associated with future Phase 3. Emissions of ROGs and NO_x would be less than the SMAQMD's significance thresholds. Also, CO, PM10, and PM2.5 emissions would be negligible.

Table 2.2.6-4. Future Phase 3 Area-Source Emissions (pounds per day)

Source	ROG	NO_x	CO	PM10	PM2.5	CO_2
Natural gas	0.06	0.84	0.71	0.00	0.00	1,009.88
Landscaping	0.12	0.02	1.55	0.01	0.01	2.81
Architectural coatings	0.75	–	–	–	–	–
Total (unmitigated)	0.93	0.86	2.26	0.01	0.01	1,012.69

<u>Alternative 2</u>

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, emissions would be similar to those of Alternative 1, as shown in Table 2.2.6-4, above. Those emissions would not exceed the SMAQMD daily thresholds.

No-Build Alternative

Under the No-Build Alternative, the freight train idling that currently results due to the "hold-out" rule would continue and likely increase over time as train volumes increase in the future. Consequently, UPRR trains would continue to idle, as mandated by the hold-out rule. This represents the baseline condition against which the project is compared.

Impact AQ-4: Creation of Carbon Monoxide Hot Spots during Project Operation

Phase 1—Track Relocation

Phase 1 would not generate additional vehicle trips. Consequently, it would not increase traffic congestion at intersections near the proposed project.

Phase 2—Sacramento Valley Station Improvements

Proposed project concentrations from local traffic were evaluated by modeling roadside CO concentrations. Three intersections that would be affected by the proposed project would operate at level of service (LOS) D, E, or F. Of these, the 3rd and J Street intersection would have the worst LOS (E) and the highest traffic volumes (Dowling Associates 2008). Consequently, CO modeling was conducted for the intersection of 3rd and J Street under existing and future conditions. The CO modeling results show that, even assuming worst-case modeling conditions, the proposed project would not cause or contribute to violations of the ambient standards (see Table 2.2.6-5).

Table 2.2.6-5. Estimated CO Concentrations (parts per million)

3rd Street/J Street Intersection	Existing	Existing	Future	Future
Averaging period	1 hour	8 hours	1 hour	8 hours
Concentration	3.1	2.2	1.6	1.1
Background	8.0	5.6	8.0	5.6
Total	11.1	7.8	9.6	6.7
Ambient standard	20	9	20	9
Exceed standard	No	No	No	No

Note: One-hour concentrations estimated using the CALINE4 model, traffic volumes (Dowling Associates 2008), and on-road CO emission factors developed with the EMFAC2007 model. Eight-hour concentrations represent modeling 1-hour concentrations converted to 8-hour average with a persistence factor of 0.7. Background concentrations were based on the highest monitored 1-hour and 8-hour concentrations during the last 4 years.

Future Phase 3—Intermodal Improvements

Alternative 1

As described in the traffic appendix of the RSP EIR, future Phase 3 of the project would not increase vehicle trips (PBS&J/EIP 2007b). Consequently, future Phase 3 would not increase vehicle congestion or CO concentrations in the vicinity of the SITF. The project represents one small portion of the overall *Sacramento Railyards Specific Plan*. Buildout of the specific plan would increase vehicle trip generation and CO concentrations. However, the RSP EIR shows that the increase in CO resulting from full buildout would not result in violations of the CO standards (PBS&J/EIP 2007b).

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect would be identical to Alternative 1 and would not violate the CO standards.

No-Build Alternative

Under the No-Build Alternative, there would be no net increase in vehicle trips, intersection congestion, or CO concentrations. Consequently, the No-Build Alternative would not result in any project-related CO effects.

Impact AQ-5: Creation of PM10/PM2.5 Hot Spots during Project Operation

The EPA and the FHWA (which is part of the U.S. Department of Transportation) have developed joint guidance that lists the following five project types as projects of air quality concern (POAC). Projects classified as POACs merit more in-depth review; projects considered POACs are described as follows:

- new or expanded highway projects that have a significant number of or a significant increase in diesel vehicles;
- projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- new bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

- expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
- projects in or affecting locations, areas, or categories of sites that are identified in the PM2.5- or PM10-applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Each phase of the proposed project was reviewed against these five criteria to determine PM10/PM2.5 significance.

Phase 1—Track Relocation

Phase 1 would not increase vehicle trips, affect nearby intersections, or result in an increase in PM10/PM2.5 emissions. Because Phase 1 would reduce diesel locomotive idling time, it would have a beneficial air quality effect by reducing PM10/PM2.5 emissions. Phase 1 would not have PM10/PM2.5 hot-spot effects.

Phase 2—Sacramento Valley Station Improvements

Phase 2 does not represent a new or expanded highway project, so the first of the five criteria does not apply. Only two intersections operating a LOS D, E, or F would be affected by the proposed project and only during Phase 2. Because Phase 2 would generate only light-duty vehicle trips, the second criterion would not apply. The proposed project is not a new terminal, so the third criterion does not apply. The fourth criterion is most applicable to the proposed project because it consists of an expanded bus and rail terminal. Although Phase 2 would generate additional trips, those trips would consist of only additional light-duty vehicles. Consequently, the fourth criterion does not apply. The fifth criterion does not apply because the SITF site does not represent a location identified as having possible violations of the PM10/PM2.5 standards.

Consequently, Phase 2 would not be considered a POAC, as defined in the EPA/FHWA guidance (U.S. Environmental Protection Agency and U.S. Department of Transportation 2006) and would not result in PM10/PM2.5 hot-spot effects.

Future Phase 3—Intermodal Improvements

Alternative 1

Future Phase 3 would not increase vehicle trips or PM10/PM2.5 hot spots associated with vehicles. The only increase in PM10/PM2.5 emissions during future Phase 3 would result from area sources. However, PM10/PM2.5 emissions from area sources would be negligible (see Table 2.2.6-4). Consequently, Phase 3 would not cause a substantial increase in PM10/PM2.5 emissions.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the PM10/PM2.5 emissions increase associated with future Phase 3 would be minimal. Therefore, future Phase 3 would not result in a substantial increase in PM10/PM2.5.

No-Build Alternative

Under the No-Build Alternative, the project would not be constructed and there would be no project-related change in emissions. Consequently, the No-Build Alternative would not result in any project-related PM10/PM2.5 effects.

Impact AQ-6: Generate and Increase in Toxic Air Contaminants during Project Operation

Phase 1—Track Relocation

Phase 1 would not increase vehicle trips as compared to no-build conditions. Consequently, Phase 1 would not generate an increase in TAC emissions. Under the FHWA's MSAT criteria, Phase 1 has a low potential to cause significant MSAT effects (U.S. Department of Transportation 2006). This is because the proposed project is designed to encourage transit use, which would reduce traffic congestion. Phase 1would not contribute to a substantial increase in TACs.

Phase 2—Sacramento Valley Station Improvements

Phase 2 would result in a minor amount of additional trips as compared to no-build conditions. However, as with Phase 1, Phase 2 would have a low potential to cause significant MSAT effects. The additional parking capacity would generate an increase of 330 trips per day, which would consist of light-duty vehicles (Dowling Associates 2008). Phase 2 would not contribute to a substantial increase in TACs.

Future Phase 3—Intermodal Improvements

<u>Alternative 1</u>

Future Phase 3 would not increase vehicle trips as compared to no-build conditions and therefore would not generate an increase in TAC emissions. Future Phase 3 would have a low potential to result in substantial MSAT effects and would not contribute to a substantial increase in TACs.

The RSP EIR included a health risk assessment for buildout of the entire specific plan. That cumulative analysis, which included the proposed project, found that the proposed project would not cause a significant health risk. This further confirms that Alternative 1 would not have substantial cumulative TAC effects.

<u>Alternative 2</u>

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1. Alternative 2 would not have substantial cumulative TAC effects.

No-Build Alternative

Under the No-Build Alternative, there would be no project-related change in vehicle trips since the no-build condition represents the baseline condition. Consequently, the No-Build Alternative would not contribute to an increase in TACs.

Impact AQ-7: Increase in Greenhouse Gas Emissions during Project Operation

Phase 1—Track Relocation

Phase 1 would not result in an operational increase in CO_2 emissions. CO_2 emissions would likely decrease because passenger and freight trains would be operating on different tracks, which would reduce locomotive idling time.

Phase 2—Sacramento Valley Station Improvements

Phase 2 would generate an increase in GHG emissions of 2,614 pounds per day, which is equivalent to 433 metric tons of CO_2 per year. These emissions would be associated with the increase in vehicle trips generated by the increase in the number of parking spaces under Phase 2. Actual GHG emissions would likely be lower because more trips would involve transit vehicles (at the expense of motor vehicle trips).

Future Phase 3—Intermodal Improvements

Alternative 1

Future Phase 3 would increase CO_2 emissions by approximately 1,013 pounds per day, which is equivalent to 167 metric tons of CO_2 per year. These emissions would result from area-source fuel combustion associated with the natural gas used for space and water heating in the SITF terminal and gasoline for power landscape maintenance equipment.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect under Alternative 2 in future Phase 3 of the project would be identical to Alternative 1 and CO_2 emissions would be increased by approximately 1,013 pounds per day (equivalent to 167 metric tons of CO_2 per year).

No-Build Alternative

Under the No-Build Alternative, there would be no project-related net change in CO_2 emissions. This is because the No-Build Alternative represents the baseline condition.

Regional Air Quality Conformity

A regional and project-specific conformity determination is required to ensure that the proposed project meets federal requirements. Because the Sacramento area is a nonattainment area for the federal O_3 and PM10 standards and a maintenance area for CO, a regional conformity analysis is needed to ensure that the proposed project's emissions meet the regional budget tests for these pollutants.

The proposed project is included in the Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Improvement Program (MTIP) 2009–2012, which was finalized in August 2008 (Sacramento Area Council of Governments 2008). The MTIP's conformity determination was approved for the MTIP.

Impact AQ-8: Potential for project not to meet conformity requirements

Phase 1—Track Relocation
Phase 1 of the SITF is listed in the MTIP (SACOG ID #2414) as being completed in 2012, when the expected date for completion as listed in the project description is 2010. However, the City of Sacramento has submitted to SACOG a "SACTrak" form requesting that the MTIP completion date for Phase 1 be changed to 2010. This change will result in SACOG amending its 2009-2012 MTIP and associated conformity determination.

Phase 2—Sacramento Valley Station Improvements
As stated in the project description, Phase 2 construction would start in the first quarter of 2011, after the completion of Phase 1, and would be completed in approximately 3 years (2014). The 2009-2012 MTIP shows the expected completion date for Phase 2 as 2011. However, the City of Sacramento recently submitted to SACOG a SACTrak form showing 2014 as the completion date for Phase 2. This change will result in SACOG amending its 2009-2012 MTIP and associated conformity determination.

Future Phase 3—Intermodal Improvements

<u>*Alternative 1*</u>
The timing of future Phase 3 is uncertain and depends on the build alternative selected and the availability of funding. FHWA will not authorize construction of either future Phase 3 alternative until more detailed design information and subsequent environmental review is completed for the future Phase 3.

<u>*Alternative 2*</u>
Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect would be similar to Alternative 1. The timing of future Phase 3 is uncertain and depends on the build alternative selected and the availability of funding. FHWA will not authorize construction of either future Phase 3 alternative until more detailed design information and subsequent environmental review is completed.

No-Build Alternative
Under the No-Build Alternative, there would be no project to include in the regional conformity analysis.

<u>*Project-Specific Conformity*</u>

Alternatives 1 and 2
Neither Alternative 1 nor 2 would cause or contribute to violations of the NAAQS or CAAQS. The CO modeling results found that the proposed project would not result in violations of either federal or state CO standards. Also, neither Alternative 1 nor 2 would be considered a POAC, and neither alternative would cause or contribute to violations of the federal or state PM10/PM2.5 standards. For these reasons, both alternatives meet the project-specific conformity requirements.

No-Build Alternative

The No-Build Alternative would not result in violations of either federal or state CO standards. Also, since the No-Build Alternative would not be considered a POAC, it would not cause or contribute to violations of the federal or state PM10/PM2.5 standards. Consequently, the No-Build Alternative meets the project-specific conformity requirements.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure AQ-1: Reduce NO_x emissions and purchase emission reductions to offset the proposed project's NO_x effects.

Because NO_x emissions in all phases will exceed the SMAQMD significance threshold of 85 pounds of NO_x per day (Table 2.2.6-2), the SMAQMD will require that NO_x emissions from diesel construction equipment be reduced by 20% (compared to the fleet average). Because this 20% reduction measure is not enough to reduce the proposed project's NO_x emissions to less than the 85-pounds-per-day significance threshold, the City will also be required to pay a fee to the SMAQMD (Sacramento Metropolitan Air Quality Management District 2008). That fee will be used to purchase emission reductions to offset the proposed project's NOx effects. Implementation of the mitigation measures, including the fee, will minimize the proposed project's construction-related ozone-precursor emission effects and substantially minimize NOx effects.

2.2.7 Noise and Vibration

The discussion in this section is based on information in the noise study report prepared for this project (ICF Jones & Stokes 2008b).

Fundamentals of Noise and Vibration

The following is a brief discussion of fundamental noise and vibration concepts. For a detailed discussion, please refer to Caltrans' *Technical Noise Supplement* (TeNS) (California Department of Transportation 1998), a technical supplement to the *Noise Analysis Protocol* (Protocol).

Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes expressed more conveniently in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100 million mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 mPa.

Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the dB scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the dB scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

A-Weighted Decibels

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of A-weighted decibels [dBA]) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments regarding the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway traffic noise. Noise levels for traffic noise reports are typically reported in terms of dBA. Table 2.2.7-1 describes typical A-weighted noise levels for various noise sources.

Table 2.2.7-1. Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet flyover at 1,000 feet		
	— 100 —	
Gas lawnmower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	— 70 —	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher in next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: California Department of Transportation 1998.

Human Response to Changes in Noise Levels

As discussed above, the doubling of sound energy results in a 3 dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured.

Under controlled conditions in an acoustical laboratory, the trained healthy human ear is able to discern 1 dB changes in sound levels when exposed to steady single-frequency ("pure-tone") signals in the midfrequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3 dB increase in sound would generally be perceived as barely detectable.

Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors used most commonly in traffic noise analysis.

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level (L_{eq}[h]) is the energy average of A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by Caltrans and the FHWA.
- **Percentile-Exceeded Sound Level (L_{xx}):** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10% of the time, and L_{90} is the sound level exceeded 90% of the time).
- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Minimum Sound Level (L_{min}):** L_{min} is the lowest instantaneous sound level measured during a specified period.
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10 p.m. and 7 a.m.
- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m., and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours between 7 p.m. and 10 p.m.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and, hence, can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance.

Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors, such as air temperature, humidity, and turbulence, can also have significant effects.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

Fundamentals of Groundborne Noise and Vibration

Ground vibration is an oscillatory motion of the soil particles with respect to the equilibrium position that can be described in terms of the displacement, velocity, or acceleration of ground particles. Vibration can be described by its peak and root mean square (r.m.s.) amplitudes. The r.m.s amplitude is useful for assessing human annoyance, while peak vibration is used most often for assessing the potential for damage to buildings or structures, but it has also been used for assessing annoyance. In this report, groundborne vibration will be addressed primarily in terms of the r.m.s. amplitude of the vibration.

Vibration velocity is typically quantified in units of inches per second (in/sec). The peak velocity of ground particles is called the peak particle velocity (PPV). The dB notation is commonly used to describe vibration so as to cover the wide range of magnitudes that can be encountered. The vibration can be expressed in terms of the velocity level, in vibration in decibels (VdB), defined as:

$$Lv = 20\log_{10}(v/v_{ref}), \text{ VdB}$$

Where: v = r.m.s velocity (in/sec)
V_{ref} = 1 micro-in/sec

Therefore, the descriptor used in this report to assess groundborne vibration is Lv referred to 1 micro-in/sec. Vibration is a function of the frequency of motion measured in cycles/second, or Hz. Ground vibration of concern for transportation sources generally spans 4–60 Hz. A graph of the level Lv vs. frequency is a spectral plot. For the level of analysis contained herein, the “overall” vibration is used. The overall vibration is the combined energy of ground motion at all frequencies.

Vibration attenuates as a function of the distance between the source and the receiver due to geometric spreading and inherent damping in the soil, which absorbs energy of the ground motion. Groundborne vibration from rail transport systems is caused by dynamic forces at the wheel/rail interface. It is influenced by many factors, including the rail and wheel roughness, out-of-round wheel conditions, the mass and stiffness characteristics of the track support system, and the local soil conditions.

Vibration caused by the rail structure, such as at-grade ballast and tie track, radiates energy into the adjacent soil in the form of surface waves that propagate through the various soil and rock strata to the foundation of nearby buildings. Buildings respond differently to ground vibration depending on the type of foundation, mass of the building, and building interaction with the soil. Once inside the building, vibration propagates throughout the building, with some attenuation with distance from the foundation but often with amplification due to floor resonances. The basic concepts for rail system-generated ground vibration are illustrated in Figure 2.2.7-1, Propagation of Groundborne Vibration into Building.

Figure 2.2.7-2, Typical Levels of Groundborne Vibration and Response to Vibration, illustrates the typical levels of human and structural response to groundborne vibration. The figure shows that the threshold of human perception is about 65 VdB, while the threshold for “cosmetic” structural damage is about 100 VdB (re 1 micro-in/sec). However, for the latter threshold, building damage is directly related to the condition of the structure. It is very rare that transportation-related ground vibration approaches building damage levels.

Groundborne noise is the radiated noise generated by vibrating building surfaces such as floors, walls, and ceilings. Groundborne noise is proportional to the vibration level and the absorption characteristics of the room. Therefore, the descriptor used in this report to assess groundborne noise is Lp referred to 20 mPa.

Affected Environment

Existing Land Uses

The proposed project would be developed on land historically used as a major train station and locomotive works. The project area is surrounded by urban uses (Figure 2.2.7-3, Project Location). Office buildings and retail, commercial, industrial, and residential uses predominate in the vicinity of the site. Residential uses exist south and southeast of the project border, with the Alkali Flat residential neighborhood abutting the southeastern portion of the project area. There are also limited residential uses as well as industrial, office, commercial, and a number of social service enterprises north of the project area within the Richards Boulevard area.

Noise Measurement Results

The existing noise environment in the project area is characterized below based on short- and long-term noise monitoring that was conducted.

Short-Term Monitoring

Table 2.2.7-2 summarizes the results of the short-term noise monitoring conducted in the project area. Refer to Figure 2.2.7-4, Noise Monitoring Locations, for the location of measurement positions.

Table 2.2.7-2. Existing Daytime Noise Levels at Selected Locations

Noise Measurement Location	Distance from Centerline (feet)	Primary Noise Sources	Measured Noise Levels 15-minute L_{eq} (dBA)
#3 – In front of 517 7th Street	42	Roadway noise from 7th Street	63.4
#4 – In front of 619 12th Street	38	Roadway noise from 12th Street and light rail along 12th Street	68.1
#5 – In front of Econo Lodge (along 16th Street)	45	Roadway noise from 16th Street	69.5
#6 – In front of 1239 Richards Boulevard	96	Roadway noise from Richards Boulevard	63.7
#7 – In front of residential units at B Street and Bannon Street	23	Roadway noise from Bannon Street	60.6
#8 – Along 7th Street near inactive railroad spur within the specific plan area	28	Roadway noise from 7th Street	67.4

Source: PBS&J/EIP 2007b.
Note: Noise levels measured on May 3, 2007, during midday hours (between about 10:30 a.m. and 3:00 p.m.).

Long-Term Monitoring

Table 2.2.7-3 summarizes the results of long-term monitoring conducted in the project area.

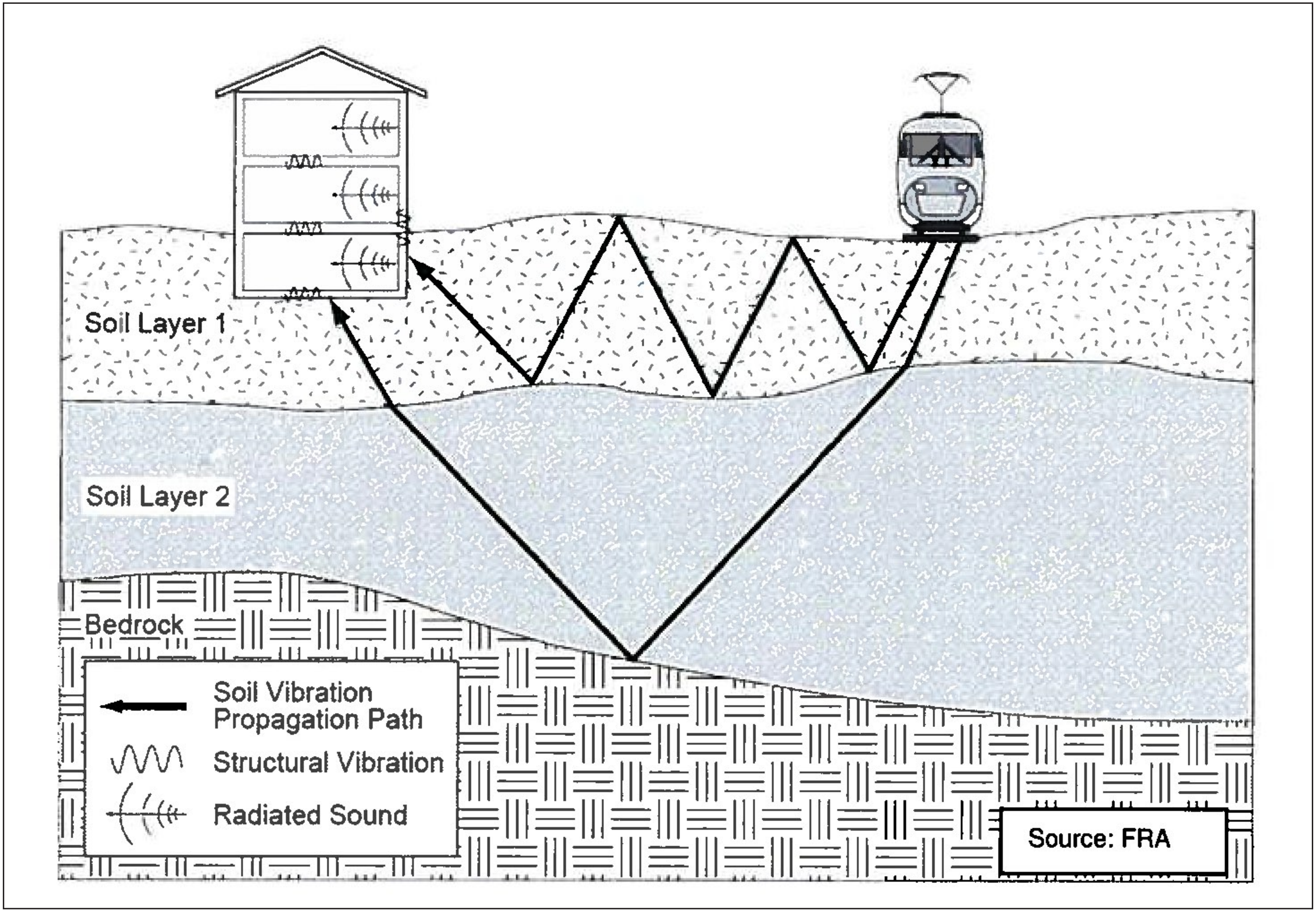

Figure 2.2.7-1
Propagation of Ground-Borne Vibration into Buildings

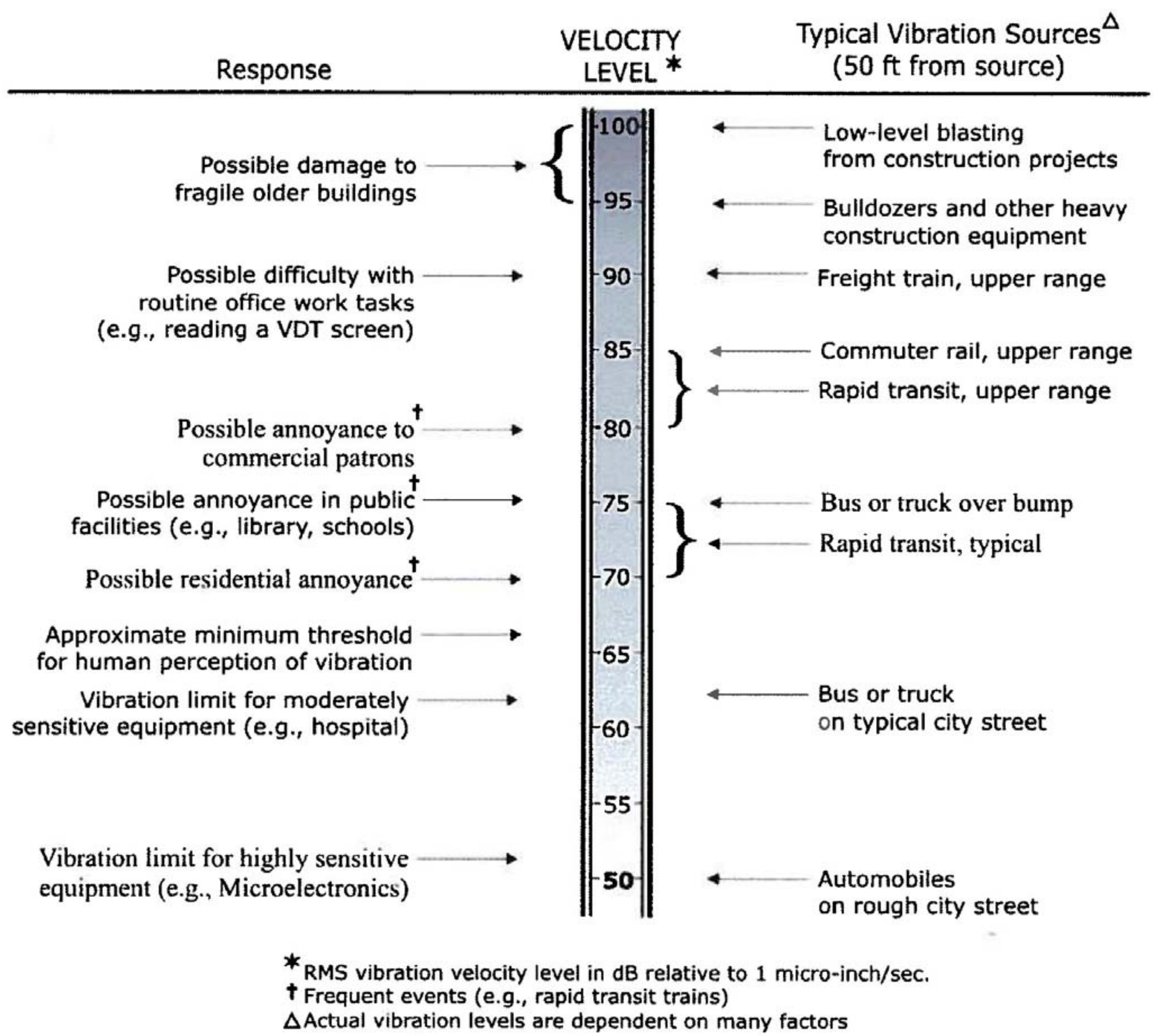

Figure 2.2.7-2
Typical Levels of Ground-Borne Vibration and Response to Vibration

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Figure 2.2.7-3
Project Location

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Figure 2.2.7-4
Noise Monitoring Locations

Table 2.2.7-3. Existing 24-Hour Noise Levels at Selected Locations

Noise Measurement Location	Primary Noise Sources	Noise Level Statistics (dBA)			
		24-hour Average L_{eq}	Calculated L_{dn}	L_{min}	L_{max}
#1 – 500 feet from Interstate 5 within specific plan area	Roadway noise from Interstate 5	67.4	72.4	49.0	88.7
#2 – 150 feet from Union Pacific Railroad alignment within specific plan area	Freight train and commuter rail passbys	63.7	71.8	46.4	100.1

Source: PBS&J/EIP 2007b.

Environmental Consequences

This section provides a program (Tier 1) level analysis of the effects of the entire three-phase project related to noise and vibration, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. Because the proposed project is not a Type I project, as defined in 23 CFR 772, a detailed traffic noise impact analysis, in accordance with the requirements of 23 CFR 772, has not been conducted. However, a discussion of the effects of Phase 1 and Phase 2 development on traffic noise and modeled traffic noise levels predicted under existing conditions and cumulative conditions (i.e., future Phase 3 conditions), with and without the project, are discussed to provide context for the noise environment under existing and future conditions.

Impact N-1: Exposure of noise-sensitive land uses to increased noise

Phase 1—Track Relocation

The Federal Railroad Administration (FRA) relies upon the Federal Transit Administration (FTA) noise and vibration impact assessment procedures (FTA 2006) for assessing improvements to rail lines and stationary rail facilities. Accordingly, FTA procedures and impact criteria are used in this assessment.

Under Phase 1, the existing mainline freight and passenger tracks would be realigned. There would be some other facility improvements made at this time as well. None of these activities would affect trip generation or traffic patterns and would therefore have no effect on traffic noise.

Realignment of the track would move it away from developed land uses located to the south and east. Increasing the distance between the tracks and adjacent land uses would reduce train noise. However, this straightening of the track would allow trains to travel faster through the area, which would have the opposite effect, thereby increasing noise.

The FHWA's Traffic Noise Model (TNM), version 2.5, was used to model the effect of the track geometry change on noise. For the purposes of assessing the effect of increased speed, existing train speeds are assumed to be 10 miles per hour (mph), and speeds with the straightened track are assumed to be 30 mph. This is consistent with the assumption used in the vibration analysis report (Wilson Ihrig Associates 2007). As recommended in FTA 2006, speed is assumed to increase noise according to the following equation:

Increase in noise = 20log10(S2/S1)

Where: S1 = initial speed
S = increased speed

Increasing the speed from 10 to 30 mph would therefore be predicted to increase noise by about 9 dB.

Table 2.2.7-4 summarizes noise predictions associated with straightening the track and increasing speed. Figure 2.2.7-5, Train Noise Modeling Locations, shows the noise prediction points.

Table 2.2.7-4. Predicted Train Noise Levels (L_{dn})

Receiver	Land Use	FTA Category	Existing Alignment L_{dn} (10 mph)	New Alignment L_{dn} (30 mph)	Increase	Impact
1	Residence	2	67	65	-2	No Impact
2	Residence	2	69	77	+8	Severe
3	Apartment	2	72	81	+9	Severe
4	Apartment	2	67	76	+9	Severe
5	Apartment	2	63	71	+8	Severe

The predicted noise levels in Table 2.2.7-4 indicate that unmitigated noise effects at residential uses located east of the project site could exceed FTA criteria for Moderate to No Impact as a result of the increased train speeds associated with straightening the track.

Table 2.2.7-5 shows the increases in noise allowed under the FTA criteria that correspond to the Moderate and No Impact levels. It also shows the reduction in noise that would be needed to reduce noise impacts to the Moderate or No Impact level.

Table 2.2.7-5. Increases Allowed for FTA Moderate and No-Impact Levels

Receiver	Land Use	FTA Category	Existing Alignment L_{dn} (10 mph)	Increase for No Impact	Increase for Moderate Impact	Mitigation Needed for No Impact	Mitigation Needed for Moderate Impact
1	Residence	2	67	1 dB	3 dB	0 dB	0 dB
2	Residence	2	69	1 dB	3 dB	-7 dB	-5 dB
3	Apartment	2	72	1 dB	2 dB	-8 dB	-7 dB
4	Apartment	2	67	1 dB	3 dB	-8 dB	-6 dB
5	Apartment	2	63	2 dB	4 dB	-6 dB	-4 dB

A potential measure to minimize this effect is discussed below (Minimization Measure N-1).

This analysis also indicates that the buildings in the Central Shops Historic District could be exposed to noise in excess of 80 dB L_{eq} from train passages. These buildings are currently unoccupied and are not used for any noise-sensitive activities. However, there are plans to develop these buildings for commercial uses in the future and a museum. Because these buildings would not be developed before the track is realigned, the increased noise from the track realignment is not predicted to result in a substantial effect on these buildings. The future reuse

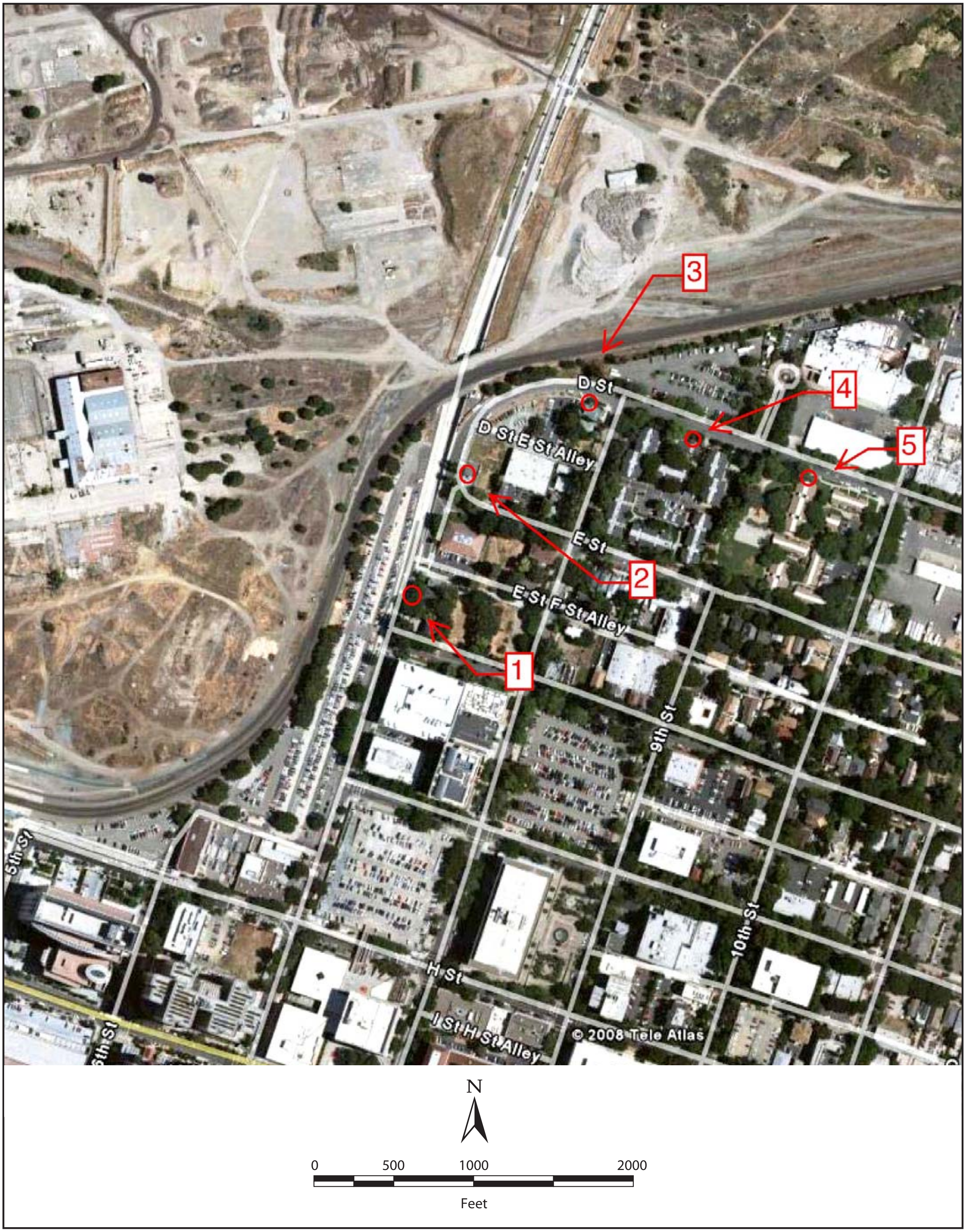

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Figure 2.2.7-5
Train Noise Modeling Locations

of the buildings, however, will need to take into account the high noise levels from train passages.

Phase 2—Sacramento Valley Station Improvements

Under Phase 2, additional facility improvements would be made, including relocating and reconfiguring passenger parking to accommodate existing parking demand and improve the drop-off area in front of the Depot. The traffic analysis conducted for this phase indicates that very small changes in peak-hour traffic volumes (typically less than 10%) would occur at some intersections in the area. A 10% change in traffic volume equates to less than a 0.5 dB change in traffic noise, which would not be perceptible.

Future Phase 3—Intermodal Improvements

Alternative 1

Under future Phase 3, the existing Station would be converted into a large multimodal regional transportation facility with substantially expanded facilities. Under Alternative 1, the Depot would not be relocated. A detailed traffic analysis of future Phase 3 conditions has not been prepared. However, the cumulative traffic noise conditions evaluated in the *Sacramento Railyards Specific Plan* (City of Sacramento 2007a) are representative of conditions that would occur under Phase 3. Table 2.2.7-6 summarizes traffic noise modeling results under cumulative conditions with and without implementation of the *Sacramento Railyards Specific Plan*.

Table 2.2.7-6. Cumulative Traffic Noise Levels with and without Project

Receptor Location	Roadway	Noise Levels (CNEL)				
		Existing No Project (dB)	Cumulative without Project (dB)	Cumulative with Project (dB)	Change over Existing (dB)	Project Contribution (dB)
517 7th Street	7th Street south of E Street	66.6	71.5	67.8	1.2	-3.7
619 12th Street	12th Street between F and G Streets	69.9	70.5	70.5	0.6	0.0
Econo Lodge (along 16th Street)	16th Street between G and H Streets	71.1	71.6	71.4	0.3	-0.2
1239 Richards Boulevard	Richards Boulevard east of Del Rios Street	66.3	71.1	69.6	3.3	-1.5
North B Street and Bannon Street	North B Street east of 7th Street (and the proposed 5th Street extension)	63.7	65.9	68.9	5.2	3.0
7th Street within the specific plan area	7th Street south of North B Street	68.3	73.2	69.5	1.2	-3.7

Source: PBS&J/EIP 2007b.

Notes: Noise levels were calculated based on peak-hour traffic volumes proved by Dowling Associates, Inc. PM peak-hour traffic volumes were used for all roadway segments except 12th Street, where the AM peak hour represented the worst-case noise level increase.

Cumulative is analyzed for 2030. Cumulative with Project assumes full build-out of the project by 2030.

The anticipated increases in noise are predicted to be 3 dB or less (barely perceptible).

<u>Alternative 2</u>

The effect under Alternative 2 would be similar to Alternative 1 except that the Depot would be relocated approximately 300 feet to the north, adjacent to the realigned tracks. A detailed traffic analysis of future Phase 3 conditions has not been prepared. However, the cumulative traffic noise conditions evaluated in the *Sacramento Railyards Specific Plan* (City of Sacramento 2007a) are representative of conditions that would occur under Phase 3. Table 2.2.7-6, above, summarizes traffic noise modeling results under cumulative conditions with and without implementation of the *Sacramento Railyards Specific Plan.* The anticipated increases in noise are predicted to be 3 dB or less (barely perceptible).

No-Build Alternative

Under the No-Build Alternative, no improvements would be made to the Station, and there would be no project-related noise effects.

Impact N-2: Exposure of noise-sensitive land uses and structures to vibration

Phase 1—Track Relocation

Groundborne vibration effects from rail and highway operations in the project area and the effect of the track relocation have been evaluated in detail in Wilson Ihrig Associates (WIA) 2007. Table 2.2.7-7 summarizes the results of the analysis. Figure 2.2.7-6, District Boundaries, shows the districts where the assessment points are located. (The Museum of Railroad Technology would be located in the Central Shops Historic District, and the performing arts facility would be located in West End District.)

It is important to recognize that the track would be relocated before most of these uses would be developed. Accordingly, the impacts identified in Table 2.2.7-7 would not occur until development is implemented. However, there are existing uses in the Depot District where the FTA criteria are predicted to be exceeded. In addition, the historic buildings in the Central Shops Historic District may be considered fragile historic buildings. For the purposes of this analysis, these buildings are considered to fall into the category of "buildings extremely susceptible to vibration damage," as indicated in Appendix C, Table C-7. The corresponding impact threshold for these types of buildings is 90 VdB (Appendix C, Table C-7). The results in Table 2.2.7-7 indicate that buildings in the Central Shops Historic District could be exposed to ground vibration as high as 91 VdB. Minimization Measure N-2 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements

There would be no groundborne vibration effects from rail and highway operations in the project area under Phase 2.

Future Phase 3—Intermodal Improvements

<u>Alternative 1</u>

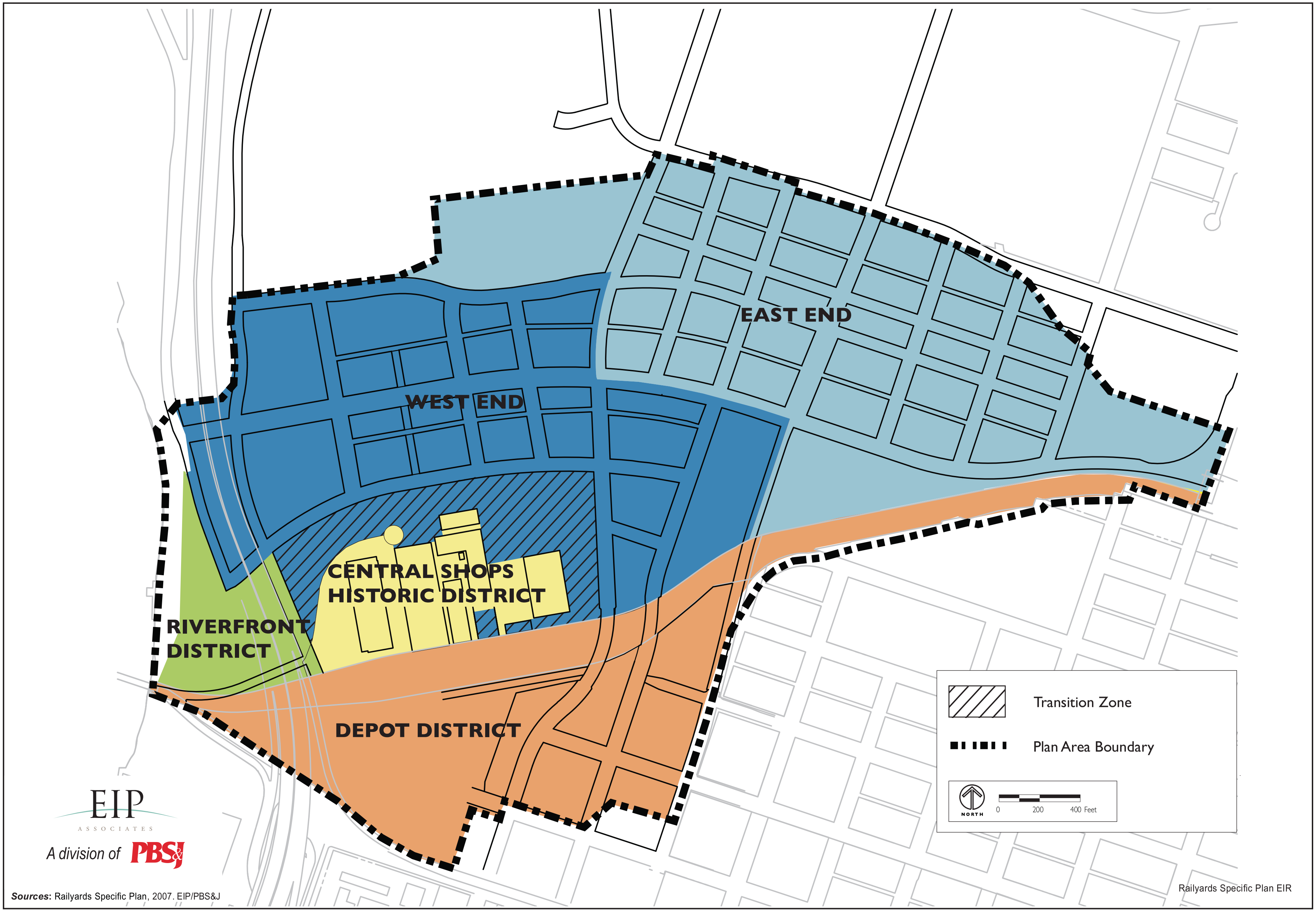
There would be no groundborne vibration effects from highway operations in the project area under future Phase 3.

Table 2.2.7-7. Projected Groundborne Vibration and Noise at the Location of the Closest Sensitive Receptors

Rec. ID	Rec. Dist. Location	Source	Land Use	Side of Track	Speed (mph)	Distance to Near Track CL (feet)	Track Type	FTA GBV Criteria, VdB	Projected GBV, VdB (re 1 µin/sec)	Type of Impact	FTA GNB Criteria, dBA	Projected GBN, dBA (re 20 µPa)	Type of Impact
1	Museum of Railroad Technology	Freight	INST	N	30	45	AG	75	91	I	40	51	I
		Pass			10	70			80	I		47	I
2	Performing Arts Facility	Freight	PA	N	30	520	AG	65	77	I	25	27	I
		Pass			10	550			63	NI		30	I
3	Parcel 47b – West End District	Freight	MFR	N	30	45	AG	72	91	I	35	51	I
		Pass			10	45			84	I		51	I
		LRT		E	35	150	EM		74	I		27	NI
4	Parcel 51 – East End District	Freight	MFR	N	30	100	AG	72	88	I	35	44	I
		Pass			30	100			84	I		51	I
5	Parcel 44 – Depot District	Freight	MFR	S	30	250	AG	72	83	I	35	34	NI
		Pass			10	90			78	I		45	I
		LRT			20	20	EM		74	I		50	I
6	Parcel 12 – West End District	I-5	MFR	E	–	80	–	72	70	NI	35	20	NI

Source: Wilson Ihrig Associates 2007.

Pass = passenger, Amtrak, or high-speed trains (California high-speed rail).
LRT = light rail train.
I-5 = vehicle traffic on Interstate 5.
MFR = multifamily residence.
PA = performing arts.
INST = institutional.
AG = at-grade ballast and tie track.
EM = at-grade embedded track.
I = impact as defined by the FTA.
NI = no impact as defined by the FTA.
CL = centerline.
GBV = groundborne vibration.
GBN = groundborne noise.



Sources: Railyards Specific Plan, 2007. EIP/PBS&J

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Figure 2.2.7-6
District Boundaries

<u>Alternative 2</u>
Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect Alternative 2 in future Phase 3 of the project would be similar to Alternative 1.

No-Build Alternative
Under the No-Build Alternative, no improvements would be made to the Station, and there would be no project-related operational vibration effects.

Impact N-3: Exposure of noise-sensitive land uses and structures to construction noise and vibration

Phase 1—Track Relocation
During track relocation, noise levels would be produced by the operation of heavy-duty equipment and various other construction activities. Similar to other projects in the area, pile driving could be necessary for track bed foundations. The 8-hour L_{eq} construction noise levels have been estimated using the FTA methodology for various typical construction phases. The noise levels associated with the equipment to be used during the various project construction phases are shown in Table 2.2.7-8.

There are sensitive uses surrounding the project area—specifically, residential uses to the north, south, and southeast. Construction noise would affect surrounding uses to varying degrees throughout the period of construction, including site grading, excavation for infrastructure and building foundations, pile driving, building construction, and paving and landscaping. The Sacramento Municipal Code, Title 8 (Health and Safety), Chapter 8.68 (Noise Control), limits construction activity to the period between the hours of 7 a.m. and 6 p.m. Monday through Saturday. Construction is also limited to the hours between 9 a.m. and 6 p.m. on Sunday. Because typical sleeping hours fall outside the time during which construction must occur, construction noise would not be expected to disturb the sleep of nearby residents.

Office and commercial uses in the vicinity of the specific plan area would be open during the time when construction would occur. The noise from construction could disturb people working in these buildings. Older California building standards (pre-1970) generally provide a reduction of exterior-to-interior noise levels of up to about 20 dB with closed windows; newer buildings generally provide a reduction of up to about 30 dB. Accordingly, interior noise levels would be 20–30 dB less than the levels shown in Table 2.2.7-8.

Pile driving noise typically can be as high as 101 dBA at 50 feet from the hammer (Federal Transit Administration 2006) and may be audible within buildings in and near the project area. While it is anticipated that most occupants of the closest residential units would be at work during the day, occupants of office and commercial uses would be at work during the day and could be affected by pile driving activities.

The FTA guidance indicates that 8-hour L_{eq} construction noise levels should not exceed 80 dBA during the day and 70 dBA at night at residences. The guidance also indicates that 8-hour L_{eq} construction noise levels should not exceed 85 dBA at commercial uses at any time. The results in Table 2.2.7-8 indicate that construction noise could exceed these levels at nearby residential and commercial uses.

Table 2.2.7-8. Estimated Construction Noise Levels (dBA)

Construction Equipment	8-hour L_{eq}		
	25 feet	50 feet	75 feet
Demolition			
Trackhoe	96	90	87
Crane	94	88	85
Excavator/loader	91	85	82
Water truck	94	88	85
Site work			
Crawler tractor	91	85	82
Grader	91	85	82
Loader	91	85	82
Compactor	88	82	79
Water truck	94	88	85
Pile driver	107	101	98
Foundation			
Backhoe	86	80	77
Loader	91	85	82
Forklift	85	79	76
Water truck	94	88	85
Utilities			
Backhoe	86	80	77
Water truck	94	88	85
Forklift	85	79	76
Slab on Grade			
Skip loader	88	82	79
Bobcat tractor	90	84	81
Forklift	85	79	76
Steel erection			
Crane	94	88	85
Air compressor	87	81	76
Generator	87	81	78
Forklift	85	79	78
Decking/slabs			
Generator	87	81	78
Forklift	85	79	76
Concrete pump	88	82	79
Completion			
Forklift	85	79	76

Source: PBS&J/EIP 2007b.
Note: Noise levels calculated from equations defined by FTA 2006, pages 12-2 to 12-7.

Certain construction activities could result in high levels of groundborne vibration. Table 2.2.7-9 summarizes vibration levels produced by equipment that is likely to be used in the project area.

Table 2.2.7-9. Vibration Source Levels for Construction Equipment

Construction Equipment	PPV at 25 feet (in/sec)	Approximate VdB at 25 feet
Pile driver (impact)		
Upper range	1.518	112
Typical	0.644	104
Pile driver (sonic)		
Upper range	0.734	105
Typical	0.170	93
Vibratory roller	0.210	94
Hoe ram	0.089	87
Large bulldozer	0.089	87
Caisson drilling equipment	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Source: Federal Transit Administration 2006 in City of Sacramento 2007a.

These values have been compared to the FTA vibration damage criteria presented in Appendix C, Table C-7. This comparison indicates that pile driving and other high-impact activities could expose existing buildings in the project area to vibration that has the potential to cause damage. The historic buildings in the Central Shops Historic District, in particular, may be susceptible to damage from pile driving and other impact activities. Minimization Measure N-3would minimize this effect.

Phase 2—Sacramento Valley Station Improvements

Construction under Phase 2 will involve primarily depot electrical upgrades, restriping and repaving of parking areas, and relocation of the LRT station and tracks. It is not anticipated that pile driving will be required. With the exception of pile-driving equipment, there is potential for equipment listed in Table 2.2.7-8 for “Site Work”, “Foundation”, and “Utilities” to be used under Phase 2.

The FTA guidance indicates that 8-hour L_{eq} construction noise levels should not exceed 80 dBA during the day and 70 dBA at night at residences. The guidance also indicates that 8-hour L_{eq} construction noise levels should not exceed 85 dBA at commercial uses at any time. The results in Table 2.2.7-8 for equipment potentially associated with Phase 2 indicate that construction noise could exceed these levels at nearby residential and commercial uses.

Certain construction activities associated with Phase 2 could result in high levels of groundborne vibration. Excluding pile driving and caisson drilling, Table 2.2.7-9 summarizes vibration levels produced by equipment that is likely to be used in the project area under Phase 2.

These values have been compared to the FTA vibration damage criteria presented in Appendix C, Table C-7. This comparison indicates that high-impact activities could expose existing buildings in the project area to vibration that has the potential to cause damage. The historic buildings in the Central Shops Historic District, in particular, may be susceptible to damage from some activities. Minimization Measure N-3 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

Construction noise and vibration impacts under future Phase 3 would be similar to that described for Phase 1. Pile driving and other high-impact activities could expose existing buildings in the project area to vibration that has the potential to cause damage. The historic buildings in the Central Shops Historic District, in particular, may be susceptible to damage from pile driving and other high-impact activities. Minimization Measures N-2 and 3 would minimize this effect.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the effect under Alternative 2 in future Phase 3 of the project would be similar to Alternative 1. The historic buildings in the Central Shops Historic District, in particular, may be susceptible to damage from high-impact construction activities. Minimization Measures N-2 and 3 would minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no construction would occur and improvements would be made to the Station; therefore, there would be no project-related construction noise and vibration effects.

Avoidance and Minimization Measures

Minimization Measure N-1: Implement measures to reduce train noise

The train noise analysis presented in this chapter, which is based on preliminary design information, indicates that realignment of the track will result in severe noise impacts as defined by FTA at residential locations east of the project site. The City will conduct a design level train noise analysis based on engineering level geometric and train operational data to determine if severe noise impacts as defined by FTA will in fact occur with realignment of the track. If the analysis determines that severe noise impacts will not occur, measures to reduce noise will not implemented. If it is determined that severe noise impacts will occur, the City will identify and implement measures where feasible to reduce noise to a level that is less than severe as defined by FTA. Measures to reduce train noise that are commonly used (FTA 2006) and have potential to be employed on this project include:

- operational restrictions (e.g., limiting speed or time of day of rail operations),
- sound barrier between track and receivers,
- use of special track ballast, and
- building noise insulation at residences.

It is not considered feasible to impose restrictions on train operations (speed and time of day) because a primary purpose of the project is to provide more efficient operations by allowing increased train speeds. Construction of a sound barrier between the track and adjacent residences would be an effective approach to reducing noise. A preliminary analysis indicates that a 12- to 14-foot-high solid barrier (constructed with a material that has a surface density of at least 4 pounds per square foot) that extends from the E Street/F Street Alley to 10th Street would be effective. Specific treatments to be implemented, if any, will be determined as part of the design level noise analysis.

Minimization Measure N-2: Implement design options to limit vibration from rail operations

WIA 2007 provides a detailed discussion of options for mitigating vibration from the track relocation. The report states that the available mitigation measures are essentially limited to a maximum vibration reduction of 15 VdB. With vibration levels as high as 16 VdB above the FTA criterion in the Central Shops Historic District, the report acknowledges that it might not be feasible to reduce vibration to the occupied use criterion level of 75 VdB for the current building siting plan. It does appear feasible that vibration can be mitigated to reduce vibration below the 90 VdB damage threshold.

Implementation of design options can reduce vibration from rail operations. Potential design options include the following:

- **Increase distance to buildings:** Locating vibration-sensitive receptors farther away from the rail alignment could help to reduce the level of impact. The following distances are based on projected groundborne vibration levels in the ground. A thorough review of the proposed structural properties of the buildings, when they are available, could alter the screening distances. All distances are measured from the closest track centerline. At this stage of the analysis, the minimum recommended distance for residential buildings is 700 feet from freight trains traveling at 30 mph, 200 feet from passenger trains traveling 10 mph (west of 7th Street), and 450 feet for passenger trains traveling 30 mph (east of 7th Street);
- **Soil densification:** Increasing soil stiffness under the track will, theoretically, reduce the force that the rail vehicle is capable of imparting on the soil; therefore, the resulting soil vibration levels should be lower. However, this type of mitigation does not appear capable, at this point, of providing enough reduction by itself to achieve levels specified by the FTA criteria. Moreover, the extent of this type of solution should go down to the stiffer, naturally occurring layers of soil, which may require treatment that is very deep. It is anticipated that treatment of the soil to depths of at least 30 feet or deeper would provide benefits on the order of about 4 VdB of reduction. Detailed investigation and analysis of the local soil characteristics should be performed prior to analyzing this mitigation approach further;
- **Trenches:** The use of trenches could mitigate vibration from the Union Pacific Railroad rail alignment. This method is more effective when trenches are located next to the rail alignment. Trenches work in a manner analogous to a soundwall. However, a general rule of thumb, as presented by the FTA, is that the bottom of the trench should be at least 0.6 times the Rayleigh wavelength. Given the initial third-octave band analysis, vibration mitigation must be achieved for frequencies of 6 Hz and higher. The equivalent trench depth for standard soil at a frequency of 6 Hz would be approximately 60 feet. The expected reduction in vibration levels could be on the order of 4 to 5 VdB with this method;
- **Piles under track bed:** Another mitigation alternative is to construct a concrete track bed over deep and massive piles. Piles would need to be driven about 60 feet deep into the soil.

The expected vibration reduction provided by this type of mitigation is no more than 5 VdB under optimal circumstances;

- **Tire-derived aggregate (TDA):** The use of shredded scrap tires as a vibration-isolating medium for railroads is relatively recent. TDA as a vibration-reduction medium consists of the construction of a compacted layer of shredded tires, approximately 12 to 18 inches thick, located below the sub-ballast and ballast layers of the track. This system has been installed at selected locations on two transit systems, the Santa Clara Valley Transportation Authority's Vasona line and Denver's TREX light rail line. Recent investigation indicates that the performance is more effective than a ballast mat but less effective, particularly at lower frequencies, when compared to the performance of a floating-slab track-bed system; and
- **Floating-slab tracks:** This approach consists of a massive concrete slab supported on elastomeric elements, normally natural rubber. Several designs have been successfully used for heavy-rail transit systems, such as in Washington, DC; Atlanta; Boston; and the Bay Area on the San Francisco Bay Area Rapid Transit District (BART) system. This specific design consists of concrete slabs that are normally 6 feet long and supported vertically on four natural rubber pads per slab. Each slab is held in place in the lateral direction by natural rubber "side pads" that bear against a curb constructed in a concrete bathtub (a shallow retained cut). In the longitudinal direction, natural rubber pads separate adjacent slabs. All of the horizontal (lateral and longitudinal) restraint pads are pre-compressed during installation. One of the most significant design parameters of the floating-slab track bed is the fundamental natural frequency of the track bed in the vertical direction. The appropriate floating-slab natural frequency depends on the groundborne vibration frequencies that require reduction. To date, floating-slab track-bed designs have been in the 8 to 16 Hz range. The design for the BART system was targeted to achieve an 8 Hz natural frequency because of unusual circumstances, involving primarily soil conditions.

Minimization Measure N-3: Implement treatments during construction to reduce noise and vibration.

Whenever construction occurs adjacent to occupied residences (on or off site), temporary barriers will be constructed around the construction sites to shield the ground floor of the noise-sensitive uses. Barriers should be designed by the construction contractor to provide 8 to 10 dB of noise reduction where feasible. Construction activities will be conducted to comply with the City's Noise Ordinance, which limits such activity to the hours of 7 a.m. to 6 p.m. Monday through Saturday and 9 a.m. to 6 p.m. on Sunday, prohibits nighttime construction, and requires the use of exhaust and intake silencers for engines on construction equipment. Exceptions to these requirements may be granted by the building inspector, consistent with the City's noise ordinance where during nighttime hours cannot be avoided. Construction equipment staging areas will be located as far as feasible from residential areas while still serving the needs of construction contractors. Quieter "sonic" pile drivers can be used, unless engineering studies indicate that it is not feasible or cost-effective based on geotechnical considerations.

Measures that can be used to limit vibration from construction equipment include using drilled piles or sonic or vibratory pile driving instead of high-impact pile driving. Alternative demolition methods that do not involve impact can also be used. For example, sawing concrete decks into sections that can be loaded onto trucks can result in lower vibration levels than impact demolition by pavement breakers.

2.3 Biological Environment

2.3.1 Animal Species

Affected Environment

Background literature review indicated that a total of 13 special-status wildlife species (CNDDB) and potentially occurring federally listed species (USFWS [Appendix B]) could occur in the entire 244-acre Railyards development site and vicinity (Table 2.3-1). Of these, only six of those species were determined to have the potential to occur in the 33-acre project area and to be affected by implementation of the proposed project. Those species are listed below.

Swainson's Hawk

Numerous records for Swainson's hawk nest locations have been documented along the Sacramento and American Rivers that place the proposed project site within the foraging range of these birds. The potential for this species to occur on the project site is low because there is no suitable nesting habitat on the site, and the discontinuous patches of ruderal vegetation within the study area do not provide significant foraging habitat because of the high level of disturbance. During the May 22, 2008 site visit, the only potential prey species observed within the study area were black-tailed jackrabbits. No mammal burrows were observed within the study area, presumably as a result of past and present soil remediation activities on site.

White-Tailed Kite

White-tailed kites were not observed within the study area during the 2006 site visits conducted for the RSP EIR or the May 22, 2008 site visit for the proposed project. The study area does not provide potential nesting habitat for this species. This species is known to forage in ruderal vegetation; however, the site provides a limited prey base for this species. The potential for this species to occur on the project site is therefore low.

Burrowing Owl

There is potential habitat for burrowing owls in the study area. Although no mammal burrows were observed within the study area, debris piles on site may provide cover for burrowing owls. No burrowing owls or burrowing owl signs (owl pellets or prey remains) were observed within the study area during the 2006 site visits for the RSP EIR or the May 22, 2008 site visit for the proposed project. The potential for this species to occur on the project site is therefore low.

Purple Martin

A colony of purple martins is known to occur on the underside of the I Street ramp leading from the I Street Bridge, which is adjacent to the proposed project site. This nesting colony has occupied this location since at least 1974. It uses the weep holes underneath the I Street ramp and gathers nesting materials from the western portion of the proposed project site. This colony was observed during the 2006 site visits for the RSP EIR and the May 22, 2008 site visit for the proposed project.

Roosting Bats

The elevated sections of I-5 and the I Street ramp provide roosting habitat for bats, including for pallid and Pacific western big-eared bats, both species of special concern. During the site visits in 2006 for the RSP EIR, unidentified bats were observed roosting in the road seams underneath I-5 and the I Street ramp. On May 22, 2008, several unidentified bats were observed roosting in a road seam underneath the I Street ramp, and a moderate amount of guano was observed below the roost. This site could serve as a maternal colony or just a day roost for bats. Additionally, bats could establish day roosts or maternity roosts at the Depot.

Valley Elderberry Longhorn Beetle

Four elderberry shrubs (habitat for VELB) were identified during surveys of the project site during the May 22 and December 12, 2008, site visits (Figure 2.3-1). Three of the shrubs are located near the railroad tracks slated for relocation in Phase 1 of the project. The other shrub is located within 100 feet of the track relocation area. These shrubs were identified within nonriparian habitat and appear to be volunteers among mostly nonnative landscape vegetation, but some native vegetation, consisting of oaks, cottonwoods, and willows, does occur in these areas. Only one of the shrubs observed had exit holes (evidence of past use by VELB).

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on animal species, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below. Biologists reviewed existing resource information related to the project to evaluate potential threatened and endangered species that could occur within the proposed project site. These sources included:

- The *Sacramento Railyards Specific Plan Environmental Impact Report*, including 2006 biological surveys (PBS&J/EIP 2007a);
- CNDDB records search for the proposed project site and a 10-mile radius (2008);
- USFWS website's list of endangered and threatened species that may occur in or be affected by projects in the vicinity of the proposed project site (2008).

Surveys for the proposed project were conducted on May 22, 2008 to verify the information from previous studies and surveys and document whether biological conditions had changed.

Impact BIO-1: Potential disturbance to nesting migratory birds during project construction

Phase 1—Track Relocation

Active Swainson's hawk, white-tailed kite, burrowing owl, and purple martin nests could be affected by construction of Phase 1 of the project, including the track work, new utility installation, and new platforms and tunnel connection in Phase 1. For Swainson's hawk and white-tailed kite, impacts were identified for the portion of the riparian habitat along the Sacramento River, which is outside of the study area. Even so, this habitat is close enough to the

Table 2.3-1. Special-Status Species Identified as Having the Potential to Occur in the Biological Study Area

Common and Scientific Names	Status[a] Federal/State/Other	Distribution	Preferred Habitats	Known and Potential Occurrence in the Project Area[b]
Plants				
Ferris' milk-vetch *Astragalus tener var. ferrisiae*	–/–/1B.1	Known to occur in the northern Sacramento Valley.	Spring meadows and seeps, and valley grasslands in subalkaline flats.	**No**. No suitable habitat exists within the biological study area.
Alkali milk-vetch *Astragalus tener var. tener*	–/–/1B.2	Known to occur in the southern Sacramento Valley, northern San Joaquin Valley, and east San Francisco Bay.	Playas, valley and foothill grasslands on adobe clay soils, and alkaline vernal pools.	**No**. No suitable habitat exists within the biological study area.
Heartscale *Atriplex cordulata*	–/–/1B.2	Known to occur in the southern Sacramento Valley and San Joaquin Valley.	Chenopod scrub, meadows, seeps, and valley and foothill grasslands on saline or alkaline soils.	**No**. No suitable habitat exists within the biological study area.
Brittlescale *Atriplex depressa*	–/–/1B.2	Known to occur in the southern Sacramento Valley and San Joaquin Valley.	Chenopod scrub, meadows, seeps, playas, valley and foothill grasslands, and vernal pools on alkaline-clay soils.	**No**. No suitable habitat exists within the biological study area.
San Joaquin spearscale *Atriplex joaquiniana*	–/–/1B.2	Known to occur in the southern Sacramento Valley, San Joaquin Valley, and Inner Coast Range..	Chenopod scrub, meadows, seeps, playas, and valley and foothill grasslands on alkaline soils.	**No**. No suitable habitat exists within the biological study area.
Palmate-bracted bird's-beak *Cordylanthus palmatus*	E/E/1B.1	Known to occur in the Central Valley.	Chenopod scrub and valley and foothill grasslands on alkaline soils.	**No**. No suitable habitat exists within the biological study area.
Dwarf downingia *Downingia pusilla*	–/–/2.2	Fresno, Merced, Napa, Placer , Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, Yuba counties	Valley and foothill grassland, vernal pools.	**No**. No suitable habitat exists within the biological study area.
Bogg's Lake hedge-hyssop *Gratiola heterosepala*	–/E/1B.2	Occurs in the inner north Coast Range, central Sierra Nevada foothills, Sacramento Valley, and the Modoc Plateau.	Vernal pools and margins of seasonally receding ponds and lakes.	**No**. No suitable habitat exists within the biological study area.
Woolly rose-mallow *Hibiscus lasiocarpus*	–/–/2.2	Known to occur in the southern Sacramento Valley and delta region.	Freshwater marshes and swamps.	**No**. No suitable habitat exists within the biological study area.
Northern California black walnut *Juglans hindsii*	–/–/1B.1	Known to occur in the North Coast Range, southern Sacramento Valley, northern San Joaquin Valley, and San Francisco Bay Area.	Riparian forest and woodlands.	**No**. No suitable habitat exists within the biological study area.

Table 2.3-1. Continued

Common and Scientific Names	Status[a] Federal/State/Other	Distribution	Preferred Habitats	Known and Potential Occurrence in the Project Area[b]
Legenere *Legenere limosa*	–/–/1B.1	Primarily in the lower Sacramento Valley in Lake and Solano Counties; San Joaquin Valley in Stanislaus County; San Mateo County in the Santa Cruz Mountains	Seasonally saturated habitat, such as vernal pools, swales, drainages, marsh edges, and river banks.	**No**. No suitable habitat exists within the biological study area.
Heckard's pepper grass *Lepidium latipes var. heckardii*	–/–/1B.1	Known to occur in southern Sacramento Valley.	Valley and foothill grasslands on alkaline flats.	**No**. No suitable habitat exists within the biological study area.
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	–/–/1B.1	Known to occur in Inner Coast Ranges and western Sacramento Valley.	Cismontane woodland, lower montane coniferous forest, meadows, seeps, valley and foothill grasslands, and vernal pools.	**No**. No suitable habitat exists within the biological study area.
Colusa grass *Neostapfia colusana*	T/E/1B.1	Known to occur in the Central Valley.	Large adobe vernal pools.	**No**. No suitable habitat exists within the biological study area.
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Widespread but infrequent; Del Norte, Fresno, Sacramento, Santa Barbara, and Ventura Counties	Sloughs and sluggish streams with silty or muddy substrate; associated with emergent marsh vegetation between.	**No**. No suitable habitat exists within the biological study area.
Solano grass *Tuctoria mucronata*	E/E/1B.1	Known to occur in Solano County.	Mesic valley and foothill grasslands and vernal pools.	**No**. No suitable habitat exists within the biological study area.
Invertebrates				
Conservancy fairy shrimp *Branchinecta conservatio*	E/–	Limited to eight populations in the following counties: Butte, Tehama, Glenn, Yolo, Solano, Merced, Stanislaus, and Ventura.	Inhabit large, cool-water pools with moderately turbid water.	**No**. No suitable habitat exists within the biological study area.
Vernal pool fairy shrimp *Branchinecta lynchi*	T/–	Central Valley; central and south Coast Ranges from Tehama County to Santa Barbara County; isolated populations also in Riverside County	Common in vernal pools; also found in sandstone rock outcrop pools	**No**. No suitable habitat exists within the biological study area.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–	Riparian and oak woodland habitats below 3,000 feet throughout the Central Valley and surrounding foothills	Riparian and oak savanna habitats with elderberry shrubs, which are the host plant	**Low**. Four elderberry shrubs (habitat for VELB) were identified during surveys of the project site. Only one of the shrubs observed had exit holes.
Vernal pool tadpole shrimp *Lepidurus packardi*	E/–	Great Central Valley and the Sacramento River Delta to the east side of San Francisco Bay, California	Vernal pools and ephemeral stock ponds	**No**. No suitable habitat exists within the biological study area.

Table 2.3-1. Continued

Common and Scientific Names	Status[a] Federal/State/Other	Distribution	Preferred Habitats	Known and Potential Occurrence in the Project Area[b]
Fish				
Green sturgeon *Acipenser medirostris*	T/SSC	In California they are known to spawn in the Sacramento River and Klamath River Basin.	An anadromous fish that spawns in deep pools or "holes" in large, turbulent, freshwater river mainstems. Early life stages may remain in fresh water for up to two years.	**No**. No suitable habitat exists within the biological study area.
Sacramento perch *Archoplites interruptus*	–/SSC	Historically occurred throughout the Central Valley, in Clear Lake, and the Pajaro and Salinas Rivers. Now occur in a few locations within their native range and have been introduced into several reservoirs and associated streams.	Formerly inhabited sloughs, slow moving rivers, and lakes, but are now found mostly in reservoirs and farm ponds.	**No**. No suitable habitat exists within the biological study area.
Delta smelt *Hypomesus transpacificus*	T/T	Are found only from the Suisun Bay upstream through the Delta in Contra Costa, San Joaquin, Sacramento, Solano, and Yolo Counties.	Are found in euryhaline waters of the Delta. Spawn in tidally influenced backwater sloughs and channel edgewaters	**No**. No suitable habitat exists within the biological study area.
Central Valley steelhead *Oncorhynchus mykiss*	T/–	Sacramento and San Joaquin River and their tributaries.	An anadromous fish that spawns and spends a portion of its life in inland streams, typically maturing in the open ocean.	**No**. No suitable habitat exists within the biological study area.
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T/T	Sacramento and San Joaquin River and their tributaries.	An anadromous fish that spawns and spends a portion of its life in inland streams, typically maturing in the open ocean.	**No**. No suitable habitat exists within the biological study area.
Winter-run Chinook salmon, Sacramento River *Oncorhynchus tshawytscha*	E/E	Sacramento River and its tributaries.	An anadromous fish that spawns and spends a portion of its life in inland streams, typically maturing in the open ocean.	**No**. No suitable habitat exists within the biological study area.
Sacramento splittail *Pogonichthys macrolepidotus*	–/SSC	Endemic to California, mainly to sloughs, lakes, and rivers of the Central Valley.	Adapted for living in estuarine waters with fluctuating conditions. Prefer slow moving sections of rivers and sloughs. Move upstream during winter and spring months to forage and spawn.	**No**. No suitable habitat exists within the biological study area.
Amphibians				
California tiger salamander *Ambystoma californiense*	T/SSC	Occur in the Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet and coastal region from Sonoma County south to Santa Barbara County, up to approximately 3,000 feet.	Small ponds, lakes, or vernal pools in grass-lands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults	**No**. No suitable habitat exists within the biological study area.

Table 2.3-1. Continued

Common and Scientific Names	Status[a] Federal/State/Other	Distribution	Preferred Habitats	Known and Potential Occurrence in the Project Area[b]
California red-legged frog *Rana aurora draytonii*	T/SSC	Historic range extended along the coast from the vicinity of Point Reyes National Seashore in Marin County, and inland from Shasta County south to Baja California. Current known distribution is along the coast from Marin County south to Los Angeles County (with inland populations in San Bernardino and Riverside Counties), the inner Coast Range from Tehama County south to eastern San Luis Obispo County, and in the Sierra Nevada from Butte County south to Tuolumne County.	Permanent and semi-permanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation and riparian species along the edges; may estivate in rodent burrows or cracks during dry periods	**No**. No suitable habitat exists within the biological study area.
Reptile				
Western pond turtle *Actinemys marmorata*	–/SSC	The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries.	Occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation in woodlands, grasslands, and open forests	**No**. No suitable habitat exists within the biological study area.
Giant garter snake *Thamnophis gigas*	T/T	Central Valley from Fresno north to the Gridley/Sutter Buttes area; has been extirpated from areas south of Fresno	Sloughs, canals, and other small waterways where there is a prey base of small fish and amphibians; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter	**No**. No suitable habitat exists within the biological study area.
Birds				
Tricolored blackbird (nesting colony) *Agelaius tricolor*	–/SSC	Largely endemic to California; permanent residents in the Central Valley from Butte County to Kern County; at scattered coastal locations from Marin County south to San Diego County; breeds at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; nesting habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony; requires large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots, where insect prey is abundant	**No**. No suitable habitat exists within the biological study area.

Table 2.3-1. Continued

Common and Scientific Names	Status[a] Federal/State/Other	Distribution	Preferred Habitats	Known and Potential Occurrence in the Project Area[b]
Grasshopper sparrow *Ammodramus savannarum*	–/SSC	Summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada crest.	Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches. Nests in slight depressions in dense grasslands.	**No**. No suitable habitat exists within the biological study area.
Burrowing owl (burrow sites and some wintering sites) *Athene cunicularia*	–/SSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast	Rodent burrows in sparse grassland, desert, and agricultural habitats	**Low**. Habitat for this species in the biological study area is limited to debris piles. No burrows were identified in the biological study area.
Swainson's hawk (nesting) *Buteo swainsoni*	–/T	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; the state's highest nesting densities occur near Davis and Woodland, Yolo County	Nests in small stands of oaks or cottonwoods in or near open riparian habitats; forages in grasslands, irrigated pastures, and grain fields adjacent to nest locations.	**Low**. No preferred nesting habitat for this species occurs in the project area. Foraging habitat (large grasslands, pastures, and grain fields) does not occur within the biological study area. The discontinuous patches of ruderal vegetation within the study area do not provide significant foraging habitat because of the high level of disturbance. There are no recorded occurrences of this species within the immediate vicinity of the biological study area, though there are several occurrences within five miles (CNDDB 2008).
Western snowy plover *Charadrius alexandrines nivosus*	T/SSC	Nests at inland lakes throughout northeastern, central, and southern California, including Mono Lake and Salton Sea	Barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds and riverine sand bars; also along sewage, salt-evaporation, and agricultural waste-water ponds	**No**. No suitable habitat nesting exists within the biological study area.
Mountain plover *Charadrius montanus*	–/SSC	Does not breed in California; in winter, found in the Central Valley south of Yuba County, along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties; parts of Imperial, Riverside, Kern, and Los Angeles Counties	Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grainfields	**No**. No suitable habitat exists within the biological study area.

Table 2.3-1. Continued

Common and Scientific Names	Status[a] Federal/State/Other	Distribution	Preferred Habitats	Known and Potential Occurrence in the Project Area[b]
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	C/E	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers	Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant	**No**. No suitable habitat exists within the biological study area.
White-tailed kite (nesting) *Elanus leucurus*	–/FP	Lowland areas west of Sierra Nevada from head of Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border	Low foothills or valley areas with valley or live oaks, riparian areas, and marshes near open grasslands for foraging	**Moderate.** There is no suitable nesting habitat for this species in the biological study area; however there is potential foraging habitat within the biological study area.
Purple martin *Progne subis*	–/SSC	Coastal mountains south to San Luis Obispo County, west slope of the Sierra Nevada, and northern Sierra and Cascade ranges. Absent from the Central Valley except in Sacramento. Isolated, local populations in southern California	Nests in abandoned woodpecker holes in oaks, cottonwoods, and other deciduous trees in a variety of wooded and riparian habitats. Also nests in vertical drainage holes under elevated freeways and highway bridges	**High**. Known to nest in weep holes on the underside of the I Street ramp leading from the I Street bridge and may gather nesting materials from the western portion of the study area.
Bank swallow *Riparia riparia*	–/T	Occurs along the Sacramento River from Tahama County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County	Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam	**No**. No suitable habitat exists within the biological study area.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	–/SSC	Breeds east of Cascade Range and Sierra Nevada in the Central Valley, Imperial Valley, and Colorado River valleys.	Nesting colonies located in large, dense emergent wetlands, often consisting of tules, cattails, or other tall plants along the borders of lakes or ponds. Nests and roosts are over deep water. Winters in southwest U.S. and Mexico.	**No**. No suitable habitat exists within the biological study area.
Mammals				
Pallid bat *Antrozous pallidus*	–/SSC	Throughout California, primarily at lower elevations and mid-elevations	Occurs in a variety of habitats from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California. Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Use caves, crevices, mines, and hollow trees for roosting.	**Moderate**. There is suitable habitat for this species in the biological study area. The elevated sections of I-5 and the I Street ramp provide roosting habitat for pallid and Pacific western big-eared bats. Unidentified bats were observed roosting in a road seam underneath the I Street ramp.

Table 2.3-1. Continued

Common and Scientific Names	Status[a] Federal/State/Other	Distribution	Preferred Habitats	Known and Potential Occurrence in the Project Area[b]
Townsend's big-eared bat *Corynorhinus townsendii*	–/SSC	Widespread throughout California.	Roosts in caves, tunnels, mines, crevices, hollow trees, and buildings; usually near water.	**Moderate**. There is suitable habitat for this species in the biological study area. The elevated sections of I-5 and the I Street ramp provide roosting habitat for pallid and Pacific western big-eared bats. Unidentified bats were observed roosting in a road seam underneath the I Street ramp.
American badger *Taxidae taxus*	–/SSC	Statewide except for the northwestern corner in Del Norte County and parts of Humboldt and Siskiyou Counties	Typically found in drier open stages of most shrub, forest, and herbaceous habitats with dry, friable soils.	**No**. No dens or burrows identified within the biological study area.

[a] Status definitions:

Federal

E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
C = candidate for listing under the federal Endangered Species Act.
– = no listing.

State

E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
R = listed as rare under the California Endangered Species Act.
SSC = species of special concern in California.
FP = fully protected under the California Fish and Game Code.
– = no listing.

California Native Plant Society (CNPS)

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2 = List 2 species: rare, threatened, or endangered in California, but more common elsewhere.
3 = List 3 species: plants about which more information is needed to determine their status.

Threat Code Extensions:

.1 = seriously endangered in California (over 80% of occurrences threatened-high degree and immediacy of threat).
.2 = fairly endangered in California (20–80% occurrences threatened).

[b] The determinations of the potential for each species to occur are generally based on the following criteria:

Low: The project area is within the species range and suitable habitat for the species occurs in the project vicinity, but was not identified in the project area.
Moderate: The project area is within the species range and suitable habitat for the species is present in the project area, however there are no records for the species in the project vicinity.
High: The project area is within the species range and suitable habitat for the species is present in the project area, and there are one or more records of the species in the project vicinity or the species was observed in the project area or in the project vicinity.

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Figure 2.3-1
Biological Study Area

proposed project site (within 250 feet of the westernmost portion) that project activities may affect nesting habitat for these species. Potential burrowing owl habitat, though believed to be limited to debris piles, could be affected by ground-disturbing activities in the study area. Purple martins have been observed nesting under the I Street Bridge. Relocation of the tracks near the I Street Bridge in Phase 1 has the potential to disturb the purple martin nesting colony under the bridge. If the project were to cause the abandonment of active nests, it could result in the substantial loss of diversity of species and result in the loss or long-term disruption of wildlife nursery sites. Mitigation measures BIO-1 through BIO-5 would avoid or minimize this effect.

Phase 2—Sacramento Valley Station Improvements

Although most of the Phase 2 project facilities would be constructed on the Station site where no habitat for nesting migratory birds has been identified, work will occur at the existing parking lot under I-5, potentially disturbing the purple martin nesting colony under the bridge. If the project were to cause the abandonment of active nests, it would result in the substantial loss of diversity of species and result in the loss or long-term disruption of wildlife nursery sites. Mitigation measures BIO-3 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

Some of the activities contemplated for Alternative 1 in future Phase 3 could require work near nesting migratory bird habitat, potentially disturbing the purple martin nesting colony under the I Street Bridge. If the project were to cause the abandonment of active nests, it would result in the substantial loss of diversity of species and result in the loss or long-term disruption of wildlife nursery sites. Mitigation measures BIO-1 through BIO-5 would avoid or minimize this effect.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change; however, the potential to disturb the purple martin nesting colony under the I Street Bridge would be similar to Alternative 1. Mitigation measures BIO-1 through BIO-5 would avoid or minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses and would not be restored. The tracks would remain in their current configuration, and the platforms would not be expanded. There would be no potential for project-related effects on special-status wildlife species.

Impact BIO-2: Potential disturbance to roosting bats during construction

Phase 1—Track Relocation

There is the potential for bats to establish day roosts or maternity roosts under I-5 and the I Street ramp, as well as at the Depot. During Phase 1, the relocation of the tracks near the I Street ramp and I-5 has the potential to disturb roosting bats. If the project were to cause the abandonment of roosting bats, especially a maternity roost, it would result in the substantial loss of diversity of species and result in the loss or long-term disruption of wildlife nursery sites. Mitigation Measure BIO-5 would minimize this effect.

Phase 2—Sacramento Valley Station Improvements
Bats have the potential to establish day roosts and maternity roosts in the Depot, as well as at the existing parking lot under I-5 and near the I-Street ramp, and therefore the planned work in these areas during Phase 2 could potentially disturb roosting bats. If the project were to cause the abandonment of roosting bats, especially a maternity roost, it would result in the substantial loss of diversity of species and result in the loss or long-term disruption of wildlife nursery sites. Mitigation Measure BIO-5 would minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1
Bats have the potential to establish day roosts and maternity roosts in the Depot, as well as at the existing parking lot under I-5 and near the I-Street ramp. Some of the activities contemplated for Alternative 1 in future Phase 3 could require work in these areas, potentially disturbing the roosting bats. If the project were to cause the abandonment roosting bats, especially a maternity roost, it would result in the substantial loss of diversity of species and result in the loss or long-term disruption of wildlife nursery sites. Mitigation Measure BIO-5 would minimize this effect.

Alternative 2
Bats have the potential to establish day roosts and maternity roosts in the Depot. Relocation of the Depot under Alternative 2 has the potential to destroy day roosts and/or maternity roosts. If the project were to destroy colonies of roosting bats, especially maternity roosts, it would result in the substantial loss of diversity of species and result in the loss or long-term disruption of wildlife nursery sites. Mitigation Measure BIO-5 would minimize this effect.

No-Build Alternative
Under the No-Build Alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses and would not be restored. The tracks would remain in their current configuration, and the platforms would not be expanded. There would be no potential for project-related effects on special-status wildlife species.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BIO-1: Conduct preconstruction surveys for Swainson's hawks and avoid impacts on active nests

If construction activity occurs during the breeding season for Swainson's hawks (February 1–August 31), the project applicant shall conduct California Department of Fish and Game (DFG) recommended protocol-level surveys within 0.5 mile of the project site prior to construction, as required by the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley or as required by the CDFG in the future (Swainson's Hawk Technical Advisory Committee 2000). If active nests are found in the construction area, mitigation measures consistent with the *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks* (*Buteo swainsoni*) in the Central Valley of California (California Department of Fish and Game 1994) shall be incorporated in the following manner or as directed by the DFG, as follows:

- If an active nest is found, no intensive new disturbances (e.g., heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities) or other project-related activities that may cause nest abandonment or forced fledging can be initiated within 200 yards (buffer zone) of an active nest between March 1 and September 15. The size of the buffer area may be adjusted if a qualified biologist and the DFG determine it will not be likely to have adverse effects on the hawks. No project activity shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active.
- Nest trees shall not be removed unless there is no feasible way of avoiding removal of the tree. If a nest tree must be removed, a Management Authorization (including conditions to offset the loss of the nest tree) must be obtained from the DFG, with the tree removal period specified in the Management Authorization (generally between October 1 and February 1).
- If construction or other project-related activities that may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site (funded by the project proponent) by a qualified biologist will be required to determine if the nest is abandoned. If the nestlings are still alive after nest abandonment, the project proponent shall fund the recovery and hacking (controlled release of captive reared young) of the nestling(s).
- Routine disturbances, such as routine maintenance activities within 0.25 mile of an active nest, shall not be prohibited unless consultation with the DFG determines that these activities will affect the active nest.

Mitigation Measure BIO-2: Conduct preconstruction surveys for burrowing owl nests and avoid impacts on active nests

- Prior to construction activity, focused preconstruction surveys shall be conducted for burrowing owls where suitable habitat is present within the construction areas. Surveys shall be conducted no less than 14 days and no more than 30 days prior to commencement of construction activities, and surveys shall be conducted in accordance with the DFG burrowing owl survey protocol.
- If unoccupied burrows are found during the non-breeding season, the project applicant may collapse the unoccupied burrows or otherwise obstruct their entrances to prevent owls from entering and nesting in the burrows. This measure will prevent inadvertent impacts during construction activities.
- If no occupied burrows are found in the survey area, a letter report documenting survey methods and findings shall be submitted to the City of Sacramento (City) and the DFG, and no further mitigation will be necessary. If occupied burrows are found, impacts on the burrows shall be avoided by providing a buffer of 165 feet during the non-breeding season (September 1 through January 31) or 250 feet during the breeding season (February 1 through August 31). The size of the buffer area may be adjusted if a qualified biologist and the DFG determine it will not be likely to have adverse effects on the owls. No project activity shall commence within the buffer area until a qualified biologist confirms that the burrow is no longer occupied. If the burrow is occupied by a nesting pair, a minimum of 7.5 acres of foraging habitat contiguous to the burrow shall be maintained until the breeding season is over.

- If impacts on occupied burrows are unavoidable, on-site passive relocation techniques approved by the DFG shall be used to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows shall be disturbed during the nesting season unless a qualified biologist verifies through non-invasive methods that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Mitigation for foraging habitat for relocated pairs shall follow guidelines provided in the California Burrowing Owl Consortium's April 1995 Burrowing Owl Survey Protocol and Mitigation Guidelines, which ranges from 7.5 to 19.5 acres per pair.

Mitigation Measure BIO-3: Conduct preconstruction surveys for purple martin nests and avoid disturbance of active purple martin nests

- To offset the loss of gathering sites for nesting material and reduce potential predation from feral cats that use tall vegetation as ambush points, the City shall ensure that weed abatement measures (e.g., weed whacking) are conducted bi-weekly from March 15 to May 15 during railroad track realignment. The area to be maintained is the area that extends out 600 feet north of the existing railroad track alignment. The plant waste shall be left in place from March 15 to May 15 to allow the purple martins to use the "waste" for nest building material. This measure is temporary and shall only occur while the existing railroad tracks are being realigned.
- To offset potential impacts from the loss of perching wires, the project applicant shall erect at least 230 feet of permanent perching structures within 200 feet of the colony. The wires shall be erected before the removal of the existing utility lines and poles and be 3/8–3/4 inches in diameter and at least 19.5 feet off the ground. Pole-mounted structures could be placed on light poles or fences for stability. The project applicant may also consult with the California State Railroad Museum as to the possibility of the perches being erected within their state lands.
- Landscaping within 120 feet of the colony shall be planned so that flight access is not disrupted. Small and medium-size non-fruit-bearing trees shall be incorporated into the landscaping plans. Landscaping plans shall also consider the option of prohibiting fruit-bearing trees within 500 feet of the site and not removing all the grass and tree clippings from the area during maintenance, particularly at the beginning of the nesting season (March 15 to May 15) to allow the purple martins to use the clippings as nesting material.
- Until the open space adjacent to the I Street colony is landscaped, the project applicant shall, from March 15 to May 15, supply nesting material (e.g., straw, pine needles) to designated areas close to the colony for use by the purple martins while the planted trees and shrubs develop. The areas will be no more than 200 feet from perching wires.
- As long as the I Street colony is active, landscaping trees adjacent to the purple martin colony shall include pine species (*Pinus* spp.) to provide a permanent source of nesting material. The pine needles that drop to the ground shall not be removed during landscape maintenance from January 1 to May 15.
- Although purple martins are tolerant of human activities, if active nests are present, no construction shall be conducted within 100 feet of the edge of the purple martin colony (as demarcated by the active nest hole closest to the construction activity) during the beginning

of the purple martin breeding season, from April 15 to August 1. The buffer area shall be avoided to prevent destruction of or disturbance to the nest until it is no longer active. The size of the buffer area may be adjusted if a qualified biologist and the CDFG determine it will not be likely to have adverse effects on the martins. The site characteristics used to determine the size of the modified buffer will include a) topographic screening, b) the distance from the disturbance to the nest, c) the size and quality of foraging habitat surrounding the nest, and d) the sensitivity of the species to nest disturbances. No project activity shall commence within the buffer area until a qualified biologist confirms that any nests are no longer active. In addition, no equipment shall be parked or stored beneath the I Street on-ramp or the I-5 overpass at the I Street on-ramp during the breeding season (April 15 to August 1).

Mitigation Measure BIO-4: Conduct preconstruction surveys for bird nests and avoid disturbance of active bird nests

- Vegetation removal and construction activities are to be conducted during the non-nesting season (between September 1 and January 31) whenever feasible.
- If vegetation removal or construction activities occur during the nesting season (between February 1 and August 31), a nesting survey shall be conducted by a qualified biologist of all habitat within 500 feet of the construction area. Surveys shall be conducted no less than 14 days and no more than 30 days prior to commencement of construction activities, and surveys will be conducted in accordance with the DFG protocol, as applicable. If no active nests are identified on or within 500 feet of the construction site, no further mitigation is necessary. This survey can be carried out concurrently with surveys for other species, provided it does not conflict with any established survey protocols. A copy of the preconstruction survey shall be submitted to the City. If an active nest of a sensitive species is identified on site (per established thresholds), specific mitigation measures shall be developed in consultation with the DFG and the USFWS. At a minimum, these measures shall include a 500-foot no-work buffer that shall be maintained between the nest and construction activity until the DFG and/or the USFWS approves of any other mitigation measures.
- Completion of the nesting cycle shall be determined by a qualified ornithologist or biologist.

Mitigation Measure BIO-5: Conduct preconstruction survey for roosting bats and avoid disturbance of active bat roosts

- Prior to any construction activities within 100 feet of I-5 and the I Street ramp, the project applicant shall conduct a preconstruction survey to determine the presence of roosting bats. The surveys shall be conducted 1 week prior to the start of construction at dusk, a time when bats would be expected to be present and active. This survey shall be conducted by a wildlife biologist who is qualified to identify the species of bats using these roosts. If the preconstruction surveys determine that no bats are roosting under I-5 or the I Street ramp, then no further mitigation is required. If roosting bats are present, the biologist shall determine if the roost is a day roost or a maternal roost. If it is determined that it is a day roost, the wildlife biologist who conducted the preconstruction surveys shall recommend appropriate measures to exclude the bats from roosting in the area. These include installing exclusion devices (e.g., light-weight polypropylene netting (< $^{1}/_{6}$-inch mesh), plastic sheeting, tube-type excluders, etc.) to prevent roosting bats from being in the area when demolition or construction occurs. The exclusion devices shall be located so that they do not interfere with nesting purple martins (which shall take priority due to their tendency to permanently abandon nesting sites that have been subject to artificial exclusion devices). The exclusion devices can be designed to serve multiple purposes if the exclusion of other species (e.g., purple martins) is also required. The biologist will also recommend, through consultation with the CDFG and other bat experts, appropriate replacement roosting habitat for the displaced bats. If the roost is determined to be a maternal roost, construction activities that cause the abandonment or destruction of the maternal roost or cause harm to bats (e.g., activities that produce diesel fumes) will be prohibited until the biologist determines that the bat pups have left the roost and are able to fend for themselves.

Prior to any demolition at the Depot, the project applicant shall conduct a preconstruction survey to determine the presence of roosting bats.

2.3.2 Threatened and Endangered Species

Affected Environment

One federally listed species, valley elderberry longhorn beetle (VELB), was identified as having the potential to occur in the 33-acre biological study area for the proposed project.

Valley Elderberry Longhorn Beetle

Four elderberry shrubs (habitat for VELB) were identified during surveys of the project site during the May 22 and December 12, 2008, site visits (Figure 2.3-1). Three of the shrubs cannot be completely avoided due to their proximity to the railroad tracks slated for relocation in Phase 1 of the project (they are located within 6.1 meters (20 feet) of the track relocation area). The other shrub is located outside the project site and is more than 6.1 meters (20 feet) but within 30.5 meters (100 feet) of the track relocation area. Removal of habitat for VELB (elderberry shrubs) was covered by the take permit issued by the U.S. Fish and Wildlife Service (USFWS) for the Railyards Remediation Project (Federal Permit # TE023739). That permit has since expired and Caltrans has recommended that effects on VELB habitat could be covered by the U.S. Department of Transportation Federal Highway Administration's programmatic consultation with the USFWS for impacts to VELB (USFWS 1997).

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project on threatened and endangered species, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below. Biologists reviewed existing resource information related to the project to evaluate potential threatened and endangered species that could occur within the proposed project site. These sources included:

- The *Sacramento Railyards Specific Plan Environmental Impact Report* (PBS&J/EIP 2007a);
- CNDDB records search for the proposed project site and a 10-mile radius (2008);
- USFWS website's list of endangered and threatened species that may occur in or be affected by projects in the vicinity of the proposed project site (2008).

Surveys for the proposed project were conducted on May 22, 2008 to verify the information from previous studies and surveys and document whether biological conditions had changed. Land within 100 feet of the biological study area was evaluated to determine the potential for habitat of the federally listed VELB to occur.

Impact BIO-3: Potential Disturbance to Valley Elderberry Longhorn Beetle

Phase 1—Track Relocation
Construction activities associated with track work would require work within the 100-foot setback for elderberry shrubs. Three of the four shrubs identified during surveys are located within 20 feet of the track relocation area and would be directly affected in by construction. The fourth shrub is located more than 20 feet but within 100 feet of the track relocation area and would be directly affected.

Phase 2—Sacramento Valley Station Improvements
No elderberry shrubs are located in the vicinity of the improvements to be constructed in Phase 2. There would be no additional effects on elderberry shrubs during construction of Phase 2.

Future Phase 3—Intermodal Improvements

<u>*Alternative 1*</u>
No elderberry shrubs are located in the vicinity of the improvements to be constructed in future Phase 3. Effects on the elderberry shrubs in the study area would be addressed during implementation of Phase 1 and there would be no additional effects on these shrubs during construction of future Phase 3.

<u>*Alternative 2*</u>
No elderberry shrubs are located in the vicinity of the improvements to be constructed in future Phase 3. Effects on the elderberry shrubs in the study area would be addressed during implementation of Phase 1 and there would be no additional effects on these shrubs during construction of future Phase 3.

No-Build Alternative
Under the No-Build Alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses and would not be restored. The tracks would remain in their current configuration, and the platforms would not be expanded. Therefore, the No-Build Alternative would have no potential for project-related effects on threatened or endangered species.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BIO-6: Append Project to Programmatic Biological Opinion and Implement Minimization and Compensation Requirements

Impacts on VELB habitat will be covered under the FHWA's programmatic consultation with the USFWS for impacts on VELB. The City will mitigate for these impacts according to *Formal Programmatic Consultation Permitting Projects with Relatively Small Effects on the Valley Elderberry Longhorn Beetle within the Jurisdiction of the Sacramento Field Office, California* (Administration File #572.9/9821) and the USFWS's *Conservation Guidelines for the Valley Elderberry Longhorn Beetle, July 9, 1999* (Guidelines). The City will comply with the measures outlined in the Guidelines for impacts on VELB by purchasing mitigation credits at a USFWS approved mitigation bank or by planting elderberry seedlings and associated native plants within a USFWS approved conservation area.

2.3.3 Invasive Species

Affected Environment

Plant species on the project site consist of mostly ruderal vegetation. Of the plant species identified during the 2006 surveys, 11 are listed as invasive species in the *California Invasive Plant Inventory* (California Invasive Plant Council 2006). One of these species, yellow starthistle, has a rating of "High," which means that it has severe ecological impacts on physical processes, plant and animal communities, and vegetation structure (California Invasive Plant Council 2006). Five of these species, tree of heaven, ripgut brome, Bermuda grass (*Cynodon dactylon*), eucalyptus (*Eucalyptus* sp.), and edible fig (*Ficus carica*), have a rating of "Moderate," which means that these species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure (California Invasive Plant Council 2006). The remaining five species—field mustard (*Brassica rapa*), red-stemmed filaree (*Erodium cicutarium*), rabbit's foot grass (*Polypogon monspeliensis*), wild radish (*Raphanus sativus*), and milk thistle—have a rating of "Limited," which means these species are invasive but that their ecological impacts are minor on a statewide level or there is not enough information to justify a higher score.

Environmental Consequences

Approach and Methodology

The following discussion provides a program (Tier 1) level analysis of the effects of the entire three-phase project related to spread of invasive species, as well the actual environmental effects of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 are combined in the same impact discussion below. The California list of invasive plant inventory (California Invasive Plant Council 2006) was reviewed to determine which invasive species occur in the proposed project area.

Impact BIO-4: Spread of invasive species during project construction

Phase 1—Track Relocation

Track work, utility relocations, grading and similar ground-disturbing construction activities associated with Phase 1 of the project could contribute to the spread of the invasive species. The spread of invasive species could adversely affect natural plant communities by displacing native plants that provide shelter and forage for wildlife species. However, because of the ruderal nature of the proposed project site and the prevalence of invasive species, this phase is unlikely to result in spread of invasive species. Mitigation Measure BIO-6 would further minimize this effect.

Phase 2—Sacramento Valley Station Improvements

Although much of the construction activities associated with Phase 2 of the project would occur in already paved areas, some ground-disturbing construction activities could contribute to the spread of invasive species. However, because of the ruderal nature of the proposed project site and the prevalence of invasive species, this phase is unlikely to result in spread of invasive species. Mitigation Measure BIO-6 would further minimize this effect.

Future Phase 3—Intermodal Improvements

Alternative 1

Construction activities associated with Alternative 1 in future Phase 3, such as street and access extensions, could contribute to the spread of invasive species. However, because of the ruderal nature of the proposed project site and the prevalence of invasive species, this phase is unlikely to result in spread of invasive species. Mitigation Measure BIO-6 would further minimize this effect.

Alternative 2

Under Alternative 2 in future Phase 3 of the project, the placement of the Depot would change, thereby resulting in a slight increase in the potential to contribute to the spread of invasive species. Because of the ruderal nature of the proposed project site and the prevalence of invasive species, this phase is unlikely to result in spread of invasive species. Mitigation Measure BIO-6 would further minimize this effect.

No-Build Alternative

Under the No-Build Alternative, no phases of the project would be constructed. The existing Depot would remain under its existing uses and would not be restored. The tracks would remain in their current configuration, and the platforms would not be expanded. Therefore, there would be no project-related contribution to the spread of invasive species.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure BIO-6: Prevent the Introduction or Spread of Noxious Weeds

The contractor will be responsible for avoiding the introduction of new noxious weeds and the spread of weeds previously documented at the project site by using certified weed-free mulches and landscaping materials and cleaning equipment before entering or exiting the project area, consistent with the requirements of Executive Order 13112: Prevention and Control of Invasive Species.

2.4 Cumulative Effects

2.4.1 Affected Environment

The cumulative analysis conducted for the proposed project used the resource boundaries outlined in the RSP EIR for determining potential effects. This cumulative context includes development and buildout of the entire RSP Area and the surrounding Central City and Richards Boulevard Area. The following residential, retail, and office projects have also been incorporated into the cumulative context assumptions:

- Historic Depot Retrofit Project
- Stanford lofts
- Westfield Mall Reconfiguration
- 500 Capitol Mall (P05-108)
- Capitol West Side
- 10th & J (The Metropolitan)
- 11th & J (Cathedral Square)
- The Library Lofts (8th & I)
- Epic Tower (P05-138)
- Sutter Medical
- Township 9
- 301 Capitol Mall
- 601 Capitol Mall
- Crocker Expansion
- 500 Capitol Mall
- 831 L St (9th & L)
- Continental Plaza Planned Unit Development
- Discovery Center Planned Unit Development
- Jibboom Street Development
- Because of the timelines for implementation of the project phases, the cumulative analysis focuses primarily on future Phase 3 of the project.

2.4.2 Environmental Consequences

2.4.2.1 Land Use

Existing and Future Land Use

The project would continue existing use of the project site for rail-and transit-related services, and would improve overall connectivity for the City's established communities. Additionally, the types of land uses proposed for the area adjacent to the existing zoned industrial land uses of the proposed projects site would be primarily mixed use and generally compatible within a developed urban environment (PBS&J/EIP 2007b). The proposed project, in all phases, would be consistent with applicable City General Plan, Specific Plan, and Community Plan policies and guidelines (Community Impact and Land Use Memorandum, August 1, 2008).

Parks and Recreation

The parks and recreational facilities in the *Central City Community Plan* area are expected to experience increased use as population and demand increases in the Central City. The proposed project, under both Alternative 1 and 2, would improve rail and transit service and accommodate growth in the number of passengers served. However, passenger growth is not anticipated to change the current level of use of the parks or recreational facilities in the Central City. The proposed project includes plans for designated open space that would be available for passenger use. Access to the parks and recreational facilities would not change or be restricted as a result of implementation of any phases of the proposed project.

2.4.3 Growth

The project would improve freight and passenger rail service capacity and reliability; establish a singular regional transportation hub; improve local traffic circulation through on-site roadway alignments, including H Street; and facilitate intercity rail access to and from the Central Business District. However, without accompanying increases in capacity at stations to the north and south along the regional rail corridor, these infrastructure improvements would not have the potential to induce unplanned growth, but rather would accommodate the City's General Plan (1988) projected growth levels through 2025.

2.4.4 Community Effects

Potential effects of the proposed project are construction-related noise, dust, and emissions from construction equipment. These effects would be temporary, and mitigation has been proposed to ensure there would be no effects on the community. No permanent displacements of low-income or minority residents are planned, and no permanent effects would result from the proposed project. Once construction was complete, the minority and low-income residents and the other residents in the surrounding community and region would enjoy the benefits of the project equally.

2.4.5 Utilities

2.4.5.1 Police Facilities and Services

The cumulative context for this analysis is the service area for the Sacramento PD, which coincides with the city's boundaries, particularly in the Central City area of Sacramento, which is defined by the Sacramento Central City Community Plan as the area between the Sacramento River on the west, the American River to the north, Sutter's Landing and Alhambra Boulevard to the east, and Broadway to the south. Areas in the Central City have similar densities and land uses, and would be most affected by development of the proposed project. Growth and development in the downtown area, including the development of the proposed project, would require the development and staffing of at least one new police station, especially in the Central City area. Furthermore, the Sacramento PD is developing a master plan that will identify city-wide department needs and identify new facilities and staffing necessary to maintain police protection services throughout the City. Once the plan is adopted, the Sacramento Police Department would add personnel as needed to accommodate the buildout of the RSP, as well as to continue to meet service goals (PBS&J/EIP 2007b). The RSP development and the City have identified an array of mechanisms, as discussed in Section 2.1.4 "Utilities/Emergency Services", to ensure that the RSP, which includes the proposed project area, would be adequately served by police protection.

2.4.5.2 Fire Facilities and Services

The cumulative context for this analysis is the service area for the SFD, which coincides with the City boundaries, particularly in the Central City area of Sacramento, which is defined by the Sacramento Central City Community Plan as the area between the Sacramento River on the west, the American River to the north, Sutter's Landing and Alhambra Boulevard to the east, and Broadway to the south. Areas in the Central City have similar densities and land uses, and would be most affected by implementation of the proposed RSP. Since the 1988 General Plan was drafted, the City has been working toward higher intensity uses in the Central City, which would cause increases in population that exceed current General Plan projections. The increases in population would increase the need for fire protection. Thus, the SFD is in the process of drafting a fire department master plan that would discuss specific triggers for new fire stations and determine when and where new facilities would need to be constructed as development occurs. Furthermore, two potential locations for a new fire station have been identified. According to SFD, residential population is the most accurate way to determine the need for fire protection services. Correspondingly, the SFD has indicated that a new fire station would need to be constructed and staffed in order to adequately serve the residential development of the RSP (PBS&J/EIP 2007b). Based on this designation of additional fire stations, the RSP development and the City have identified an array of mechanisms, as discussed in Section 2.1.4 "Utilities/Emergency Services", to ensure that the RSP, which includes the proposed project area, would be adequately served by fire protection services.

2.4.5.3 Stormwater Drainage and Water Systems

The City Department of Utilities has completed many of the CSS Improvement and Rehabilitation Program projects and numerous rehabilitation and replacement projects throughout the system. The City also has identified improvements to the older portions of the City's CSS to meet increased demand, including future upgrades to the interceptors that connect to the SRWTP (PBS&J/EIP 2007b). With these planned improvements, the proposed project would not have a considerable contribution to wastewater and stormwater flows.

2.4.5.4 Energy and Natural Gas

The cumulative context for electricity is the SMUD service area. The cumulative context for natural gas is the City of Sacramento Service Area of PG&E. For both contexts, this includes all planned projects, such as the Richards Boulevard Redevelopment Project. The cumulative context for transportation energy is the Sacramento metropolitan area. SMUD has stated that electricity would be available to supply energy to the city at full implementation of the Sacramento 2030 General Plan over the next 25 years, including the development of the RSP and the proposed project. SMUD also has stated that sufficient energy could be provided to serve the RSP.

In regard to natural gas, because PG&E's demand projections are continuously updated and PG&E's system has ample capacity to ensure continued levels of service to all customers in the region, PG&E has stated that it can supply natural gas to the RSP area, including the proposed project area, without jeopardizing other existing or projected service commitments.

2.4.5.5 Water Supply

The cumulative analysis for water supply, distribution, and storage considers the potential environmental effects of supplying water to the proposed project in addition to the other anticipated water demands that may be served by the City of Sacramento through year 2030. The RSP EIR, which includes the proposed project site, (PBS&J/EIP 2007b) based its cumulative water supply analysis on the Draft Water Supply Assessment for the RSP Project (PBS&J/EIP 2007c), the City of Sacramento Urban Water Management Plan (UWMP) (West Yost Associates 2006), and the Sacramento River Water Reliability Study Initial Alternatives Report (U.S. Department of the Interior, Bureau of Reclamation 2005). As such, the RSP EIR notes that the USBR contract, in conjunction with the City's water rights, provides the City with a reliable and secure water supply. Furthermore, the USBR analysis finds that the City has sufficient water supply under its water rights and entitlements to serve the RSP area, which would include the proposed project site.

2.4.6 Transportation

The geographic scope of the cumulative traffic impact analysis generally consists of the key intersections in the vicinity of the proposed project site. In collaboration with the City and Caltrans staff members, a study area was defined that included 14 study intersections, four freeway ramps, and 4 freeway interchanges (see discussion above). The cumulative base traffic projections used for the traffic analyses included two elements: 1) ambient growth in the existing background traffic volumes, reflecting the effects of overall regional growth and development, and 2) traffic generated by specific related projects located within or near the study area.

The intersection analysis discussed in Section 2.1.5 "Traffic and Transportation", showed that operations at two of the 14 study intersections in the AM peak hour would deteriorate under cumulative without-project conditions. With the addition of project-generated traffic, delay times for these two intersections would further deteriorate. While the project would contribute to a minor increase in delay times to freeway segments and ramps, the project would not substantially affect these facilities of the transportation system. Mitigation measures would be implemented as part of the proposed project to minimize effects on traffic and transportation facilities in the project area. If other projects in the study area are determined to have a substantial effect on transportation facilities in the study area, these projects may also have include mitigation where feasible. In addition, the project area is within the regional planning area of the SACOG Metropolitan Transportation Plan, which forecasts long-term transportation demands for the Sacramento region and identifies policies, actions, and funding sources to accommodate those demands, including construction of new transportation facilities, transportation systems management strategies, transportation demand management strategies, and land use strategies.

2.4.7 Visual Resources

The geographic context for the analysis of cumulative aesthetic and visual resources effects varies by threshold. Thus, the geographic context scenarios are presented individually for the various potential cumulative effects identified below. The geographic context for cumulative effects associated with the degradation of visual quality includes the areas adjacent to the Specific Plan Area that are visible from the Specific Plan Area or from locations which currently afford views of the Specific Plan Area. The cumulative context for riverfront visual conflicts is that portion of the Downtown/Land Park area of the Sacramento riverfront, as defined in the Sacramento River Parkway Plan, from 25th Avenue to the Jibboom Street bridge at the confluence of the American River. The geographic context for lighting includes the areas adjacent to the Specific Plan Area. The majority of cumulative development surrounding the project site would occur either south of the project site in the Central Business District or northeast of the site in the Richards Boulevard Redevelopment Area. The cumulative context for glare effects would be other glare-generating development adjacent to roadways potentially affected by glare produced from development in the RSP Area. Mitigation Measures VIS-2 and VIS-3, identified in Section 2.1.7 of this document, would minimize the project's contribution to cumulative effect of increased light and glare.

2.4.8 Cultural Resources

The cumulative context for the cultural resources analysis varies depending on the type of resource. Because of the extensive urban development in the project vicinity, the cumulative evaluation focuses on prehistoric archaeological resources in downtown Sacramento and its immediate surroundings and on historic resources in the Railyards. Current soil remediation has resulted in damage to and the destruction of archaeological resources in the study area, and the RSP development would likely result in additional damage to or the destruction of additional archaeological resources, including the 6th Street Levee, Sacramento SPRR Station District, historic Depot, and Central Shops District. The project would contribute to cumulative effects on these resources. Mitigation measures to reduce the severity of these effects will be identified in a project-specific Historic Properties Treatment Plan to be prepared according to a Programmatic Agreement between SHPO, Caltrans, and the City.

2.4.9 Hydrology and Flooding

Potential effects on hydrology and water quality can be contributed to by development not only within the City limits in the CSS service area, but also in the watershed area outside the City limits. The proposed project site is located in Zone 'X', defined by FEMA as "Areas outside of the 500-year floodplain. For the cumulative scenario, buildout of the City's General Plan is assumed, and the SACOG regional buildout is anticipated. The drainage conveyances of the project area will be designed to comply with both City and County standards. (See section 2.2.2, "Water Quality and Storm Water Runoff.") The design standards set forth by the County and City of Sacramento will ensure that the runoff from the proposed project site, in addition to that from all other projects in the area, will not exceed the storm drain capacities and cause flooding either on site or off site.

2.4.10 Water Quality and Stormwater Runoff

Potential effects on hydrology and water quality can be contributed to by development not only within the City limits in the CSS service area, but also in the watershed area outside the City limits. For the cumulative scenario, buildout of the City's General Plan is assumed, and the SACOG regional buildout is anticipated. Consistent with the City's requirements, the contractors or engineers will develop a Drainage Master Plan for the project that would include BMPs to keep pollutants from entering the CSS. The City will ensure that all applicable requirements will be met throughout the construction period of the proposed project and will implement and routinely inspect all applicable control devices required to connect to its stormwater system.

2.4.11 Geology

The cumulative study area for geology/soils/seismic/topography effects is the maximum footprint of all the project alternatives. Ground shaking, landslides, liquefaction, and other soils, seismic, and topographical constraints pose a potential hazard for all development and redevelopment projects in the Sacramento region. Nevertheless, these effects are evaluated on a site-specific basis and potential effects are minimized through site-specific design features. Measures such as adherence to geotechnical consultant recommendations regarding soil preparation, earthquake structure design, and grading methods would minimize potential effects of each project, and avoid substantial cumulative effects. The project would have the potential to result in geology/soils/seismic/topography effects because of the degree of excavation and structural design involved. Even so, it is not anticipated that these effects would made a cumulatively substantial contribution.

2.4.12 Paleontology

The cumulative study area for paleontology effects is the maximum footprint of all the project alternatives. Based on site-specific borings conducted for the geotechnical report (ENGEO 2008), the entire project area is not considered sensitive for significant fossils because excavation would be within sandy/silty units, which generally do not contain significant fossils. Furthermore, the deposits within the project area are not sensitive for paleontological resources. However, even though this area appears to be disturbed, fossil-bearing subsurface deposits could be encountered during excavation for repaving, tunnel extension, and other subsurface construction activities in Phase 2. Mitigation Measure PALEO-1 would minimize this effect and therefore it is not anticipated that the project would made a substantial contribution to cumulative effects on paleontological resources.

2.4.13 Hazardous Waste/Materials

The cumulative context for the analysis of potential hazardous substances effects of the proposed project, in combination with other similar projects, is the City of Sacramento. There would be no cumulative effects relating to hazardous materials with implementation of the proposed project. The City will ensure that all applicable requirements set forth in the Tri-Party MOU (City of Sacramento 2007b) and by DTSC will be met throughout the construction period of the proposed project and soil remediation for the entire site is anticipated to be completed near the end of Phase 1. Due to the relatively small volumes of materials on-site and the limited duration of construction, the potential for release and exposure of hazardous materials during construction is limited. The probability of an accident involving a train car carrying hazardous materials is and will continue to be very low with the project. Mitigation Measures HAZ-1 through HAZ-6 would further minimize these effects and ensure that the project would not have a cumulatively substantial contribution to potential exposure of the public to hazardous materials.

2.4.14 Air Quality

Ozone precursors emitted anywhere in the SVAB can affect O_3 air quality throughout the SVAB. Therefore, the proposed project's cumulative context for O_3 precursor emissions would be existing and future development in the entire SVAB. In contrast, CO, PM10, and TAC effects are limited to the immediate vicinity of their specific sources. Consequently, the proposed project's cumulative context for CO, PM10, and TAC emissions would be existing and proposed future development in the immediate vicinity of the project site. Although the project would generate construction emissions that exceed the SMAQMD thresholds, the SMAQMD would use the required construction mitigation fees to offset construction emissions. Consequently, construction of the project would not cause or contribute to cumulative air effects. By reducing locomotive idling time, Phase 1 would lower regional emissions, resulting in a cumulatively beneficial effect. Phase 2 would result in a slight increase in criteria pollutant air emissions. Those emissions would result primarily from increases in vehicle trips associated with the additional parking spaces. By encouraging the use of transit, Phase 2 would likely result in a regional reduction in emissions as people switch to rail from single-occupant vehicles. Consequently, Phase 2 would also contribute to a cumulative beneficial air quality effect. Phase

3 would generate area-source emissions associated with heating and cooling the new terminal building. However, those emissions would be relatively minor and less than the SMAQMD significance thresholds. Consequently, Phase 3 emissions would not cause a substantial cumulative effect. When considering all three phases, the project would not cause air quality cumulative effects.

Emissions of criteria pollutants and greenhouse gases would likely be higher under the No-Build Alternative as compared to the project, which would improve both freight and commuter rail traffic. The No-Build Alternative would not improve either freight or commuter rail traffic and, over time, would lead to increased freight idling and increases in vehicle trips and vehicle miles traveled, therefore making a substantial contribution to cumulative air quality effects in the Sacramento region.

2.4.15 Noise and Vibration

For evaluation of cumulative effects, the cumulative setting would be other existing and future development or other activities that would add stationary or mobile source noise to the Specific Plan Area and the surrounding area. Table 2.2.7-6 in the "Noise and Vibration" chapter summarizes the cumulative traffic noise conditions in the project area that are predicted to occur with implementation of the project. With the exception of the area along North B Street, east of 7th Street, implementation of either alternative is not predicted to increase traffic noise under cumulative conditions. A 3-dB increase (barely perceptible) is predicted to occur along North B Street with implementation of either alternative. However, this increase is small and the affected area is industrial and does not include noise-sensitive uses. As indicated in Table 2.2.7-4 in the "Noise and Vibration" section, relocation of the track is predicted to result in increased noise in residential areas. Implementation of mitigation measures discussed in Section 2.2.7 would reduce the project's contribution to cumulative conditions.

2.4.16 Biological Resources

Cumulative effects on biological resources are analyzed on either a regional (Central Valley), county-wide, or city-wide level. For this analysis, buildout of the City's General Plan is assumed and the SACOG regional blueprint is also anticipated. Historically, habitats in the region, including the project area, were contiguous. Development and agriculture have fragmented habitats and created habitat islands that are disconnected from migratory pathways. The construction of dams and other water supply projects has fragmented habitat and blocked access to spawning areas of migratory species. Upland movement corridors include open lands that are physically connected to other open lands, have minimal barriers to movement, or are close to other open lands so that wildlife can move between them easily. As the remaining open lands, floodplains, and spawning streams in the region continue to be converted under development, connections between the Central Valley, foothills, Delta, and mountainous regions, including the proposed project site, become more tenuous, forcing wildlife and riverine species to expend more energy, or expose themselves to increased mortality by moving greater distances between noncontiguous habitat patches, or abandon some patches entirely. The amount of terrestrial plant and wildlife habitat in the proposed project site is relatively small, highly modified, and isolated from other areas of natural habitat. Because the habitat has been highly modified and is in a degraded state, it is of poor quality for wildlife species. Because of this, the proposed project's contribution to regional reduction of natural habitat is not considerable.

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 avoidance, minimization, and/or compensation 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, interagency coordination meetings, and public meetings and workshops. This chapter summarizes the results of Caltrans efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

3.1 Consultation and Coordination with Public Agencies

The Federal Transit Administration (FTA) and the Federal Railroad Administration (FRA) are NEPA cooperating agencies, pursuant to CEQ regulations (40 CFR Section 1501.6). This EA will provide information such that FTA and FRA can fulfill their environmental responsibilities as NEPA cooperating agencies for the proposed project.

Formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act is occurring for project effects on habitat for the federally listed valley elderberry longhorn beetle, which will be addressed via FHWA's programmatic consultation with the USFWS (i.e., the Formal Programmatic Consultation Permitting Projects with Relatively Small Effects on the Valley Elderberry Longhorn Beetle within the Jurisdiction of the Sacramento Field Office, [California Administration File #572.9/9821] and the USFWS's Conservation Guidelines for the Valley Elderberry Longhorn Beetle, July 9, 1999).

Consultation with the State Historic Preservation Officer (SHPO) under the National Historic Preservation Act is proceeding with preparation and execution of a project-specific programmatic agreement (PA) between Caltrans, FHWA, the SHPO, the City, FTA, FRA, and other consulting parties, as appropriate. Correspondence between SHPO and Caltrans is provided at the end of this chapter (Exhibit 3-1).

3.2 Early Coordination

Because the proposed project is part of the RSP, early coordination for the proposed project occurred at a both a project and program level. The RSP was approved by the Sacramento City Council on December 11, 2007. Its associated EIR involved coordination with an array of local, state, and federal agencies and the general public.

3.3 Workshops

Over the past many months, the City has held a number public meetings and planning sessions on the proposed project. In particular, on August 27, 2008, the City held a public workshop to provide an update to the public on recent project developments and to gather public feedback on the proposed project. The workshop presentation highlighted a general overview and the next steps of the proposed project. Following the presentation, participants visited phase-specific information stations to ask questions and provide feedback directly to project team members. Conceptual maps of each of the project phases were on display at each station. Many elected officials, City staff and other project team members were also on hand to answer questions and provide input to the public.

Workshop notifications were posted on the City website, through a stakeholder and property owner newsletter mailed to nearly 1,200 recipients and personal emails. Comment cards were available at each information station and were collected at the conclusion of the workshop, as well as through email and standard mail after the workshop.

3.3.1 Comments Received

An array of comments was received from the public during the August 27, 2008 public workshop. Feedback from the public included suggestions to add additional project features to the proposed project. These requests ranged from including the first phase of LRT's Downtown Natomas Airport (DNA) project into the proposed project plans, to installing solar paneling over passenger platforms, and adding the bicycle and pedestrian facilities, such as a pedestrian/bicycle tunnel, a pedestrian connection to the project site from Old Sacramento, and an overhead connection between the intermodal facility and the tracks in Phase 3. Additional feedback was also given by the public on the project site's historical integrity.

3.4 Public Participation and Coordination

Public participation and coordination for the Project included the following activities.

3.4.1 Mailing List

A comprehensive mailing list was developed for the proposed project that includes the names and addresses of stakeholders and property owners whose property is nearby the project area. In addition, the mailing list includes federal, State of California, and local agencies; elected and appointed officials and staff; and potentially interested interest groups and organizations. The list was used for notification of the public workshop on August 27, 2008, and will used for notification of the public meeting to be held on April 22, 2009.

3.4.2 Availability of the Environmental Assessment

The availability of the EA and notification of the public review period will be advertised (see the contact information page following the cover, titled “General Information About This Document”). Comments on the EA may be submitted via email or in writing. Following completion of the public review period, all comments received during the review period will be considered and responded to before a decision is made to finalize this environmental document. Copies of the EA will made available for review and comment at the following locations:

City of Sacramento
Development Services Department
300 Richards Boulevard, 3rd Floor
Sacramento, CA 95811

Federal Highway Administration
650 Capitol Mall, 4th Floor
Sacramento, CA 95814

Copies of the EA will be available on CD at the April 22, 2009 public meeting. The EA will also be available for review on the City’s website at:
http://www.CityofSacramento.org/dsd/planning/environmental-review/eirs/

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
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February 2, 2009 Reply To: FHWA081124A

Susan Bauer
Chief, Office of Environmental Management M1
Caltrans, District 3
703 B Street
Marysville, CA 95901

Re: Determinations of Eligibility for the Proposed Sacramento Intermodal Transportation Facility Project, Sacramento, CA

Dear Ms. Bauer:

Thank you for consulting with me about the subject undertaking in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA).

The California Department of Transportation (Caltrans) has determined that the following properties are not eligible for the National Register of Historic Places (NRHP):

- Southern Pacific Tunnel/Pedestrian Subway
- Train Shed Curbs
- Ancillary Train Shed Curbs
- Pattern Storage Shop Slab Foundations
- SPRR Foundry Loading Ramp
- Redwood Railroad Ties
- Southern Car Shops Slab Foundations
- 7th Street Railroad Trestle Bents (CA-SAC-941-H)

Based on my review of the submitted documentation, I concur.

Caltrans has also determined that the following properties are eligible for the NRHP for the following reasons:

- The UPRR Tracks are eligible for the NRHP under Criterion A and C as a contributing element of the SPRR Central Shops Historic District.
- The Casting Shop Kilns are eligible for the NRHP under Criterion A and C as a contributing element of the SPRR Central Shops Historic District.
- The 6th Street Levee (CA-SAC-940-H) is eligible for the NRHP under Criterion A and C for the levee's association with early flood control efforts in Sacramento and as a

representation of three distinct episodes of levee construction, documenting the city residents' technological response to different and repeated flood events.

Based on my review of the submitted documentation, I concur.

Caltrans has also determined that the Chinese Confucius School at 404 I Street in Sacramento is eligible for the NRHP under Criterion B for its association with Walter Fong, a prominent businessman and Chinese community leader in Sacramento. Based on my review of the submitted documentation, I cannot concur with this determination. There is not enough information to support that the Confucius School is the best building in Sacramento to represent Fong's contributions to the Sacramento Chinese community.

If Caltrans disagrees with my opinion and still believes the Chinese Confucius School is eligible for the NRHP, please notify me at the earliest opportunity. Unless I hear from Caltrans on this matter within 15 days following your receipt of this letter, I will assume that Caltrans concurs in my assessment and officially considers the Chinese Confucius School to be ineligible for inclusion in the NRHP.

Thank you for considering historic properties as part of your project planning. If you have any questions, please contact Natalie Lindquist of my staff at your earliest convenience at (916) 654-0631 or e-mail at nlindquist@parks.ca.gov .

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Chapter 4 List of Preparers

This Environmental Assessment (EA) and its supporting studies were prepared by a multidisciplinary team of environmental and engineering specialists.

4.1 Federal Highway Administration

The following individual was involved in management, oversight, and review of the EA and technical reports:

- Scott McHenry—Project management
- David Cohen—Environmental Specialist
- Larry Vinzant—Section 7 Specialist
- Stephanie Stoermer—Section 106 Specialist

4.2 California Department of Transportation

The following individuals were involved in management, oversight, and review of the EA and technical reports:

- Steve Propst—Project management
- Laura Walsh—Project coordination
- Gail St. John—Architectural history
- Anmarie Medin—Archaeology
- Darryl Noble—Archaeology
- Nadarajah Suthahar—Traffic
- Saeid Zandian—Noise
- Suzie Melim—Natural environment

4.3 Consultant Team: ICF Jones & Stokes

The following consultant team members were involved in compiling this EA and/or were responsible for preparation of the specific technical reports listed below:

- Maggie Townsley—Project direction, Paleontology
- Vicki Axiaq—Project management

- Beth Eggerts—Project coordination, Community Impact and Land Use Technical Memorandum
- Bill Kasson—Community Impact and Land Use Technical Memorandum
- Gabriel Roark—Archaeological Study Report, Historic Property Survey Report, Historical Resources Evaluation Report
- David Lemon—Historical Resources Evaluation Report, Historic Property Survey Report
- Mark Bowen—Historical Resources Evaluation Report, Historic Property Survey Report
- Ed Yarborough—Historical Resources Evaluation Report, Historic Property Survey Report
- Kimberly Stevens—Individual Section 4(f) Report
- Dave Buehler—Noise Study Report
- Will Kohn—Biological Assessment and Natural Environment Study
- John Howe—Biological Assessment and Natural Environment Study
- Jacob Collins—Floodplains and water quality
- Amy Fransen—Visual
- Teresa Tapia—Geology and soils
- Taryn Nance—Hazardous materials
- Alex Angier—CAD
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4.3.1 Subconsultant Team

The following subconsultant team members were involved in compiling this EA and/or were responsible for preparation of the specific technical reports listed below:

- Tim Rimpo (Rimpo and Associates, Inc.)—Air Quality Technical Memorandum
- Mark Bowman (Dowling Associates, Inc.)—Traffic and Transportation Report

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Breiger, Allene. Transystems. July 16, 2008—e-mail to Vicki Axiaq of ICF Jones & Stokes regarding construction phasing and construction equipment.

Tremaine, Kimberly. Principal and archaeologist, Tremaine & Associates, Inc., West Sacramento, CA. July 2, 2008—telephone conversation with Gabriel Roark, archaeologist, ICF Jones & Stokes, Sacramento, CA.

Appendix A Section 4(f) Evaluation

Sacramento Intermodal Transportation Facility

Draft Section 4(f) Evaluation

Sacramento, California
HPL – 5002(090)
EA 03-0L0364L

March 2009

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Introduction

This Section 4(f) evaluation has been prepared in accordance with 49 USC 303 and the Federal Highway Administration's (FHWA's) regulations for Section 4(f) compliance (23 Code of Federal Regulations [CFR] 774). Additional guidance has been obtained from the following sources:

- FHWA's *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (1987),
- FHWA's *Section 4(f) Policy Paper* (2005), and
- California Department of Transportation's (Caltrans') National Environmental Policy Act Environmental Assessment annotated outline (2008).

Regulatory Setting

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) also specifies that "the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of a historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if: 1) there is no prudent and feasible alternative to using that land; and 2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use."

Section 4(f) further requires consultation with the U.S. Department of the Interior and, as appropriate, the involved offices of the U.S. Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, coordination with the State Historic Preservation Officer (SHPO) is also needed.

Feasible and Prudent Standard

Under Section 4(f), an alternative that completely avoids the use of Section 4(f) property must be selected unless it would not be "feasible and prudent" to construct it (49 USC 303(c)). FHWA's Section 4(f) regulations define "feasible and prudent avoidance alternative" as follows:

> (1) A feasible and prudent avoidance alternative avoids using Section 4(f) property and would not cause other severe problems of a magnitude that

substantially outweighs the importance of protecting the Section 4(f) property. In assessing the importance of protecting the Section 4(f) property, it is appropriate to consider the relative value of the resource to the preservation purpose of the statute.

(2) An alternative is not feasible if it cannot be built as a matter of sound engineering judgment.

(3) An alternative is not prudent if:

(i) It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;

(ii) It results in unacceptable safety or operational problems;

(iii) After reasonable mitigation, it still causes:

(A) Severe social, economic, or environmental impacts;

(B) Severe disruption to established communities;

(C) Severe disproportionate impacts to minority or low income populations; or

(D) Severe impacts to environmental resources protected under other Federal statutes;

(iv) It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;

(v) It causes other unique problems or unusual factors; or

(vi) It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

23 CFR 774.17.

If no feasible and prudent total avoidance alternative exists, then FHWA may only approve the alternative that:

(1) Causes the least overall harm in light of the statute's preservation purpose. The least overall harm is determined by balancing the following factors:

(i) The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);

(ii) The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;

(iii) The relative significance of each Section 4(f) property;

(iv) The views of the official(s) with jurisdiction over each Section 4(f) property;

(v) The degree to which each alternative meets the purpose and need for the project;

(vi) After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and

(vii) Substantial differences in costs among the alternatives.

(2) The alternative selected must include all possible planning, as defined in §774.17, to minimize harm to Section 4(f) property.

23 CFR 774.3(c).

Tiering (Programmatic Review) under NEPA

Tiering is a procedure for completing NEPA process in two separate stages, known as tiers. The use of tiering is authorized under the regulations issued by CEQ (40 CFR Part 1500), and under the U.S. Department of Transportation regulations issued jointly by FHWA and FTA (23 CFR Part 771). The first level, or "Tier 1," allows a federal agency to focus on broad environmental issues at a program level, which may correlate directly to early planning decisions, such as the type of project, the general location of a project, and major design features of a project. The second level, or "Tier 2," addresses site-specific details on project impacts, costs, and mitigation measures at a project level. Completing a Tier 2 NEPA review generally allows FHWA and other federal agencies to reach a project-level decision (e.g., issuance of a record of decision or finding of no significant impact) and authorize release of federal funding or right-of-way acquisition, whereas decisions made at Tier 1 are of a "programmatic" nature and, generally speaking, do not include planning and design at a level necessary to support such project-level decisions and authorizations (Malley and Dusenbury 2001).

Tier1/Tier 2 NEPA-level Review

As described above, the proposed project would be implemented in three phases. Design information for Phase 1 (realignment of existing mainline rail tracks) and Phase 2 (improvements to the existing Sacramento Valley Station) is at a level sufficient to conduct detailed, site-specific environmental analyses. Design information for future Phase 3 (the planned eventual transformation of the station into a multimodal transportation center) is currently only at a conceptual level. Therefore, the environmental analysis in the EA is at a Tier 1 level (broader programmatic level) for the *entire* three-phase project, and also includes a site-specific, project-specific analysis for Phases 1 and 2 at a combined program/project-specific level.

Accordingly, the EA analyzes all three phases of the project at the Tier 1 programmatic level and Phases 1 and 2 of the project at the Tier 2 project level of detail. This is intended to provide FHWA, as the lead agency under NEPA, sufficient information to reach a "programmatic" Tier 1 decision for the entire three-phase project (i.e., Phases 1–3), as well as a specific, project-level Tier 2 decision on whether to authorize construction of Phases 1 and 2 on completion of this EA. The EA analyzes Phase 3 of the project at the Tier 1 programmatic level, describing what Environmental Effects may be in this future phase. FHWA would not authorize, at the conclusion of this environmental process, the final design or Federal funding for any right-of-way acquisition for future Phase 3.

Tiering under Section 4(f)

U.S. Department of Transportation regulations allow for tiering of Section 4(f) evaluations and acknowledge that "when the first-tier, broad-scale EIS [or EA] is prepared, the detailed information necessary to complete the Section 4(f) evaluation may not be available at the time." The regulations require an evaluation be made on the "potential impacts that a proposed project would have on Section 4(f) land" and allow a "preliminary determination" to be made at the Tier 1 stage as to whether there are feasible and prudent locations or alternatives for the Tier 1 level action to avoid the use of the Section 4(f) land. The statute recognizes that planning at the Tier 1 stage would be limited to "ensuring that opportunities to minimize harm at subsequent stages in the development process have not been precluded by decisions made at the first–tier stage" (23 CFR 774.7[e]).

Tier 1/Tier 2 Section 4(f) Review

As described above, the environmental analysis in the EA is at a Tier 1 level (broader programmatic level) for the entire three-phase project, and includes a site-specific, project-specific analysis for Phases 1 and 2 at a combined program/project specific level, commensurate with the level of detail available at this time. Therefore, it is anticipated that at the time of the final EA, FHWA would be able to make a "preliminary determination" for the Tier 1 level aspects, with a final Section 4(f) approval to be made when additional design details are available at later date. For Phases 1 and 2, it is anticipated that a final Section 4(f) approval could be made as part of the approval process for the current EA under consideration.

Description of Proposed Project

The City of Sacramento (City) proposes to expand the existing Sacramento Valley Station (Station) to meet current needs and to establish a state-of-the-art regional transportation center to meet the future needs of rail and bus transit passengers and service operators in the Sacramento region through the year 2025 and beyond. The project site is located within the Central Business District (CBD) of the downtown area of the City and within the Railyards Specific Plan (RSP) area, just south of the historic Southern Pacific Railroad (SPRR) Sacramento Shops complex. The project site consists of approximately 33 acres and is generally bounded by I Street on the south, 2nd Street and the Sacramento River riverfront on the west, 7th Street on the east, and the Central Shops buildings on the north.

Developed in three phases, the Sacramento Intermodal Transportation Facility (SITF) (the proposed project) would encompass a realignment of existing mainline rail tracks (Phase 1), improvements to the existing Sacramento Valley Station, which includes the current Southern Pacific Railroad Depot (Phase 2), and eventual transformation of the Station into a multimodal transportation center (future Phase 3). As noted above, for Phases 1 and 2, design information is at a level sufficient for detailed, site-specific environmental analyses. Design information for future Phase 3 is currently only at a conceptual level. Therefore, the Section 4(f) evaluation analyzes all three phases of the project at the Tier 1 programmatic level and the actual effects on the 4(f) resources of Phases 1 and 2 of the project at the Tier 2 project level of detail. This draft 4(f) evaluation analyzes two build alternatives for future Phase 3, in addition to the no-build alternative: Alternative 1, “Don’t Move the Depot,” and Alternative 2, “Move the Depot.” These build alternatives are identical in design for Phase 1 and Phase 2 and differ only in the design of the ultimate project in future Phase 3.

Following is a summary of the key project features by phase. Figures 1 through 8 at the end of this document illustrate the study area, the project alternatives, and the 4(f) resources in the study area. A more detailed description of the proposed alternatives is available in Chapter 1, “Proposed Project,” of the EA.

Phase 1—Track Relocation

Phase 1 consists of the following components, which are identical for both build alternatives. The environmental effects of these components are analyzed at the project level of detail in the EA.

- Preparing the new alignment for relocation of the existing mainline freight and passenger tracks.
- Installing new freight tracks, new passenger tracks, and associated equipment within the platform area.
- Constructing new double-sided passenger platforms.
- Constructing a new passenger platform tunnel under the relocated tracks.

- Constructing a pedestrian walkway from the passenger platform tunnel to the Depot building on the south side of the rail corridor.
- Constructing a pedestrian connection from the passenger platform tunnel to the north side of the rail corridor.
- Constructing a service access pathway from the Depot to the proposed new passenger tracks, consisting of a crossing of the tracks on the west side of the platforms, the service roadway between the platforms, and the paved drive between the Depot and the crossing.
- Constructing a pedestrian-bicycle tunnel west of the service access connecting the north and south areas that border the rail right of way.
- Removing the existing mainline tracks and passenger platforms behind the Depot once the new track alignment was operational. The ramps to the platform that are part of the existing pedestrian tunnel at the Depot would be subsequently demolished.

Phase 2—Sacramento Valley Station Improvements

Phase 2 would consist of improvements to the existing Station that would upgrade its facilities and relocate transportation uses for more efficient operations, including improvements to the existing Depot. Phase 2 consists of the following components, which are identical in both build alternatives. The environmental effects of these components are analyzed at the project level of detail in the EA.

- Relocating, reconfiguring, and repaving/restriping the existing Regional Transit (RT) and Amtrak bus berths.
- Relocating the existing light rail transit (LRT) station to a north-south alignment on the eastern edge of the site as planned by RT, which would create better internal site circulation and proximity to the bus berths and to the long-distance passenger rail service from LRT trains.
- Providing enhanced passenger connections, including walkway upgrades (e.g., street furniture, a shade/weather covering, and landscaping/lighting) from the new passenger platforms to the Depot and a tunnel extension that connects the existing Depot tunnel and the new passenger platform tunnel constructed in Phase 1.
- Relocating and reconfiguring passenger vehicle and bicycle parking to accommodate existing parking demand and improve the drop-off area in front of the Depot.
- Upgrading the electrical system at the station and within the Depot to meet functional needs and requirements.
- Providing a transit way along the north side of the site connecting the west side of the facility to the extension of F Street to facilitate bus circulation on site and provide shortcuts separate from congested city streets.
- The Phase 2 improvements would be constructed after the tracks had been relocated and would be implemented in stages as funding became available.

Future Phase 3—Intermodal Improvements

The environmental effects of future Phase 3 are analyzed at the program level in the EA. FHWA would not authorize construction of an alternative for future Phase 3 until a later date when more detailed design information and subsequent environmental review was completed for this phase. As noted previously, the differences in the two overall build alternatives would occur in future Phase 3. Under Alternative 1, the Depot would remain in place and continue to function as the portal to the transit facility. Under Alternative 2, the Depot would be moved approximately 300 feet north and some functions would be relocated to the terminal extension. Both alternatives under future Phase 3 would consist of the following components.

- Converting the existing Station into a large, multimodal regional transportation facility that integrates a classic transportation building and a new terminal.
- Expanding bus bays.
- Expanding baggage facilities.
- Constructing multiple waiting areas.
- Expanding site features that serve passengers and providers.
- Meeting sustainable design objectives.

List and Description of Section 4(f) Properties

This section identifies and describes the Section 4(f) resources within the vicinity of the proposed project. The only Section 4(f) resources in the project vicinity are those listed or eligible for listing in the National Register of Historic Places (NRHP). There are no significant parks, recreational facilities, or wildlife refuges in the project vicinity and therefore only historic properties are discussed in this section. Parks and recreation facilities and non-NRHP eligible historic properties are discussed in the section at the end of this document titled "Other Park, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f)."

Built Environment and Archaeological Resources

Section 4(f) applies to lands of a historic site of national, state, or local significance. Significance for historic sites under Section 4(f) means that the site is in or eligible for listing in the NRHP and is a "historic property" as defined by Section 106 of the National Historic Preservation Act of 1966, as amended. If the historic site is not listed or eligible for listing on the NRHP, the provisions of Section 4(f) do not apply (23 CFR 774.11[e]). For historic sites, the land would not need to be publicly owned for Section 4(f) to be triggered. With regard to archaeological sites, Section 4(f) would not apply to such resources, even if they are eligible for the National Register, if FHWA concludes that "the resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place" (23 CFR 774.13[b]).

A historical resources evaluation report (HRER), archaeological survey report (ASR), and Historic Property Survey Report (HPSR) have been prepared for the project, pursuant to Section 106 of the National Historic Preservation Act of 1966 (NHPA) (ICF Jones & Stokes 2008a 2008b). All archaeological and built environment resources within the APE were analyzed for NRHP eligibility, which determines whether they are also protected under Section 4(f). The APE for archaeological and historical resources for this undertaking was established by Caltrans, pursuant to 36 CFR 800.16(d). The APE encompasses the maximum possible area of direct impact resulting from the proposed project, including all new construction, easements, and staging areas, as well as adjacent parcels that might be subject to indirect effects (e.g., auditory, vibratory, visual). All subsurface excavations, including track installation, light rail station relocation, moving the Depot onto a new foundation, and constructing a new terminal, would not exceed 25 feet in depth. Grading required for access and staging would not exceed 3 feet in depth (ICF Jones & Stokes 2008a, 2008b).

Studies for the project resulted in the identification of several historic properties in the APE. Caltrans submitted the HPSR, HRER, and ASR containing eligibility recommendations to the SHPO and received concurrence with their determinations in a letter dated February 2, 2009 (see Appendix 1). A draft Finding of Effects (FOE) document evaluated potential impacts on historic properties at a project (Tier 2) level for Phases 1 and 2 of the project. The draft FOE resulted in the preliminary determination that project activities under Phases 1 and 2 would result in an adverse effect on one or more historic properties. The final effect determinations have not yet been made, nor has SHPO concurred with the findings; therefore, as a result of further Section 106 consultation, this Section 4(f) evaluation may be revised.

Caltrans has prepared a Programmatic Agreement (SITF PA) that addresses all the phases of the project and stipulates the procedures for phased identification, treatment, and reporting of historic properties. The PA is currently under negotiation by the FHWA, the Federal Railroad Administration (FRA), the Federal Transit Administration (FTA), and the California State Historic Preservation Officer (SHPO).

Historic Properties

Based on the previously described Section 106 documentation, four historic properties within the APE for the current project are eligible for protection under Section 4(f), as described below and in Table 1. The locations of the historic properties are shown on Figure 8 at the end of this document.

The Sacramento Southern Pacific Railroad (SPRR) Depot was listed in the NRHP in 1975, along with the American REA building as a contributing element. In 1999, the SPRR Platform Amenities (platforms, railings, canopies, and pedestrian subways) were determined NRHP-eligible as a contributing element of the SPRR Depot. The studies conducted for the current project resulted in the identification of a Sacramento SPRR Station District, which includes the Depot, the REA building, the platform amenities, and the Union Pacific Railroad (UPRR) tracks as contributing features. The 6th Street Levee was also determined eligible for the NRHP as a result of the current study. The Central Shops Historic District was determined eligible for listing in the NRHP in 2001. As noted previously, the SHPO concurred with the determinations of eligibility made for the current study in a letter to Caltrans dated February 2, 2009.

Table 1. Historic Properties Identified in the Project APE

Name	Street Address/ Assessor's Parcel Number	Year Built	NRHP Status	Description
Sacramento Southern Pacific Railroad Station District	401 I Street	1925	Eligible (2008)	The Sacramento SPRR Station District consists of the depot, REA building, platform amenities, and UPRR tracks.
Sacramento Southern Pacific Railroad Station Depot	401 I Street	1925	Individually listed under Criteria A and C (1975); contributing element of SPRR Station District (2008)	Core building of the SPRR Station District
6th Street Levee (P-34-1561/CA-SAC-940-H)	401 I Street 002-0010-051	1852–1880	Eligible (2008)	Historic levee
Central Shops Historic District	401 I Street/ 002-0010-051	1868–1937	Eligible (2001)	The Central Shops Historic District comprises a core of 10 historic structures and encompasses a number of structural ruins.

Impacts on Section 4(f) Properties

Introduction

As stated in FHWA's Section 4(f) regulations, "the potential use of land from a Section 4(f) property shall be evaluated early in the development of the action when alternatives to the proposed action are under study" (23 CFR 774.9[a]). Impacts on Section 4(f) properties are based on whether a project would result in "use" of the resource. Section 4(f) use, as defined in 23 CFR 774.17, occurs when any of the following take place.

- Land is permanently incorporated into a transportation facility.
- There is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose as determined by the criteria in 23 CFR 774.13(d).
- There is a constructive use of a Section 4(f) property as determined by the criteria in 23 CFR 774.15.

Potential uses of Section 4(f) properties that may result from implementation of the proposed project phases are summarized in Table 2.

Section 4(f) is applicable to historic properties when the resource is included in, or is eligible for listing in, the NRHP (23 CFR 774.11[e]). Because the SPRR Depot, SPRR Station District, Central Shops District, and 6th Street Levee are listed or eligible for the NRHP, they qualify as Section 4(f) resources.

As noted previously in the Introduction, a Section 4(f) evaluation may involve different levels of detail in instances when the Section 4(f) evaluation is addressed in a tiered, or programmatic, NEPA document.

SAFETEA-LU Section 6009 amended existing Section 4(f) legislation to allow the U.S. Department of Transportation to determine that certain uses of Section 4(f) land would have no adverse effect on the protected resource (49 USC 303[d]; see also 23 USC 138[b]). For historic sites, a de minimis impact means that no historic property is affected or that there is a "no adverse effect" finding under 36 CFR Part 800. *De minimis* impact findings may be made for the individual Section 4(f) resources when there are multiple resources present on a property.

Constructive use (23 CFR 774.15) involves the evaluation of indirect or "proximity impacts" to a Section 4(f) resource. No actual use or "take" of land is involved. A constructive use occurs when a project's proximity impacts are so severe that the protected activities, features or attributes that qualify the resource for protection under Section 4(f) are "substantially impaired." Substantial impairment occurs only when the protected activities, features or attributes are "substantially diminished" by the proposed project.

Table 2. Potential Section 4(f) Use of Historical Resources

Resource	Project Phase*	Preliminary Section 106 Effect**	Potential Section 4(f) Use***	Comments
Sacramento SPRR Station District	1	Adverse	Individual	Loss of contributing elements to the district (passenger platforms, canopies, and railings and UPRR tracks) would disrupt the historic functional layout of the district, resulting in an adverse effect under Section 106. Use of this resource must be addressed in an individual Section (4(f) evaluation.
	2	Not adverse	De minimis	Although the resource is NRHP-eligible, the minor construction elements of Phase 2 would not substantially impair any contributing elements of the Station District and the electrical upgrades to the Depot would be conducted in accordance with the Secretary of the Interior standards, as would be required by the PA. Therefore, FHWA anticipates that, in accordance with 49 USC 303(d), that Phase 2 of the project would meet the criteria for a de minimis impact finding for this Section 4(f) resource.
	3-1	Adverse	Individual (preliminary determination)	The setting and association of the Sacramento SPRR Station District would be altered by the introduction of several new buildings and facilities, including the transit/joint development parking, the new terminal extension, and other structures in future Phase 3 and it is anticipated that the effect would be adverse under Section 106. Based on the conceptual level design for this phase, the preliminary determination at the Tier 1 level is that future Phase 3, Alternative 1, would have to be addressed in an individual project-level Section 4(f) Evaluation.
	3-2	Adverse	Individual (preliminary determination)	Relocation of the Depot building approximately 300 feet north of its original and current location would remove the axial structure of the Sacramento SPRR Station District. The break in historic association would be most apparent in the removal of the contributing element to the District from direct relationship and alignment with the REA building and from the viewshed of I Street. Relocation of the Depot building would substantially impair the NRHP eligibility of the District. The historic setting also would be altered by the introduction of new buildings and facilities. The effect is anticipated to be adverse under Section 106. Based on the conceptual level design for this phase, the preliminary determination at the Tier 1 level is that future Phase 3, Alternative 2 would have to be addressed in an individual project-level Section 4(f) Evaluation.
Sacramento Depot	1	Not adverse	Temporary	Work associated with Phase 1would not have the potential to compromise the integrity of the Depot and thus it would remain eligible for listing on the NRHP. At this time, the preliminary determination is that there would be no adverse effect on this resource under Section 106. Phase 1 would meet the requirements for a finding of temporary occupancy under Section 4(f) (23 CFR 774.13(d)) because the scope of the work would be minor and temporary (less than the time needed to construct the overall project), no change in ownership would occur, and there are no permanent adverse physical impacts or interference with the activities or purposes of the Depot, which would continue to operate as a Depot.

Table 2. Continued

Resource	Project Phase*	Preliminary Section 106 Effect**	Potential Section 4(f) Use***	Comments
	2	Not adverse	No use	As stipulated in the PA, the electrical upgrades and replacements that would occur in Phase 2 would be designed to meet the 10 standards for rehabilitation found in the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68.3(b)), and are therefore anticipated to result in no adverse effect on the Sacramento Depot under Section 106 and, consequently, no use of the Depot under Section 4(f) (23 CFR 774.13(a)).
	3-1	Not adverse	No use (preliminary determination)	As would be stipulated in a PA, any renovations to the Depot that would occur under Alternative 1 in a future Phase 3 would be designed to meet the 10 standards for rehabilitation found in the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68.3(b)) and, accordingly, it is anticipated that any such future project activities would not result in an adverse effect on the Sacramento Depot under Section 106. Consequently, FHWA's preliminary determination is that such activities would not result in a use of the Depot under Section 4(f) (23 CFR 774.13(a)).
	3-2	Adverse	Individual (preliminary determination)	The NRHP eligibility of the Depot building would be substantially impaired by relocation. The move would leave the original basement space behind and may lead to the loss of additional original building material. In addition, relocation of the Depot would surround the historic Depot with new construction, effectively removing it from view outside the new transportation facility itself. The historic setting of the Depot also would be altered by the introduction of new buildings and facilities as that area undergoes development. At the Tier 1 level, these changes are anticipated to constitute an adverse effect under Section 106. Based on the conceptual level design for this phase, the preliminary determination at the Tier 1 level is that future Phase 3, Alternative 2, would not meet the requirements for a finding of temporary occupancy of the Depot under Section 4(f) (23 CFR 774.13(d)) or de minimis use of this resource under Section 4(f) (49 USC 303(d)) because the effect under Section 106 would be adverse and therefore use of this resource would have to be addressed in an individual project-level Section (4(f) evaluation.
Central Shops Historic District	1	Not adverse	De minimis	Vibration from use of the tracks following Phase 1 relocation could damage the Central Shops Historic District buildings; however, as stipulated in the PA to ensure the resolution of adverse effects, final design measures would be implemented to reduce vibration such that there would be no substantial impairment of the attributes that qualify the resource for listing in the NRHP. Placement of the new heavy rail and passenger rail lines and new passenger platforms and tunnel surface access elements at the boundary of the Central Shops District is not anticipated to impair the district attributes. With implementation of the requirements of the PA, it is anticipated that Phase 1 of the project would not adversely affect this resource under Section 106. Therefore, FHWA has preliminarily determined that track relocation under Phase 1 of the project would result in a de minimis use of the Central Shops Historic District.

Table 2. Continued

Resource	Project Phase*	Preliminary Section 106 Effect**	Potential Section 4(f) Use***	Comments
	2	Not adverse	Temporary	Studies undertaken to date regarding Phase 2 have indicated that there would be no adverse effect under Section 106 on the character defining features of the Central Shops. The activities would be limited to improvements to the station and there would be no severe proximity impacts that would substantially diminish the features or attributes that qualify the Central Shops District for protection under Section 4(f). In addition, there would be no right of way acquisition, the duration of the construction activities would be temporary (completed in less than the time needed for construction of the overall project), and the nature and magnitude of the changes to the resource are minimal. Therefore, Phase 2 would appear to meet all of the provisions of “temporary occupancy” for this Section 4(f) resource (23 CFR 774.15(d)).
	3-1	Not adverse	Temporary (preliminary determination)	Effects on the Central Shops Historic District could occur in future Phase 3 at the southern margin of the district where the conceptual design indicates a pedestrian bridge could connect to the platforms and the northern terminus of the Central Tunnel. No buildings or structures would be altered or damaged, but the proposed pedestrian bridge could create a visual intrusion into a portion of the district. Construction of a railroad terminal extension is broadly compatible with the historic layout of the Railyards with respect to uses surrounding the Central Shops. Therefore, at the Tier 1 level, based on the conceptual design, the effects on this resource likely would not be considered adverse under Section 106. Based on the conceptual design, at the Tier 1 level, the work during future Phase 3 of the project would be of temporary duration, the nature and magnitude of changes would be minimal, and there would be no interference with the purpose of the resource; therefore, the preliminary determination is that the Phase 3, Alternative 1would result in “temporary occupancy” of this Section 4(f) resource, per 23 CFR 774.15(d).
	3-2	Not adverse	Temporary (preliminary determination)	Alternative 2 would entail moving the Depot to a location near the Central Shops Historic District, in addition to construction of joint development projects and a railroad terminal extension between the relocated Depot and the Central Shops. The effect of construction of the joint development and the terminal extension would be similar to the effect of construction of the pedestrian bridge connection described above for Alternative 1. It is anticipated that, with implementation of the stipulations in the PA, the impact to this resource would not be considered adverse under Section 106. Based on the conceptual design, at the Tier 1 level, any work that took place during future Phase 3, Alternative 2, within the boundary of the Central Shops Historic District would be of temporary duration, the nature and magnitude of changes would be minimal, and there would be no interference with the purpose of the resource; therefore, the preliminary determination is that the project would result in temporary use of this Section 4(f) resource.

Table 2. Continued

Resource	Project Phase*	Preliminary Section 106 Effect**	Potential Section 4(f) Use***	Comments
6th Street Levee	1	Adverse	Individual	Under Phase 1 of the proposed project, removal of the current UPRR tracks (which overlay the alignment of the 6th Street Levee) would involve excavation to 3 feet below the present ground surface. Because the levee is buried by only 1.5–2.0 feet of fill, excavation to 3.0 feet below ground surface could result in damage to the 6th Street Levee. As much as 2,400 feet of the 6th Street Levee could be damaged as a result of track removal (the approximate length of levee that coincides with the ground-disturbing activities associated with track relocation [Tremaine et al. 2002]); such activity would result in the use of this Section 4(f) property.
	2	No effect	No use	Analysis to date indicates that Phase 2 of the project would not require additional excavation over the 6th Street Levee, nor would its proximity impacts substantially impair that activities, features, and attributes that qualify the levee for protection under Section 4(f). Accordingly, FHWA has preliminarily determined that Phase 2 of the overall project would not result in the use of the 6th Street Levee.
	3-1	No effect	No use (preliminary determination)	Future Phase 3 of the project would not require additional excavation over the 6th Street Levee under and it is anticipated at the Tier 1 programmatic level of analysis that there would be no adverse effect under Section 106. Therefore, based on the conceptual design at the Tier 1 level, the provisions of Section 4(f) would not be triggered because the resource would not be adversely affected under Section 106 and no land from the levee would be incorporated into this future phase of the overall project.
	3-2	No effect	No use (preliminary determination)	

* Discussion of future Phase 3 in this section is based on a preliminary analysis using the best project information available at the time of publication.

** Findings of Effect made under Section 106 are pending concurrence from SHPO and may be subject to change.

*** A de minimis finding for historic sites is made when the Administration has determined, in accordance with 36 CFR part 800 that no historic property is affected by the project or that the project will have "no adverse effect." An Individual 4(f) Evaluation is prepared when one of the Programmatic Section 4(f) agreements or a de minimis finding do not apply.

Use of the Section 4(f) Properties as a Result of the Project

The potential uses of Section 4(f) properties resulting from implementation of the proposed project phases are described below at the project level for the entire project and at the programmatic level for Phases 1 and 2 and are summarized in Table 2.

Preliminary Analysis of Use of Section 4(f) Resources at the Tier 1 Level

This draft evaluation provides a preliminary program (Tier 1) level analysis of the effects of the entire three-phase project on Section 4(f) resources, as well the actual impacts of Phases 1 and 2 at the project (Tier 2) level. The program-level (Tier 1) and project-level (Tier 2) analysis for Phases 1 and 2 were combined in the same discussion below, organized by Section 4(f) resource.

In summary, as further explained in the following resource discussions, preliminary analysis indicates that implementation of all three phases of the project would result in use of Section 4(f) resources (SPRR Station District, Depot, Central Shops District, and 6th Street Levee), *i.e.*, "actual use" as defined in 23 CFR 774.17.

In addition, implementation of the overall project would not qualify for a *de minimis* impact finding under Section 4(f) (49 USC 303[d]; 23 CFR 774.17) because "adverse impacts" on historic properties under Section 106 would occur in some project phases (SPRR District, Depot, and 6th Street Levee).

Moreover, the overall project would not meet the requirements for a finding of *temporary occupancy* under Section 4(f) (23 CFR 774.13[d]), because the conditions of short duration, minor scope of work, and no adverse impacts could not be met in all project phases. There would be adverse impacts (*i.e.*, actual use) under Section 106 on the SPRR District and 6th Street Levee in Phase 1 and the SPRR District and Depot in future Phase 3. No adverse effects under Section 106 would occur in Phase 2 with implementation of the stipulations in the PA, but the scope of work involved in electrical upgrade and Station improvements would not be considered minor.

Finally, the overall project would not qualify for one of the five *programmatic applications* under Section 4(f) (23 CFR 774.3[d]) because as described above the condition of minor involvement with historic properties could not be met in all project phases.

<u>Preliminary Tier 1 Evaluation for All Project Phases</u>: Based on the information in the phased Section 106 evaluation and as supported by the discussions below, the preliminary evaluation at the overall programmatic or Tier 1 level is that the project potentially would have an adverse effect under Section 106 and therefore must be addressed in an individual Section 4(f) evaluation.

Use of Section 4(f) Resources at the Combined Tier 1/Tier 2 Levels

As noted earlier, design information is at a level sufficient for detailed, site-specific analyses of potential uses of Section 4(f) properties at the Tier 2 level. These potential uses are summarized below for Phases 1 and 2.

Preliminary Tier 2 Evaluation for Phase 1: As further explained in the following resource discussions, at the Tier 2 project level, implementation of Phase 1 of the project would result in adverse effects under Section 106 on Section 4(f) resources (SPRR Station District and 6th Street Levee) and therefore must be addressed in an individual Section 4(f) evaluation.

Preliminary Tier 2 Evaluation for Phase 2: As further explained in the following resource discussions, at the Tier 2 level, implementation of Phase 2 of the project would not result in adverse effects under Section 106 and any use of Section 4(f) resources (SPRR Station District, Depot, Central Shops District) during Phase 2 would be either temporary or *de minimis* as defined in FHWA regulations.

The following discussions provide the supporting information for anticipated effects of Tier 1 and Tier 2 on Section 4(f) properties.

Sacramento SPRR Station District and Depot

Phase 1—Track Relocation

Sacramento SPRR Station District

The Station District is composed of five buildings and structures, including the Depot building, which is evaluated as a separate resource below. The district is connected by historic operations and by associated elements. Under Phase 1, the platform amenities (specifically the passenger platforms, canopies, and railings) and UPRR tracks would be demolished and the tunnel access points would surface within the district. This loss, which would amount to nearly half of the district's contributing elements, would disrupt the historic functional layout of the district, a character-defining feature of the district. These effects on the District would result in a use during Phase 1.

Station Depot

No alterations or modifications to the Depot building would occur as part of the project activities included in Phase 1. There would be no penetration of the exterior structure and, as evaluated in the Section 106 documentation, work associated with Phase 1, such as relocation of the tracks and demolition of the canopies and platforms, would not have the potential to compromise the integrity of the structure and thus it would remain eligible for listing on the NRHP. At this time, the preliminary determination is that there would be no adverse effect on this resource under Section 106 in Phase 1.

With regard to the Depot, Phase 1 would meet the requirements for a finding of temporary occupancy under Section 4(f) (23 CFR 774.13[d]) because the scope of the work would be minor and temporary (less than the time needed to construct the overall project), no change in ownership would occur, and there are no permanent adverse physical impacts or interference with the activities or purposes of the Depot, which would continue to operate as a Depot.

Phase 2—Sacramento Valley Station Improvements

Station District

Phase 2 would result in changes to the setting of the Station District, such as the construction of a parking lot north of the existing UPRR right-of-way and the reconfiguration of bus berths and light rail facilities. The historic setting of the district is not a character-defining feature of this historic property (ICF Jones & Stokes 2008h). Rather, the spatial and functional relationships of the district contributors are character-defining features, which would not be altered by construction of the parking lot and other activities requisite for reconfiguration of the Station site. Furthermore, the historic setting of the district already is compromised by modern transportation facilities and the previous demolition of buildings and structures associated with the Central Shops District immediately north of the UPRR tracks. The setting that Phase 2 would alter would not resemble the setting during the Station District's period of significance. Therefore, the facilities proposed under Phase 2 would not result in an adverse effect on the Sacramento SPRR Station District under Section 106.

Although the resource is NRHP-eligible, the minor construction elements of Phase 2 would not substantially impair any contributing elements of the Station District and the electrical upgrades to the Depot would be conducted in accordance with the Secretary of the Interior standards, as would be required by the PA. Therefore, FHWA anticipates that, in accordance with 49 USC 303(d), that Phase 2 of the project would meet the criteria for a *de minimis* impact finding for this Section 4(f) resource.

Station Depot

As stipulated in the PA, the electrical upgrades and replacements that would occur in Phase 2 would be designed to meet the 10 standards for rehabilitation found in the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68.3[b]), and are therefore anticipated to result in no adverse effect on the Sacramento Depot under Section 106 and, consequently, no use of the Depot under Section 4(f) (23 CFR 774.13[a]).

Future Phase 3—Intermodal Improvements

Station District

Alternative 1

The setting and association of the Sacramento SPRR Station District would be altered by the introduction of several new buildings and facilities, including the transit/joint development parking, the new terminal extension, and other structures in future Phase 3. These buildings would largely block the view between the Central Shops Historic District and the Depot and REA buildings. The placement of the new construction behind the Depot and REA buildings, as viewed from I Street, would likely cause less substantial impairment to the NRHP-eligibility than if new construction were to be built between the Depot and REA buildings and I Street. In any event, it is anticipated that the effect would be adverse under Section 106. Based on the conceptual level design for this phase, the preliminary determination at the Tier 1 level is that future Phase 3, Alternative 1, would have to be addressed in an individual project-level Section 4(f) Evaluation.

Alternative 2

Relocation of the Depot building approximately 300 feet north of its original and current location would remove the axial structure of the Sacramento SPRR Station District. The break in historic association would be most apparent in the removal of the contributing element to the District from direct relationship and alignment with the REA building and from the viewshed of I Street. Relocation of the Depot building would substantially impair the NRHP eligibility of the District. The historic setting also would be altered by the introduction of new buildings and facilities. The effect is anticipated to be adverse under Section 106. Based on the conceptual level design for this phase, the preliminary determination at the Tier 1 level is that future Phase 3, Alternative 2 would have to be addressed in an individual project-level Section 4(f) Evaluation.

Station Depot

Alternative 1

As would be stipulated in a PA, any renovations to the Depot that would occur under Alternative 1 in a future Phase 3 would be designed to meet the 10 standards for rehabilitation found in the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68.3(b)) and, accordingly, it is anticipated that any such future project activities would not result in an adverse effect on the Sacramento Depot under Section 106. Consequently, FHWA's preliminary determination is that such activities would not result in a use of the Depot under Section 4(f) (23 CFR 774.13[a]).

Alternative 2

Relocation of the Depot building approximately 300 feet north of its original and current location would remove the axial structure of the Depot. The break in historic association would be most apparent in removal of the building from its direct relationship and alignment with the REA building and from the viewshed of I Street. The NRHP eligibility of the Depot building would be substantially impaired by relocation. The move would leave the original basement space behind and may lead to the loss of additional original building material. In addition, relocation of the Depot would surround the historic Depot with new construction, effectively removing it from view outside the new transportation facility itself. The historic setting of the Depot also would be altered by the introduction of new buildings and facilities as that area undergoes development. At the Tier 1 level, these changes are anticipated to constitute an adverse effect under Section 106. Based on the conceptual level design for this phase, the preliminary determination at the Tier 1 level is that future Phase 3, Alternative 2, would not meet the requirements for a finding of temporary occupancy of the Depot under Section 4(f) (23 CFR 774.13[d]) or *de minimis* use of this resource under Section 4(f) (49 USC 303[d]) because the effect under Section 106 would be adverse and therefore use of this resource would have to be addressed in an individual project-level Section 4(f) evaluation.

Central Shops Historic District

Phase 1—Track Relocation

As described in the EA in Section 2.2.7, "Noise and Vibration," passenger and freight trains on tracks relocated adjacent to the southern boundary of the Central Shops Historic District under Phase 1 of the proposed undertaking would result in vibration that exceed the criteria that the FTA (Federal Transit Administration 2006) has developed pertaining to vibration impacts on "buildings extremely susceptible to vibration damage" (e.g., fragile older buildings). Vibration from use of the tracks following Phase 1 relocation, therefore, could damage the Central Shops Historic District buildings (ICF Jones & Stokes 2008d). However, there are several minimization measures that are under consideration to help reduce the vibration level to ensure that no damage would occur (see Section 2.2-57 to 59 of the EA). As would be stipulated in the PA to ensure the resolution of adverse effects, final design measures would be implemented to reduce vibration such that there would be no substantial impairment of the attributes that qualify the resource for listing in the NRHP (i.e., the strong association with the development of the Central Pacific Railroad Company, as discussed in more detail in the EA).

Placement of the new heavy rail and passenger rail lines and new passenger platforms parallel to the southern border of the Central Shops District is not expected to result in substantial impairment to the district, as defined in 23 CFR 774.15. The new rail would be relocated in approximately the location of historic rail service. Also in Phase 1, construction of the Central Tunnel would include surface access elements such as stairs, an elevator, and perhaps an escalator at the north end of the proposed tunnel and the West Tunnel northern access would be located at the southwest corner of the Central Shops District. These above ground structures would add non-contributing features at the southern boundary of the Central Shops Historic District. The setting has, however, little of its built environment, historic-period elements remaining and the new elements are on a small scale in relation to the contributing structures of the Central Shops Historic District to the north.

With implementation of the requirements of the PA, it is anticipated that Phase 1 of the project would not adversely affect this resource under Section 106. Therefore, FHWA has preliminarily determined that track relocation under Phase 1 of the project would result in a *de minimis* use of the Central Shops Historic District.

Phase 2—Sacramento Valley Station Improvements

Studies undertaken to date regarding Phase 2 have indicated that there would be no adverse effect under Section 106 on the character defining features of the Central Shops. The activities would be limited to improvements to the station and there would be no severe proximity impacts that would substantially diminish the features or attributes that qualify the Central Shops District for protection under Section 4(f). In addition, there would be no right of way acquisition, the duration of the construction activities would be temporary (completed in less than the time needed for construction of the overall project), and the nature and magnitude of the changes to the resource are minimal. Therefore, Phase 2 would appear to meet all of the provisions of "temporary occupancy" for this Section 4(f) resource (23 CFR 774.15[d]).

Future Phase 3—Intermodal Improvements

Alternative 1

Effects on the Central Shops Historic District could occur in future Phase 3 at the southern margin of the district where the conceptual design indicates a pedestrian bridge could connect to the platforms and the northern terminus of the Central Tunnel. No buildings or structures would be altered or damaged, but the proposed pedestrian bridge could create a visual intrusion into a portion of the district. Construction of a railroad terminal extension is broadly compatible with the historic layout of the Railyards with respect to uses surrounding the Central Shops. Therefore, at the Tier 1 level, based on the conceptual design, the effects on this resource likely would not be considered adverse under Section 106.

Based on the conceptual design, at the Tier 1 level, the work during future Phase 3 of the project would be of temporary duration, the nature and magnitude of changes would be minimal, and there would be no interference with the purpose of the resource; therefore, the preliminary determination is that the Phase 3, Alternative 1would result in "temporary occupancy" of this Section 4(f) resource, per 23 CFR 774.15(d).

Alternative 2

Alternative 2 would entail moving the Depot to a location near the Central Shops Historic District, in addition to construction of joint development projects and a railroad terminal extension between the relocated Depot and the Central Shops. The effect of construction of the joint development and the terminal extension would be similar to the effect of construction of the pedestrian bridge connection described above for Alternative 1. It is anticipated that, with implementation of the stipulations in the PA, the impact to this resource would not be considered adverse under Section 106.

Based on the conceptual design, at the Tier 1 level, any work that took place during a future Phase 3, Alternative 2, within the boundary of the Central Shops Historic District would be of temporary duration, the nature and magnitude of changes would be minimal, and there would be no interference with the purpose of the resource; therefore, the preliminary determination is that the project would result in temporary use of this Section 4(f) resource.

6th Street Levee

Phase 1—Track Relocation

Under Phase 1 of the proposed project, removal of the current UPRR tracks (which overlay the alignment of the 6th Street Levee) would involve excavation to 3 feet below the present ground surface. Because the levee is buried by only 1.5–2.0 feet of fill, excavation to 3.0 feet below ground surface could result in damage to the 6th Street Levee. As much as 2,400 feet of the 6th Street Levee could be damaged as a result of track removal (the approximate length of levee that coincides with the ground-disturbing activities associated with track relocation [Tremaine et al. 2002]); such activity would result in the use of this Section 4(f) property.

Phase 2—Sacramento Valley Station Improvements

Analysis to date indicates that Phase 2 of the project would not require additional excavation over the 6th Street Levee, nor would its proximity impacts substantially impair that activities, features, and attributes that qualify the levee for protection under Section 4(f). Accordingly, FHWA has preliminarily determined that Phase 2 of the overall project would not result in the use of the 6th Street Levee.

Future Phase 3—Intermodal Improvements

Future Phase 3 of the project would not require additional excavation over the 6th Street Levee under and it is anticipated at the Tier 1 programmatic level of analysis that there would be no adverse effect under Section 106.

Therefore, based on the conceptual design at the Tier 1 level, the provisions of Section 4(f) would not be triggered because the resource would not be adversely affected under Section 106 and no land from the levee would be incorporated into this future phase of the overall project.

Avoidance Alternatives

The following section is based on preliminary effect findings made pursuant to Section 106 and is subject to change based on consultation with SHPO and input from the public.

Alternatives to the project that would completely avoid use of Section 4(f) resources or would have less impact to Section 4(f) resources were identified by the project development team (PDT) and developed as part of an extensive public outreach program (described in the EA) and are discussed below. These include alternatives that were developed and evaluated in the concept design process and represent a range of reasonable alternatives that were based on the City Council-approved vision, project criteria, and programs for transportation and joint development. Summaries of the alternatives and evaluation are provided below, while the complete process is documented in Sacramento Intermodal Transportation Facility Technical Report #9: SITF Alternatives (City of Sacramento 2004). Also evaluated are design shift and off-site location alternatives developed to avoid use of Section 4(f) resources. The avoidance alternatives considered are;

- No-Build Alternative
- Overland Limited Alternative
- Valley Flyer Alternative
- Separation of Freight and Passenger Track Alignments Alternative
- Parallel Placement of Freight and Passenger Tracks Alternative
- No Track Relocation Alternative
- Off-Site Alternative

These alternatives are considered for the project as a whole, based on the “feasible and prudent” and “least overall harm: standards for evaluating Section 4(f) alternatives (see “Regulatory Setting,” above).

SUMMARY: As discussed in this section and illustrated in Table 3 and Appendix 2, some alternatives would avoid use of some Section 4(f) resources during some project phases. However, based on the conceptual level design, at the Tier 1 level, no total avoidance alternatives have been identified that would meet the feasible and prudent standard under Section 4(f). None of the avoidance alternatives described below would meet project purpose and need and some would involve extraordinary operational or safety problems, result in unacceptable and severe adverse environmental impacts, cause extraordinary community disruption, have additional construction costs of an extraordinary magnitude, or result in an accumulation of factors that collectively have adverse impacts (23 CFR 774.3).

Table 3. Summary of Avoidance Alternatives for the Tier 1 Project (Phase 1, Phase 2, and Future Phase 3)*

Alternative	Resources Avoided	Preliminary Determination of Section 4(f) Use in Tier 1				Prudent and Feasible Criteria**						
		Section 4(f) Use in Tier 2		Future Phase 3								
		Phase 1	Phase 2	Alt 1	Alt 2	1	2	3	4	5	6	7
No-Build Alternative	Station District	Individual	De minimis	Individual	Individual	No	Yes					Yes
	Station Depot	Temporary	De minimis	No use	Individual							
	Central Shops Historic District	De minimis	Temporary	Temporary	Temporary							
	6th Street Levee	Individual	No use	No use	No use							
Alternative C: Overland Limited	Station Depot (minimize but not avoid use)	No use	De minimis	Individual	Individual	No	Yes		Yes	Yes		Yes
Alternative D: Valley Flyer	Station Depot (minimize but not avoid use)	No use	De minimis	Individual	Individual	No				Yes		Yes
Alternative I: Separation of Freight and Passenger Track Alignments	Station Depot	No use	De minimis	Individual	Individual	No	Yes		Yes	Yes		Yes
Alternative II: Parallel Placement of Freight and Passenger Tracks	Station Depot	No use	De minimis	Individual	Individual	No	Yes			Yes		
No Track Relocation Alternative	Central Shops Historic District	Individual	No use	No use	No use	No	Yes		Yes	Yes		Yes
	6th Street Levee	Individual	No use	No use	No use							
Off-Site Alternative	Station District	Individual	De minimis	Individual	Individual	No	Yes	Yes	Yes		Yes	Yes
	Station Depot	No use	De minimis	Individual	Individual							
	6th Street Levee	Individual	No use	No use	No use							
	6th Street Levee	Individual	No use	No use	No use							

* Supporting information is provided in the text, including the Tier 2 analysis of avoidance alternatives for Phases 1 and 2

** An alternative may be rejected as not prudent for any of the following reasons:

1. Does the alternative meet the project purpose and need,
2. Does the alternative involve extraordinary operational or safety problems,
3. Are unique problems or truly unusual factors present with the alternative,
4. Does the alternative result in unacceptable and severe adverse social, economic or other environmental impacts,
5. Does the alternative cause extraordinary community disruption,
6. Does the alternative have additional construction costs of an extraordinary magnitude, or
7. Does the alternative cause an accumulation of factors that collectively, rather than individually, have adverse impacts that present unique problems or reach extraordinary magnitudes.

No-Build Alternative

Under the No-Build Alternative, none of the three phases of the proposed project would be constructed and, therefore, any use of Section 4(f) resources would be avoided. Although this alternative would avoid the use of the Section 4(f) resources, it would not meet the purpose of and need for this project, in that it would fail to correct the numerous operational and service deficiencies of the existing Station. Applying the feasible and prudent standard, this alternative would avoid all Section 4(f) uses and is technically feasible. However, FHWA has preliminarily determined it would not be prudent because it would not meet any elements of the project purpose and need, including to improve capacity and reliability for freight and passenger rail service, reduce rail and passenger conflicts and improve safety, provide improved connectivity and ease of use for transit and rail users and providers, accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers, increase local and regional transit use by bringing together disconnected elements of the transit network into a single regional hub, meet projected service levels and passenger growth, or provide alternative modes of transportation to the Sacramento region. This alternative would allow operational and safety deficiencies to continue.

Overland Limited Alternative

This alternative rail alignment, which would maintain the tracks closer to the Depot, was proposed by Save Our Rail Depot. This alternative (also known as Alternative "C") would restore and expand the historic Depot at its existing location to accommodate additional transit functions. The existing tracks and platforms would be demolished and relocated to an alignment that would have its northern edge approximately 200 feet south of the Central Shops; relocation of the tracks would potentially damage the 6th Street Levee.

The track alignment under this alternative would not permit local city streets to be extended across the tracks because there would be inadequate distance to enable the overcrossing supports and bridge structures to be built to the required clearance height over the tracks. Without extensions of city streets over the tracks, there would be no connectivity between the residential and commercial City areas on the north and south sides of the project area, resulting in community disruption and restricting access to the site by intermodal facility passengers.

The UPRR mainline tracks are shared by the Capitol Corridor intercity rail service, which operates passenger service between the Bay Area and Auburn; the Amtrak transcontinental passenger service; and the San Joaquin Corridor rail service, which operates between Sacramento and Bakersfield. The existing, curved track configuration substantially reduces the velocity at which freight trains can pass through the area and the existing undersized platforms require that freight trains be delayed ("held out") to wait for passenger trains at the SPRR station to load and unload passengers, resulting in delays for both passenger and freight travel. In discussions with the City of Sacramento, intercity rail operators and Amtrak, it was determined that the facility needs at least three straight passenger platforms, with lengths from 1,200 to 1,600 feet in order to reduce hold out time and provide straight platforms to enable train crews to open all the train doors concurrently and have maximum visibility to ensure that passengers are entering and exiting the trains safely.

The existing platforms vary in length, with the longest about 960 feet long. Under this alternative, the existing platforms would be demolished and replaced with two 800-foot-long passenger platforms. The shorter-than-existing 800-foot-long platforms under this alternative would be undersized and would fail to meet the project objectives to improve capacity and reliability for freight and passenger rail service, reduce rail and passenger conflicts, and improve safety.

In summary, this alternative would not avoid the adverse Section 106 effects on the SPRR Station District and the 6th Street Levee or the use of these resources under 4(f) that would occur in Phase 1 and would not meet the purpose and need for the project.

Although this alternative might minimize use of the Depot, it would not avoid use of the Station District or 6th Street Levee. The alternative would not meet the project purpose and need to improve capacity and reliability for freight and passenger rail service, reduce rail and passenger conflicts and improve safety, provide improved connectivity and ease of use for transit and rail users and providers, accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers, or meet projected service levels and passenger growth. Additionally, this alternative would result in severe operational and safety disadvantages that overshadow its advantages, including restricted access to the site and lack of connectivity across the rail tracks and undersized platforms that would exacerbate freight and passenger rail conflicts and could create unsafe conditions for passengers. By precluding completion of remediation activities, it could result in significant environmental effects. Finally, the rail alignment was not approved by UPRR or the Capitol Corridor and would not be acceptable to the operators from an operational perspective because it would not eliminate freight trains being held out or provide the longer platforms needed to enable train crews to open all the train doors concurrently and have maximum visibility to ensure that passengers are entering and exiting the trains safely.

Valley Flyer Alternative

The so-called Valley Flyer Alternative uses an alternate rail alignment developed by the Intermodal Planning Team, in an attempt to achieve longer platform lengths while still maintaining the tracks closer to the Depot. This alternative (also known as Alternative “D”) would restore and expand the historic Depot at its existing location to accommodate additional transit functions. The existing tracks and platform would be demolished and no longer be used and the rail alignment under this alternative would accommodate three dedicated freight lines and two passenger platforms approximately 1,100 to 1,200 feet long. The tracks would be realigned to a sharper diagonal, starting at the mid area of the Depot and extending east to 7th Street. The platforms would be shifted east and north, resulting in an estimated distance of approximately 1,000 feet from the north side of the Depot to the middle of the platforms. This distance, which equates to approximately three city blocks, is not acceptable to the rail operators because of the impact on passenger and baggage service.

Although this alternative would provide the necessary longer passenger platforms, as with the Overland Limited alternative, the rail alignment was not approved by UPRR or the Capitol Corridor and would not be acceptable to the operators from an operational perspective. This alternative would avoid the Section 106 adverse effect of moving the Depot building (that could occur in future Phase 3, Alternative 2), but would not completely avoid use of this resource. This alternative would result in a similar adverse effect under Section 106 on the setting of the SPRR District and 6th Street Levee and would also result in use of these resources under 4(f).

Although technically feasible, this alternative would not avoid use of the Depot, SPRR District, or 6th Street Levee, and would not fully meet the project purpose and need to provide improved connectivity and ease of use for transit and rail users and providers or accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers, nor would it be acceptable to the rail operators because of the lengthy distance (three city blocks) it would create for passenger and baggage service between the Depot and passenger platforms.

Phase 1 Track Alignment Alternatives Considered

In conjunction with determining the type of transportation center, the City considered several basic track positioning alternatives for the area between the existing historic Depot and the Central Shops and between the I Street Bridge and 7th Street overcrossing. These alternatives, described below, varied the co-placement of the freight and passenger tracks.

Separation of Freight and Passenger Track Alignments Alternative

In this alternative, the existing passenger tracks adjacent to the historic Depot would continue to be used, while the freight tracks would be straightened by relocating them to the north, adjacent to the Central Shops. Benefits to freight service in this segment would include operations with straighter, modern tracks and switches; higher speeds and increased capacity; elimination of conflicts with passenger service and passengers; and the option of adding another mainline track—for a total of three. Passenger service would also have similar safety benefits because of the reduction in conflicts with freight trains and the ability to service passenger trains more easily.

However, there would be fewer other benefits for passenger service. Continuing to use the existing passenger track would result in continued safety problems with curved platforms, inadequate platform length for the projected number of trains and numbers of cars in long-distance trains, ability to use only the south track on the I Street Bridge across the Sacramento River, and other operational issues, such as the inability of the trains to switch tracks/berths in the station, stack and run-through efficiently, or have flexibility as to where they operate. This alternative would also result in difficulty in providing additional needed space for support facilities, as well as constraining joint development opportunities. The existing Depot would not have sufficient space, and expansion would be difficult in the adjacent area south of the tracks. Between the passenger and newly relocated freight tracks would be an area that would be difficult to access and virtually undevelopable. Further, grade-separated street extensions to the north to link downtown to the Railyards and River District areas would not be possible because there would not be adequate distance to clear two sets of tracks.

Finally, preliminary analysis has indicated that this alternative would not avoid use of SPRR District or 6th Street Levee, and would present severe operational disadvantages, could result in community disruption by precluding community linkages, and would not meet the project purpose and need to improve capacity and reliability for freight and passenger rail service, improve safety, provide improved connectivity and ease of use for transit and rail users and providers, and accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers.

Parallel Placement of Freight and Passenger Tracks Alternative

In this alternative, the freight tracks would be placed on one side of the rail corridor and the passenger tracks on the other side. Theoretically, the freight tracks would be on the north and the passenger tracks on the south, to enable better ties to the passenger terminal and improved access by users and operators. This would provide benefits of reducing conflicts between passenger and freight services similar to those noted for the Separation of Freight and Passenger Track Alignments Alternative above. Various alignments for parallel track placement in the area between the Central Shops and the historic Depot were examined.

Regardless, the various alignments evaluated resulted in similar problems. Multiple tracks would need to fan out from the existing tracks on the I Street Bridge on the west and the 7th Street overcrossing on the east. They also would need to weave their way through the I-5 freeway columns. There would be an eventual need for three freight tracks and four passenger tracks. In this approximately 0.75-mile stretch, there would not be sufficient distance for all the tracks to diverge and merge. Also, because the passenger tracks would switch from the mainline, they would likely not be as straight (or the platforms as long) as needed to eliminate freight trains being held out or provide the longer platforms needed to enable train crews to open all the train doors concurrently and have maximum visibility to ensure that passengers are entering and exiting the trains safely. As with the Separation of Freight and Passenger Track Alignments Alternative, it was concluded that there would be limited operational benefits for passenger service, issues with facility expansion, and difficulties in extending streets and connecting communities.

Finally, preliminary analysis indicates that this alternative would not avoid use of SPRR District or 6th Street Levee, and is not prudent because it presents severe operational disadvantages, could result in community disruption by precluding community linkages, and would not meet the project purpose and need to improve capacity and reliability for freight and passenger rail service, improve safety, provide improved connectivity and ease of use for transit and rail users and providers, and accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers.

No Track Relocation Alternative

The only alternative that would avoid the adverse Section 106 effects on the SPRR District and the 6th Street Levee would be one that left the existing tracks in place. However, such an alternative would not improve the existing operational and capacity deficiencies of the current alignment of the UPRR track. Freight and passenger operations would still be constrained to one track over the I Street Bridge, requiring freight trains to be slowed or held on the bridge while passenger trains are in the station, limiting train length, and prohibiting use of two in-line trains. It would not be feasible to construct the longer platforms needed for passengers, or the passenger connections between the areas on either side of the tracks. The alternative would also make it infeasible to complete site remediation beneath the tracks. Improvements to the Depot building and Station District would likely still be necessary, even with the tracks in place.

Although leaving the tracks in their current position would avoid use of the 6th Street Levee, this alternative would present severe operational disadvantages that overshadowed its advantages, could result in some community disruption by precluding community linkages, and would not meet the project purpose and need to improve capacity and reliability for freight and passenger rail service, reduce rail and passenger conflicts and improve safety, provide improved connectivity and ease of use for transit and rail users and providers, or accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers. Additionally, by precluding completion of remediation activities, it could result in significant environmental effects.

Off-Site Alternative (Total Avoidance)

The SITF is intended to be a regional transportation center at a hub where connections could be made among multiple modes. It would have very high service levels and would need to be located in an area where routes and major transportation arteries cross through, be close to existing rail lines and close to destinations, and provide easy access to regional users.

The proposed site at the existing Sacramento Valley Station meets these criteria. Downtown Sacramento is the center of the region and the center of the regional transportation network. The site is located on the transcontinental rail route and has the required space to meet program requirements of operators and to accommodate the multiple movements of the different modes. The configuration of the site, surrounded by freeways, bridge, the downtown grid, and numerous office building, shops, and commercial enterprises, as well as urban residential, supports the location as the best choice for multimodal operators and users, but also constrains how the site can be designed. There are no other locations in the Sacramento downtown area that meet these needs.

Although an off-site alternative could avoid impacts to all Section 4(f) properties in the project area, it would not meet the project purpose and need to provide improved connectivity and ease of use for transit and rail users and providers, accommodate future expansion of rail and bus services by providers that currently operate at the existing Depot and potential new users and providers, or bring together disconnected elements of the existing transit network into a single regional hub. In addition, this alternative would have additional construction costs of an extraordinary magnitude related to relocating existing rail, bus, and transit operations to a new location, and could have additional, potentially severe environmental impacts.

Measures to Minimize Harm

Measures to minimize harm to the Section 4(f) properties affected by the project are focused on historic properties on or eligible for listing on the National Register. FHWA has determined that a project-specific Programmatic Agreement (SITF PA) is the most appropriate tool for ensuring compliance with Section 106. Preparation of a project-specific PA is consistent with the provisions of 36 CFR 800.13(a)(1), which permit federal agencies to use PAs as a tool to plan for the treatment of archaeological resources and other historic properties subsequent to Section 106 consultation. Execution of the SITF PA would constitute compliance with Section 106.

The resolution of any adverse effects would be determined in accordance with the stipulations of the SITF PA, which is currently under negotiation among FHWA, FTA, FRA, and SHPO. Proposed measures to minimize harm are included in a Historic Property Treatment Plan included as an attachment to the draft SITF PA, which is subject to change pending consultation and agreement between all parties. Items proposed include, among other things, the use of the Secretary of the Interior's Standards for the Treatment of Historic Properties, conducting pre-construction condition assessments, and implementing protective measures during construction.

Coordination

Consultation and coordination with the agencies with jurisdiction over the Section 4(f) resources described in this document and other interested parties are ongoing and would continue throughout development of the environmental assessment. The relevant Section 4(f) resources and their respective agencies, including descriptions of consultation and coordination that have occurred to date, are listed below.

- The Federal Transit Administration (FTA) and the Federal Railroad Administration (FRA) are NEPA cooperating agencies, pursuant to CEQ regulations (40 CFR Section 1501.6) and would use this Section 4(f) Evaluation to fulfill their environmental responsibilities for the proposed project.
- Consultation with the State Historic Preservation Officer (SHPO) under the National Historic Preservation Act is proceeding with preparation and execution of a project-specific programmatic agreement (PA) between Caltrans, FHWA, the SHPO, the City, FTA, FRA, and other consulting parties, as appropriate. Correspondence between SHPO and Caltrans is provided in the EA (see Exhibit 3-1 in the EA). An HPSR, ASR and HRER were prepared in accordance with the January 1, 2004 PA among FHWA, ACHP, SHPO, and Caltrans. SHPO concurred with the determinations of eligibility made in the documents in a letter dated February 2, 2009.
- Coordination with the Department of the Interior for a 45-day comment period for the Individual Section 4(f) Evaluation.
- Coordination with the ACHP, in a letter from FHWA dated February 13, 2009.

Other Parks, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f)

This section discusses parks, recreational facilities, wildlife refuges, and historic properties found within or adjacent to the project area that do not trigger Section 4(f) protection because 1) they would not be publicly owned, 2) they would not be open to the public, 3) they would not be eligible historic properties, 4) the project would not permanently use the property and would not hinder the preservation of the property, or 5) the proximity impacts do not result in constructive use.

Section 4(f) applies to publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance. A summary of the publicly owned parks, and recreation facilities located within 0.5 mile of the proposed project, are listed in Table 4 and shown on Figure 8. In all, ten parks or recreation facilities are located within 0.5 mile of the proposed project. No wildlife or waterfowl refuges are located within 0.5 mile of the proposed project.

Implementation of the proposed project would not require a temporary or permanent use under Section 4(f) of the parks, or recreation facilities listed above. Thus, the provisions of Section 4(f) would not be triggered.

The provisions of Section 4(f) would not be triggered for the I Street Viaduct (Bridge 24C0364L), Jibboom Street Overhead (Bridge 24C0006), the Southern Pacific Tunnel/Pedestrian Subway, or the Transcontinental Railroad because they would not be NRHP-eligible, as described in the HRER prepared for the proposed project (ICF Jones & Stokes 2008a). These resources would not be discussed further in this Section 4(f) evaluation.

Table 4. Recreation Resources

Resource/Address	Description
Robert T. Matsui Waterfront Park (formerly Jibboom Street Park); Jibboom Street at the Sacramento River, Sacramento	A 6-acre park owned and maintained by the City of Sacramento. Two acres are developed, including a water spray area and bike trail. The park is located approximately 0.43 mile north of the western project boundary.
Emiliano Zapata Park; 905 E Street, Sacramento	A 1.37-acre park owned and maintained by the City of Sacramento. Facilities include three picnic areas, one basketball court, and an adventure play area. This park is located approximately 0.16 mile east of 7th Street.
J. Neely Johnson Park; 516 11th Street, Sacramento	A 1.17-acre park owned and maintained by the City of Sacramento. Facilities include a shaded picnic area and community garden. The park is located approximately 0.32 mile east of 7th Street.
Cesar E. Chavez Plaza; 910 I Street, Sacramento	A 3.05-acre park owned and maintained by the City of Sacramento. Facilities include five picnic areas, restrooms, a fountain, and a café. The park is located approximately 0.30 mile east of 5th Street.
Saint Rose of Lima Park; 705 K Street, Sacramento	A 0.51-acre park owned and maintained by the City of Sacramento. Facilities include a stage and seasonal ice rink. The park is located approximately 0.20 mile southeast of the project site.
Crocker Park; 211 O Street, Sacramento	A 6.10-acre park owned and maintained by the City of Sacramento. Facilities include four shaded picnic areas and the Crocker Art Museum. The park is located approximately 0.40 mile south of I Street.
Old Sacramento State Historic Park; Sacramento River and I-5, from I Street to Capitol Mall, Sacramento	Located on 28 acres, the historic park is owned by the State of California. The state park includes the historic 1850s business district of Old Sacramento, which has more than 50 historic buildings. There are five museums, including the California State Railroad Museum, and multiple retail shops. The park is a National Historic Landmark and California Historical Landmark. The state historic park is located approximately 0.05 mile south and west of the project site and is separated from the project site by I-5 and I Street.
Sacramento River Parkway; 100 J Street, Sacramento	A total of 25.73 acres of open space area located along the east bank of the Sacramento River. Facilities include a paved bicycle trail approximately 1 mile in length from J Street to the American River Parkway. The parkway is located approximately 0.03 mile west of the western project boundary. The parkway is separated from the project site by a fence and railroad right-of-way.
Riverwalk Park; 651 2nd St., West Sacramento	A 4.0-acre park owned and maintained by the City of West Sacramento. Facilities include picnic areas, barbecues, a promenade, the Grand Staircase, the Veteran's Plaza, Union Square, and a walking path. This park is located on the west bank of the Sacramento River approximately 0.19 mile west of the project site.
Broderick Boat Ramp; 103 - 4th St., West Sacramento	A 4.0-acre park owned and maintained by the City of West Sacramento. Facilities include a boat dock; picnic area, and restrooms. The boat ramp is located on the west bank of the Sacramento River, approximately 0.28 mile northwest of the project site.

Sources: City of Sacramento 2008; State of California 2008; City of West Sacramento 2008.

References

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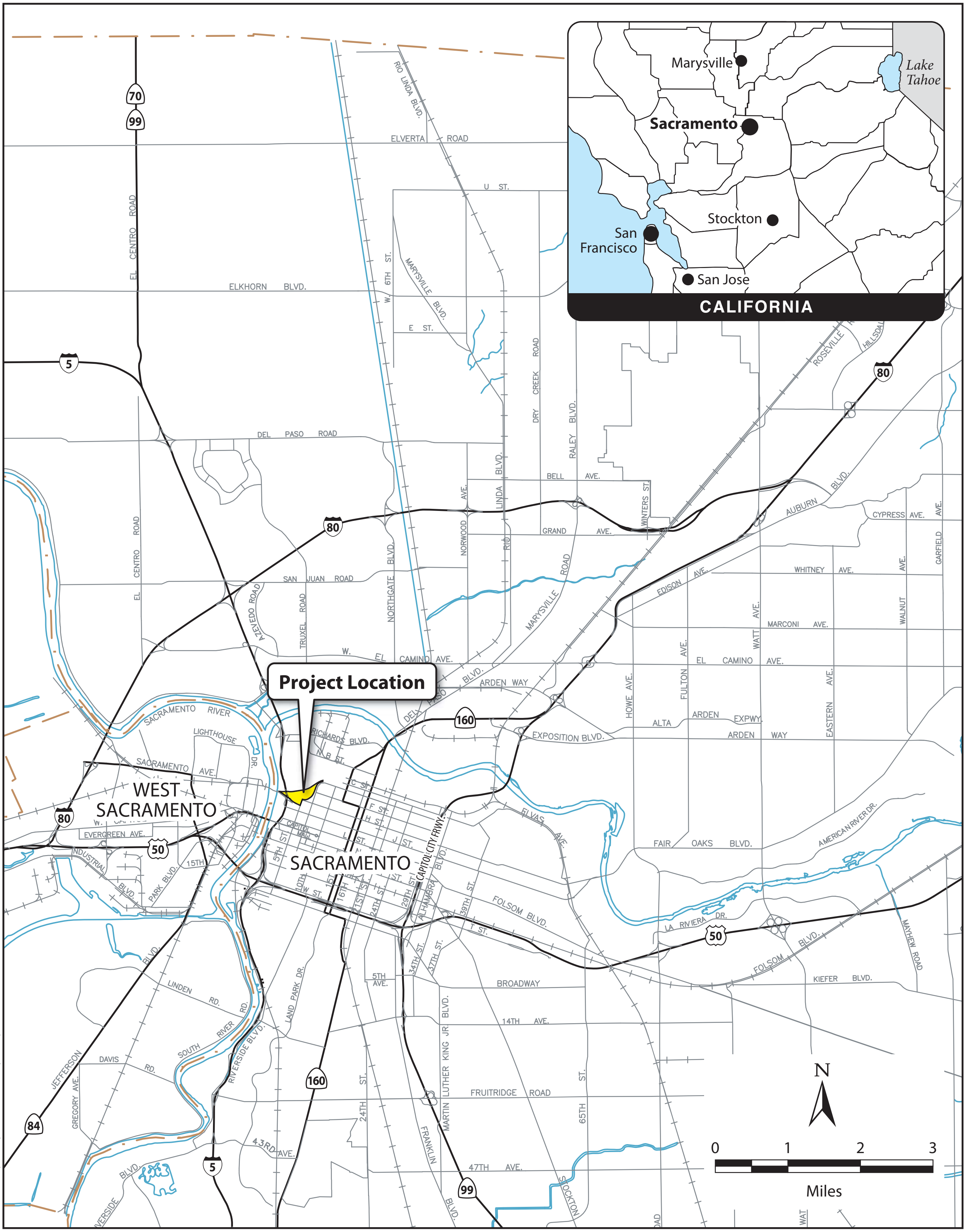
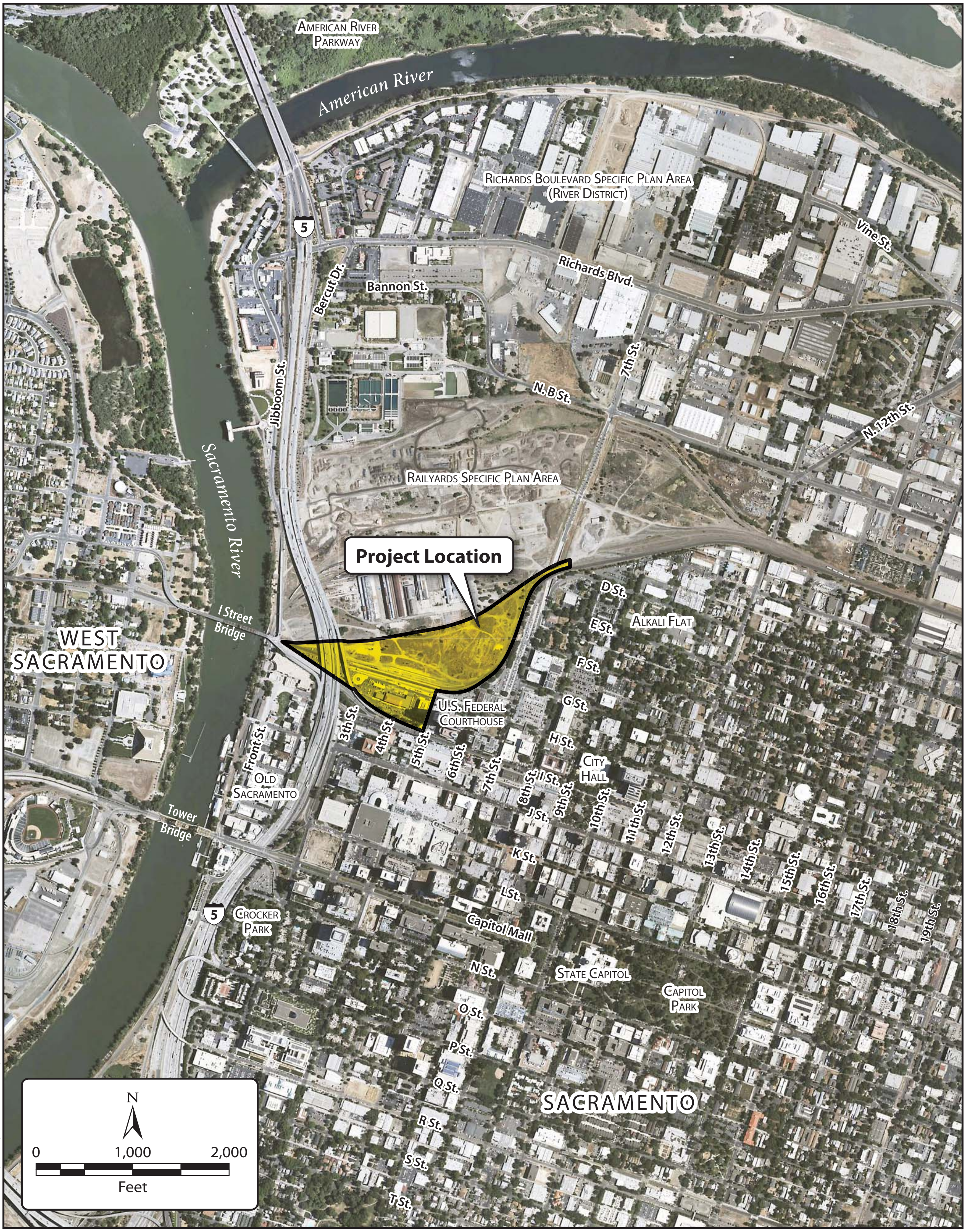


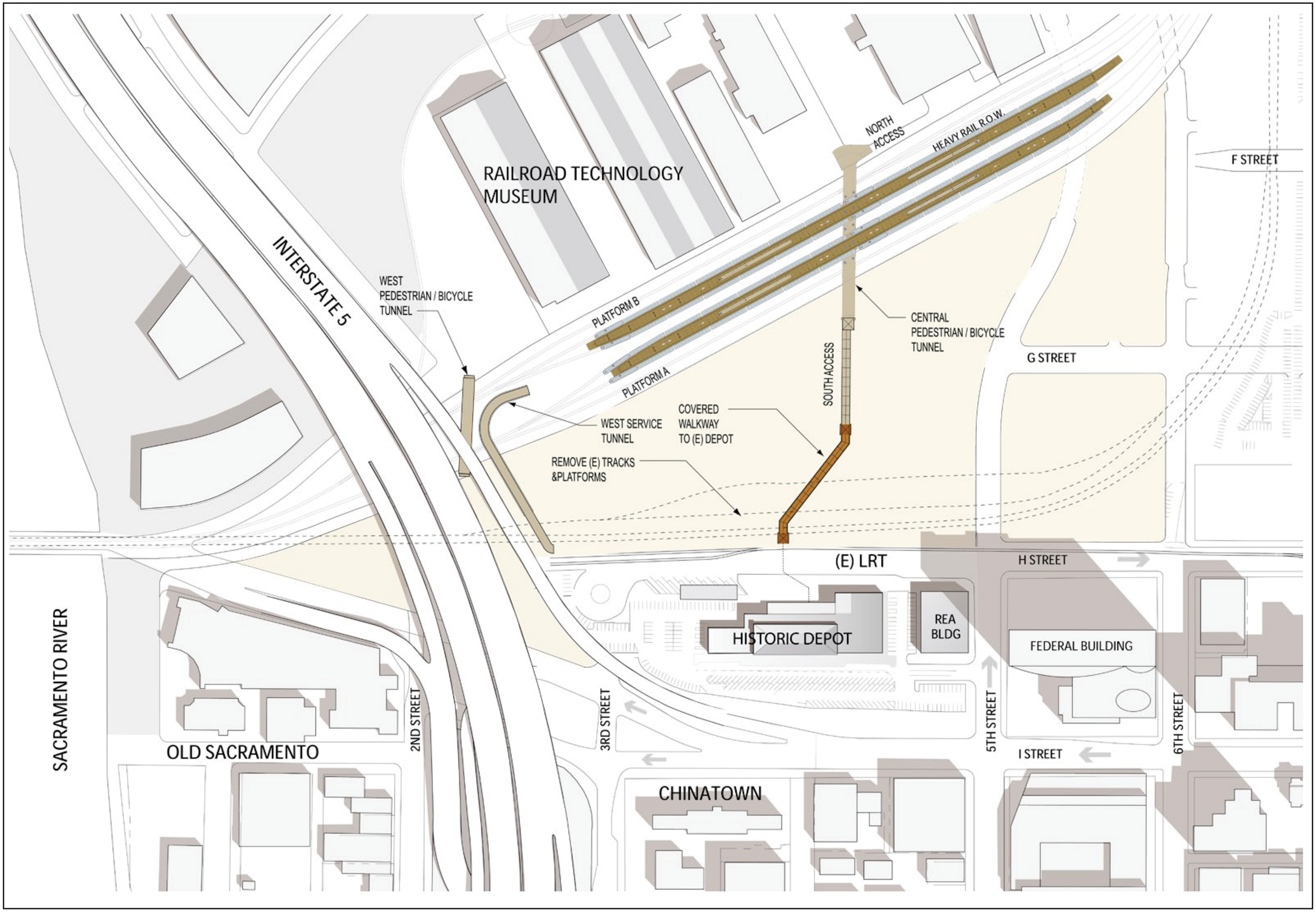
/Volumes/PUB/Graphics/Projects (Pub)/_2008_Project_Graphics/00121.08 Sacto-Intermodal_SITF/IS_EA (Task 100)/

Figure 1
Project Vicinity



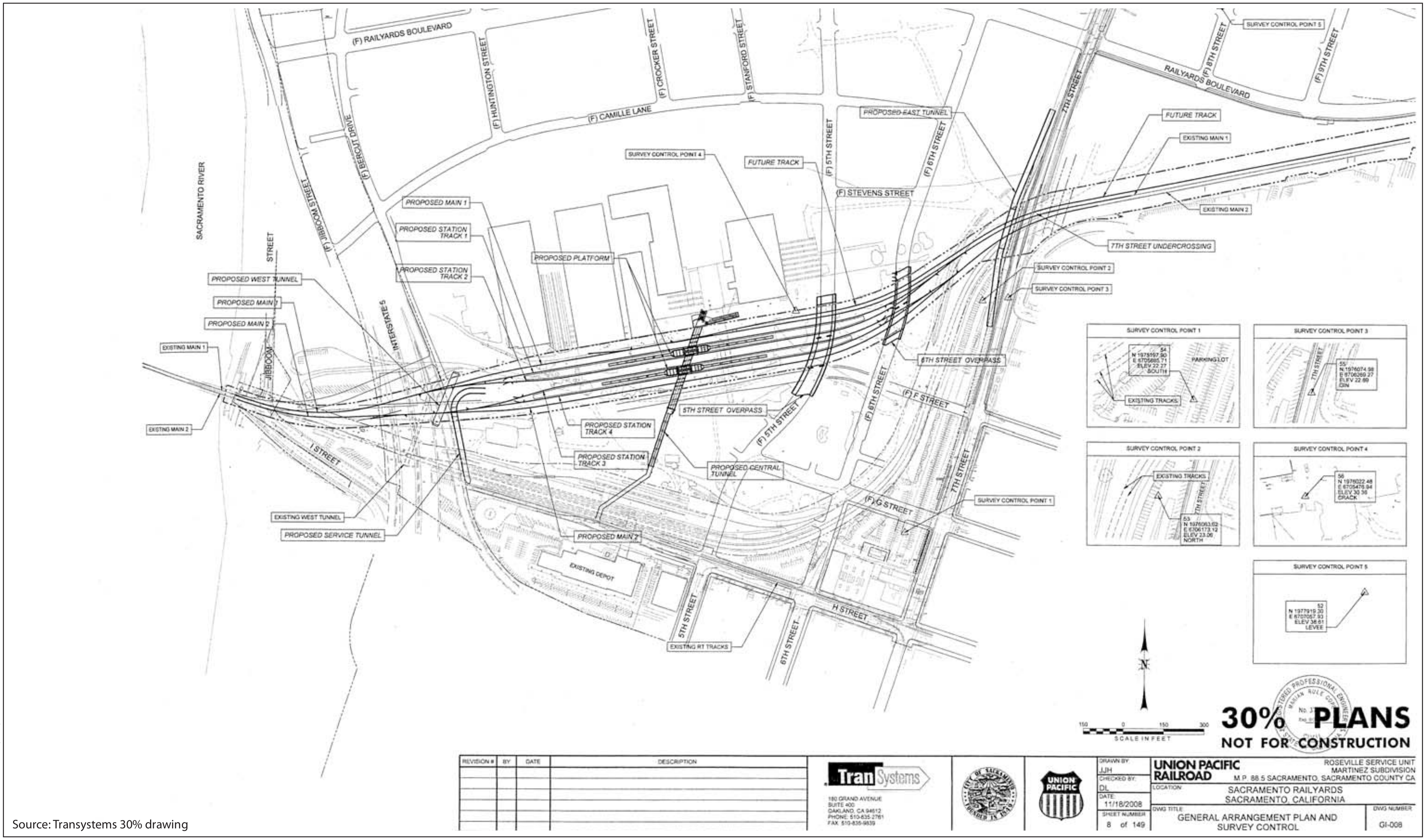
/Volumes/PUB/Graphics/Projects (Pub)/_2008_Project_Graphics/00121.08 Sacto-Intermodal_SITF/IS_EA (Task 100)/

Figure 2
Project Location



00121.08 401 Sac Intermodal (12-08)

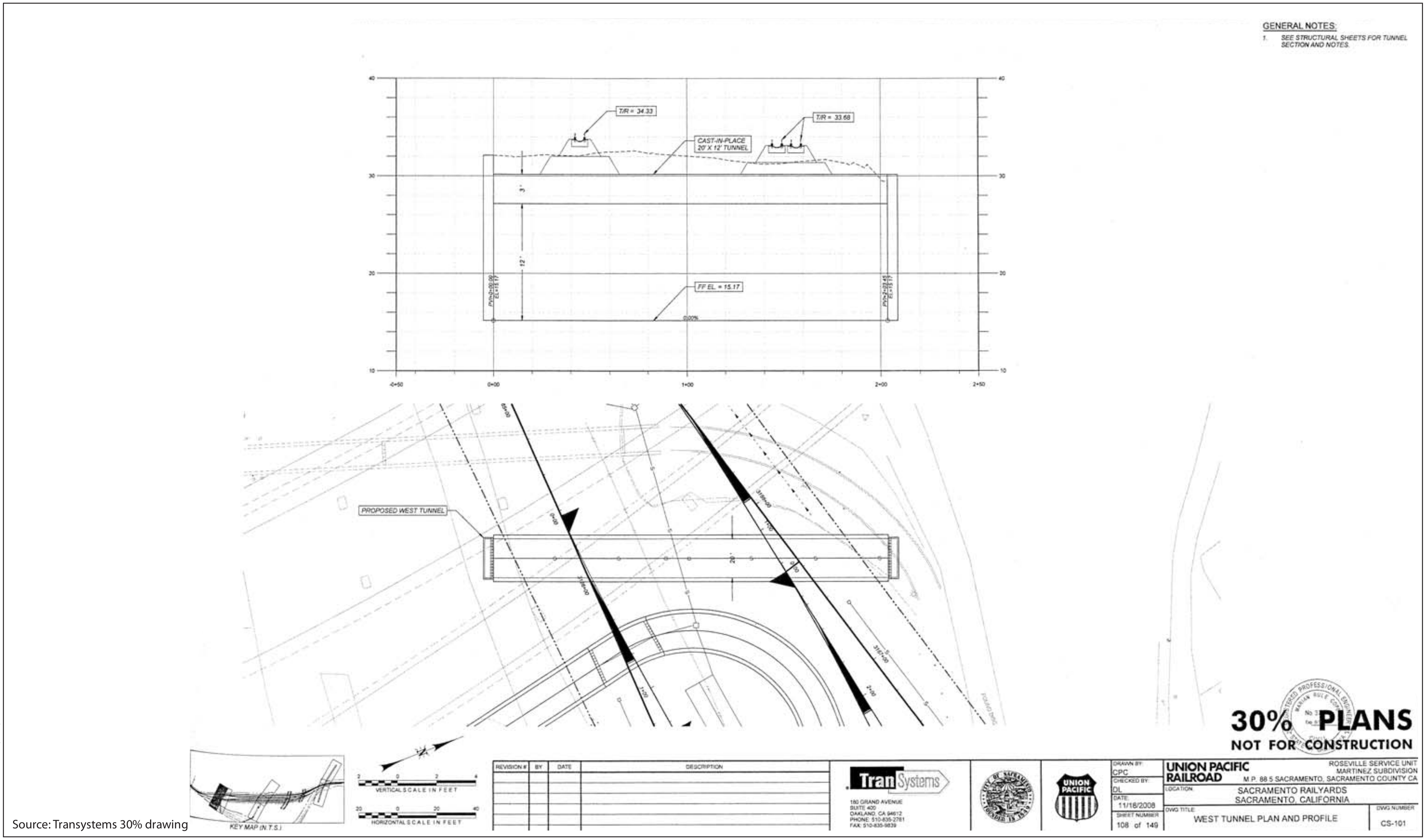
Figure 3a
Phase 1 Track Relocation



Source: Transystems 30% drawing

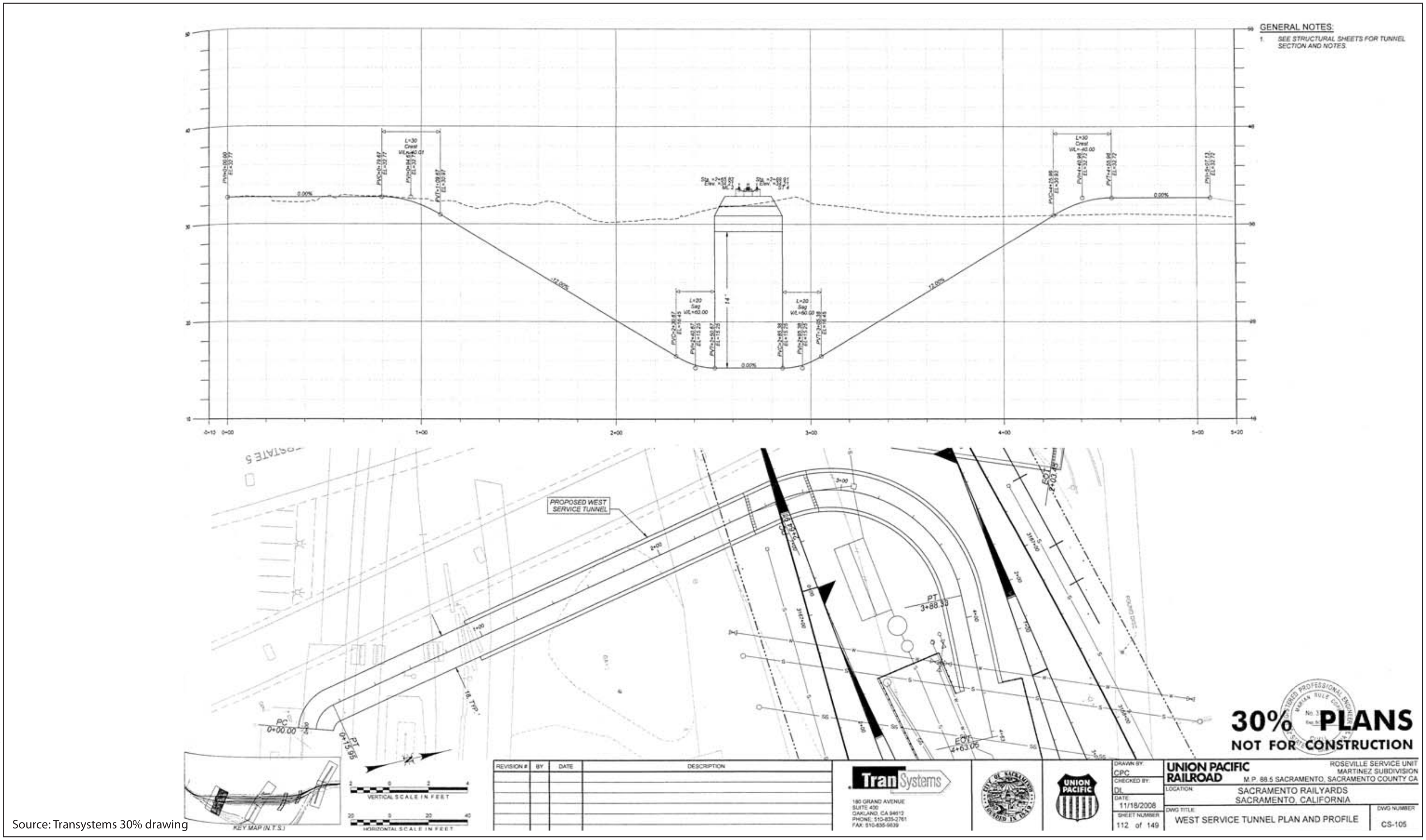
00121.08 401 Sac Intermodal (12-08)

Figure 3b
Phase 1: General Arrangement Plan



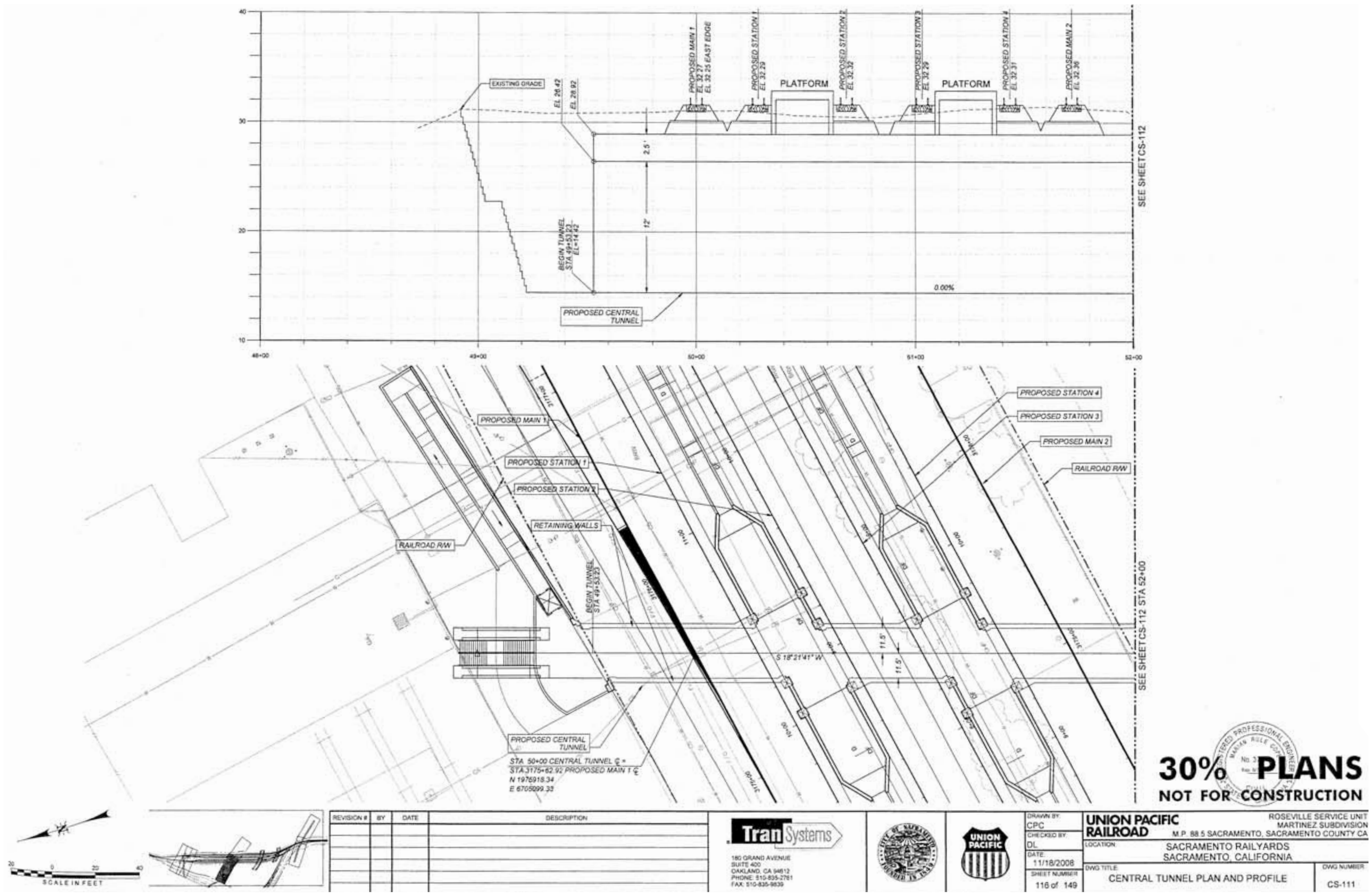
Source: Transystems 30% drawing

Figure 3c
Phase 1: West Pedestrian Tunnel Plan and Profile



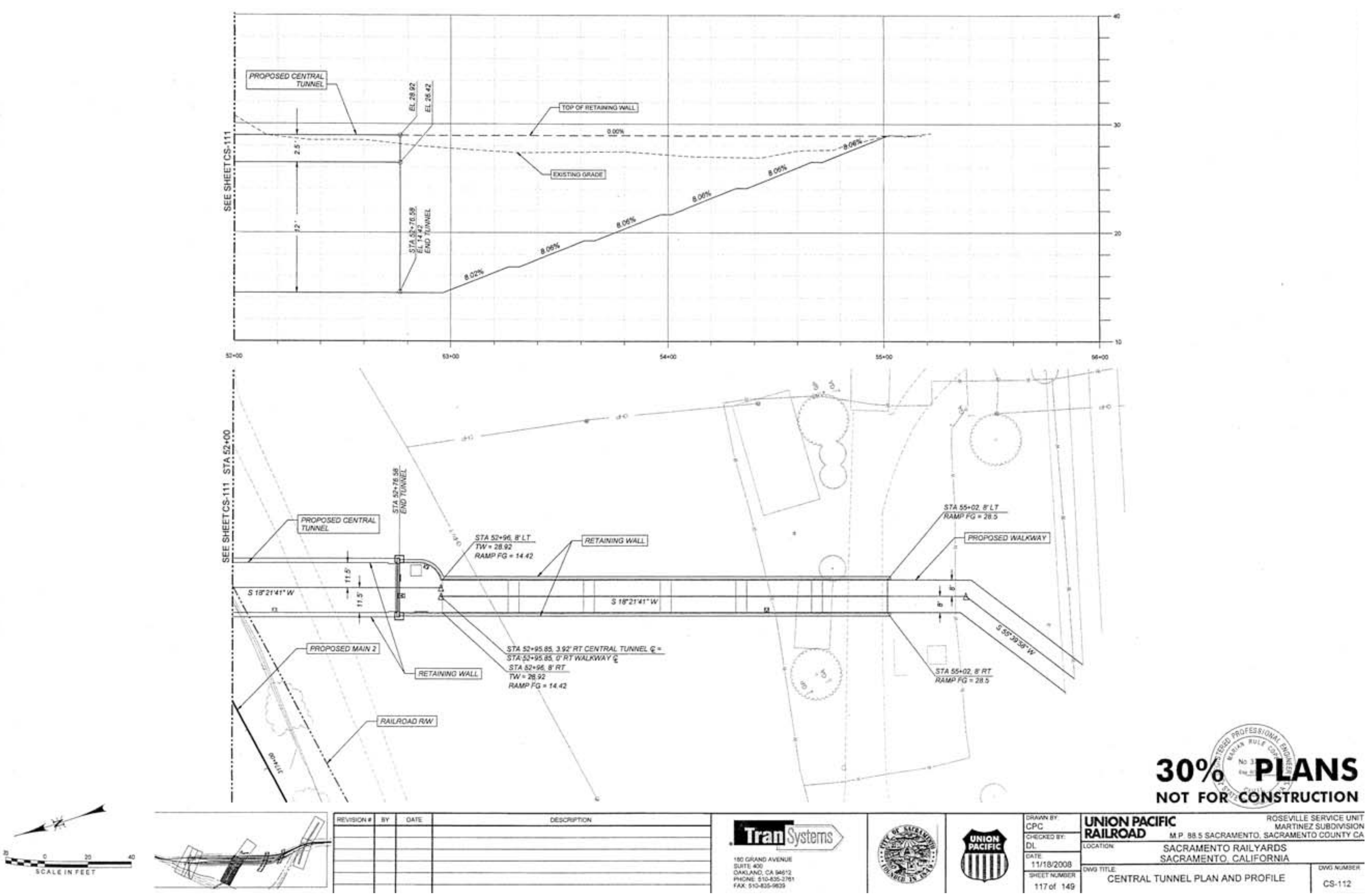
Source: Transystems 30% drawing

Figure 3d
Phase 1: West Service Tunnel Plan and Profile



Source: Transystems 30% drawing

Figure 3e (page1)
Phase 1: Central Tunnel Plan and Profile

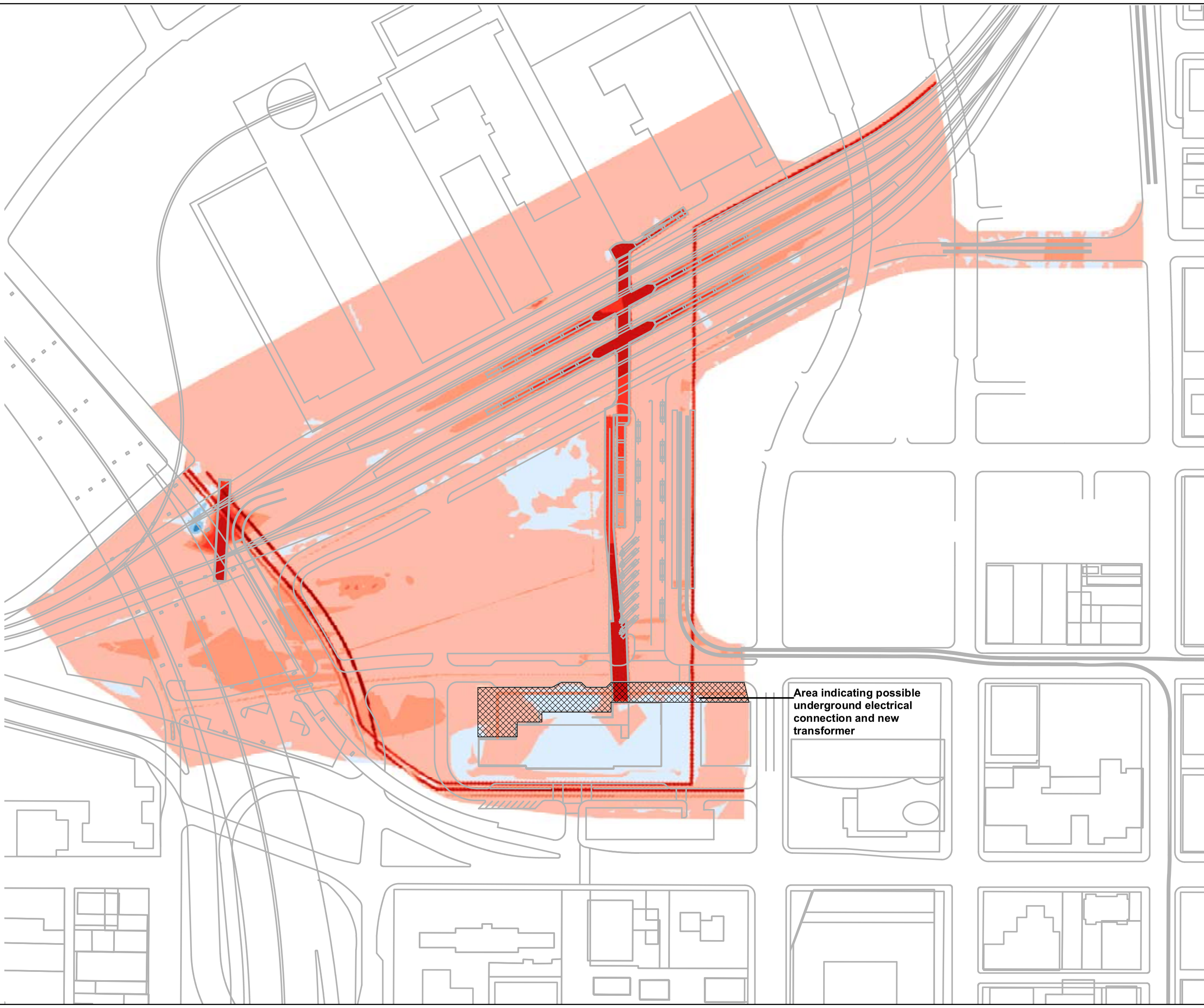


Source: Transystems 30% drawing

Figure 3e (page 2)
Phase 1: Central Tunnel Plan and Profile

00121.08 Section 4(f) (09-08)

Figure 4a
Phase 2 - Sacramento Valley Station Improvements



LEGEND

Electrical Utility Line

Construction Depth Impacts

- -28 to -25 ft (Cut)
- -25 to -20 ft (Cut)
- -20 to -15 ft (Cut)
- -15 to -10 ft (Cut)
- -10 to -5 ft (Cut)
- -5 to 0 ft (Cut)
- 0 to 5 ft (Fill)
- 5 to 10 ft (Fill)
- 10 to 15 ft (Fill)

NOTES:

1. This drawings shows the potential impacts of construction for Phase 2. Low Impact areas are shown in Blue and High Impact Areas are shown in Red

0 95 190 380
Feet

Issue	Date	By	Checked	Approved
B	Dec 2 2008	AGM	AGM	WB
A	Nov 21 2008	AGM	AGM	WB

Produced using Geographical Information Systems

ARUP 560 Mission Street Suite 700 San Francisco CA 94103
Tel +1 415 957 9445 Fax +1 415 957 9096
www.arup.com

Client
City of Sacramento

Job Title
Sacramento Intermodal Transportation Facility Assessment of Cultural Impacts

Drawing Title
Phase 2 Depth of Construction Intensity Map

Plot ID \Drawings\GIS\Figures\EA-CI-021-A.mxd

Scale at 11" x 17"
1" : 200'

Drawing Status
Preliminary

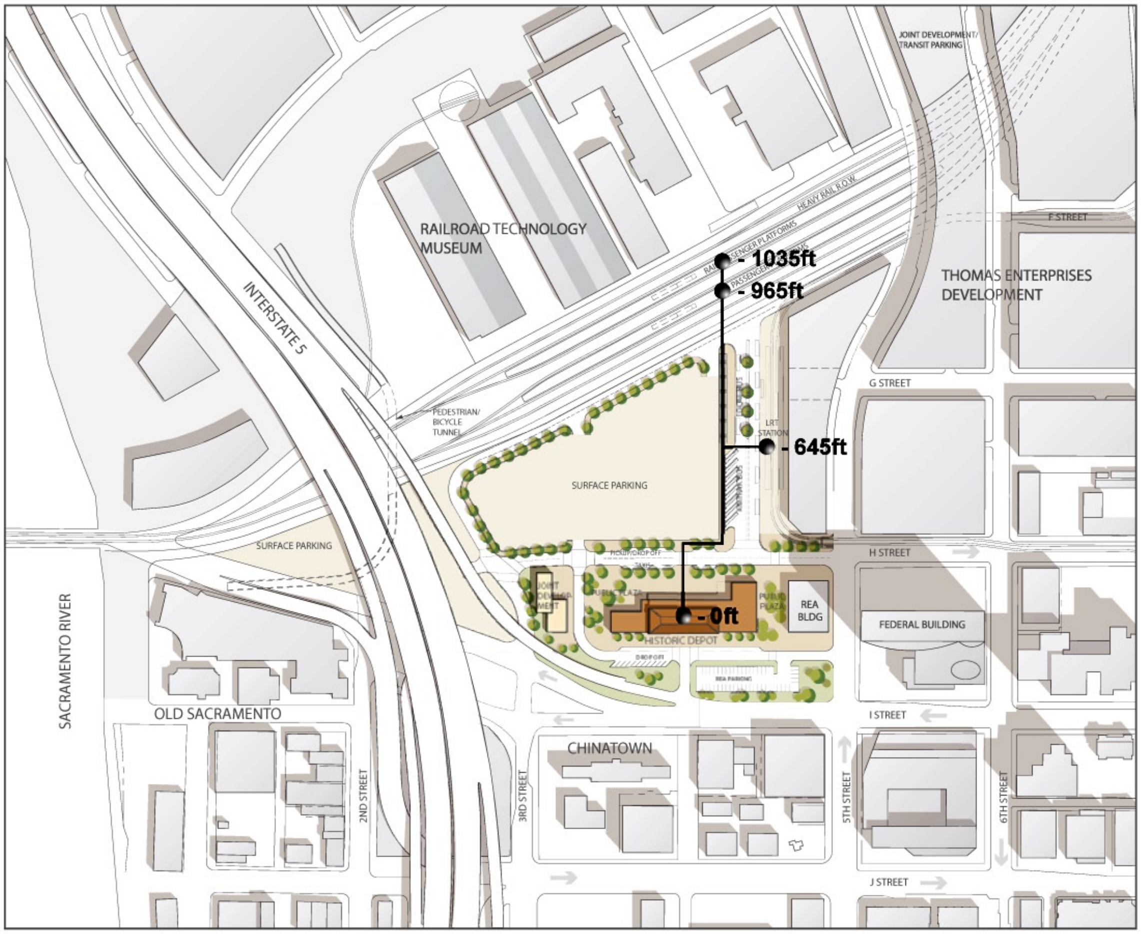
Job No.
130153-05

Drawing No.
EA-CI-021

Issue
B

00121.08_401 (01-09) SS

Figure 4b
Phase 2 Depth of Construction

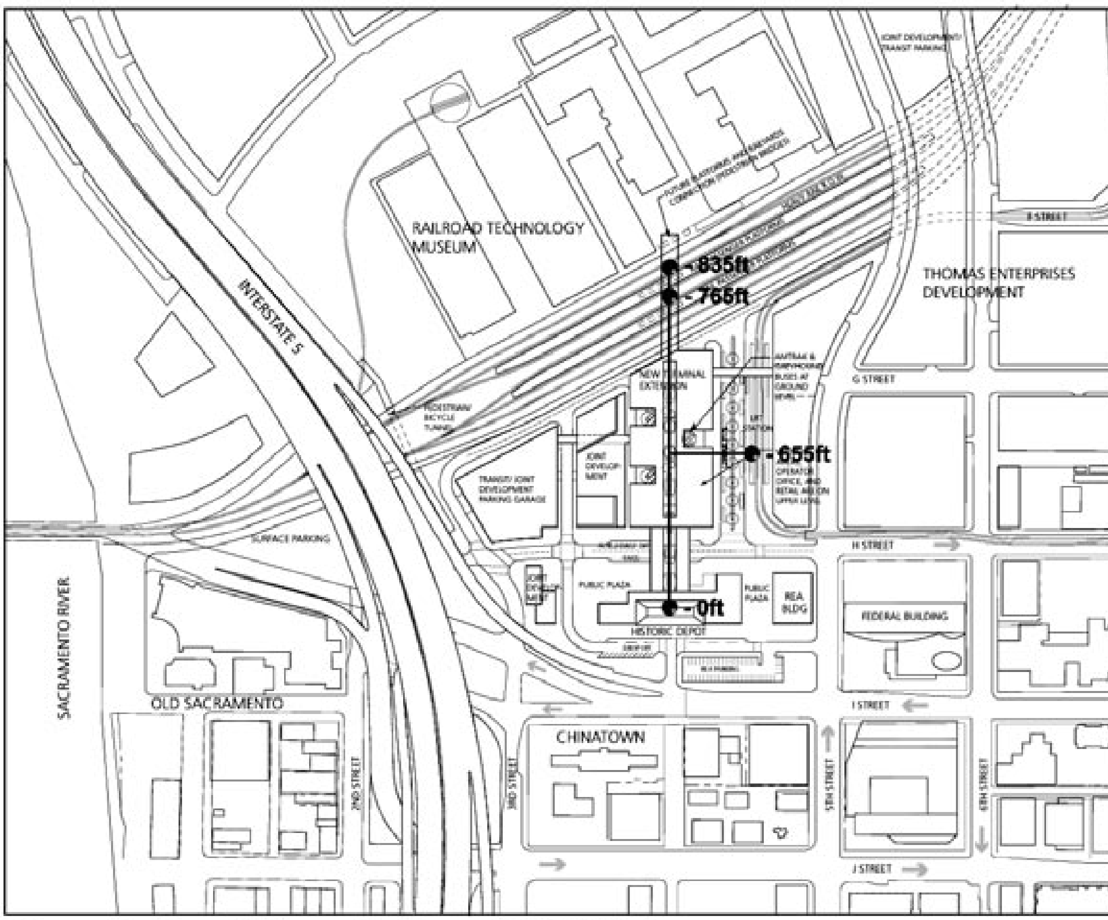


Phase 1 and Phase 2 Walk Distance
Measured from center of Historic Depot waiting area to vertical circulation for each platform

Source: SMWM/Arup

00121.08 IS (12-08)

Figure 5a
Phase 1 and Phase 2 Walk Distance

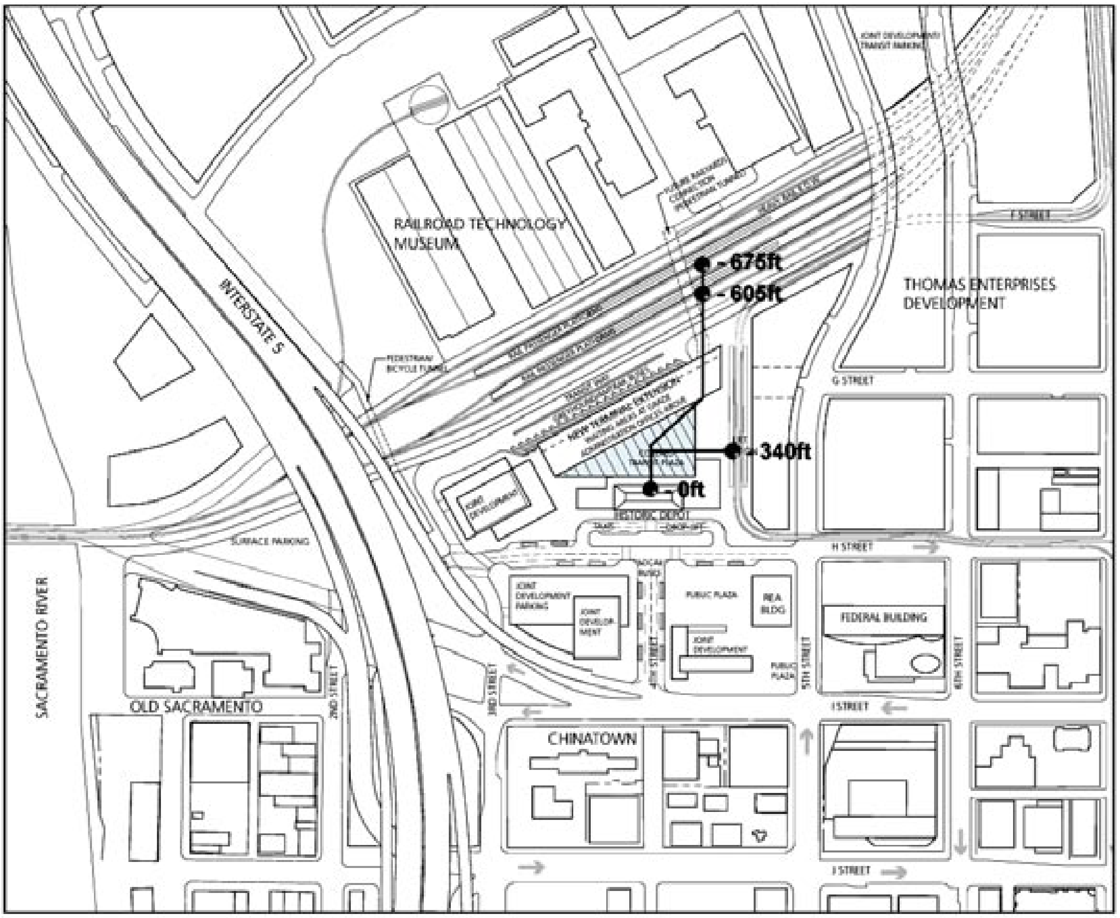


Phase 3 - Don't Move the Depot Walk Distance

Measured from center of Historic Depot waiting area to vertical circulation for each platform

Source: SMWM/Arup

Figure 5b
Phase 3 - Don't Move the Depot Walk Distance



Phase 3 - Move the Depot Walk Distance

Measured from center of Historic Depot waiting area to vertical circulation for each platform

Source: SMWM/Arup

00121.08 IS (12-08)

Figure 5c
Phase 3 - Move the Depot Walk Distance

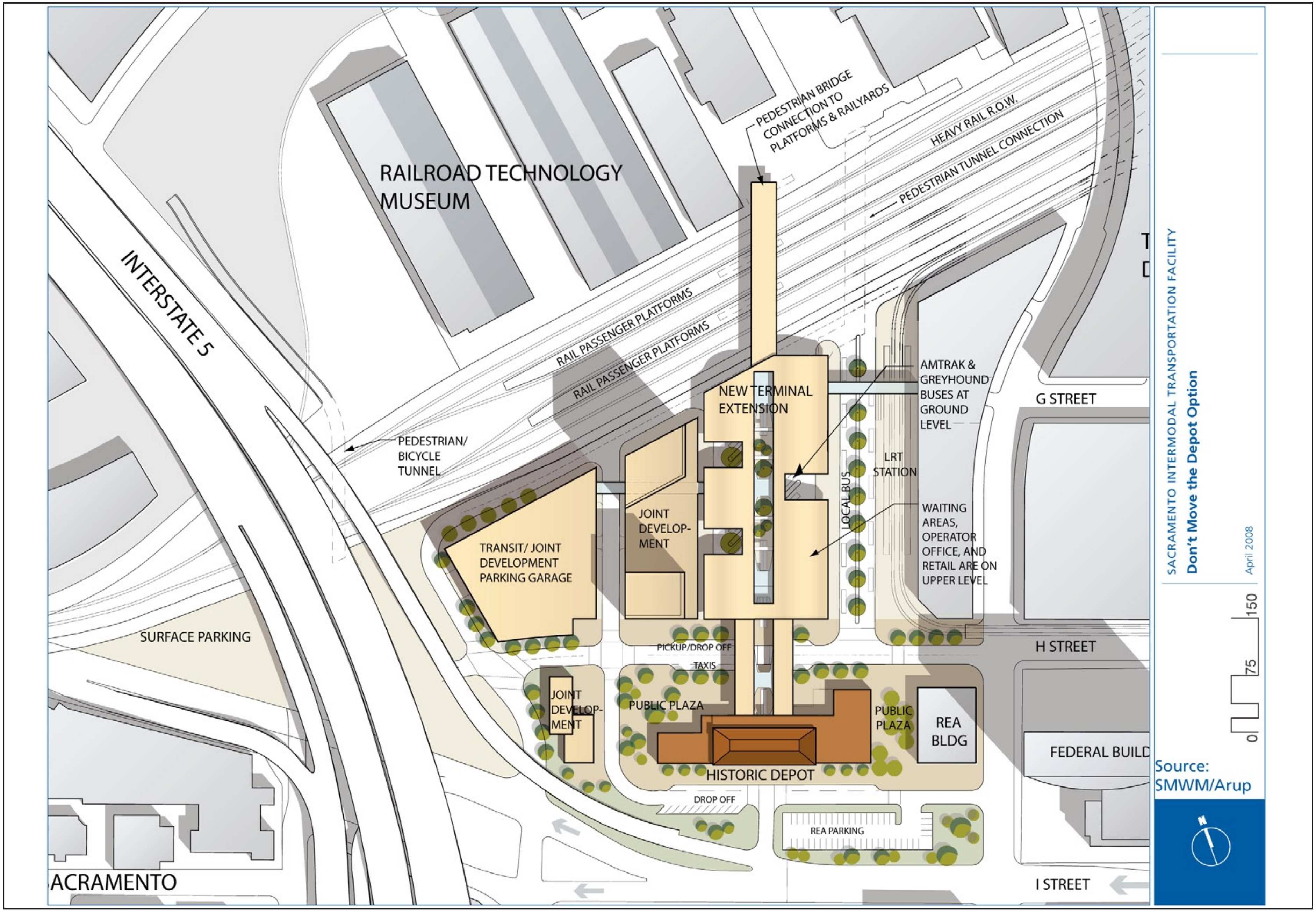


Figure 6
Phase 3 - Don't Move the Depot Option

Figure 7
Phase 3 - Move the Depot Option

00121.08 Section 4(f) (09-08)

Figure 8
Section 4(f) Properties

Appendix 1. Coordination with the State Historic Preservation Officer

Appendix 1

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov

February 2, 2009 Reply To: FHWA081124A

Susan Bauer
Chief, Office of Environmental Management M1
Caltrans, District 3
703 B Street
Marysville, CA 95901

Re: Determinations of Eligibility for the Proposed Sacramento Intermodal Transportation Facility Project, Sacramento, CA

Dear Ms. Bauer:

Thank you for consulting with me about the subject undertaking in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA).

The California Department of Transportation (Caltrans) has determined that the following properties are not eligible for the National Register of Historic Places (NRHP):

- Southern Pacific Tunnel/Pedestrian Subway
- Train Shed Curbs
- Ancillary Train Shed Curbs
- Pattern Storage Shop Slab Foundations
- SPRR Foundry Loading Ramp
- Redwood Railroad Ties
- Southern Car Shops Slab Foundations
- 7th Street Railroad Trestle Bents (CA-SAC-941-H)

Based on my review of the submitted documentation, I concur.

Caltrans has also determined that the following properties are eligible for the NRHP for the following reasons:

- The UPRR Tracks are eligible for the NRHP under Criterion A and C as a contributing element of the SPRR Central Shops Historic District.
- The Casting Shop Kilns are eligible for the NRHP under Criterion A and C as a contributing element of the SPRR Central Shops Historic District.
- The 6th Street Levee (CA-SAC-940-H) is eligible for the NRHP under Criterion A and C for the levee's association with early flood control efforts in Sacramento and as a

representation of three distinct episodes of levee construction, documenting the city residents' technological response to different and repeated flood events.

Based on my review of the submitted documentation, I concur.

Caltrans has also determined that the Chinese Confucius School at 404 I Street in Sacramento is eligible for the NRHP under Criterion B for its association with Walter Fong, a prominent businessman and Chinese community leader in Sacramento. Based on my review of the submitted documentation, I cannot concur with this determination. There is not enough information to support that the Confucius School is the best building in Sacramento to represent Fong's contributions to the Sacramento Chinese community.

If Caltrans disagrees with my opinion and still believes the Chinese Confucius School is eligible for the NRHP, please notify me at the earliest opportunity. Unless I hear from Caltrans on this matter within 15 days following your receipt of this letter, I will assume that Caltrans concurs in my assessment and officially considers the Chinese Confucius School to be ineligible for inclusion in the NRHP.

Thank you for considering historic properties as part of your project planning. If you have any questions, please contact Natalie Lindquist of my staff at your earliest convenience at (916) 654-0631 or e-mail at nlindquist@parks.ca.gov .

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Appendix 2. Concept Alternatives

SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

Alternative C "Overland Limited" Area Plan

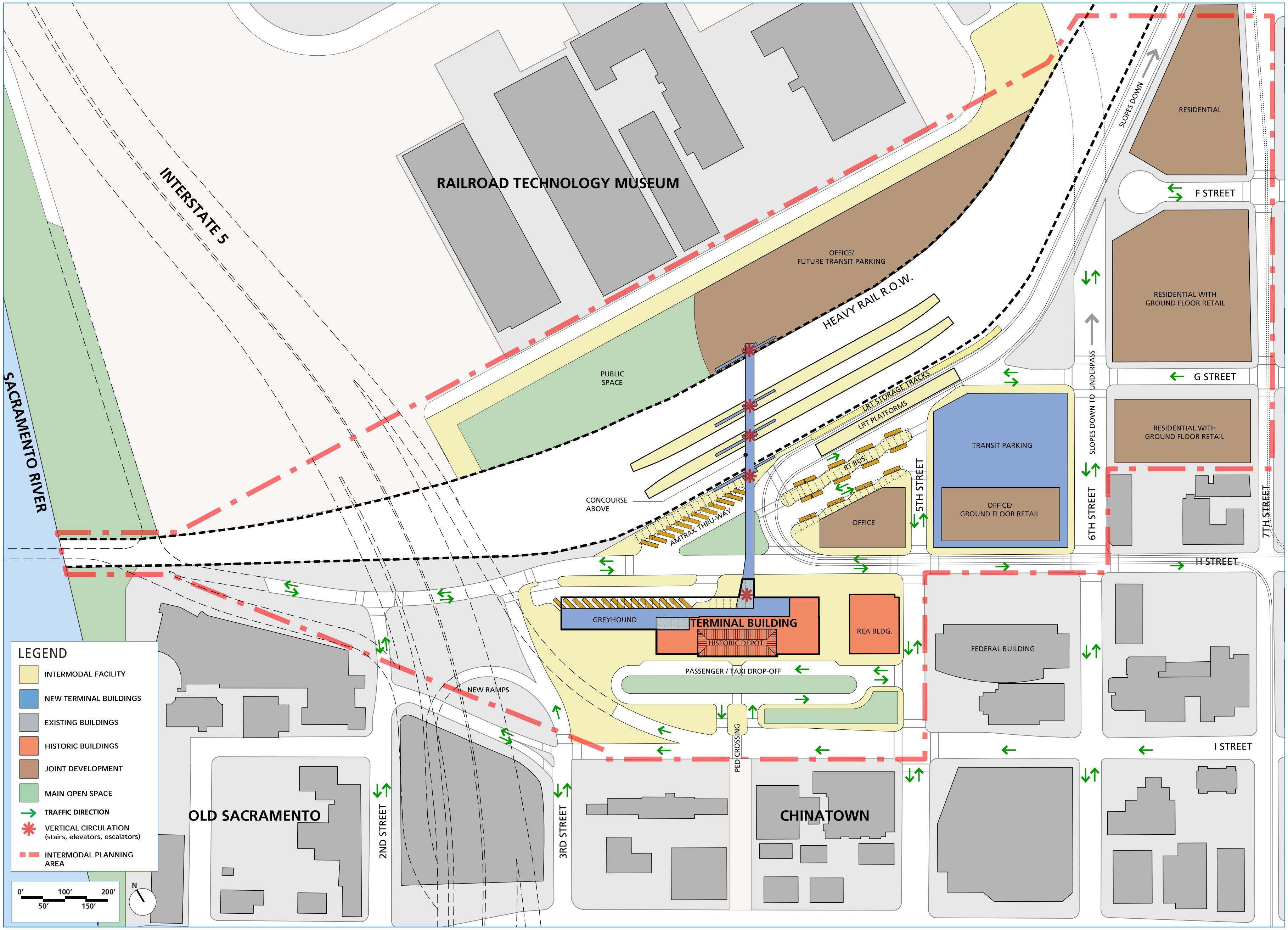
Figure 3.3.1

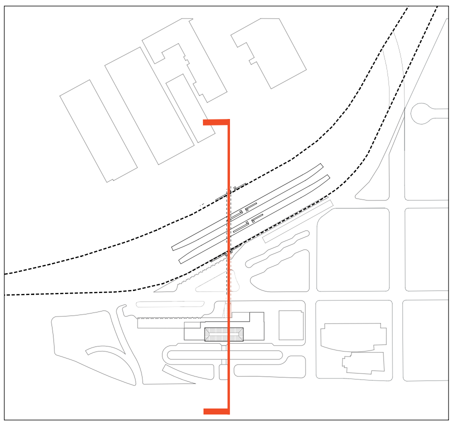
8 October 2004

Client
City of Sacramento

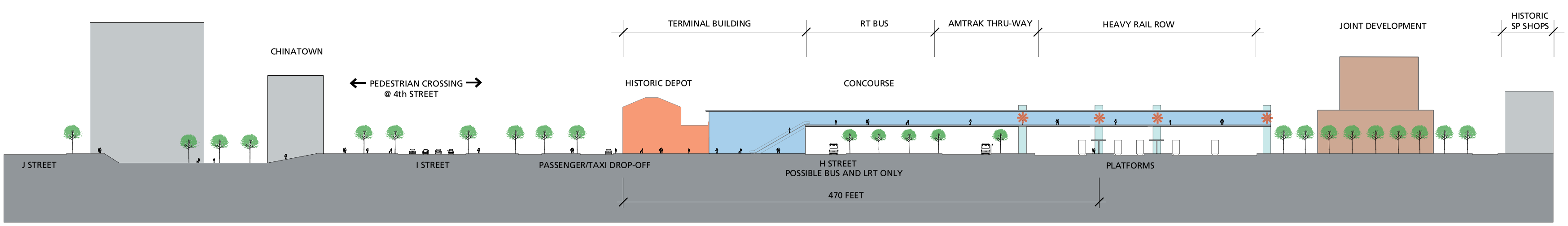
Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
Jones Lang Lasalle
LTK Engineering Services
Nelson/Nygaard
Simpson Gumpertz & Heger, Inc.

ARUP
SMWM
architecture
interiors
planning
graphic design





KEY PLAN



Not To Scale

SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

Alternative C "Overland Limited"

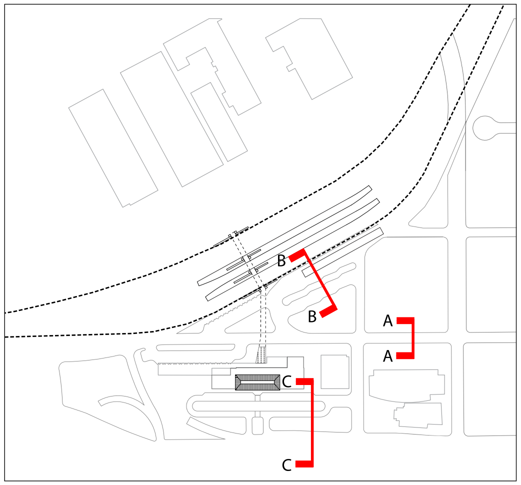
Figure 3.3.2

8 October 2004

Client
City of Sacramento

Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
Jones Lang Lasalle
LTK Engineering Services
Nelson/Nygaard
Simpson Gumpertz & Heger, Inc.

ARUP
SMWM
architecture
interiors
planning
graphic design



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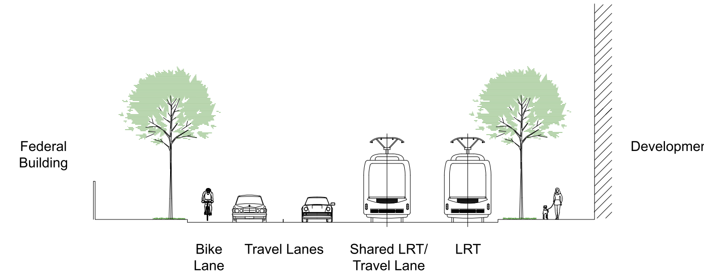
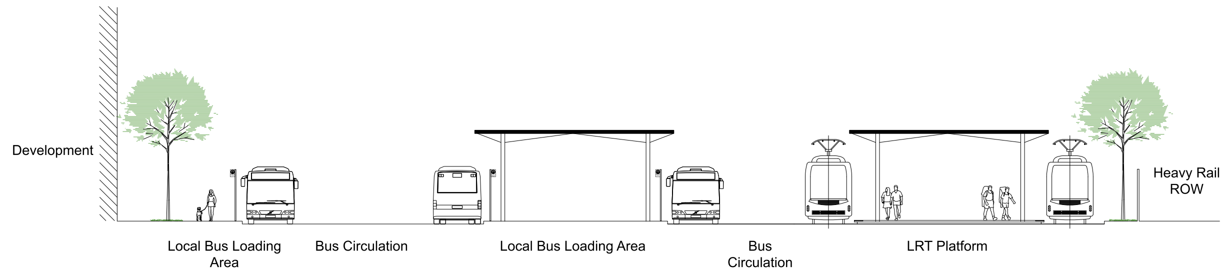
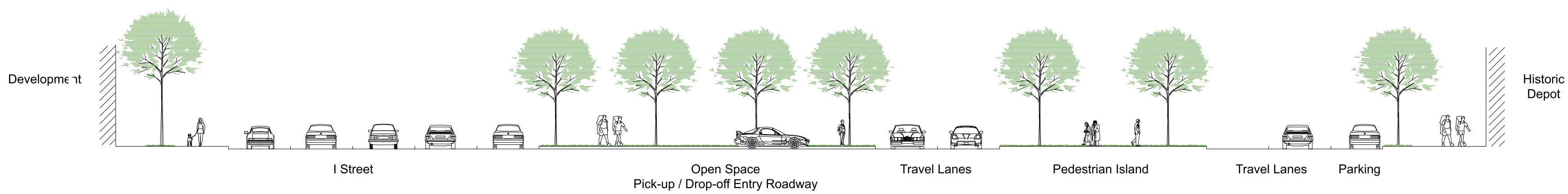


Section A-A: through H Street



Section B-B: through Local Bus and LRT Boarding Area



Section C-C: through I Street and Passenger Pick-up / Drop-off

Not To Scale

SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

Alternative C "Overland Limited" Typical Street Sections

Figure 3.3.3

8 October 2004

Client
City of Sacramento

Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
Jones Lang Lasalle
LTK Engineering Services
Nelson/Nygaard
Simpson Gumpertz & Heger, Inc.

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SMWM
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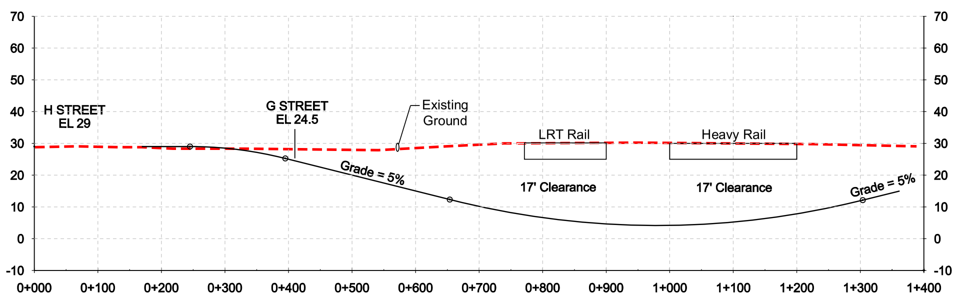
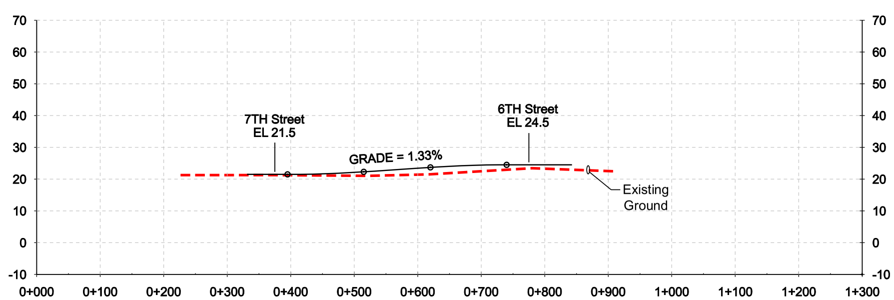
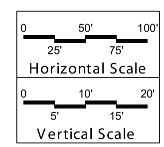
interiors
planning
graphic design



6th Street Profile



G Street Profile



SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

Alternative C "Overland Limited" Street Profiles

Figure 3.3.4

8 October 2004

Client
City of Sacramento

Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
Jones Lang Lasalle
LTK Engineering Services
Nelson/Nygaard
Simpson Gumpertz & Heger, Inc.

ARUP
SMWM
architecture
interiors
planning
graphic design

SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

Alternative D "Valley Flyer" Area Plan

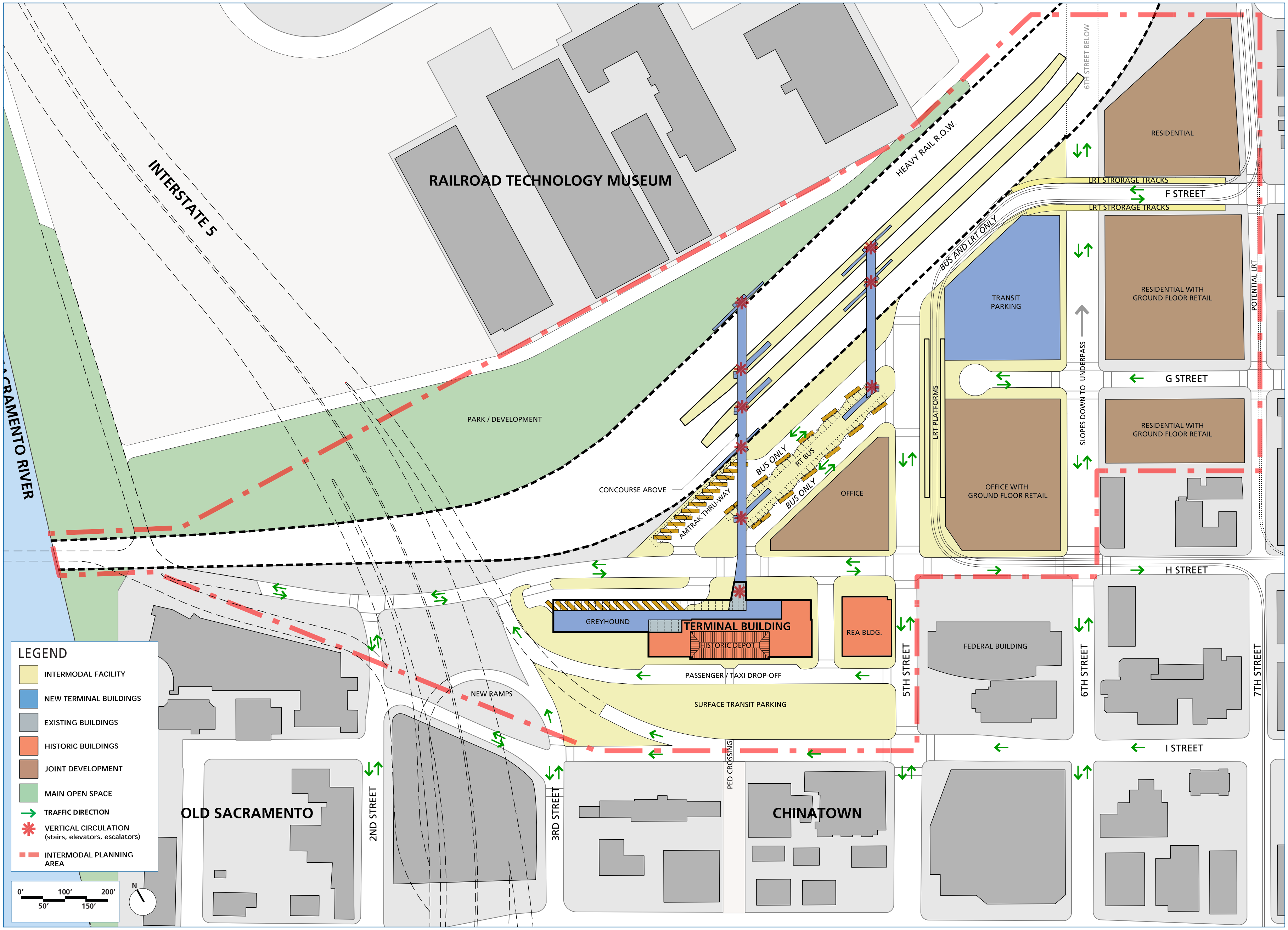
Figure 3.4.1

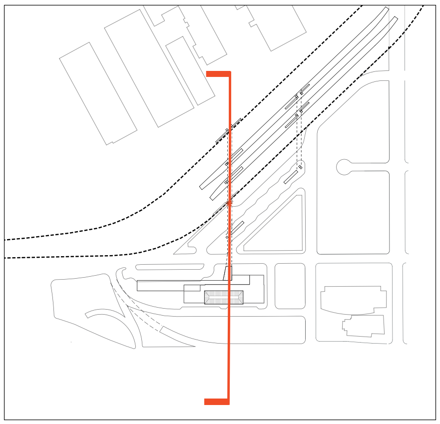
8 October 2004

Client
City of Sacramento

Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
Jones Lang Lasalle
LTK Engineering Services
Nelson/Nygaard
Simpson Gumpertz & Heger, Inc.

ARUP
SMWM
architecture
interiors
planning
graphic design





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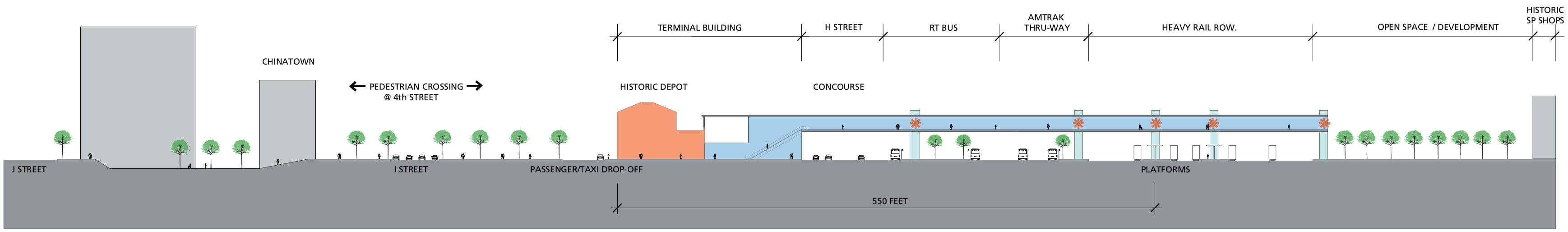


Not To Scale

SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

Alternative D "Valley Flyer" Facility Section

Figure 3.4.2

8 October 2004

Client
City of Sacramento

Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
Jones Lang Lasalle
LTK Engineering Services
Nelson/Nygaard
Simpson Gumpertz & Heger, Inc.

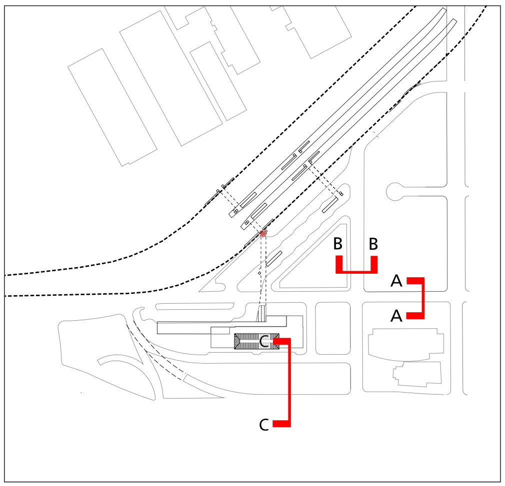
ARUP
SMWM
architecture
interiors
planning
graphic design

SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

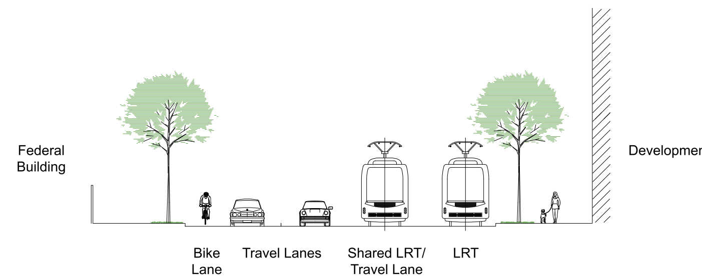
Alternative D "Valley Flyer" Typical Street Sections

Figure 3.4.3

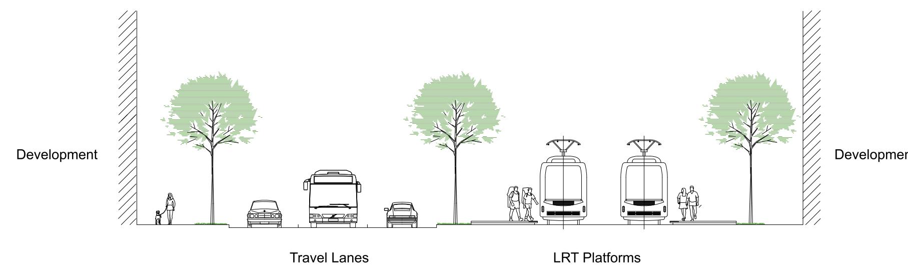
8 October 2004



KEY PLAN

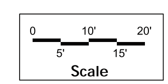


Section A-A: through H Street



Section B-B: through 5th Street Extension

Section C-C: through I Street and Passenger Pick-up / Drop-off



Client
City of Sacramento

Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
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LTK Engineering Services
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ARUP
SMWM
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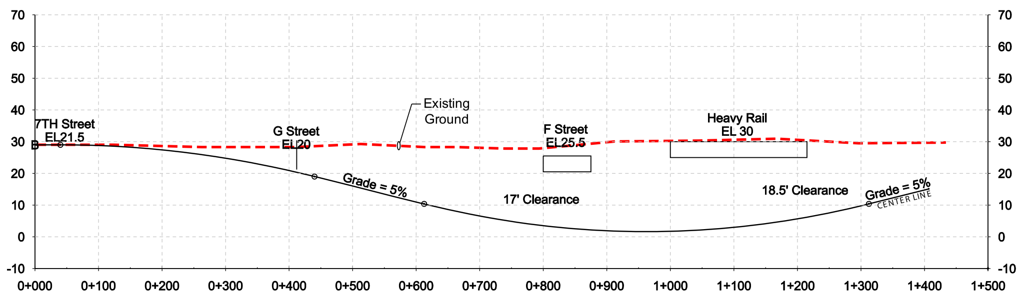
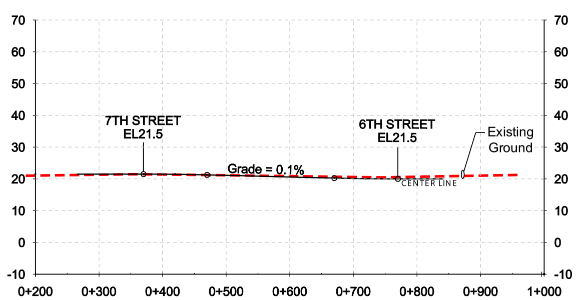
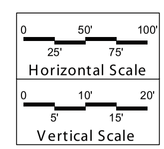


6th Street Profile



G Street Profile



SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

Alternative D "Valley Flyer" Street Profiles

Figure 3.4.4

8 October 2004

Client
City of Sacramento

Consultant Team
SMWM / Arup
Acanthus
CHS Consulting Group
CH2MHill
Hanscomb Faithful & Gould
The Hoyt Company
Jones Lang Lasalle
LTK Engineering Services
Nelson/Nygaard
Simpson Gumpertz & Heger, Inc.

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Appendix B USFWS Species List

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 081201104257

Database Last Updated: September 11, 2008

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

Rana aurora draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Quads Containing Listed, Proposed or Candidate Species:

SACRAMENTO WEST (513D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of

1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 01, 2009.

Appendix C Regulatory Settings

Appendix C Regulatory Settings

This appendix contains general information about laws and regulations that apply to transportation projects and the topics covered in Chapter 2 of this document.

C.1 Public Utilities

C.1.1 City of Sacramento Regulations

City of Sacramento General Plan

The City is in the process of updating its 1988 General Plan. A draft version of the 2030 General Plan is currently available to the public, and it is expected to be formally adopted by the City in the winter of 2008 (City of Sacramento 2008a). Originally drafted in 1988, the current General Plan was last updated in 2003 (City of Sacramento 2008a). According to the current approved General Plan, the following public utilities and emergency service goals and policies are applicable to the proposed project.

Police Services

Goal A: Provide the highest level of police service to protect City residents and businesses.

Policy 2: Maintain communication with residents and businesses in order to learn about developing crime problems and to educate people on crime prevention measures and programs.

Fire Protection Facilities and Services

Goal A: Provide adequate fire service for all areas of the City.

Policy 2: Ensure that adequate water supplies are available for fire-fighting equipment in newly developing areas.

Policy 5: Promote greater use of fire sprinkler systems for both commercial and residential use.

Public Facilities and Services

Goal A: Provide and maintain a high quality of public facilities and services to all areas of the City.

Goal B: Time all new public facilities and services as closely as possible to approved urban expansion.

Goal E: Design public facilities in such a manner as to ensure safety and attractiveness.

Telephone, Cable, Gas, and Electrical Services

Goal A: Continue to improve and provide communication and utility services to all areas of the City.

Water Supply

Goal A: Provide and improve water supply facilities to meet future growth of the City and assure continued supply of safe, potable water.

Policy 1: Develop and adopt a comprehensive water policy for the City of Sacramento that is consistent with a long range adopted plan.

Policy 5: Provide water service meeting or exceeding State and federal regulatory agency requirements.

Railyards Specific Plan

Approved by the Sacramento City Council on December 11, 2007, the *Railyards Specific Plan* (RSP) and the accompanying development agreement (City of Sacramento 2008b) guide the development of the RSP area, including the proposed project site (City of Sacramento 2007a). Below are the RSP public utilities and emergency service goals and policies that are applicable to the proposed project.

Goal CS-1: Provide adequate water facilities to serve the needs of new development, and apply water conservation techniques that will reduce overall demand.

Policy CS-1.1: Ensure a safe, reliable on-site water distribution system that meets the criteria of the City's design standards and meets the needs of the community under both normal and stressed conditions.

Goal CS-3: Provide a storm drainage system to serve the Plan Area that achieves the water quality provisions of the City's municipal NPDES Stormwater Permit.

Policy CS-3.1: Provide for the separation of combined storm and sanitary sewer flows in the Plan Area.

Policy CS-3.2: Design the storm drainage system to meet the design criteria of the City's Department of Utilities, Sacramento City design standards and the terms of the City's NPDES permit.

Goal CS-4: Provide adequate electrical and gas service to serve the project development, and provide a program of energy conservation.

Policy CS-4.1: Implement strategies to promote additional energy conservation, beyond the level required under California Title 24 building standards, to the extent that such approaches are found to be feasible and cost effective.

Policy CS-4.3: Encourage early consultation between project developers and the Sacramento Municipal Utilities District to determine the appropriate electrical and gas infrastructure to serve the Plan area, including appropriate energy conservation measures.

C.2 Traffic and Transportation/Pedestrian and Bicycle Facilities

The Federal Highway Administration 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 Code of Federal Regulations 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.

Caltrans and the Federal Highway Administration are committed to carrying out the 1990 Americans with Disabilities Act by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

C.3 Visual/Aesthetics

The National Environmental Policy Act of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 United States Code 4331(b)(2)]. To further emphasize this point, the Federal Highway Administration in its implementation of the National Environmental Policy Act [23 United States Code 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic, and historic environmental qualities." [California Public Resources Code Section 21001(b)]

C.3.1 Local

Sacramento Central Business District Urban Design Plan

The City of Sacramento's (City's) Urban Design Plan designates particular streets in the Central Business District as protected view corridors. View corridors adjacent to the proposed project area include I Street, 4th Street, and 7th Street. The proposed project area itself does not fall within the Central Business District designation; however, because views along 4th and 7th Streets lead directly to the proposed project area, the plan is considered relevant to this proposed project in relation to these view corridors.

City of Sacramento General Plan

The following goals from the City of Sacramento General Plan's Residential Land Use Element are applicable to the proposed project:

Section 2: Residential Land Use Element; Overall Goal

Goal A: Maintain and improve the quality and character of residential neighborhoods in the City.

Section 2: Residential Land Use Element; Specific Goals, Policies, Actions

Goal A: Improve the quality of residential neighborhoods citywide by protecting, preserving, and enhancing their character.

Central City Community Plan

The following goal, sub-goals, and guidelines from the *Central City Community Plan* are applicable to the proposed project:

Section 3: Goals

Environmental Goal: Create an attractive urban setting through the preservation of existing amenities in the Central City and development of an urban design addendum to the *Central Community City Plan*.

Sub-Goals

Encourage new residential office and commercial development that is human in scale, sensitive to open space and aesthetic needs, and designed to minimize air and noise pollution.

Improve visual qualities, especially signing, building and yard maintenance, commercial developments, and overhead utilities.

Develop urban design standards that provide open space and attractive landscaping and encourage creative design features that are sensitive to the urban forms, scales, and patterns found in the Central City.

Protect and enhance the unique visual features, such as entrances into the Central City, attractive arterials, and notable landmarks, and provide access to views of the rivers.

Section 4: Transportation

B. Parking

8) Design Guidelines

Future parking facilities should reflect the location and design guidelines, which will enhance the character and environment of the Central City. Some of the more important considerations are:

a. Future Core area parking should be located at the periphery or outside the Core area where possible to reduce traffic circulation, vehicle-pedestrian conflicts, and aesthetic problems within the downtown area.

Sacramento Urban Design Plan, Central Business District Framework Plan

The *Sacramento Central Business District Urban Design Plan* is a comprehensive set of guidelines for developing downtown Sacramento. That Urban Design Plan identifies four key plan concepts:

- creating a city center,
- enhancing streets as places,
- linking activity areas and landmarks, and
- choreographing the urban experience.

Key policies from the *Sacramento Central Business District Urban Design Plan* that would be relevant to the proposed project are listed below.

Linking Activity Areas and Landmarks – 4th Street North of K Street

The 4th Street pedestrian link to the Southern Pacific Depot (Depot) would connect existing and future downtown employees to the retail and cultural core via the K Street Mall. This link would have retail continuity and streetscape amenities that would make it a pleasing pedestrian environment. Features of this connection would include:

- development of the "Travelers" public parking site should provide for a pedestrian-oriented street that connects to the Chinatown courtyard via a grade level crossing,
- existing and future retail frontage should be reinforced by enhanced landscaping and lighting, and
- a re-engineered I Street/I-5 ramp would allow for a grade level connection to the train station.

Preservation of Vistas

Preservation of vistas protects the uniqueness of Sacramento. The following statements act as policy criteria for protection of vistas in the downtown:

- second-level pedestrian bridges over public streets should not be allowed except for special circumstances,
- the construction or intrusion of private or public development over public streets and rights-of-way should not be permitted, and
- landscaping and building mass should enhance views of landmarks.

Further, the *Sacramento Central Business District Urban Design Plan* identifies a number of protected view corridors, including I Street and 4th Street, in the proposed project area. Development is not allowed to block views and vistas on these streets in any way.

Sacramento Railyards Specific Plan

The following goals and policies from the RSP are applicable to the proposed project:

> **Goal C-5: Create and reinforce safe and efficient pedestrian connections within the Plan Area and in relation to surrounding districts.**

Policy C-5.2: Enhance pedestrian pathways using landscaping, trees, and art in public places.

Policy C-5.4: Encourage landscape and building elements, such as enhanced paving materials, accent lighting, streetscape furniture, and generous sidewalk space, that will contribute to pedestrian environments that are both physically attractive and safe.

C.4 Cultural Resources

"Cultural resources" as used in this document refers to historic and archaeological resources, regardless of significance. The main federal laws dealing with cultural resources include the following:

The National Historic Preservation Act of 1966, as amended, 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 the National Historic Preservation Act 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 Code of Federal Regulations 800). On January 1, 2004, a Section 106 Programmatic Agreement among the Advisory Council, the Federal Highway Administration, the State Historic Preservation Officer, and Caltrans went into effect for Caltrans projects, both state and local, with Federal Highway Administration involvement. The Programmatic Agreement implements the Advisory Council's regulations, 36 Code of Federal Regulations 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans.

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties. See Appendix A of the Environmental Assessment for this project for specific information regarding Section 4(f).

Historical resources are considered under the California Environmental Quality Act, as well as California Public Resources Code Section 5024.1, which established the California Register of Historical Resources. Section 5024 of the Public Resources Code requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the National Register or are registered or eligible for registration as California Historical Landmarks.

C.5 Hydrology and Floodplain

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 Code of Federal Regulations 650 Subpart A.

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 affected by the project.

The base 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 base floodplain."

C.5.1 State

Executive Order S-3-05 (Schwarzenegger)

In 2005 Arnold Schwarzenegger signed Executive Order S-3-05 officially declaring that California is vulnerable to the impacts of climate change. The order proclaims the increased temperatures threaten to greatly reduce the Sierra snowpack, and potentially raise sea levels (Office of the Governor 2005).

C.5.2 Local

The Sacramento Area Flood Control Agency (SACFA) was formed in 1989 to address the area's vulnerability to catastrophic flooding. Through a Joint Exercise of Powers Agreement, the City of Sacramento, the County of Sacramento, the County of Sutter, the American River Flood Control District, and Reclamation District1000 created SAFCA. The goal of SAFCA is to provide at least 100-year-level flood protection while seeking a 200-year or greater level of protection over time. Under the SAFCA Act of 1990, the California Legislature has given SAFCA broad authority to finance flood control projects and has directed the Agency to carry out its policies in way that optimizes the protection of the natural environment (Sacramento Area Flood Control Agency 2008).

C.6 Water Quality and Storm Water Runoff

Section 401 of the Clean Water Act requires water quality certification from the State Water Resources Control Board or from a Regional Water Quality Control Board when the project requires a Clean Water Act Section 404 permit. Section 404 of the Clean Water Act requires a permit from the U.S. Army Corps of Engineers to discharge dredged or fill material into waters of the United States.

Along with Section 401 of the Clean Water Act, Section 402 of the Clean Water Act establishes the National Pollutant Discharge Elimination System permit for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the National Pollutant Discharge Elimination System program to the State Water Resources Control Board and nine Regional Water Quality Control Boards. The State Water Resources Control Board and Regional Water Quality Control Boards also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The State Water Resources Control Board has developed and issued a statewide National Pollutant Discharge Elimination System permit to regulate storm water discharges from all Caltrans activities on its highways and facilities. Caltrans construction projects are regulated under the statewide permit, and projects performed by other entities on Caltrans right-of-way (encroachments) are regulated by the State Water Resources Control Board's Statewide General Construction Permit. All construction projects over 1 acre require a Storm Water Pollution Prevention Plan to be prepared and implemented during construction. Caltrans activities of less than 1 acre require a Water Pollution Control Program.

C.6.1 State

Porter-Cologne Water Quality Control Act

Porter-Cologne Water Quality Control Act (Porter-Cologne Act) was passed in 1969 and coincides with the CWA Sections 303 and 402 for the protection of water quality. It established the SWRCB and divided the state into nine regions, each overseen by a RWQCB. The SWRCB is the primary agency in charge of protecting the state's surface and groundwater supplies, with much of the implementation being carried out by one of the nine RWQCBs.

The Porter-Cologne Act also provides the development and review of water control plans (also known as basin plans). The basin plan for the Sacramento and San Joaquin River Basins was prepared and implemented by the Central Valley RWQCB and amended in 2007. The Sacramento River and San Joaquin River Basin Plan identifies the beneficial uses and designated water quality criteria for the water bodies of the region. The beneficial uses of the water bodies in the area are described below.

CVRWQCB Basin Plan

The Central Valley RWQCB is responsible for implementing the water quality standards to protect the beneficial uses in the Central Valley region. As mentioned above, the Sacramento and American Rivers have been designated in the Basin Plan as having beneficial uses that include municipal, agricultural, and recreational uses (Central Valley Regional Water Quality Control Board 2007). The basin plan has also set water quality objectives for the surface waters in this region, which address the potential presence of bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating materials, methylmercury, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settable material, suspended material, tastes and odors, temperature, toxicity, and turbidity (Central Valley Regional Water Quality Control Board 2007). The Basin Plan also sets water quality objectives for the groundwater within this region to protect beneficial uses. The objectives address the potential presence of bacteria, chemical constituents, radioactivity, tastes and odors, and turbidity (Central Valley Regional Water Quality Control Board 2007). The beneficial uses of groundwaters in the region are designated as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply (Central Valley Regional Water Quality Control Board 2007). The beneficial uses of the groundwater within the project area is dependent on the level of contaminates within the area.

General Construction Permit

Under the statewide NPDES construction general permit, construction sites with a disturbed area of 1 acre or more are required to either obtain a NPDES permit for a stormwater discharge, or to be covered by the construction general permit. To obtain a general construction permit, the proponent must file a notice of intent (NOI) with the SWRCB. Each applicant must also ensure that a Storm Water Pollution Prevention Plan (SWPPP) is prepared prior to grading and earthwork activities begin. The objective of the SWPPP is to identify, construct, implement, and maintain best management practices (BMPs) in order to reduce or eliminate pollutants from entering the waterways through storm discharges and unauthorized non-storm discharges.

Dewatering Permit

A small amount of construction dewatering is allowed under the General Construction permit. However, the RWQCB has also adopted a General Order for Dewatering and Other Low Threat Discharges to Surface Waters (General Dewatering Permit) (Order Number 5-00-175) under the NPDES permit No. CAG995001 (City of Sacramento 2007a). If construction activities require large amounts of water to be removed prior to beginning excavation or trench work, submittal and approval for a discharging permit to the Central Valley RWQCB would be required before such activities begin. A temporary permit must also be obtained from the City before any discharges are allowed into the sewer/stormwater system. If the groundwater contains contaminates at levels that pose risks to the receiving water bodies, the discharged groundwater would have to meet the standards of the Central Valley RWQCB and the City's NPDES permit prior to discharge into the City's Combined Sewer and Stormwater System (CSS).

Stormwater Discharges

The City has coverage for stormwater discharges under a MS4 General Permit. As part of compliance, the City has outlined requirements for allowing such discharges in their Stormwater Quality Improvement Plan (SQIP). The proposed project would need to comply with the SQIP in order to obtain coverage for discharging into the CSS.

C.6.2 Local

Stormwater Quality/Urban Runoff Management

The County of Sacramento and the Cities of Sacramento, Folsom, Citrus Heights, Elk Grove, Rancho Cordova, and Galt have a joint NPDES permit (No. CAS082597), which was granted in 2007 (City of Sacramento 2007a). The permit is intended to implement the Central Valley RWQCB Basin Plan objectives from the pollutants generated and carried to the receiving water bodies from these areas. The permit covers all wet- and dry-weather runoff from the storm drains and requires these cities to implement BMPs to reduce the level of pollutants to the maximum extent possible prior to the runoff reaching the receiving waterbody.

Wastewater Discharges

Any discharge into the CSS must have a Sewer Use Questionnaire on file with the Sacramento Regional County Sanitation District (SRCSD). Section 13.08.040 of the Sacramento City Code prohibits the discharge of any substance that would result in or contribute to a violation of any applicable water quality plan, water quality standard, or NPDES permit (City of Sacramento 2008c).

City of Sacramento General Plan

The 1988 City of Sacramento General Plan has the following goals and polices that pertain to this section ("Water Quality and Stormwater Runoff"). The 2030 City of Sacramento General Plan update is still in the drafting stage, so the City's current General Plan was used for this analysis. (City of Sacramento 1988).

Water Quality

Stormwater quality enhancement measures are required by the City's NPDES permit. New development within the city is required to reduce stormwater pollution to the Maximum Extent Practicable (MEP).

Drainage

> **Goal A: Provide adequate drainage facilities and services to accommodate desired growth levels.**
>
> Policy 1: Ensure that all drainage facilities are adequately sized and constructed to accommodate the projected increase in stormwater runoff from urbanization.

Sacramento Central City Community Plan

The Central City Community Plan does not contain any policies that relate to water quality or stormwater runoff within the project area.

Stormwater Quality Design Manual for the Sacramento and South Placer Regions (May 2007)

This *Stormwater Quality Design Manual for the Sacramento and South Placer Regions* outlines planning tools and requirements to reduce urban runoff pollution to the MEP from new development and redevelopment projects. This manual is a collaborative effort of the Sacramento Stormwater Quality Partnership and the City of Roseville, and it is intended to satisfy the regulatory requirements of their respective municipal stormwater permits.

Sacramento City/County Drainage Manual 1996

The Sacramento City/County Drainage Design Manual hydrology standards are part of a five-volume City/County Drainage manual developed jointly by the Sacramento County Water Resources Division and City of Sacramento Department of Utilities Division of Engineering Services. The objective of this manual is to present the acceptable methods for estimating the surface-water runoff peak flows and volumes for the analysis and design of drainage facilities in the City and County of Sacramento (Sacramento County Division of Water Resources and the City of Sacramento Department of Utilities Division of Engineering Services1996).

C.7 Geology/Soils/Seismic/Topography

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the California Environmental Quality Act.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Caltrans’ Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. The current policy is to use the anticipated Maximum Credible Earthquake from young faults in and near California. The Maximum Credible Earthquake is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

C.8 Paleontology

Paleontology is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects (such as the Antiquities Act of 1906 [16 U.S. Code 431-433], Federal-Aid Highway Act of 1935 [20 U.S. Code 78]). Under California law, paleontological resources are protected by the California Environmental Quality Act, the California Administrative Code, Title 14, Section 4306 et seq., and Public Resources Code Section 5097.5.

C.9 Hazardous Waste or Materials

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use.

The main federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The purpose of the Comprehensive Environmental Response, Compensation and Liability Act, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. The Resource Conservation and Recovery Act provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include the following:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act

- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety & Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

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

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

C.9.1 State Regulations

California regulations generally are regarded as equal to or more stringent than federal regulations. The EPA has granted the state primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key state laws pertaining to hazardous wastes are discussed below.

Hazardous Materials Release Response Plans and Inventory Act of 1985
The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a hazardous materials business plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act
The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal RCRA program. The act is implemented by regulations contained in 26 CCR, which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transport; design and permitting of recycling, treatment, storage, and disposal facilities; treatment

standards; operation of facilities and staff training; and closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of them. Under this act and 26 CCR, a generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including EPA, California Highway Patrol, Regional Water Quality Control Boards (RWQCBs), air quality management districts, and county disaster response offices.

California Occupational Safety and Health Administration Standards

Worker exposure to contaminated soils, vapors that could be inhaled, or groundwater containing hazardous constituents would be subject to monitoring and personal safety equipment requirements established in Title 8 of the California Occupational Safety and Health Administration (Cal-OSHA) regulations. The primary intent of the Title 8 requirements is to protect workers, but compliance with some of these regulations would also reduce potential hazards to nonconstruction workers and project area occupants because required controls related to site monitoring, reporting, and other activities would be in place.

Polychlorinated Biphenyl Regulations and Requirements

In the past, oil containing polychlorinated biphenyl (PCBs) was used in electrical equipment, such as transformers and light ballasts, as a dielectric insulating fluid for heat dissipation. Manufacture of PCBs was banned in 1976; therefore, equipment manufactured after this time should not contain PCBs. EPA requires that insulating oils containing PCBs at concentrations greater than 50 milligrams per liter be disposed of properly by a California-licensed hazardous waste hauler.

Asbestos Regulations

Title 8, CCR Section 1529 regulates asbestos exposure in all construction work and defines permissible exposure limits and work practices. Typically removal or disturbance of more than 100 square feet of material containing more than 0.1 percent asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the material contains 1 percent or less asbestos. When the asbestos content of materials exceeds 1 percent, virtually all requirements of the standard become effective. With respect to potential worker exposure, notification, and registration requirements, Cal-OSHA defines asbestos-containing construction material (ACCM) as construction material that contains more than 0.1 percent asbestos (Title 8, CCR 341.6).

C.9.2 Local Regulations

Sacramento Metropolitan Air Quality Management District (SMAQMD)

The SMAQMD works with local, state, and federal government agencies and local communities to achieve and maintain healthy air quality for Sacramento County. Toxic air contaminants generated by the excavation or remediation of contaminated soils are subject to applicable SMAQMD regulations and permitting requirements.

City of Sacramento General Plan

The following goals and policies concerning hazardous waste are applicable to the proposed project:

> **Goal A Provide for the health and safety of the citizens of Sacramento and for the protection of the environment by reducing exposure to hazardous materials and waste.**
>
> Policies
>
> 1. Work with the County, State, and federal agencies and responsible parties to identify, contain, and cleanup sites that contain hazardous materials.
>
> 8. Ensure that areas where hazardous materials have been found are remediated, before development of new areas, to the extent necessary to protect the health and safety of all possible users and adjacent properties, consistent with applicable laws and regulations.

Sacramento City Code

The following implementation measure pertains to hazards and hazardous substances within the City of Sacramento:

> The City has adopted a hazardous materials disclosure code requiring handlers of hazardous materials file a disclosure form within fifteen (15) days of a significant change to the handling, use, and/or location of hazardous materials. (Sacramento City Code 8.64.040).

C.10 Air Quality

The Clean Air Act, as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the concentration of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards. Standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO_2).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to the State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity is concerned with how well the region is meeting the standards set for carbon monoxide, nitrogen dioxide, ozone, and particulate matter. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the Regional Transportation Plan, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Sacramento Metropolitan Air Quality Management District (SMAQMD) for the Sacramento metropolitan area, and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the Regional Transportation Plan is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the Regional Transportation Plan must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the Regional Transportation Plan, then the proposed project is deemed to meet regional conformity requirements for purposes of the project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is in “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as non-attainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as carbon monoxide or particulate matter analysis performed for National Environmental Policy Act and California Environmental Quality Act purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the carbon monoxide standard to be violated, and in “nonattainment” areas, the project must not cause any increase in the number and severity of violations. If a known carbon monoxide 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.

C.11 Noise and Vibration

The National Environmental Policy Act of 1969 and the California Environmental Quality Act provide the broad basis for analyzing and abating the effects of highway traffic noise. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between the National Environmental Policy Act and the California Environmental Quality Act.

C.11.1 National Environmental Policy Act and 23 Code of Federal Regulations 772

For highway transportation projects with Federal Highway Administration involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 Code of Federal Regulations 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria that are used to determine when a noise impact would occur. The noise abatement criteria differ depending on the type of land use under analysis. For example, the criterion for residences (67 decibels) is lower than the criterion for commercial areas (72 decibels). Table C-1 lists the noise abatement criteria for use in the National Environmental Policy Act and 23 Code of Federal Regulations 772 analysis and Table C-2 shows the noise levels of typical activities.

Table C-1. Activity Categories and Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, A-weighted Noise Level, Leq(h)	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	–	Undeveloped lands
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: Caltrans Traffic Noise Analysis Manual 1998.
Note: A-weighted decibels are adjusted to approximate the way humans perceive sound. Leq(h) is the steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual time-varying levels over one hour.

In accordance with Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects,* August 2006, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12-decibel or more increase) or when the future noise level with the project approaches or exceeds the noise abatement criteria. Approaching the noise abatement criteria is defined as coming within 1 decibel of the criteria.

If it is determined that the project would have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies' input, newly constructed development versus development pre-dating 1978, and the cost per benefited residence.

Feasibility of noise abatement is basically an engineering concern. A minimum 5-decibel reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations.

Table C-2. Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft) Commercial Area	70	Vacuum Cleaner at 3 m (10 ft) Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime Quiet Suburban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Rural Nighttime	30	Library Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Federal Transit Administration/Federal Railroad Administration

The FTA's environmental impact regulation is codified in 23 CFR 771. The FTA's 2006 *Transit Noise and Vibration Impact Assessment Manual* (Federal Transit Administration 2006) provides guidance for noise and vibration impact assessment. The FRA criteria and methodology for noise and vibration are similar to the FTA criteria and methodology for noise and vibration.

Noise Impact Criteria

The FTA defines noise impact criteria based on three land use categories. Table C-3 describes these three land use categories.

Table C-3. Land Use Categories and Metrics for Transit Noise Impact Criteria

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(h)$[a]	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet and land uses such 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 L_{dn}	Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)$[a]	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with activities such 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.

Source: Federal Transit Administration 2006.

[a] L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.

The FTA categorizes noise impacts into the following three categories:

- **No Impact**—On average, the introduction of the project would result in an insignificant increase in the number of people highly annoyed by the new project-related noise;
- **Moderate Impact**—An impact where the project-related change in noise is noticeable to most people but may not be sufficient to cause strong, adverse reactions from the community; and
- **Severe Impact**—An impact where a significant percentage of people would be highly annoyed by the new noise (i.e., the project-related increase in noise).

Table C-4 summarizes the FTA noise impact criteria for each land use category.

Table C-4. Noise Levels Defining Impact for Transit Projects

Existing Noise Exposure, $L_{eq}(h)$ or L_{dn} (dBA)[a]	Project Noise Impact Exposure, $L_{eq}(h)$ or L_{dn} (dBA)[a]					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
< 43	< Ambient+10	Ambient+10–15	> Ambient+15	< Ambient+15	Ambient+15–20	> Ambient+20
43	< 52	52–58	> 58	< 57	57–63	> 63
44	< 52	52–58	> 58	< 57	57–63	> 63
45	< 52	52–58	> 58	< 57	57–63	> 63
46	< 53	53–59	> 59	< 58	58–64	> 64
47	< 53	53–59	> 59	< 58	58–64	> 64
48	< 53	53–59	> 59	< 58	58–64	> 64
49	< 54	54–59	> 59	< 59	59–64	> 64
50	< 54	54–59	> 59	< 59	59–64	> 64
51	< 54	54–60	> 60	< 59	59–65	> 65
52	< 55	55–60	> 60	< 60	60–65	> 65
53	< 55	55–60	> 60	< 60	60–65	> 65
54	< 55	55–61	> 61	< 60	60–66	> 66
55	< 56	56–61	> 61	< 61	61–66	> 66
56	< 56	56–62	> 62	< 61	61–67	> 67
57	< 57	57–62	> 62	< 62	62–67	> 67
58	< 57	57–62	> 62	< 62	62–67	> 67
59	< 58	58–63	> 63	< 63	63–68	> 68
60	< 58	58–63	> 63	< 63	63–68	> 68
61	< 59	59–64	> 64	< 64	64–69	> 69
62	< 59	59–64	> 64	< 64	64–69	> 69
63	< 60	60–65	> 65	< 65	65–70	> 70
64	< 61	61–65	> 65	< 66	66–70	> 70
65	< 61	61–66	> 66	< 66	66–71	> 71
66	< 62	62–67	> 67	< 67	67–72	> 72
67	< 63	63–67	> 67	< 68	68–72	> 72
68	< 63	63–68	> 68	< 68	68–73	> 73
69	< 64	64–69	> 69	< 69	69–74	> 74
70	< 65	65–69	> 69	< 70	70–74	> 74
71	< 66	66–70	> 70	< 71	71–75	> 75
72	< 66	66–71	> 71	< 71	71–76	> 76
73	< 66	66–71	> 71	< 71	71–76	> 76
74	< 66	66–72	> 72	< 71	71–77	> 77
75	< 66	66–73	> 73	< 71	71–78	> 78
76	< 66	66–74	> 74	< 71	71–79	> 79
77	< 66	66–74	> 74	< 71	71–79	> 79
> 77	< 66	66–75	> 75	< 71	71–80	> 80

Source: Federal Transit Administration 2006.

[a] L_{dn} is used for land uses where nighttime sensitivity is a factor; L_{eq} during the hour of maximum transit noise exposure is used for land uses involving only daytime activities.

Figure C-1, Increase in Cumulative Noise Levels Allowed by Criteria (Land Use Cat. 1 & 2), expresses these criteria in terms of the project-related increase in noise for Category 1 and 2 land uses.

Historically significant sites are treated as noise-sensitive, depending on the land use activities. Sites of national significance with considerable outdoor use required for site interpretation would be in Category 1. Historical sites that are currently used as residences would be in Category 2. Historic buildings with indoor use of an interpretive nature involving meditation and study fall into Category 3. These include museums, significant birthplaces, and buildings in which significant historical events occurred.

Most busy downtown areas have buildings that are historically significant because they represent a particular architectural style or are prime examples of the work of an historically significant designer. If the buildings or structures are used for commercial or industrial purposes and are located in busy commercial areas, they are not considered noise sensitive, and the noise impact criteria do not apply. Similarly, historical transportation structures, such as terminals and railroad stations, are not considered noise-sensitive land uses themselves. These buildings or structures are, of course, afforded special protection under Section 4(f) of the Department of Transportation Act and Section 106 of the National Historic Preservation Act. However, based strictly on how they are used and the settings in which they are located, these types of historical buildings are not considered noise-sensitive sites.

Special protection provided by Section 4(f) of the Department of Transportation Act and Section 106 of the National Historic Preservation Act come into play frequently during the environmental review of transit projects. Section 4(f) protects historic sites and publicly owned parks, recreation areas, and wildlife refuges. Section 106 protects historic and archeological resources. In general, noise in the Moderate Impact range would not substantially impair the use of a property afforded protection under Section 4(f). Therefore, it would not constitute a "constructive use," as this term is defined in Section 4(f) regulations. In the Section 106 process protecting historic and cultural properties, Moderate Impact may or may not be considered an "adverse effect," depending on the individual circumstances. Historic properties are only noise sensitive based on how they are used. As previously noted, some historic properties are not noise sensitive at all. It is possible, though, that a historic building housing sensitive uses, such as a library or museum, could be affected adversely by noise in the Moderate range. The regulatory processes stemming from these statutes require coordination and consultation with agencies and organizations having jurisdiction over these resources. Their views on the project's impact on protected resources are given careful consideration by the FTA and the project sponsor, and their recommendations may influence the decision to adopt noise-reduction measures.

Mitigation is not required when project-generated noise is in the No Impact range. Noise impacts in the Severe range represent the most compelling need for mitigation. If it is not practical to avoid Severe Impacts by changing the location of the project, mitigation must be considered. Impacts in this range have the greatest adverse effect, and there is a presumption by the FTA that mitigation will be incorporated into the project unless there are truly extenuating circumstances that prevent it. Projected noise levels in the Moderate Impact range will also require consideration of mitigation and adoption of mitigation when it is considered reasonable. Refer to FTA 2006 for a detailed discussion of mitigation requirements.

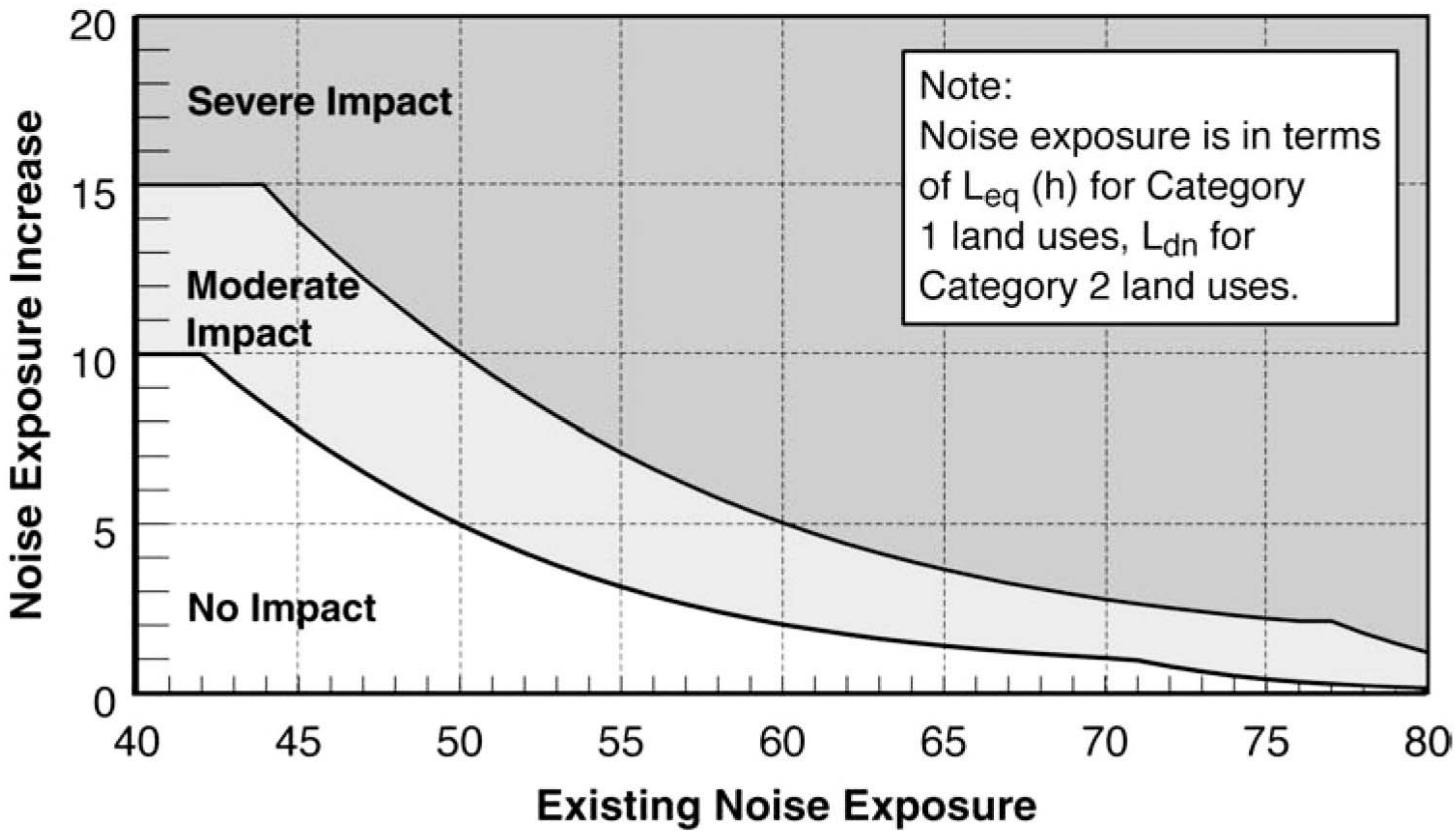

Figure C-1
Increase in Cumulative Noise Levels Allowed by Criteria (Land Use Cat. 1 & 2)

Vibration Impact Criteria

The FTA defines vibration impact criteria based on three land use types:

- **Category 1**—Buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance;
- **Category 2**—All residential land uses and any buildings where people sleep, such as hotels and hospitals; and
- **Category 3**—Schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment but still have the potential for activity interference.

Table C-5 summarizes the FTA impact criteria for groundborne vibration and noise.

Table C-5. Groundborne Vibration and Noise Impact Criteria for General Assessment

Land Use Category	Groundborne Vibration Impact Levels (VdB re 1 micro-in/sec)			Groundborne Noise Impact Levels (dB re 20 mPa)		
	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB[d]	65 VdB[d]	65 VdB[d]	N/A[d]	N/A[d]	N/A[d]
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source: Federal Transit Administration 2006.

[a] "Frequent" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.

[b] "Occasional" is defined as between 30 and 70 vibration events of the same source per day. Most commuter trunk lines have this number of operations.

[c] "Infrequent" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

[d] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the heating, ventilation, and air-conditioning (HVAC) systems and stiffened floors.

[e] Vibration-sensitive equipment is generally not sensitive to groundborne noise.

There are some buildings, such as concert halls, television and recording studios, and theaters, that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table C-6 gives criteria for acceptable levels of groundborne vibration and noise for various types of special buildings.

The criteria in Tables C-5 and C-6 are related to groundborne vibration that causes human annoyance or interferes with the use of vibration-sensitive equipment. It is extremely rare for vibration from train operations to cause any sort of building damage, even minor cosmetic damage. However, there is sometimes concern about damage to fragile historic buildings located near a right-of-way. Even in these cases, damage is unlikely except when the track is very close to the structure.

Table C-6. Groundborne Vibration and Noise Impact Criteria for Special Buildings

Type of Building or Room	Groundborne Vibration Impact Levels (VdB re 1 micro-in/sec)		Groundborne Noise Impact Levels (dB re 20 mPa)	
	Frequent Events[a]	Occasional or Infrequent Events[b]	Frequent Events[a]	Occasional or Infrequent Events[b]
Concert halls	65 VdB	65 VdB	25 dBA	25 dBA
TV studios	65 VdB	65 VdB	25 dBA	25 dBA
Recording studios	65 VdB	65 VdB	25 dBA	25 dBA
Auditoriums	72 VdB	80 VdB	30 dBA	38 dBA
Theaters	72 VdB	80 VdB	35 dBA	43 dBA

Source: Federal Transit Administration 2006.

[a] "Frequent" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

[b] "Occasional or Infrequent" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

[c] If the building will rarely be occupied when the trains are operating, there is no need to consider impacts. As an example, consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 p.m., it should be rare that the trains interfere with the use of the hall.

To assess the potential for vibration to damage fragile historic buildings, the FTA applies thresholds that were developed for assessing vibration impacts from construction equipment. Table C-7 summarizes these criteria.

Table C-7. Construction Vibration Damage Criteria

Building Category	PPV (in/sec)	Approximate Lv[a]
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: Federal Transit Administration 2006.

[a] r.m.s. velocity in decibels (VdB) re 1 micro-in/sec.

C.11.2 State Regulations and Policies

California Environmental Quality Act

The California Environmental Quality Act requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under the California Environmental Quality Act, then the act dictates that mitigation measures must be incorporated into the project unless such measures are not feasible

Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects

The Protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or federal-aid highway projects. The NAC specified in the Protocol are the same as those specified in 23 CFR 772. The Protocol defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA. The Protocol also states that a sound level is considered to approach an NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA but 65 dBA is not).

As discussed above, there are no off-site roadway improvements included in the proposed project. Accordingly, the proposed project is not a Type I project, and no evaluation of operational traffic noise is required under 23 CFR 772.

C.12 Wetlands and Other Waters

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 United States Code 1344) is the main law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States 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 Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can 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 with oversight by the Environmental Protection Agency.

The Executive Order for the Protection of Wetlands (Executive Order 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, 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.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Game and the Regional Water Quality Control Boards. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that would substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the California Department of Fish and Game before beginning construction. If the California Department of Fish and Game determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement would be required. The California Department of Fish and Game's jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the Army Corps of Engineers may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the Department of Fish and Game.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The Regional Water Quality Control Boards also issue water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section earlier in this appendix for additional details.

C.13 Plant Species

The U.S. Fish and Wildlife Service and California Department of Fish and Game share regulatory responsibility for the protection of 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 threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act and/or the California Endangered Species Act. Please see the Threatened and Endangered Species section of this appendix (below) for detailed regulatory information regarding these species.

The Plant Species section of Chapter 2 of this document discusses all the other special-status plant species, including California Department of Fish and Game fully-protected species and species of special concern, U.S. Fish and Wildlife Service candidate species, and non-listed California Native Plant Society rare and endangered plants.

The regulatory requirements for the Federal Endangered Species Act can be found at United States Code 16, Section 1531, et. seq. See also 50 Code of Federal Regulations Part 402. The regulatory requirements for the California Endangered Species Act can be found at California Fish and Game Code, Section 2050, et. seq. Caltrans projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

C.14 Animal Species

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration Fisheries Service, and the California Department of Fish and Game are responsible for implementing these laws. The section on Animal Species in Chapter 2 discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in a separate section. All other special-status animal species are discussed here under Animal Species, including California Department of Fish and Game fully protected species and species of special concern, and the U.S. Fish and Wildlife Service or National Oceanic and Atmospheric Administration 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
- Marine Mammal Protection Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1601–1603 of the Fish and Game Code
- Sections 4150 and 4152 of the Fish and Game Code

C.15 Threatened and Endangered Species

The main federal law protecting threatened and endangered species is the Federal Endangered Species Act: 16 United States Code, Section 1531, et seq. See also 50 Code of Federal Regulations Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems on which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration 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 consultation under Section 7 is a Biological Opinion or an incidental take statement. Section 3 of the Federal Endangered Species Act defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act, California Fish and Game Code, Section 2050, et seq. The California Endangered Species Act emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Game is the agency responsible for implementing the California Endangered Species Act. Section 2081 of the Fish and Game Code prohibits “take” of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The California Endangered Species Act allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by the California Department of Fish and Game.

For projects requiring a Biological Opinion under Section 7 of the Federal Endangered Species Act, the California Department of Fish and Game may also authorize impacts to the California Endangered Species Act species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

C.16 Invasive Species

On February 3, 1999, President Bill 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." Federal Highway Administration guidance issued August 10, 1999 directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the National Environmental Policy Act analysis for a proposed project.

C.17 Cumulative Impacts

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

A definition of cumulative impacts, under the National Environmental Policy Act, can be found in 40 Code of Federal Regulations, Section 1508.7 of the Council on Environmental Quality regulations.

C.18 References

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