

REGIONAL TRANSIT ISSUE PAPER

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
13	07/23/18	Open	Action	07/19/18

Subject: Approving the Downtown Riverfront Streetcar Governance Documents

ISSUE

Whether or not to approve the Downtown Riverfront Streetcar Governance Documents

RECOMMENDED ACTION

- A. Adopt Resolution No. 18-07-___, Adopting a Mitigated Negative Declaration for the Downtown Riverfront Street Project; and**
- B. Adopt Resolution No. 18-07-___, Approving the Downtown Riverfront Streetcar Governance Documents, Consisting of the Subrecipient and Interagency Agreement; Design Procurement and Construction Agreement, and Operations and Maintenance Agreement.**

FISCAL IMPACT

Described below.

DISCUSSION

On June 11, 2018, staff provided the Board with an overview on the various Downtown Riverfront Streetcar Governance documents. Staff is now seeking Board approval of the following agreements:

Subrecipient and Interagency Agreement for Streetcar Funding

SacRT is the Federal Transit Administration (FTA) and State grantee for this Project and will be responsible for ensuring all applicable grant requirements are met by SacRT, the Streetcar Joint Powers Authority (JPA) and cities of Sacramento and West Sacramento (cities). Because the Project will ultimately be owned by the cities through the JPA, it is necessary to execute a Subrecipient and Interagency Agreement to set out the terms and conditions applicable to SacRT's transfer of grant funds to the JPA, as the subgrantee, for the development of the Project.

The Subrecipient and Interagency Agreement designates the JPA as the subrecipient of federal and state grants. As a subrecipient, the JPA must comply with all terms and conditions of all Project grants, including the FTA Small Starts Grant Agreement (SSGA). SacRT will exercise oversight rights with regards to the terms and conditions of all applicable grants.

Approved:

Presented:

Revised Final 07/19/18

General Manager/CEO

Deputy General Manager/COO

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Design, Procurement and Construction Agreement for the Streetcar Project

The JPA will enter into a Design, Procurement and Construction Agreement with SacRT. This Agreement authorizes SacRT to provide design, construction and procurement services for the Project. SacRT agrees to perform the services in a reasonable, prudent and diligent manner consistent with good practices within the industry, while complying with all FTA grant requirements. The JPA and SacRT agree that all undisputed cost overruns are the responsibility of the cities of Sacramento and West Sacramento.

Operations and Maintenance Agreement for the Streetcar Project

Because the SSGA requires that operation and maintenance for the Project be conducted by an entity experienced in the operation and maintenance of rail transit projects, an Operations and Maintenance Agreement (O&M) is necessary. The O&M appoints SacRT to provide operation and maintenance services for the Project. The O&M, once executed, defines the roles, responsibilities and expectations regarding the operation and maintenance of the Project. Through the O&M, SacRT is responsible for operating and maintaining the system, as well as compliance with all applicable federal, state and local laws and requirements. The O&M states that SacRT must be compensated for its “commercially reasonable” costs incurred in providing services. At this time, the opening year estimated operating cost is \$5,922,517, however, because the commencement of revenue operations is several years in the future, this number cannot be predicted with certainty. The planned sources of funding for the operating cost are provided in response to question 5 below.

Questions from the Board

During the June 11, 2018 overview, the Board asked some questions. Those questions, along with Staff responses, are provided below.

1. When will the results of Risk Assessment be known?

RESPONSE: Based on FTA’s input during the June Risk Assessment, the official report will likely not be seen until late this year. However, input has been received.

The Downtown Riverfront Streetcar Risk Assessment was held on June 20-22, 2018. The FTA hosted workshop consisted of JPA staff, SacRT staff, FTA Headquarters staff from Washington D.C., FTA Region IX staff from San Francisco and members of the FTA’s Project Management Oversight Consultant (PMOC) team. The three-day workshop focused on the Project’s current scope, schedule and costs as well as FTA’s assessment of Project risks.

FTA provided Staff with eleven risks that are currently being addressed. Staff expects to response to the FTA by mid-August. The identified risks fall under the following four subject areas: Project governance; utilities coordination; uncertainties associated with changing the

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location of the Streetcar Vehicle Maintenance and Service Facility (VMSF): and market conditions. This is consistent with other similar projects and these risks were anticipated. These risks likely add cost to the overall Project. The additional costs are not known at this time. FTA and Project staff also identified mitigation steps Staff can take to reduce or eliminate the risk and bring the Project budget into alignment with the current Project estimate. The FTA stated that the Project participants should move forward with all aspects of the Project including agreements and design. FTA encouraged the Project participants to continue to mitigate risks and be “shovel-ready” as soon as possible.

2. The Board would like to ensure that future O&M costs are not a hit to SacRT’s operating budget. Will the JPA indemnify SacRT?

RESPONSE: The O&M Agreement is a high-level agreement that contemplates further action by the parties to identify the specific scope of SacRT O&M services and cost methodology to compensate SacRT to operate the streetcar system. SacRT is to propose a cost methodology 36 months prior to the planned commencement of revenue operations for consideration by the JPA. It will be up to SacRT to capture all costs associated with the operation of this system and assure that they are reimbursed by the JPA so that SacRT’s operating budget is not impacted by streetcar operation, which might result in the cutting of other services.

3. The Board had concerns with the bidding climate and asked what Staff was doing to minimize risk to cost overruns.

RESPONSE: The Design, Procurement and Construction Agreement states that SacRT will have no obligation to perform Services to the extent it will incur costs in excess of \$203.5 million, unless the Budget is increased by the JPA to provide compensation for such Services (the overall Project budget of \$208 million includes costs that will be incurred by the JPA outside of the Design, Procurement and Construction Agreement, such as JPA staff salaries and real estate acquisition costs). Staff is also going through other efforts to reduce the likelihood of unknown issues creating cost overruns. The Construction Management consultant, PGH Wong, is completing a constructability review. This review is a project management technique to review construction processes from start to finish during the pre-construction phase. It will identify obstacles before a project is actually built to reduce or prevent errors, delays, and cost overruns. Additionally, Staff will perform a value engineering exercise on the Project to identify cost effective alternatives to the current plans and/or identifying cost savings on the Project. Lastly, staff will be reaching out to other local, state and national agencies to better understand market conditions.

4. The Board asked if SacRT is satisfied with the Governance documents as it relates to the level of risk and decision making?

RESPONSE: In drafting the Governance documents, the risks to SacRT were recognized and measures were taken to protect SacRT without compromising the regionally preferred approach to governance. FTA has spent significant time reviewing and commenting on the

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governance documents. Much of the FTA input has been incorporated into the current version of these documents. As the State and Federal grant recipient, it is impossible to completely eliminate SacRT’s risk with the preferred form of governance. SacRT’s Legal Department has prepared a comprehensive high-level analysis of major foreseeable risks, which is included as Attachment 1 for the Board’s review; while not exhaustive, this analysis attempts to identify major risks.

5. The Board asked what is the source of O&M funding used to pay SacRT to operate the Streetcar system?

RESPONSE: SacRT will be paid by the Riverfront Joint Powers Authority. Funding will come from a combination of funding from the cities of Sacramento and West Sacramento, fare revenue, advertising revenue and other State or Federal funding sources. More specifically, in the Project’s most recent Small Starts submittals (FY18 & FY19), Staff has provided to FTA an annual estimated operating cost in the opening year of \$5,922,517. The funding sources are as follows:

Farebox Revenue	\$	700,000
Advertising Revenue	\$	750,000
Local Revenue Source A (W. Sac.)	\$	1,157,506
Local Revenue Source B (Sac.)	\$	2,315,011
Other (CMAQ / LCTOP)	\$	1,000,000

SacRT Board Action

Approval of these Governance documents is an action item the Project participants must take in order to secure a Small Starts Grant Agreement (SSGA). Demonstrating final approval of the governance documents will be an important part of the Risk Review final report. The FTA Risk Review Report may be finalized as early as August and as late as the first quarter of 2019. The Project participants should be open to potential amendments to the documents if necessary to resolve issues that arise during any portion of the Federal readiness review.

The SacRT Board is being asked to approve the Subrecipient and Interagency Agreement, the Design, Procurement and Construction Agreement and the Operations and Maintenance Agreement. The City of West Sacramento Council approved the governance documents on June 13, 2018. The JPA approved the governance documents on June 19, 2018. The City of Sacramento expects to approve the governance documents on July 24, 2018.

Because the governance documents constitute a commitment by SacRT to proceed with the Downtown Riverfront Streetcar Project, as a “responsible agency” under the California Environmental Quality Act, SacRT is required to consider the EIR or negative declaration prepared by the lead agency and reach its own conclusions on whether and how to approve the project involved. This includes making required findings as to whether all significant impacts of the project have been mitigated or, if not, making a required

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statement of overriding considerations. SACOG acted as the lead agency for the preparation of the environmental documents. SacRT was an active participant in, and contributed to that process. Staff reviewed both the Initial Study/Environmental Assessment and the Mitigated Negative Declaration approved by SACOG in August 2015. The Initial Study/Environmental Assessment is Attachment 2 to this Issue Paper.

REGIONAL TRANSIT MEMO

DATE: July 16, 2018

TO: Henry Li, General Manager/CEO
Mark Lonergan, Deputy CEO/COO
Neil Nance, VP, Engineering and Facilities

THRU: Olga Sanchez-Ochoa, Deputy Chief Counsel

FROM: Melissa Noble, Senior Attorney *M.N.*

SUBJ: Streetcar Governance Risk Assessment

In response to a request from the General Manager/CEO in a meeting last week with the Deputy Chief Counsel, I have prepared the following overview analysis of potential risks associated with proceeding forward with approval of the governance documents for the Downtown/Riverfront Streetcar Project (the "Project") and prosecution of the Project under the terms of those documents. The intent of this analysis is to provide information to management to permit an informed determination regarding any recommendation to the Board of Directors concerning the governance documents and identify potential material risks that should be disclosed by Staff in its report to the Board. If further analysis of the legal terms and conditions of the governance documents is needed, or management identifies additional risks to be analyzed, the Legal Department can furnish that analysis upon request.

At the pinnacle of the governance structure, above the documents to be executed by the Riverfront Joint Powers Authority (JPA), cities of Sacramento and West Sacramento ("Cities"), and SacRT, sit the federal and state grant agreements. As the sole signatory to these agreements, SacRT has ultimate responsibility to the granting agencies for completing the Project in accordance with the grant requirements. From the standpoint of the FTA and Caltrans, these responsibilities cannot be delegated to a subrecipient.

Ultimately, SacRT will be held responsible for any breach of a grant agreement with the attendant consequences (the most serious of which would be debarment from future federal or state grant funding). That fact creates the most risk to SacRT from entering into the governance documents, which require SacRT to cede a degree of control over the Project, while maintaining ultimate responsibility to the FTA and Caltrans. In working on the governance documents over an 18-month period, attempts were made to mitigate these risks to the extent possible.

The two most significant aspects of the agreements that mitigate SacRT's risk are:

(1) The Cities are parties in their individual capacities to the Subrecipient Agreement and agree to assume joint and several liability for all obligations of the JPA under the Subrecipient Agreement. The dissolution of the JPA does not affect this obligation. Under Article 2 of the Subrecipient Agreement, the JPA expressly agrees to comply with all applicable federal and state grant requirements.

(2) Article 11 of the Subrecipient Agreement contains an indemnity obligation on the part of the JPA and the Cities to indemnify and hold SacRT harmless for any claim, obligation, loss, penalty, fine, demand, damage, cost, expense or liability, including attorneys' fees, demand

for return of all or a portion of the FTA Grant funds or any withholding from or denial of any future FTA Grant funds arising from a breach by the JPA or the Cities of their obligations under the Subrecipient Agreement.

Because of these key provisions, and others in the governance documents, many of the risks associated with the project involve not if SacRT will ultimately be made whole, but when.

Construction Phase

The bulk of the Project funding (\$155 million) for the design and construction phase comes from grants controlled by SacRT and the Subrecipient Agreement gives SacRT authority to draw down funds directly for undisputed invoices. The Cities have already furnished a portion of the local match through prior interagency agreements (\$10.9 million). As a consequence, SacRT is at limited risk during this phase of the Project.

Risk: Because invoices are submitted in arrears, if JPA disputes an SacRT invoice, SacRT will have already incurred the costs associated with the invoice and potentially have an obligation to pay its contractor/consultant during the pendency of any dispute.

Mitigation in Agreements: Article 7(a) of the Subrecipient Agreement allows the JPA only 15 days to dispute the contents of an invoice. The Design, Procurement and Construction Agreement requires JPA approval of all Key Agreements and all modifications (Sections 1.2 and 1.2(f)) to any Project agreement, which mitigates risk that JPA will assert that costs are not permissible/associated with the Project. The presence of the Owner's Representative (Section 1.2(o)) to provide SacRT oversight also mitigates the possibility of disputes when contractor/consultant invoices are received.

Outstanding Risk: If the non-binding dispute resolution process does not resolve a dispute, SacRT could be advancing costs to contractors/consultants that remain unreimbursed.

Risk: Cities do not furnish the required local match

Mitigation in Agreements: Article 4 of the Subrecipient Agreement specifies that the JPA is responsible for furnishing all local match funds and that "[i]n the event of a shortfall of funding for local match requirements for planning and construction of the Project, the Authority or the Cities will be solely responsible for providing the required match."

Outstanding Risk: While SacRT has the contractual right to have the Cities/JPA furnish the local match, that right must be enforced through litigation. To comply with grants, SacRT may be required to cash flow the Project until Cities furnish the required funding.

Risk: Project costs are in excess of the \$208 million budget

Mitigation in Agreements: Article 5 of the Subrecipient Agreement specifies that it does not create any obligation for SacRT to be responsible for providing any separate funding for the planning, construction, rail vehicle or rolling stock acquisition, maintenance or operation of the Project other than the pass through of the grants and previously approved agreements. Article 7(d) of the Subrecipient Agreement specifies that "responsibility for cost overruns will lie exclusively with first the Authority and, if not satisfied by the Authority, shall be the responsibility of the Cities jointly."

Outstanding Risk: (1) SacRT has responsibility for cost overruns that are a result of a default under the Design, Procurement and Construction Agreement, setting up a potential dispute and an incentive on the part of the JPA/Cities to assert an SacRT default; and (2) to comply with grants, SacRT may be required to cash flow the Project until Cities furnish the additional funding.

Risk: Project is delayed and SacRT cannot meet the revenue service commitment to the FTA. This risk is heightened by the requirements in Section 1.2 and Section 1.2(f) of the Design, Procurement and Construction that the JPA approve all Key Agreements and any modifications to SacRT Contractor Agreements.

Mitigation in Agreements: Section 1.2(o) of the Design, Procurement and Construction Agreement requires the appointment of an Owner's Representative to provide oversight of SacRT's performance. The assumption is that the Owner's Representative will be delegated day-to-day authority to approve some agreements and amendments to agreements to expedite the approval process. In addition, under the terms of the mutual indemnity set out in Article 11 of the Subrecipient Agreement, the JPA and Cities must indemnify SacRT if their actions lead to any claim by the FTA of breach of the FTA agreement.

Outstanding Risk: The JPA or Cities could assert that the delay is a result of an SacRT default in performing its obligations under the Design, Procurement, and Construction Agreement and, therefore, that SacRT is responsible for the claim. During the pendency of any dispute, SacRT would have to address the consequence of the delay.

Risk: Issues concerning the relocation of SacRT's SVS station delay completion of the Project. While the design of the Project assumes the relocation of SacRT's existing facilities, and it is anticipated that the relocation will be carried out by the streetcar construction contractor, that relocation is not included as part of the Project description or as part of a relocation obligation of the JPA.

Rather, it is being designed and funded by separate agreements between SacRT and the City of Sacramento in its individual capacity. There is a risk that SacRT's interests with respect to the SVS station relocation may conflict with its obligations to the FTA under the SSGA to complete the Project and its obligations to the JPA under the Design Agreement to "diligently" carry out its obligations to complete the Project.

Mitigation in Agreements: SacRT is presently in negotiations with the City of Sacramento concerning the relocation of the SVS station. It is anticipated that those agreements will mitigate this risk.

Outstanding Risk: Until agreement is reached with the City of Sacramento regarding the scope and funding for the SVS station project, there remains a risk that either: (a) SacRT will not be able to timely complete the Project as required by the various agreements due to a fundamental conflict with the existing tracks (while it is theoretically possible for the streetcar and the existing station to coexist, the 100% civil design prepared by HDR assumes the station relocation); or (b) SacRT will have to assume some or all of the costs of the SVS station relocation to avoid a breach of its obligations to complete the Project.

Risk: There is a conflict between the parties regarding the prosecution of the Project.

Mitigation in Agreements: The intent of the governance agreements is to permit the JPA, as the ultimate owner, to make decisions with respect to the Project in all instances other than those involving grant compliance. Article 3 of the Subrecipient Agreement vests final authority in SacRT with respect to all compliance issues.

Outstanding Risk: Because SacRT will be the contracting party for all of the design/construction phase agreements, there is a limited opportunity for the JPA to direct or control the work. SacRT's risk is lowest during the design and construction phase.

Operations Phase

FTA grants require that federally-assisted assets be used for project purposes until the expiration of their useful life. The FTA offers the following general guidelines as to useful life: a streetcar vehicle -- 25 years, a railroad system -- 50 years, and buildings -- 40 years.

Consequently, execution of the SSGA constitutes a long-term commitment to continued operation of the streetcar system, even if no future FTA funds will be used for operations.

At this juncture, the only dedicated operating funding source for the Project is the special tax approved by the Community Facilities District in the City of Sacramento. However, that tax will be levied only through Fiscal Year 2042/43, before the end of the useful life of the streetcar. All other funds for streetcar operations will come from farebox revenues, discretionary annual general fund appropriations by the Cities, and, potentially, other minor revenue sources such as advertising.

Risk: The Community Facilities District is deemed invalid, creating a \$2 million/year operating deficit in the proposed budget.

Mitigation in Agreements: Article 5 of the Subrecipient Agreement specifies that SacRT has no funding responsibility for operations and maintenance of the streetcar.

Outstanding Risk: To comply with grant requirements, SacRT may have to cash flow operation of the Project while pursuing remedies against the JPA/Cities.

Risk: Parties do not agree to a budget methodology in advance of commencement of operations.

Mitigation in Agreements: Section 1.1 of the Operations and Maintenance Agreement calls for SacRT to submit the proposed methodology for developing an annual budget and SacRT's proposed methodology for payment of the Services not later than 36 months prior to the planned start of revenue service, with the assumption that any issues can be resolved well before the commencement of revenue operations.

Outstanding Risk: The Operations and Maintenance Agreement calls for non-binding dispute resolution in the event the parties don't reach agreement on the Budget Methodology. If agreement is not reached through the non-binding procedures, court action might be required. During the pendency of a dispute and to comply with grants, SacRT may be required to cash flow operations until agreement is reached on budget methodology.

Risk: Parties agree on a budget methodology but JPA disagrees with cost inputs into the budget methodology.

Mitigation in Agreements: Section 1.1 of the Operations and Maintenance Agreement specifies that not later than 24 months prior to the planned commencement of revenue service, the Parties will complete development of a detailed agreement to define the roles, responsibilities and expectations regarding the operation and maintenance of the Project

and the annual budget for the first 12 months of service. The intent is for early resolution of potential cost issues.

Outstanding Risk: The Operations and Maintenance Agreement calls for non-binding dispute resolution in the event the parties don't reach agreement on the Initial Budget. If agreement is not reached through the non-binding procedures, court action might be required. During the pendency of a dispute and to comply with grants, SacRT may be required to cash flow operations until agreement is reached on budget methodology.

Risk: The parties reach agreement on the budget, but JPA/Cities do not make payments as required by the methodology/budget

Mitigation in Agreements: Section 1.2 of the Operations and Maintenance Agreement specifies that "if any invoice submitted by SacRT consistent with the adopted annual budget remains unpaid due to unavailability of funds, and not due to a legitimate dispute regarding costs, after compliance with the process set out in Section 5.1, SacRT may unilaterally reduce Services as needed to match the available funds and proceed toward a termination for default." If the service reduction would result in a breach of the SSGA, Article 5 of the Subrecipient Agreement specifies that SacRT has no funding obligation for the maintenance or operation of the streetcar and JPA would be responsible.

Outstanding Risk: To comply with grant requirements, SacRT may have to cash flow operation of the Project while pursuing remedies against the JPA/Cities. The budget methodology proposed by SacRT may contain a request for the establishment of an operating reserve to protect SacRT against the risk of budget shortfalls.

Risk: The Budget Methodology agreed to by the parties does not cover SacRT's actual costs to provide the services.

Mitigation in Agreements: The intent would be to propose an "actual cost" budget methodology that provides for reconciliation of the anticipated vs. actual costs, much as is currently used for the City of Folsom service agreement.

Outstanding Risk: The JPA may not agree to an actual cost budget methodology. In addition, even in an actual cost methodology, there is a time lag before the actual costs are recovered (typically after reconciliation is done at the end of a fiscal year).

Risk: There is a dispute between the parties regarding operation and maintenance of the streetcar.

Mitigation in Agreements: The intent of the agreements is to let the JPA, as the ultimate owner, make decisions with respect to the Project in all instances other than those involving grant compliance. Article 3 of the Subrecipient Agreement vests final authority in SacRT with respect to all compliance issues.

Outstanding Risk: So long as SacRT is the operator of the service, there is a reduced risk that JPA can take action with respect to operations that will violate grant compliance requirements.

Risk: There is a conflict in operations between SacRT and Streetcar on the shared portion of the alignment.

Mitigation in Agreements: It is anticipated that a Shared Track Agreement will be entered into prior to the start of streetcar revenue operations, which would be part of the detailed agreement to "define the roles, responsibilities and expectations regarding the operation

and maintenance of the Project” contemplated by Section 1.1 of the Operations and Maintenance Agreement.

Outstanding Risk: There is no mandate in the governance agreements for a Shared Track Agreement and execution of such an agreement is not a prerequisite to either: (1) SacRT’s Operation & Maintenance obligations; or (2) future termination of the Operations and Maintenance Agreement. If there is no Shared Track Agreement, there is a risk of SacRT compromising its own operations in order to fulfill its obligations to the FTA and JPA under the SSGA and Operations and Maintenance Agreement, respectively.

Risk: JPA determines that it no longer wants SacRT to operate the streetcar, eliminating a degree of SacRT control over continued compliance with the grant agreements.

Mitigation in Agreements: During the first 5 years of operations, affirmative vote of the JPA Board member who is also member of the SacRT Board is required to terminate the Operations and Maintenance Agreement. In addition, the Operations and Maintenance Agreement can’t be terminated unless SacRT determines that there is a suitable replacement operator and JPA enters into a grant monitoring agreement with SacRT.

Outstanding Risk: The replacement operator does not operate the service in compliance with FTA/State requirements and SacRT is required to pursue legal action to enforce grant compliance.

Risk: JPA/Cities decide to stop funding streetcar operations.

Mitigation in Agreements: Section 2 of the Subrecipient Agreement requires the JPA as subrecipient to comply with all grant obligations, including those related to the FTA’s retained interest in Project property. In addition, the Joint Exercise of Powers Agreement provides that JPA must comply with all federal requirements in disposing of any FTA-assisted assets, including repayment to FTA of the federal share, if required. Article 11, Mutual Indemnity, requires the JPA to indemnify and hold harmless SacRT for any claims arising out of a breach of the Subrecipient Agreement by Cities/JPA

Outstanding Risk: SacRT is potentially in breach of the SSGA and subject to consequences from FTA while it pursues action to compel JPA to comply with Subrecipient Agreement.

Environmental Assessment/ Initial Study and Proposed Mitigated Negative Declaration

Downtown Riverfront Streetcar Project

May 2015

Prepared for:
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and

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SUPPORTING TECHNICAL STUDIES (UNDER SEPARATE COVER)

Fehr & Peers, 2014. Downtown/Riverfront Streetcar Transportation Assessment. June 2014.

JRP Historical Consulting, 2015. Built Environment Resources Report, Downtown/Riverfront Streetcar Project. March 2015.

URS Corporation (URS), 2014a. Biological Resources Technical Memorandum for the Downtown/Riverfront Streetcar Project, Sacramento County/Yolo County, California. November 2014.

URS, 2015. Archaeological Resources Assessment for the Downtown/Riverfront Streetcar Project, Sacramento and Yolo Counties, California. Draft Technical Report. March 2015.

URS, 2014b. Downtown/Riverfront Environmental Justice Technical Memorandum. November 2014.

URS, 2014c. Downtown/Riverfront Transit Study, Air Quality, and Greenhouse Gases Technical Memorandum. November 2014.

SACOG, 2015. Greenhouse Gas Emissions Benefits of Streetcar, Technical Memorandum, April 29, 2015.



WIA (Wilson, Ihrig & Associates, Inc.), 2014. Sacramento Downtown/Riverfront Streetcar Noise and Vibration Impact Assessment Draft Technical Report. November 2014.

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ADA	Americans with Disabilities Act
APE	Area of Potential Effects
AST	aboveground storage tank
bgs	below ground surface
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBD	Central Business District
CCAA	California Clean Air Act
CCCP	Central City Community Plan
CCVFPB	California Central Valley Flood Protection Board
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHRIS	California Historical Resources Information System
CNDDB	California Natural Diversity Database
CNG	compressed natural gas
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	equivalent carbon dioxide
Corps	U.S. Army Corps of Engineers
CPUC	California Public Utilities Commission
CRPR	California Rare Plant Rank
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CVFPP	Central Valley Flood Protection Plan
CVPA	Capitol View Protection Act



CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DBH	diameter at breast height
DPR	Department of Parks and Recreation
DTSC	California Department of Toxic Substances Control
EA	Environmental Assessment
EB	eastbound
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report
ERC	Education, Recreation, and Culture
ESA	Federal Endangered Species Act
ESC	Entertainment and Sports Center
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	Geological Information System
GPR	Ground-Penetrating Radar
GPS	Global Positioning System
HAP	hazardous air pollutant
HCD	California Department of Housing and Community Development
HCR	Historic and Cultural Resources
HHS	U.S. Department of Health and Human Services
HWCC	Hazardous Waste Control Law
HWCL	California Hazardous Waste Control Law
I-5	Interstate 5
I-80	Interstate 80
IS	Initial Study
kWh	kilowatts per hour
LID	Low-Impact Development
LOS	Level of Service
LPA	Locally Preferred Alternative
LRT	light-rail transit
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
µg/m ³	micrograms per cubic meter
MLD	Most Likely Descendent
MND	Mitigated Negative Declaration



MOU	Memorandum of Understanding
mph	miles per hour
MPO	Metropolitan Planning Organization
MSF	maintenance and storage facility
msl	mean sea level
MTIP	Metropolitan Transportation Improvement Program
MTP	Metropolitan Transportation Plan
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy 2035, approved in 2012
NAAQS	National Ambient Air Quality Standard
NAHC	National American Heritage Commission
NEHRPA	National Earthquake Hazards Reduction Program Act
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NHS	U.S. Department of Health and Human Services
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NO _x	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O ₃	ozone
OCS	overhead catenary system
OHWM	ordinary high water mark
PCBs	polychlorinated biphenyls
PG&E	Pacific Gas and Electric Company
PM ₁₀	particulate matter equal to or less than 10 micrometers in diameter
PM _{2.5}	particulate matter equal to or less than 2.5 micrometers in diameter
POAQC	Project of Air Quality Concern
ppm	parts per million
PRC	Public Resources Code
Project	Downtown/Riverfront Streetcar Project
PSC	Policy Steering Committee
RCRA	Resource Conservation and Recovery Act
RMX	Residential Mixed Use
ROG	reactive organic gases
RSWS	Raised Streets Hollow Sidewalks
RT	Sacramento Regional Transit District
RWQCB	Regional Water Quality Control Board
SACOG	Sacramento Area Council of Governments
SCEMD	Sacramento County Environmental Management Department
SCS	Sustainable Communities Strategy



SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SITF	Sacramento Intermodal Transportation Facility
SLIC	Spills, Leaks, Investigations and Cleanup
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SO ₂	sulfur dioxide
SO _x	sulfur oxide
SRCSD	Sacramento Regional County Sanitation District
SRHCR	Sacramento Register of Historic and Cultural Resources
S RTP	Short-Range Transit plan
SRWWTP	Sacramento Regional Wastewater Treatment Plant
SVAB	Sacramento Valley Air Basin
SVP	Society of Vertebrate Paleontology
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TAZ	traffic analysis zone
TPSS	traction power substation
UDP	Unanticipated Discovery Plan
U.S. 50	U.S. Highway 50
U.S. EPA	U.S. Environmental Protection Agency
UPRR	Union Pacific Railroad
USC	United States Code
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UWMP	Urban Water Management Plan
V/C	volume-to-capacity
VOC	volatile organic compound
WB	westbound
WIA	Wilson, Ihrig & Associates, Inc.
WSAFCA	West Sacramento Area Flood Control Agency
YCTD	Yolo County Transportation District
YSAQMD	Yolo-Solano Air Quality Management District



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EXECUTIVE SUMMARY

The Federal Transit Administration (FTA) and the Sacramento Area Council of Governments (SACOG) have prepared this joint Environmental Assessment (EA)/Initial Study (IS) to address the environmental effects of the proposed Downtown/Riverfront Streetcar Project (Project). These agencies have prepared this EA/IS in compliance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code Section 4321 et seq.; the Council on Environmental Quality (CEQ) regulations for implementing NEPA; the California Environmental Quality Act (CEQA) of 1970, Public Resources Code, Section 21000 et seq., as amended; the Guidelines for Implementation of CEQA, Title 14, California Code of Regulations, Section 15000 et seq.; FTA guidelines; and applicable law. For the purposes of this EA/IS, FTA is serving as the lead agency for NEPA, and SACOG is the lead agency for CEQA. Other public agencies that have discretionary approval power over the Project—and are, therefore, responsible agencies under CEQA—are the cities of West Sacramento and Sacramento, Sacramento Regional Transit District (RT), Yolo County Transportation District (YCTD), and the California Department of Transportation (Caltrans).

Background

Sacramento neighborhoods were once connected by small electric transit vehicles. These were not long commuter trains, but rather single-unit trolleys or streetcars. Operating between 1870 and 1947, the streetcar system was located in the Central City and transported people between their homes and their workplaces. The planning process for restoring streetcar service to the downtown core area of Sacramento has been ongoing for the past two decades. Key planning studies and alternatives considered that have been taken over the last 20 years to address transit needs of the region and the Downtown area specifically include: the Downtown Sacramento Historic Streetcar Study, prepared in 1995; the Phase 1 Summary Report Downtown/Riverfront Streetcar Study prepared in 2007; and, the Sacramento Streetcar Systems Plan, prepared in 2012. These plans are further discussed in Section 3.4 of this EA/IS.

In 2006, the City of Sacramento, the City of West Sacramento, RT, and the YCTD began working together under a Memorandum of Understanding (MOU) to study the feasibility of reintroducing a streetcar line to connect their cities' downtowns and riverfront areas. As part of Phase 1 of this effort, an initial alignment was developed during a week-long design charrette in October 2006. It reflected the results of project tours, a review of preliminary route opportunities, public input, Policy Steering Committee (PSC) and Technical Advisory Committee involvement, Design Team guidance, and adherence to design principles and selection criteria established for the Project. The Design Team and the Technical Advisory Committee considered a number of variations in the route, and some of those variations/improvements in the alignment were incorporated into a resulting refined alignment. In May 2007, the City of Sacramento City Council adopted a Resolution (2007 310) approving the alignment proposed in the feasibility study and authorizing the City Manager to direct staff to continue to work with its MOU partners through the completion of the environmental review and the preliminary design phase of the Project. The Project was evaluated pursuant to



CEQA and in 2009 a Final Environmental Impact Report (EIR) was certified by the City of West Sacramento, acting as lead agency.

In an effort to further refine the alignment within the City of Sacramento and to address funding concerns, the City of Sacramento embarked on the Sacramento Streetcar Planning Study in early 2011. The Sacramento Streetcar Planning Study was accepted by the Sacramento City Council in February 2012. This study established the Locally Preferred Alternative (LPA) which is the Project (i.e., Action Alternative) addressed in this EA/IS. The Project also includes preliminary options for locating a maintenance and storage facility (MSF) and the traction power substations (TPSS) necessary for streetcar operation.

Most of the alignment and study area evaluated in the 2009 Final EIR remain substantially unchanged, and the environmental setting data and impact analysis from the 2009 EIR continue to be pertinent for use in the preparation of this EA/IS. Therefore, the 2009 Final EIR (Downtown/Riverfront Streetcar Study Final EIR, April 2009, State Clearinghouse number 2007082123) is hereby incorporated by reference. The analysis in that EIR and this EA/IS relies on earlier studies that include:

- Downtown/Riverfront Streetcar Phase 1 Summary Report (City of West Sacramento et al, May 2007)
- Sacramento Streetcar System Plan Report (City of Sacramento, February 2012)
- Downtown/Riverfront Streetcar Economic Benefits Analysis (Strategic Economics, October 2013)
- Downtown/Riverfront Streetcar Maintenance and Storage Facility Framework, Draft (URS, November 2013)
- Downtown/Riverfront Streetcar Maintenance and Storage Facility Framework – Additional Information, Draft (URS, December 2013)
- Downtown/Riverfront Streetcar Vehicle Technology Survey Memo (HDR, December 2013)

All of these reports are hereby incorporated by reference and are accessible online at:
<http://www.riverfrontstreetcar.com/project-documents/>.

Project Description

SACOG, in partnership with the City of Sacramento, the City of West Sacramento, YCTD, and RT, have undertaken advanced planning, environmental, and engineering activities for the reintroduction of the streetcar to connect the cities of West Sacramento and Sacramento and their shared riverfront. It is anticipated that the development plans and growth projections for West Sacramento's redevelopment areas and Downtown Sacramento will generate greater travel demand for local mobility and roadway capacity than is currently available, especially given the projected traffic congestion scenarios at the Tower Bridge. The purpose of the Project is to improve transit service and local circulation by connecting West Sacramento and Downtown Sacramento



with an alternative (non-auto) mode, and supporting existing and future development in the City of West Sacramento and Downtown Sacramento.

The 3.3-mile streetcar alignment would extend from the West Sacramento Civic Center to the Midtown entertainment and retail district in Sacramento. Mixed-use neighborhoods in the Washington Neighborhood (designated as a Transit Priority Area in the Metropolitan Transportation Plan) and the Railyards Specific Plan area have been planned around a future high-quality transit system intended to serve these new and emerging employment and residential districts. Several key destinations in these neighborhoods would be connected by the Project, including Raley Field, home of the Sacramento Rivercats AAA baseball team; Old Sacramento; Sacramento Valley Station in the Railyards Specific Plan area (the largest urban infill project in the country and the planned terminus of the California High-Speed Rail system); Downtown Plaza Mall (future site of the Sacramento Entertainment and Sports Center [ESC]); the historic Memorial Auditorium; the Sacramento Community Center Theater; the California State Capitol building; and the Sacramento Convention Center.

The alignment also includes service to the Bridge District in West Sacramento along Riverfront Street. With this service, West Sacramento would be served with streetcars alternating streetcars split between terminal stops at the West Sacramento Civic Center and in the Bridge District. Also included is the relocation of existing light rail service from K Street to H Street between 7th and 12th streets in Downtown Sacramento. Streetcar service along Riverfront Street and the relocation of LRT to H Street will be constructed within five years of opening day. Note that this EA/IS evaluates the potential effects from the relocation of LRT to H Street.

The alignment for the proposed streetcar is along existing city streets with the exception of a small section connecting the project with the Sacramento Intermodal Transportation Facility. The City of Sacramento has already adopted plans for the existing street (I Street) to extend to the Sacramento Intermodal Transportation Facility. New track would be laid for the entire alignment within West Sacramento and across Tower Bridge. East of Tower Bridge, new track would be installed in the road bed on Capitol Mall to 3rd Street and north on 3rd Street to the Sacramento Intermodal Transportation Facility where it would connect with existing LRT tracks that run east onto H Street. Short sections of new track would also be necessary on 7th Street from just north of J Street to K Street, and on 12th Street between K and L streets. The full lengths of J, L, and 19th streets would require new track. New track would also be placed on H Street between 8th and 12th streets to accommodate the relocation of LRT from K Street.

The proposed project includes the installation of 12 westbound and 13 eastbound stations. New station platforms would be concrete slabs designed with a berthing area 60 to 65 feet in length, and a boarding area 40 to 45 feet in length with a height of about 8 inches. These slabs would be constructed within the sidewalk and/or roadbed and would not require removal of any existing granite curbs or street trees. Station elements may include such amenities as a canopy mounted on structural supports, supplemental lighting, fare machines, schedule and patron information rack,



bench, lean rail, trash receptacle, sign with stop name, and an Americans with Disabilities Act (ADA) pedestrian warning strip running the length of the boarding area.

The traction power facilities (support poles, catenary poles, and substations) would be located within the public right-of-way. Substations would convert electrical current to the proper voltage for streetcars and occupy approximately 375 square feet of space. For reliability purposes, the streetcar line will be powered by two additional substations in West Sacramento. Support and catenary poles of the Overhead Contact System (OCS) will be spaced along the streetcar alignment and will be similar to the system that is currently in place today for the light rail system in Downtown Sacramento. The OCS system will be designed during the final design phase of the project but maximum span between OCS poles is typically 120 feet; existing utility and LRT poles, and suitable buildings (i.e., not historic properties) will be used whenever possible to attach wires.

There are two potential sites considered for a maintenance and storage facility (MSF), one in Sacramento and the other in West Sacramento. The MSF will accommodate daily and routine vehicle inspections, interior/exterior cleaning of the streetcars, preventive (scheduled) maintenance, unscheduled maintenance, and component change-out. The potential MSF in Sacramento would be constructed beneath the Business 80/50 elevated freeway viaduct in the area bound by X Street, W Street, 19th Street, and RT's South Line LRT tracks, on land currently owned by the California Department of Transportation (Caltrans) and leased to the City of Sacramento for parking. The potential MSF in West Sacramento would be constructed beneath the Business 80/50 freeway (Pioneer Bridge) near South River Road and Mill Street/Riverfront Street in Caltrans right-of-way.

Public Involvement

The Downtown/Riverfront Streetcar Project was presented to various agencies at the federal, State, and regional/local levels as part of the Environmental Impact Report (EIR) for the Downtown/Riverfront Streetcar Study, which was certified by the City of West Sacramento in 2009. As part of this process, a Notice of Preparation was circulated to the public, and two public scoping meetings were held in September 2007. A Draft EIR was circulated to the public, and two public hearings on the Draft EIR were held in September 2008. All public concerns were addressed in the Final EIR.

Subsequent to the completion of the 2009 EIR, presentations, community meetings, and information-gathering sessions were conducted to further define the project. Information was shared on the progress of the conceptual engineering, how the streetcar would operate, the general construction process and how construction effects could be minimized, and the environmental review process. Notice was provided via press releases, websites, emails, and direct contact with the public through the Business Advisory Committee and the Citizen's Advisory Committee. The outreach process provided information on the transit modes and alignments under review and gathered feedback that was used to gain input on financing options and to discuss related community issues and concerns, as well as to inform the selection of a revised LPA in 2012. As part



of this process, all information was presented in reader-friendly formats, using simple text and clear graphics to illustrate concepts and project details.

Since 2011, three additional public meetings have been held on the Downtown/Riverfront Streetcar Project. The first occurred on November 10, 2011 at the Tsakopoulos Library Galleria for the purposes of receiving community input on the purpose and need and network design of the Project. Two meetings were held to receive community input on the Project route on September 18, 2013, at the SACOG office and on September 19, 2013, at the West Sacramento Civic Center.

In addition, City staff presented the streetcar project to the Alkali and Mansion Flats Historic Neighborhood Association on July 14, 2011 and again on October 10, 2013.

CEQA and NEPA Process

This joint EA/IS has been prepared for the Project to minimize duplicative environmental reviews. The purpose of the EA/IS is to determine whether or not the updated Project may have a significant effect on the environment, thus allowing decision makers to make informed assessments of the environmental impacts of the Project on resources under their jurisdiction, or to make discretionary decisions regarding the Project. Based on information contained in this EA and any comments submitted, FTA will determine whether environmental effects are sufficiently substantial to warrant preparation of an Environmental Impact Statement under NEPA. If the FTA decides that there are no adverse effects, it will prepare and sign a Finding of No Significant Impact (FONSI). The determination will be made available to the general public and all who commented on this EA. The IS demonstrates that all potential impacts of the Project may be reduced to a less-than-significant level with the incorporation of avoidance, minimization, and mitigation measures, and—in accordance with CEQA—SACOG has prepared a proposed Mitigated Negative Declaration (MND) for review and consideration by interested agencies and the public. The IS Checklist and proposed MND are included in Appendix A of this document.

This EA/IS is being distributed for a 30 day public review and comment period pursuant to NEPA and Section 106 of the National Historic Preservation Act (NHPA). A notice of availability of the EA/IS has been made through notices published in local newspapers of general circulation in the Project area. FTA proposes a finding of no adverse effect to historic properties pursuant to 36 CFR 800.5(b) that is subject to concurrence with the SHPO and review of this environmental document. Appendix D of the EA/IS provides documentation of consultation efforts undertaken to date. The EA/IS is also being circulated for comment according to CEQA Statute and Guidelines. Following close of the public review and comment period, FTA and SACOG will thoroughly consider all comments submitted. Based on information contained in this EA/IS and comments submitted, the lead agencies will determine whether environmental effects are sufficiently substantial to warrant further analysis. If no adverse effects are found, FTA will prepare and sign a FONSI and SACOG will adopt the proposed MND included in Appendix A of this document. A Notice of Determination will be made available to the general public and all who commented on this EA/IS.



A number of technical reports and/or memoranda have been prepared, and support the EA/IS analysis:

- Downtown/Riverfront Streetcar Transportation Assessment (Fehr & Peers, 2014);
- Built Environment Resources Report, Downtown/Riverfront Streetcar Project (JRP Historical Consulting, 2015);
- Biological Resources Technical Memorandum for the Downtown/Riverfront Streetcar Project, Sacramento County/Yolo County, California (URS, 2014a);
- Archaeological Resources Assessment for the Downtown/Riverfront Streetcar Project, Sacramento and Yolo Counties, California. Draft Technical Report (URS, 2015);
- Downtown/Riverfront Environmental Justice Technical Memorandum (URS, 2014b);
- Downtown/Riverfront Transit Study, Air Quality, and Greenhouse Gases Technical Memorandum (URS, 2014c);
- Greenhouse Gas Emissions Benefits of Streetcar, Technical Memorandum, (SACOG 2015); and
- Sacramento Downtown/Riverfront Streetcar Noise and Vibration Impact Assessment Draft Technical Report (WIA, 2014).

These technical studies are hereby incorporated by reference. All but the Archaeological Resources Assessment are available for review at <http://www.riverfrontstreetcar.com/project-documents/>.

Environmental Effects

The EA/IS analyses potential environmental and socioeconomic effects of the both an Action Alternative (Project) and the No Action Alternative. The No Action Alternative includes the existing transportation system and all projects in SACOG's Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) that are programmed to serve the study area and expected to be completed by 2017, the anticipated opening year for the proposed Streetcar Project. The No Action Alternative represents future conditions in the study area if the Project were not built.

Chapter 4 discusses the environmental setting in the study area, the potential effects of the Project Alternatives, and avoidance, minimization, and mitigation measures. Environmental factors potentially affected by the Project and analyzed in this EA/IS include:

- Aesthetics and visual resources
- air quality and greenhouse gasses
- historic, architectural, archaeological and paleontological resources
- geology and soils
- energy and public utilities
- hazards and hazardous materials
- hydrology and water quality
- land use and planning
- noise and vibration
- parks and recreation
- socioeconomics and regional growth
- transportation
- environmental justice

Construction of the alignment, stations, street improvements/repairs, and traction power facilities would occur in the existing public right-of-way. Construction activities would occur over a



relatively short time because the Project would be constructed in three-block segments that would take approximately 3 weeks each. Temporary effects may occur from construction equipment air emissions, temporary detours, and noise and vibration. However, these temporary effects would be minimized due to compliance with all construction-related regulations. Other effects include:

- The Project could result in effects to biological resources, including nesting raptors and other protected birds, roosting bats, and street trees. Measures have been identified to minimize harm;
- Downtown Sacramento is a highly sensitive area for historic and archaeological resources with a number of historic properties located within or adjacent to the Project's Area of Potential Effects (APE). However, the Project has been designed to avoid adverse effects to historic properties and measures to minimize harm have been included to address inadvertent discovery during construction;
- Hazards and hazardous materials effects could occur due to routine use of hazardous materials during operation, potential contamination from neighboring sites, and subsurface disturbance during construction. Measures to minimize harm include Phase I and Phase II investigations.
- Operational noise effects would result from an increase in noise levels from streetcar operations and ancillary facilities that exceed the threshold for a severe impact as defined by the FTA Guidance Manual. Measures to minimize harm have been identified to reduce noise effects. Construction noise would be reduced through noise limiting construction techniques.
- Vibration resulting from streetcar operation and construction would exceed FTA Groundborne Vibration Impact Criteria at sensitive receptors. Measures to minimize harm include vibration control strategies and monitoring.
- Construction-related transportation effects would be minimized through temporary bicycle detours, implementation of a Traffic and Parking Management Plan, and coordination with the US Coast Guard (USCG) regarding construction closures of the Tower Bridge lift.

Table ES-1 provides a summary of the environmental effects associated the Project and the No Action Alternative. The CEQA Initial Study Checklist and Proposed Negative Declaration, included as Appendix A of this EA/IS, provide a determination of Project impacts pursuant to CEQA.



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
Aesthetics and Visual Resources (see EA/IS Section 4.1 for more information)		
Scenic Vista, Scenic Resources and/or Visual Quality During Operation	No adverse effect	No adverse effect
Light and glare	No adverse effect	No adverse effect
Views During Construction	No adverse effect	No adverse effect
Air Quality and Global Climate Change (see EA/IS Section 4.2 for more information)		
Streetcar Operational Emissions	No adverse effect	No adverse effect
Maintenance and Storage Operational Emissions	No adverse effect	No adverse effect
Transportation Conformity	No adverse effect	No adverse effect
Hazardous Air Pollutants/Toxic Air Contaminants	No adverse effect	No adverse effect
Odors	No adverse effect	No adverse effect
Operational Greenhouse Gas Emissions	No adverse effect	No adverse effect
Construction Emissions	No adverse effect	No adverse effect
Construction Greenhouse Gas Emissions	No adverse effect	No adverse effect
Biological Resources (see EA/IS Section 4.3 for more information)		
Nesting Raptors and other MBTA-Protected Birds	No adverse effect	<p>No adverse effect. The following minimization measures will apply:</p> <p>Mitigation Measure Bio-1: Nesting Birds To avoid direct impacts to nesting birds during construction, including raptors such as Swainson’s hawk and migratory birds, the following impact avoidance and minimization measures shall be implemented.</p> <p>Conduct site preparation, such as vegetation removal, and initiate construction, during the non-nesting season (generally September 1 through February 15). If work is initiated during the nesting season (generally February 15 through August 31), then a qualified biologist shall conduct a pre-construction survey within 2 weeks prior to construction to determine if active nests occur in the</p>



Table ES-1
Alternatives – NEPA Summary of Effects

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>project area or could be affected in the vicinity. If at any time during construction there is a delay of activities of at least 2 weeks during nesting season, then surveys shall be conducted again. The surveys must cover the construction area footprint, and out a distance of at least 250 feet for passerines and 500 feet for raptors. Surveys for Swainson’s hawk shall follow the methods described in the Swainson’s hawk Technical Advisory Committee Guidelines. If no active nests are identified, then no impacts would be expected, and no further measures are required.</p> <p>If active bird nests are identified, one or more of the following additional measures are required:</p> <ul style="list-style-type: none"> • Construction in the vicinity of the nest must be delayed until a qualified biologist has determined that the nest is no longer active, or has been abandoned, or young have fledged. • If construction cannot be delayed, then a qualified biologist with stop work authority shall establish a non-disturbance buffer with either modified or no ground-disturbing work, and monitor the nest site to determine if nesting behavior is being disrupted. CDFW and USFWS shall be consulted to reach concurrence on the suitability of the non-disturbance buffer, considering line of site, distance, species, and type of activities proposed near the nest. If nesting behavior is disrupted, then work activities shall be redirected to other areas and/or modified in such a way that no further disruption is observed. Monitoring, if needed, shall occur at least twice per week during construction until the nest is no longer active. <p>Mitigation Measure Bio-2: Bird nests on structures Swallow nests and nests of other species, such as martins, that could be affected by construction shall be removed prior to new ground disturbance during the non-nesting season. Swallows are persistent, and continued monitoring and maintenance is required to ensure that nests that are initiated are removed. Nest removal is commonly accomplished mechanically with a jet of high pressure water, such as with a fire hose. As the birds attempt to build new nests, they shall be removed as needed, typically weekly or even daily, before they are completed. Alternatively, exclusion devices could be installed on structures to prevent new nests from being established during construction. Pre-emptive nest removal, prevention of new nesting, and ongoing monitoring and maintenance during nesting season, would avoid disruption of active nests on structures during construction.</p>



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
Roosting Bats	No adverse effect	<p>No adverse effect. The following minimization measure will apply: Mitigation Measure BIO 3: Roosting Bats The most suitable habitat for pallid bat in the study area is around and inside man-made structures. Preconstruction bat surveys would be conducted to inspect the undersides of the Tower Bridge and the Business Interstate 80 (I 80) overpass for roosting bats. A qualified biologist shall inspect structures and trees prior to removal or construction to determine if bats are roosting. If no roosting bats are found, no further mitigation would be necessary. If bats are present, the biologist shall direct the installation of one-way exclusion devices to allow bats to vacate the structure or tree prior to construction. Exclusionary devices, such as plastic sheeting, or plastic or wire mesh, can be used to allow bats to exit but not reenter any occupied roosts. Expanding foam and plywood sheets can be used to prevent bats from re-entering unoccupied roosts during construction. Exclusion devices shall be inspected, monitored, and maintained on structures during construction. Excluding bats from project trees and structures would avoid construction related impacts to this species.</p>
Street Trees	No adverse effect	<p>No adverse effect. The following minimization measure will apply: Mitigation Measure BIO 4: Replace any removed tree per City of Sacramento and City of West Sacramento requirements. At this time, there are no tree removals anticipated within the City of Sacramento. In West Sacramento, 15 recently planted London plane trees in the median of West Capitol Ave in front of West Sacramento City Hall will likely be removed. There is also one landmark-sized liquid amber tree in front of City Hall that also may be affected. Should trees need to be removed for construction, the Project sponsor will follow the applicable conditions of the City of Sacramento or City of West Sacramento requirements for replacing removed trees. The ordinances require a permit for tree removal or impacts to street trees, and, either replanting and maintaining replacement trees at an appropriate ratio specified by the cities under the ordinance, or, the payment of an in-lieu fee to the cities. The in-lieu fees fund the planting and maintaining of street trees in the cities, and therefore compensate each jurisdiction for in-kind replacement.</p>
Historic Architectural, Archaeological, and Paleontological Resources (see EA/IS Section 4.4 for more information)		
Historic Architectural Resources	No adverse effect	No adverse effect
Archaeological Resources During Operation	No adverse effect	No adverse effect



Table ES-1
Alternatives – NEPA Summary of Effects

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
Subsurface Historic and Archaeological Resources During Construction	No adverse effect	<p>No adverse effect. Applicable minimization and mitigation measures include:</p> <p>Mitigation Measure CR-1: Pre-construction resource identification. Additional identification efforts will consist of further archival research and subsurface exploration to avoid impacts to historic properties. As the Project design is advanced, additional archival research will be conducted to help identify specific locations in the APE where contributing elements of the RSHS District may exist. This research will target those areas of the design that coincide with known or likely below-grade hollow sidewalks or raised street structures. Preconstruction subsurface explorations will be conducted where construction is anticipated to approach the vertical limits of the APE in areas sensitive for cultural resources (both pre-historic and historic). The Project proponent will also coordinate with the City of Sacramento and property owners to obtain permission to access any remaining hollow sidewalk segments that are identified or suspected to exist in areas that could be affected by construction, particularly installation of OCS poles. If access is obtained and hollow sidewalks are present, the potentially affected hollow sidewalk segment(s) will be field recorded and the data collected will be added to the existing RSHS District Department of Parks and Recreation (DPR) 523 recordation forms (Downey, 2010), following the protocol described in the Unanticipated Discovery Plan (UDP) for the Project described below. This recordation will capture data about the hollow sidewalks/raised streets that are not readily available, and will improve access to information about these historic resources. If access cannot be obtained, the Project proponent will use ground-penetrating radar or other means to confirm the presence or absence of hollow sidewalk segments in the construction footprint. Should hollow sidewalks be identified in areas of potential OCS pole location, avoidance options will be executed. These options include modifying the proposed OCS pole locations, modifying track and system elements that are causing a conflict, modifying the pole foundation type, using a building attachment, or attaching span or pull-off wires to a backbone wire between two other poles or structures. The attachment of wires to adjacent buildings may require modification of the APE to accommodate those buildings, which would also necessitate re-consultation with the SHPO. No structures that are historic properties would be selected for wire attachment. Furthermore, if research or field investigation confirms the presence of historic or prehistoric archaeological resources that are eligible for the NRHP, and that would be in conflict with Project construction, the Project proponent will revisit the design to avoid adverse effects to historic properties.</p> <p>Mitigation Measure CR-2: Monitoring.</p>



Table ES-1
Alternatives – NEPA Summary of Effects

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>All ground-disturbing activities in Downtown Sacramento (not including the Sacramento MSF option) will be monitored by a qualified archaeologist and, when appropriate, a Native American representative of any tribe that has been determined a consulting party to the Project. If any prehistoric or historic-era features, or human remains, are exposed during construction, work will stop or be redirected to allow for recordation, including photography, measurements, and Global Positioning System/Geological Information System (GPS/GIS) data. Field recordation data will be added to the existing P-34-2358/RSHS District DPR 523 recordation form (Downey, 2010; Tremaine, 2008).</p> <p>Mitigation Measure CR-3: Discovery.</p> <p>Inadvertent discovery of cultural resources. If cultural resources are encountered at a location beyond the Downtown Sacramento area, or in locations not identified by research or other investigations during the pre-construction period, work will stop or be redirected within 50 feet of the finds to allow for recordation, including photography, measurements, and GPS/GIS data in accordance with the UDP.</p> <p>Inadvertent discovery of hollow sidewalk. If hollow sidewalk features or raised street structures are encountered in locations not identified by research or other investigations during the pre-construction period, work will stop in order to allow recordation. The field recordation data collected (e.g., photography, field measurements, and GPS/GIS data) will be added to the existing RSHS District DPR 523 (Downey, 2010) recordation form. This recordation will follow the protocol for treating cultural resources identified as inadvertent discoveries described in the UDP for the Project. The UDP will describe treatment for both prehistoric and below-grade historic-era resources, including all elements that contribute to the RSHS District.</p> <p>Inadvertent discovery of human remains. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. If human remains are encountered, work should halt within 100 feet of the remains and, as required by law, the Sacramento or Yolo County Coroner should be notified immediately. If human remains are of Native American origin, the Coroner must notify the NAHC within 24 hours of that determination. Pursuant to California Public Resources Code 5097.98, the NAHC, in turn, will immediately contact an individual who is most likely descended from the remains (aka: a Most Likely Descendent [MLD]). The MLD has 48 hours to inspect the site and recommend treatment of the remains. The landowner is obligated to work with the MLD in good faith to find a respectful resolution to the situation and entertain</p>



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>all reasonable options regarding the descendants' preferences for treatment.</p> <p>Mitigation Measure CR-4: Prepare an UDP.</p> <p>An UDP will be developed prior to the initiation of construction. The UDP will provide detailed descriptions of protection and mitigation measures for archaeological resources in the APE. The UDP will include guidelines for avoidance of historic properties and establishment of environmentally sensitive areas; data recovery guidelines for those known historic properties/historical resources that cannot be avoided by Project design; protocols for treating cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as inadvertent discoveries, including human remains; monitoring during construction; responsibilities and coordination with Native American tribes and individuals; and curation of recovered materials. The UDP will address treatment for both prehistoric resources, including human remains, and historic-era resources, including all elements that contribute to P-34-2358/RSHS District. All activities outlined in the UDP will be conducted under the direction of individuals who meet the professional qualification standards in Archaeology and Historic Preservation, Secretary of Interior's Standards and Guideline (Federal Register, Volume 48, No. 190, September 29, 1983).</p> <p>As Project design progresses, all effort will be made to avoid known historic properties in the APE. Resources avoided by Project design will be identified as environmentally sensitive areas to ensure that these locations are not inadvertently encroached upon during construction. Newly identified cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as inadvertent discoveries during construction will require testing to assess their research potential and eligibility for the listing in the NRHP and the CRHR. Archaeological testing will proceed with guidance from the National Park Service Guidelines for Evaluating and Registering Archeological Properties (National Park Service, 2000). Evaluation efforts will involve archival research and archaeological fieldwork. Fieldwork methodologies will be tailored to the location, circumstance, and nature of the find. It therefore may be appropriate to use mechanical trenching techniques, controlled excavation units, or block exposures, shovel sampling explorations, or any combination of the above. All newly identified resources will be thoroughly mapped, photographed, located through Global Positioning System (GPS), and recorded on DPR 523 forms. If resources are found to be eligible to the NRHP or the CRHR, and they cannot be avoided by construction, data recovery will be required. Data recovery will conform to the</p>



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>principles in Parts I and II of Treatment of Archaeological Properties: A Handbook (Advisory Council on Historic Preservation, 1980), the “Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation” (Federal Register, Vol. 48, September 29, 1983, pp. 44716–44742), and appropriate SHPO guidelines. Data recovery may involve archaeological excavation, or for resources such as hollow sidewalks, detailed recordation on DPR 523 forms.</p> <p>All construction will immediately cease within 100 feet in all directions of the discovery of human remains, which will then be treated in accordance with the requirements of Section 7050.5 of the California State Health and Human Safety Code. If the County Coroner determines that the remains are of Native American origin, the coroner will notify the California NAHC, and the provisions of Section 5097.98 of the California Public Resources Code will be followed. All subsurface construction related to the Project will be monitored by a professional archaeologist, and as appropriate, by a Native American representative. Monitors will be responsible for working with construction personnel and identifying cultural resources that may be uncovered during ground disturbance. If cultural materials are unearthed, the monitor will have the authority to immediately halt work to allow the onsite archaeological monitor to inspect and asses the materials, determine whether additional analysis of the find is warranted, or whether construction can proceed without further analysis. Should additional analysis be required, testing protocols will be developed.</p> <p>FTA and the Project proponent will continually consult with Native American tribes about the treatment of resources of ancestral significance throughout Project development and construction. The UDP will define the responsibilities of the Native American tribes or individuals who are consulting parties to the Project. Native American monitors will have the opportunity to be present during testing and data recovery excavations on prehistoric and multicomponent sites, and during all construction activities in areas determined sensitive for the presence of subsurface prehistoric or ethnographic resources. It is recommended that Native American monitors meet the minimum qualifications in the guidelines provided by the NAHC (2012). Participating tribes will ultimately be responsible for identifying the individuals who will represent their tribe as monitors. The Native American monitors are expected to report to their tribal government or designee to keep them informed of Project activities. The Native American monitors and archaeological monitors will work together as a team to observe ground-disturbing</p>



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>activities.</p> <p>All cultural materials and associated records resulting from identification, evaluation, and treatment of historic properties conducted under the UDP shall be properly maintained in accordance with 36 CFR Part 79, and the provisions under 43 CFR Part 10 if the archaeological materials are determined to be of Native American origin, and the State of California’s Guidelines for the Curation of Archeological Collections (State Historical Resources Commission, Department of Parks and Recreation, 1993). The Project proponent will consult with Native American tribes and individuals affiliated with the cultural materials on repatriation, as appropriate. If the Project proponent and consulting tribes cannot agree, the FTA will ensure that all cultural materials discovered on State lands are curated.</p>
Paleontological Resources	No adverse effect	<p>No adverse effect. The following minimization measure will apply: Mitigation Measure CR-5: Train construction personnel on paleontological resources, and cease work in event of paleontological discovery.</p> <p>The Project applicant shall retain a qualified paleontologist to carry out all actions related to paleontological resources. Prior to the start of any ground-disturbing activities, the qualified paleontologist shall train all construction personnel working on the Project. The training shall include an overview of potential paleontological resources that could be encountered during ground-disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the qualified paleontologist for further evaluation and action, as appropriate. The training should also include an overview of penalties for unauthorized artifact collecting or intentional disturbance of paleontological resources.</p> <p>If any items of paleontological interest are discovered, the contractor shall be required to immediately suspend all work activities within 100 feet of the discovery site and immediately contact the lead agency. Work shall not be resumed until authorization is received from the lead agency and any recommendations received from a qualified paleontologist are implemented. Any accidental discovery of paleontological resources during construction shall be evaluated by the qualified paleontologist. If it is determined that the Project could damage a unique paleontological resource, as defined per the CEQA Guidelines, mitigation shall be implemented in accordance with PRC Section 21083.2, and</p>



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		Section 15126.4 of the CEQA Guidelines. If avoidance is not feasible, the paleontologist shall develop a treatment plan in consultation with the lead agency. The treatment plan shall be a site-specific plan in report format that shall: <ol style="list-style-type: none"> 1. Detail strategies for the management of the affected paleontological sites; 2. Include standards for further testing, sampling, documentation, data recovery, preservation and protection, analysis, and report preparation; 3. Outline an effective preservation plan or data recovery and documentation plan for those resources that the paleontologist has determined to have significant research or other value; 4. Provide a schedule for the implementation of the treatment plan; and 5. Provide a cost estimate for mitigation strategies, including testing, data recovery, curation, and report preparation.
Geology and Soils (see EA/IS Section 4.5 for more information)		
Geology and Soils	No adverse effect	No adverse effect
Seismic Hazards	No effect	No effect
Landslide and Debris Flow Hazards	No effect	No effect
Erosion During Construction	No adverse effect	No adverse effect
Energy and Public Utilities (see EA/IS Section 4.6 for more information)		
Energy During Operation	No adverse effect	Beneficial
Public Utilities During Operation	No adverse effect	No adverse effect
Disruption of Utility Service During Construction	No adverse effect	No adverse effect. The following minimization measure will apply: Mitigation Measure EPU-1: Utility Disruption: Design, construction, and inspection of required utility work would be completed in accordance with applicable statutes. Where feasible, utility relocations would be undertaken in advance of Project construction. SACOG and/or RT would coordinate with affected service providers to ensure that all utility work is performed in accordance with appropriate requirements and criteria. Coordination with the utility providers would be initiated during the preliminary engineering phase of the Project and would continue through final design and construction. Coordination efforts would include planning for utility re-routes, identification of any other potential conflicts, and formulation of strategies for overcoming problems that may arise to ensure



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>minimum disruption of utility service or operation during the utility work and Project construction.</p> <p>If unexpected underground utilities are encountered, the construction contractor would coordinate with the utility provider to develop plans to address the utility conflict, protect the utility if needed, and limit service interruptions. Any short-term, limited service interruptions of known utilities would be scheduled well in advance, and appropriate notification would be provided to users. SACOG and/or RT would coordinate with all utility providers during the design phase of the Project to incorporate effective design treatments and construction procedures to avoid adverse impacts to existing utilities and traffic during construction. Nonetheless, the potential exists for construction activities to encounter unexpected utilities. In addition, utility relocations may require short-term, limited interruptions of service. No interference to existing utility services is anticipated during the realignment of the overhead power transmission lines, because PG&E and SMUD would put customer loads on alternate lines until the connections are re-established.</p>
Energy Use During Construction	No adverse effect	No adverse effect
Hazards and Hazardous Materials (see EA/IS Section 4.7 for more information)		
Routine Use of Hazardous Materials During Operation	No adverse effect	No adverse effect
Accidental Release of Hazardous Materials During Operation	No adverse effect	No adverse effect
Contamination from Neighboring Sites	No adverse effect	No adverse effect
Risk of Wildland Fires	No effect	No effect
Routine Use of Hazardous Materials During Construction	No adverse effect	No adverse effect
Subsurface Disturbance of Hazardous Materials During Construction	No adverse effect	<p>No adverse effect. The following minimization measure will apply: Mitigation Measure HZ 1:—Site Investigation. To mitigate the potential for encountering unknown contaminated soil and/or groundwater in the Project area, a Phase I Environmental Site Assessment will be conducted along the proposed alignment and MSFs in areas where excavation or subsurface disturbance will take place close to sites with listed known soil or groundwater contamination. The Phase I investigation will be done during the design phase and completed prior to</p>



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>the completion of final design. The purpose of the Phase I investigation will be to determine whether suspected contamination, as listed in the records search, is actually present on the property, and if additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm. The Phase I investigation may include activities such as geophysical surveys, drilling, trenching, soil sampling, soil gas sampling, ground water sampling, and surface water sampling. If the Phase I investigation finds that additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm, then a Phase II investigation shall be required for areas where soil and/or groundwater contamination are suspected. The Phase II investigation will be conducted to determine the nature and extent of contamination. If the Phase II investigation concludes there is a potential to encounter contaminated materials (during and post-construction), then a soil and groundwater management plan shall be developed and implemented. The soil and groundwater management plan shall provide detailed procedures to be followed in the event that contaminated materials are encountered (during and post-construction).</p> <p>The information generated from implementation of the site investigation would be integrated into the operational design of the Project, and would limit the potential for adverse effects attributable to development on previously contaminated land.</p>
Hydrology and Water Quality (see EA/IS Section 4.8 for more information)		
Water Quality During Operation	No adverse effect	No adverse effect
Deplete Groundwater Supplies	No adverse effect	No adverse effect
Reduce Groundwater Recharge	No adverse effect	No adverse effect
Increase Runoff Rate and/or Volume Downstream	No adverse effect	No adverse effect
Exceed Drainage Capacity	No adverse effect	No adverse effect
Placement of Fill or Structures in 100-year Floodplain	No adverse effect	No adverse effect
Increased Risk to Human and Structural Safety During Flooding	No adverse effect	No adverse effect
Increased Risk to Inundation Due to Mudflow	No adverse effect	No adverse effect



Table ES-1
Alternatives – NEPA Summary of Effects

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
Temporary Disturbance of Existing Drainage Patterns During Construction	No adverse effect	No adverse effect
Land Use and Planning (see EA/IS Section 4.9 for more information)		
Existing and Surrounding Land Uses	No adverse effect	No adverse effect
Noise and Vibration (see EA/IS Section 4.10 for more information)		
Operational Noise	No adverse effect	<p>No adverse effect. The following minimization measures will apply:</p> <p>Mitigation Measure NV-1: Implement Wheel Noise Control Measures. Resilient wheels or suitable equivalent noise control measures shall be implemented that achieves a reduction of wheel squeal to Moderate or No Impact level, as defined by the FTA noise criteria.</p> <p>Mitigation Measure NV-2: Substation Design. To alleviate noise impacts from substation operation, noise impacts from substation operation will be mitigated in one of the following ways:</p> <ul style="list-style-type: none"> Locate traction power substations at a distance farther from noise-sensitive receptors than the screening distance determined in this analysis. Re-evaluate the inside buffer during engineering design, and if necessary, install efficient enclosures to meet local noise threshold criteria. Place traction power substations in underground utility vaults. <p>With implementation of Mitigation Measure NV-2, substation noise impacts would not exceed City of Sacramento Exterior Noise Standard for Fixed Sources for the cities of Sacramento and West Sacramento.</p> <p>Mitigation Measure NV-3: MSF Facilities. To avoid noise impacts from the MSF facilities in West Sacramento:</p> <ul style="list-style-type: none"> Install sound walls around the MSF in West Sacramento. A perimeter wall that is 6 to 8 feet high would minimize noise from the MSF at this location. <p>With implementation of Mitigation Measure NV-3, the potential noise impacts from MSF facilities would not exceed FTA criterion.</p>
Operational Vibration	No adverse effect	<p>No adverse effect. The following minimization measure will apply:</p> <p>Mitigation Measure NV 4: Vibration Control. To avoid vibration-related impacts from streetcar operations:</p> <ul style="list-style-type: none"> • Additional measurements, including soil vibration propagation testing, shall be made during the engineering design phase to evaluate the potential for efficient soil propagation at distances beyond 50 feet, site-specific vibration propagation, and the effects on vibration transmission into those buildings identified as being



Table ES-1
Alternatives – NEPA Summary of Effects

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>impacted in the current analysis.</p> <p>If streetcar operational speeds are 30 to 35 mph, then various forms of vibration control will need to be investigated during the engineering phase of the Project. There are different measures available depending on the level of vibration reduction required. For the highest level of reduction indicated for the Project (e.g., 13 VdB), a floating slab track may be implemented. Where lower levels of vibration reduction are required (e.g., 5 VdB or less), it may be possible to use a resilient ballast mat if the track design permits this approach, similar to that implemented at SFMTA. At special trackwork (i.e., crossover), it should be possible to implement “flange-bearing frogs,” as has been accomplished elsewhere (e.g., SFMTA). The majority of vibration impacts due to streetcar operations would be eliminated if the streetcar speeds were reduced to 20 mph or less. In the City of Sacramento, the remaining vibration impacts at 20 mph or less would occur at the Cathedral of the Blessed Sacrament and the Cathedral Building Apartments where a crossover is to be located. As with the case where speeds are 30 to 35 mph, a flange-bearing frog would control vibration from such special trackwork. Assuming mitigation of flange bearing frog is implemented, then for the remaining receptors impacted at a vehicle speed of 20 mph the vibration level would be reduced if operating speeds were lower. The predicted level for 20 mph with flange bearing frog are 1 dB over criterion. Speed reduction would be minimal (e.g., 18 mph instead of 20mph).</p>
Construction Noise	No adverse effect	<p>No adverse effect. The following minimization measure will apply: Mitigation Measure NV-5: Noise-Limiting Construction Practices. To control the potential impacts to the nearby community during construction of the Project, the following array of mitigation strategies would be employed:</p> <ul style="list-style-type: none"> • Locate noisy equipment as far as possible from noise-sensitive receptors. In addition, temporary barriers should be employed around the equipment. • Use temporary noise barriers along the Project right-of-way. Barriers/curtains must achieve a Sound Transmission Class of 30 or greater in accordance with American Society for Testing and Materials International (ASTM) Test Method E90, and be constructed from material having a surface density of at least 2 pounds per square foot to ensure adequate transmission loss. • Use sound absorption for temporary barriers in the area of Downtown Sacramento. In this area, a reverberant environment is produced due to the narrow distance between buildings and hard pavement surfaces. Line the inner face of the temporary barrier or use a curtain with an absorptive face. The



**Table ES-1
Alternatives – NEPA Summary of Effects**

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<p>absorptive liner or absorptive face should have a Noise Reduction Coefficient rating of 0.70 or greater, in accordance to ASTM Test Method C423.</p> <ul style="list-style-type: none"> • Require ambient-sensitive (“smart”) backup alarms, SAE Class D, or limit to SAE Class C (97 dB). • Fit silencers to combustion engines. Ensure that equipment has quality mufflers installed, in good working condition. • Switch off engines or reduce to idle when not in use. • Lubricate and maintain equipment regularly. Equipment is normally quieter when well maintained. • Construction-related truck traffic should be re-routed along roadways that would produce the least disturbance to sensitive receptors.
Construction Vibration	No adverse effect	<p>No adverse effect. The following minimization measure will apply: Mitigation Measure NV-6: Vibration Monitoring. To avoid vibration-induced annoyance impacts due to construction activities, the activities should be kept below the FTA impact criteria for each land use category. Equipment and methods selected by the contractor to reduce the potential for annoyance will be reviewed and approved by the Project proponent. Possible mitigation strategies that will be implemented to ensure vibration-induced annoyance does not exceed the impact criteria include:</p> <ul style="list-style-type: none"> • Avoid the use of pavement breakers. Instead, use a hoe ram with hydraulic chisel. • Avoid the use of dynamic compaction at a distance closer than 25 feet from any sensitive receptors, or use alternative methods of compaction in areas of construction that would be closer than 25 feet from sensitive receptors. • Monitor vibration during construction to ensure compliance with criteria for building damage for buildings within 40 feet of construction activities. Conduct a preconstruction crack survey of these buildings. • Plan routes for hauling material out of the Project site that would cause the least impact (annoyance). Propose truck routes along roads where the sensitive receptors are at least 75 feet from the street centerline.
Parks and Recreation (see EA/IS Section 4.11 for more information)		
Access and Use of Adjacent Parks During Operation	No adverse effect	No adverse effect
Access and Use of Adjacent Parks During Construction	No adverse effect	No adverse effect



Table ES-1
Alternatives – NEPA Summary of Effects

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
Socioeconomics and Regional Growth (see EA/IS Section 4.12 for more information)		
Population and Housing	No adverse effect	No adverse effect
Employment Opportunities	No adverse effect	Beneficial effect
Regional Growth	No adverse effect	No adverse effect
Transportation (see EA/IS Section 4.13 for more information)		
Transit	No adverse effect	Beneficial effect
Pedestrian Access and Safety During Operation	No adverse effect	<ul style="list-style-type: none"> • No adverse effect
Bicycle Facilities During Operation	No adverse effect	No adverse effect
Parking	No adverse effect	No adverse effect
Roadway Facilities During Operation	No adverse effect	No adverse effect
Caltrans Facilities	No adverse effect	No adverse effect
Bicycle Facilities During Construction	No adverse effect	No adverse effect. The following minimization measure will apply: Mitigation Measure TRA-1: Implement temporary bicycle detours during construction. Bicycle detours will be devised and publicized in advance of streetcar construction. Alternatively, it may be possible to route bicycles along short sidewalk segments, depending on the pedestrian volumes along the sidewalk.
Roadway Facilities During Construction	No adverse effect	No adverse effect. The following minimization measure will apply: Mitigation Measure TRA-2: Develop Construction Traffic and Parking Management Plan. The Project sponsor will develop a Construction Traffic and Parking Management Plan that will be subject to review and approval by the City of West Sacramento Traffic Engineer, the City of Sacramento Department of Transportation, Caltrans, and local emergency service providers, including the fire and police departments. The plan will ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. At a minimum, the plan will include: <ul style="list-style-type: none"> • The number of truck trips, time, and day of street closures; • Time of day of arrival and departure of trucks; • Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting;



Table ES-1
Alternatives – NEPA Summary of Effects

Resource Area	No Action	Downtown Riverfront Streetcar Project (Action Alternative)
		<ul style="list-style-type: none"> • Provision of a truck circulation pattern; • Provision of driveway access plan so that safe vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas); • Maintain safe and efficient access routes for emergency vehicles; • Manual traffic control when necessary; • Proper advance warning and posted signage concerning street closures; and • Provisions for pedestrian safety. <p>A copy of the construction traffic management plan will be submitted to local emergency response agencies, and these agencies will be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.</p>
Navigation During Tower Bridge Construction	No adverse effect	<p>No adverse effect. The following minimization measure will apply: Mitigation TRA-3: Coordinate construction activities with the U.S. Coast Guard. If construction activities limit or impede use of the lift mechanism of the Tower Bridge during intermittent or extended periods, the U.S. Coast Guard will be informed of these occurrences a minimum of 30 days in advance of the interruption to navigational traffic. The U.S. Coast Guard will post notice of the temporary closure in the Federal Register, and businesses and boat owners that would be most affected by the obstruction of navigation will be notified individually. The Project sponsor will coordinate with Caltrans, the owner of the Tower Bridge, the U.S. Coast Guard, and affected businesses/boat owners to minimize or alleviate the potential impact by providing proper notification of the bridge closures; by scheduling closures in the non-peak excursion season (October through April); or by raising the bridge for an extended time to allow continuous river navigation, while temporarily rerouting vehicular and non-motorized traffic.</p>
Environmental Justice (see EA/IS Section 4.14 for more information)		
Environmental justice populations	No adverse effect	No adverse effect



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CHAPTER 1. INTRODUCTION

1.1. Purpose of the Environmental Assessment/Initial Study

The Federal Transit Administration (FTA) and SACOG have prepared this joint Environmental Assessment (EA)/Initial Study (IS) to address the environmental effects of the proposed Downtown/Riverfront Streetcar Project (Project). These agencies have prepared this EA/IS in compliance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code Section 4321 et seq.; the Council on Environmental Quality (CEQ) regulations for implementing NEPA; the California Environmental Quality Act (CEQA) of 1970, Public Resources Code, Section 21000 et seq., as amended; the Guidelines for Implementation of CEQA, Title 14, California Code of Regulations, Section 15000 et seq.; FTA guidelines; and applicable law. For the purposes of this EA/IS, FTA is serving as the lead agency for NEPA, and SACOG is the lead agency for CEQA. Other public agencies that have discretionary approval power over the Project—and are, therefore, responsible agencies under CEQA—are the cities of West Sacramento and Sacramento, RT, YCTD, and Caltrans.

Sacramento neighborhoods were once connected by small electric transit vehicles. These were not long commuter trains, but rather single-unit trolleys or streetcars. Operating between 1870 and 1947, the streetcar system was located in the Central City and transported people between their homes and their workplaces. The planning process for restoring streetcar service to the downtown core area of Sacramento has been ongoing for the past two decades. Key planning studies and alternatives considered that have been taken over the last 20 years to address transit needs of the region and the Downtown area specifically include: the Downtown Sacramento Historic Streetcar Study, prepared in 1995; the Phase 1 Summary Report Downtown/Riverfront Streetcar Study prepared in 2007; and, the Sacramento Streetcar Systems Plan, prepared in 2012. These plans are further discussed in Section 3.4, below.

In 2006, the City of Sacramento, the City of West Sacramento, RT, and the YCTD began working together under a Memorandum of Understanding (MOU) to study the feasibility of reintroducing a streetcar line to connect their cities' downtowns and riverfront areas. As part of Phase 1 of this effort, an initial alignment was developed during a week-long design charrette in October 2006. It reflected the results of project tours, a review of preliminary route opportunities, public input, Policy Steering Committee (PSC) and Technical Advisory Committee involvement, Design Team guidance, and adherence to design principles and selection criteria established for the Project. Based on that initial alignment, a series of Technical Memoranda explored various aspects of Project development. Toward the end of this Phase 1 study, the PSC requested that the Design Team ensure that the initial alignment met the Project objectives, serving the civic and cultural heart of West Sacramento, and reaching the Midtown area of Sacramento. The Design Team and the Technical Advisory Committee considered a number of variations in the route, and some of those variations/improvements in the alignment were incorporated into a resulting refined alignment. In May 2007, the City of Sacramento City Council adopted a Resolution (2007-310), approving the alignment proposed in the feasibility study, and authorizing the City Manager to direct staff to



continue to work with its MOU partners through the completion of the environmental review and the preliminary design phase of the Project. The Project was evaluated pursuant to CEQA and in 2009a Final Environmental Impact Report (EIR) was certified by the City of West Sacramento, acting as lead agency.

In an effort to further refine the alignment within the City of Sacramento and to address funding concerns, the City of Sacramento embarked on the Sacramento Streetcar Planning Study in early 2011. The Sacramento Streetcar Planning Study was accepted by the Sacramento City Council in February 2012. This study established minor modifications to the initial alignment and established the Locally Preferred Alternative (LPA), which is the Project (i.e., Action Alternative) addressed in this EA/IS.

The alignment evaluated in the 2009 EIR extended from the West Sacramento Civic Center to the Sacramento Convention Center following along West Capitol Avenue, across Tower Bridge, down Capitol Mall, up both 7th and 8th streets to K Street, and east along K Street to terminate around the Convention Center via 13th, J, 15th, and L streets.

The current project consists of a 3.3 mile streetcar alignment which would extend from the West Sacramento Civic Center to the Midtown entertainment and retail district in Sacramento. It basically maintains the original alignment in West Sacramento and across Tower Bridge, with the addition of service along Riverfront Street in West Sacramento. On the Sacramento side of Tower Bridge, the original alignment has been rerouted from Capitol Mall north along 3rd Street to H Street in order to provide better connections with downtown businesses and civic institutions such as the Downtown Plaza, the Sacramento Intermodal Transportation Facility, the federal courthouse, and City Hall. The alignment further extends east on H Street and along 7th and 8th Streets back to the original alignment along K Street Mall before looping round the Convention Center and traveling farther into Midtown along 12th, J, 19th, and L Streets. Rerouting existing LRT service on H Street between 8th and 12th Streets is also part of the streetcar project.

The alignment (see Appendix B) for the proposed streetcar is along existing city streets with the exception of a small section connecting the project with the Sacramento Intermodal Transportation Facility. The City of Sacramento has already adopted plans for the existing street (I Street) to extend to the Sacramento Intermodal Transportation Facility. New track would be laid for the entire alignment within West Sacramento and across Tower Bridge. East of Tower Bridge, new track would be installed in the road bed on Capitol Mall to 3rd Street and north on 3rd Street to the Sacramento Intermodal Transportation Facility where it would connect with existing LRT tracks that run east onto H Street. Short sections of new track would also be necessary on 7th Street from just north of J Street to K Street, and on 12th Street between K and L streets. The full lengths of J, L, and 19th streets would require new track. New track would also be placed on H Street between 8th and 12th streets to accommodate the relocation of LRT from K Street.



The proposed project includes the installation of 12 westbound and 13 eastbound stations. New station platforms would be concrete slabs designed with a berthing area 60 to 65 feet in length, and a boarding area 40 to 45 feet in length with a height of about 8 inches. These slabs would be constructed within the sidewalk and/or roadbed and would not require removal of any existing granite curbs or street trees. Station elements may include such amenities as a canopy mounted on structural supports, supplemental lighting, fare machines, schedule and patron information rack, bench, lean rail, trash receptacle, sign with stop name, and an Americans with Disabilities Act (ADA) pedestrian warning strip running the length of the boarding area.

The traction power facilities (support poles, catenary poles, and substations) would be located within the public right-of-way. Substations would convert electrical current to the proper voltage for streetcars and occupy approximately 375 square feet of space. For reliability purposes, the streetcar line will be powered by two additional substations in West Sacramento. Support and catenary poles of the Overhead Contact System (OCS) will be spaced along the streetcar alignment and will be similar to the system that is currently in place today for the light rail system in Downtown Sacramento. The OCS system will be designed during the final design phase of the project but maximum span between OCS poles is typically 120 feet; existing utility and LRT poles, and suitable buildings (i.e., not historic properties) will be used whenever possible to attach wires.

Two options for a maintenance and storage facility are under consideration for the Project (Figure 3), neither of which was evaluated in the 2009 EIR. One option is the Sacramento Maintenance Facility that would be constructed beneath the Business 80/Highway 50 interchange between X Street, W Street, 19th Street, and LRT's South Line LRT tracks on land currently owned by the California Department of Transportation (Caltrans) and leased to the City of Sacramento. Streetcar access to this facility would be provided along existing LRT tracks. The second option is the West Sacramento Maintenance Facility that would be constructed beneath the Business 80/Highway 50 freeway near South River Road and Rice Mill Road/Riverfront Street, also on property currently owned by Caltrans. Additional streetcar tracks along Riverfront Street would be constructed as part of this option.

Most of the alignment and study area evaluated in the 2009 Final EIR remain substantially unchanged, and the environmental setting data and impact analysis from the 2009 EIR continue to be pertinent for use in the preparation of this EA/IS. Therefore, the 2009 Final EIR (Downtown/Riverfront Streetcar Study Final EIR, April 2009, State Clearinghouse number 2007082123) is hereby incorporated by reference. As a result, the analysis contained herein focuses on the alignment modifications and proposed maintenance facility sites (which are changes from the 2009 Final EIR), as well as on compliance with current NEPA and CEQA regulations and guidance.

This joint EA/IS has been prepared for the Project to minimize duplicative environmental reviews. The purpose of the EA/IS is to determine whether the updated Project may have a significant effect on the environment, thus allowing decision makers to make informed assessments of the environmental impacts of the Project on resources under their jurisdiction, or to make discretionary decisions regarding the Project. Based on information contained in this EA and any



comments submitted, FTA will determine whether environmental effects are sufficiently substantial to warrant preparation of an Environmental Impact Statement. If the FTA decides that there are no adverse effects, it will prepare and sign a Finding of No Significant Impact (FONSI). The determination will be made available to the general public and all who commented on this EA. The IS demonstrates that all potential impacts of the Project may be reduced to a less-than-significant level with the incorporation of avoidance, minimization, and mitigation measures, and SACOG has prepared a proposed Mitigated Negative Declaration (MND) for review and consideration by interested agencies and the public. The IS Checklist and proposed MND are included in Appendix A of this document.

1.2. Organization of the Environmental Assessment/Initial Study

The EA/IS is divided into eight chapters and appendices. Chapters 1 and 2 introduce the EA/IS, describe the Project features, its location and study area, and describe the Project purpose and need. Chapter 3 explains the Proposed Alternatives, including the No Action Alternative. Chapter 4 discusses the environmental setting in the study area, the potential effects of the Project Alternatives, and avoidance, minimization, and mitigation measures. Chapter 5 discusses public involvement and agency coordination undertaken for the Project. Chapter 6 lists all of the agencies and consultants involved in the preparation of the document. Chapter 7 includes a list of EA/IS/MND preparers and, finally, Chapter 8 provides a list of references cited in the EA/IS. Appendices include:

- Appendix A - California Environmental Quality Act (CEQA) Initial Study Checklist and Proposed Mitigated Negative Declaration
- Appendix B - Preliminary Alignment and Typical Station Platform Plans
- Appendix C - Special-Status Species with Potential to Occur in the Study Area
- Appendix D - Section 106 Consultation

A number of technical reports and/or memoranda have been prepared, were relied upon in the preparation of this EA/IS and are hereby incorporated by reference. They are available for review¹ at <http://www.riverfrontstreetcar.com/project-documents/>, and include:

- Downtown/Riverfront Streetcar Transportation Assessment (Fehr & Peers, 2014);
- Built Environment Resources Report, Downtown/Riverfront Streetcar Project (JRP Historical Consulting, 2015);
- Biological Resources Technical Memorandum for the Downtown/Riverfront Streetcar Project, Sacramento County/Yolo County, California (URS, 2014a);
- Archaeological Resources Assessment for the Downtown/Riverfront Streetcar Project, Sacramento and Yolo Counties, California. Draft Technical Report (URS, 2015);
- Downtown/Riverfront Environmental Justice Technical Memorandum (URS, 2014b);

¹ The Archaeological Resources Assessment for the Downtown/Riverfront Streetcar Project is not available for public review due to the sensitivity of locational information related to Native American resources.



- Downtown/Riverfront Transit Study, Air Quality, and Greenhouse Gases Technical Memorandum (URS, 2014c);
- Greenhouse Gas Emissions Benefits of Streetcar, Technical Memorandum, (SACOG 2015); and
- Sacramento Downtown/Riverfront Streetcar Noise and Vibration Impact Assessment Draft Technical Report (WIA, 2014).

1.3. Intended Uses of the Environmental Assessment/Initial Study

This EA/IS is being distributed for a 30-day public review and comment period pursuant to NEPA and NHPA. A notice of availability of the EA/IS has been made through notices published in local newspapers of general circulation in the Project area. Readers are invited to submit comments on the adequacy of this document. FTA proposes a finding of no adverse effect to historic properties pursuant to 36 CFR 800.5(b) that is subject to concurrence with the SHPO and review of this environmental document. The EA/IS is also being circulated for comment according to CEQA Statute and Guidelines.

Written comments should be submitted to:

Kirk Trost, Chief Operating Officer and General Counsel
Sacramento Area Council of Governments
1415 L Street
Sacramento, California 95814

Or via email at eaiscomments@sacog.org.

All comments must be received by close of business on June 22, 2015.

Following close of the public review and comment period, FTA and SACOG will thoroughly consider all comments submitted. Based on information contained in this EA/IS and comments submitted, the lead agencies will determine whether environmental effects are sufficiently substantial to warrant further analysis. If no adverse effects are found, FTA will prepare and sign a FONSI, and SACOG will adopt the proposed MND included in Appendix A of this document. A Notice of Determination will be made available to the general public and all who commented on this EA/IS.



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CHAPTER 2. PURPOSE AND NEED

2.1. Project Background

Sacramento neighborhoods were once connected by small electric transit vehicles. These were not long commuter trains, but rather single-unit trolleys or streetcars. The streetcar system was located in the Central City, and transported people between their homes and their workplaces from 1870 to 1947². The planning process for restoring streetcar service to the downtown core area of Sacramento has been ongoing for the past two decades and is further discussed in Chapter 3. Key planning studies undertaken to address transit needs of the region and the Downtown area specifically include: the Downtown Sacramento Historic Streetcar Study, prepared in 1995; the Phase 1 Summary Report Downtown/Riverfront Streetcar Study prepared in 2007; and, the Sacramento Streetcar Systems Plan, prepared in 2012. These plans are discussed in Section 3.4 and summarized in Table 3-4, below.

In 2006, the cities of West Sacramento and Sacramento, in cooperation with RT and YCTD, formed a partnership to study the reintroduction of streetcar service to connect the cities of West Sacramento and Sacramento and their shared riverfront. The partnership was aided by funding from the SACOG Community Design Program to perform a thorough analysis so that elected officials, public agencies, citizens groups, and other stakeholders could make an informed decision on the most appropriate transportation investment. The feasibility study, which included a discussion of technology, alignment, financing opportunities, and operating plans, was completed in May 2007, and summarized in the Phase 1 Summary Report, Downtown/Riverfront Streetcar Study. The City Council of West Sacramento adopted the findings of the Phase 1 report on May 9, 2007.

Following adoption of the Phase 1 report, the City of West Sacramento, acting as the lead agency, completed a project-level EIR in April 2009 that evaluated a streetcar line that would connect West Sacramento with the City of Sacramento via the Tower Bridge. The streetcar alignment evaluated in the 2009 EIR would extend from the West Sacramento Civic Center to the Sacramento Convention Center following a general alignment along West Capitol Avenue, Tower Bridge Gateway, Capitol Mall, and K Street (see Figure 2-1).

After certification of the Final EIR, the City of Sacramento undertook a planning study to conduct additional outreach to stakeholders, identify funding options, and further refine the alignment. This study was finalized in 2012 with the completion of the Sacramento Streetcar System Plan. This included the selection of a LPA for a Starter Line that would extend the original alignment to the east to provide improved connections to Midtown Sacramento, and farther north toward H Street to provide access to Downtown Plaza, the Entertainment and Sports Center (ESC), the Sacramento Intermodal Transportation Facility, Sacramento Valley Station, and the Railyards, as well as an additional stop

² Sacramento Streetcar System Plan Report (February 2012) available online at: <http://www.riverfrontstreetcar.com/project-documents/>.



serving Old Sacramento. The initial alignment from 3rd Street/Capitol Mall west across the Tower Bridge to Raley Field and the West Sacramento Civic Center remained unchanged.

Following completion of the Sacramento Streetcar System Plan, SACOG entered into a MOU as the Sponsoring Agency in partnership with four Participating Agencies (the City of Sacramento, the City of West Sacramento, YCTD, and RT) to undertake advanced planning, environmental, and engineering activities for a Streetcar Project in the Downtown/Riverfront corridor connecting Sacramento and West Sacramento. Caltrans is an active partner in the Project, but is not a party to the MOU for the Project.

2.2. Location and Study Area

The proposed alignment would link Downtown and Midtown Sacramento with the Washington/Bridge District/Civic Center areas of West Sacramento (Figure 2-2). In general, the study area encompasses areas within approximately ¼ mile of the alignments. These areas are separated by the Sacramento River and linked by the Tower Bridge.

The 3.3-mile streetcar alignment would extend from the West Sacramento Civic Center to the Midtown entertainment and retail district in Sacramento (Figure 2-1). Mixed-use neighborhoods in the Washington Neighborhood (designated as a Transit Priority Area in the Metropolitan Transportation Plan [MTP]), the Bridge District, and the Railyards Specific Plan area have been planned around a future high-quality transit system intended to serve these new and emerging employment and residential districts. Several key destinations in these neighborhoods would be connected by the Project, including Raley Field, home of the Sacramento Rivercats AAA baseball team; Old Sacramento; Sacramento Valley Station in the Railyards Specific Plan area (the largest urban infill project in the country and the planned terminus of the California High-Speed Rail system); Downtown Plaza Mall (future site of the Sacramento ESC); the historic Memorial Auditorium; the Sacramento Community Center Theater; the California State Capitol building; and the Sacramento Convention Center.

The alignment also includes service to the Bridge District in West Sacramento along Riverfront Street. With this service, West Sacramento would be served with streetcars alternating between terminal stops at the West Sacramento Civic Center and in the Bridge District. Also included is the relocation of existing light rail service from K Street to H Street between 7th and 12th streets in Downtown Sacramento.

2.3. Purpose of Proposed Action

The purpose of the Project is to improve existing transit service (see Figure 2-3) and local circulation, especially for shorter trips, by connecting the urban cores of Sacramento and West Sacramento with an alternative (non-auto) mode, and supporting existing and future development on both sides of the Sacramento River. The Sacramento Region Blueprint envisions growth through development that encourages the use of alternative modes of transportation; the Project would support that plan. The following is a summary of the Project objectives.



2.3.1. Support Projected Growth in the Study Area

The Project would provide additional transit service to accommodate projected population and employment growth in the study area. Several planned developments have been proposed on both sides of the Sacramento River in the vicinity of the alignment, and the Project would improve mobility and connectivity between West Sacramento and Downtown Sacramento.

2.3.2. Alleviate Roadway Congestion

The Project is intended to reduce roadway congestion related to projected growth during the next 20 years. By augmenting transit service, the Project would improve roadway Level of Service (LOS) on the Tower Bridge, the I Street Bridge, the Pioneer (Highway 50) Bridge, and adjacent streets. The Project would increase multi-modal travel choices by establishing an urban circulator line located near existing routes for automobile traffic, light-rail transit (LRT), bus, and pedestrians. Therefore, the Project would facilitate a shift in travel mode from automobile to transit.

2.3.3. Alleviate Air Quality Problems

As indicated above, the Project would reduce the growth in automobile trips and reduce roadway congestion, which would have beneficial air quality effects. It would attract new riders to the local and regional transit system, which would support pedestrian circulation and walkable communities.

2.3.4. Augment Transit Capacity and Provide Transit Connections

The Project would augment existing LRT, bus, and regional rail service by providing a local circulator that connects communities on both sides of the Sacramento River. Therefore, the Project would enhance the efficiency and effectiveness of existing transit services by creating new a travel option that connects employment and commercial districts, tourist destinations, and residences along the alignment. The combination of proposed streetcar service and existing transit service would provide frequency and reliability of service that would make midday travel by transit more efficient and attractive to users.

2.3.5. Support Local and Regional Land Use Development Plans and Policies

The Project would support implementation of local and regional development plans, such as the City of Sacramento 2030 General Plan and related specific plans, the City of Sacramento Climate Action Plan, the City of West Sacramento General Plan and related specific plans, the City of West Sacramento Strategic Plan, and SACOG's Metropolitan Transportation Plan/Sustainable Communities Strategy 2035 (MTP/SCS), which coordinates transportation planning with land use development.

The MTP/SCS is a long-range regional plan for transportation projects, such as bikeway, road, sidewalk, and transit projects. In order to provide people with a variety of efficient transportation options, an MTP/SCS considers where jobs, housing, and services are located both today and in the



future. The plan also includes a financial forecast that shows that the transportation projects in the plan can reasonably be funded over the course of 20 years. The major outcome of the MTP/SCS includes improving air quality, reducing traffic congestion, and reducing greenhouse gas emissions. SACOG must maintain and update the MTP/SCS at least every four years. All transportation projects that receive state or federal funding must be included in the plan, so SACOG works closely with its 22 member cities and 6 member counties when updating the MTP/SCS. The current MTP/SCS was adopted in 2012 (2012 MTP/SCS). SACOG is currently in the process of updating the MTP/SCS for adoption in 2016 (<http://sacog.org/mtpscs/2016update/>).

Section 2.4.1, “Population and Employment Growth,” describes development plans in the study area that were considered during development of the proposed alignment. In addition, because the proposed streetcar is a local service and could be combined with streetscape improvements, it would support the economic and social vitality of commercial districts and neighborhoods by enhancing their identity and adding character.

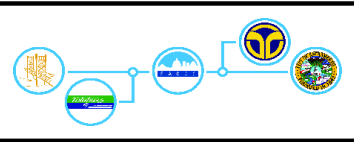
2.4. Need for Transportation Improvements in the Corridor

Significant levels of growth are projected to occur in the urban core of the Sacramento Region (including Downtown and Midtown Sacramento and Downtown West Sacramento, and the shared waterfront) during the next 20 years. Section 2.4.1, “Population and Employment Growth,” describes several urban infill projects that are key components of the SACOG MTP/SCS that was approved in 2012. Therefore, transit circulation in the regional urban core is conducive to fulfilling land development policies related to infill, environmental protection, and economic growth. The projected growth will generate greater travel demand for local transit and roadway capacity than is currently available. Currently, limited transit connections between Sacramento and West Sacramento create greater reliance on automobiles, which emit air pollutants and greenhouse gases. Reliance on auto use also increases consumption of land area for parking, which is antithetical to urban development goals of the sponsoring agencies. Therefore, because projected growth is concentrated in the urban core, the Project is needed to provide limited transit service for shorter, local trips that connect residential areas, employment centers, and retail services. The following sections describe the deficiencies that exist in the study corridor.

2.4.1. Population and Employment Growth

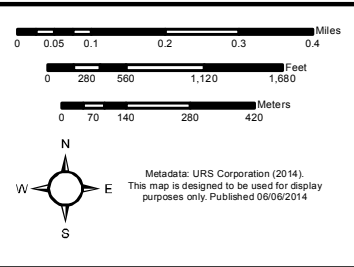
There are six major planned development areas in the cities of Sacramento and West Sacramento: The Railyards Specific Plan, the River District, the R Street Corridor Master Plan (City of Sacramento, 2009c), and the Docks Area Specific Plan (City of Sacramento, 2013a), all in Sacramento; and the Bridge District Plan and the Washington Specific Plan, both in West Sacramento (City of West Sacramento, 2013b). Development plans in these areas would result in approximately 28,600 new residential units and approximately 23 million square feet of new office and commercial space in the study area. In addition, there are currently limited options for pedestrians to cross the Sacramento River, creating a barrier for pedestrians. The proposed new transit service would provide additional transit capacity between the two cities by supplementing

Downtown/Riverfront
STREETCAR
 PROJECT

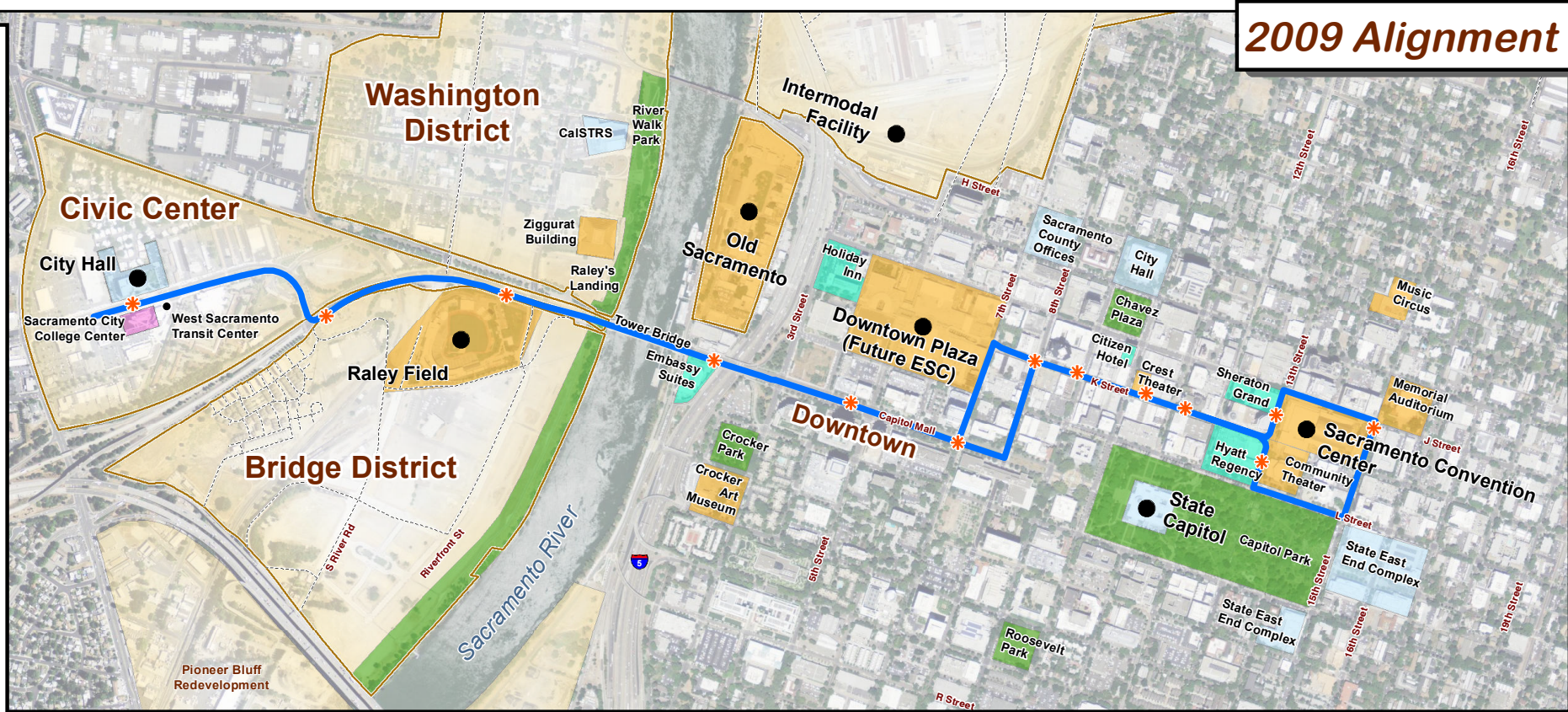


Legend

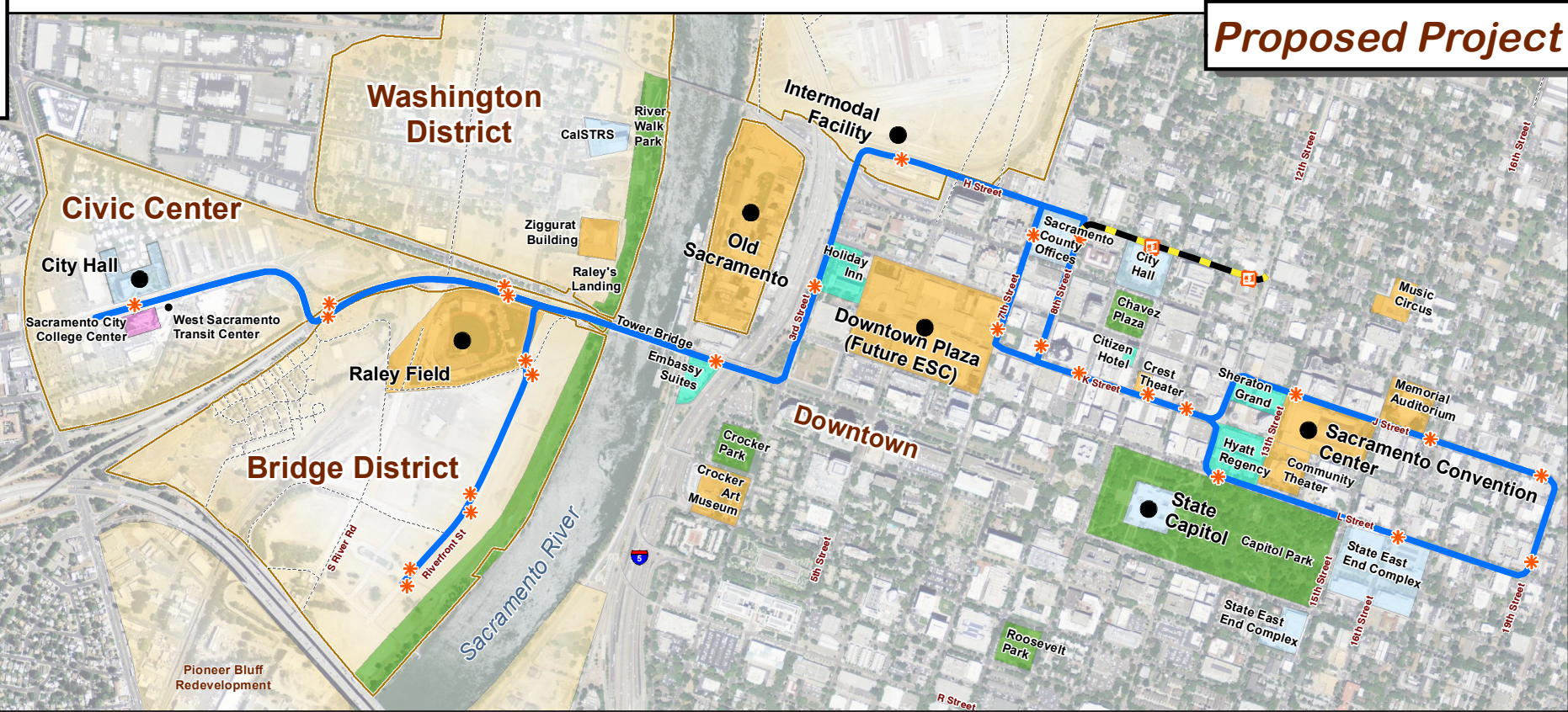
- Proposed Streetcar Alignment
- Candidate Stop Location
- H Street LRT Relocation
- New LRT Station



2009 Alignment



Proposed Project



PROJECT COMPARISON

June 2014 27560885	Downtown/Riverfront Streetcar Project Sacramento & West Sacramento
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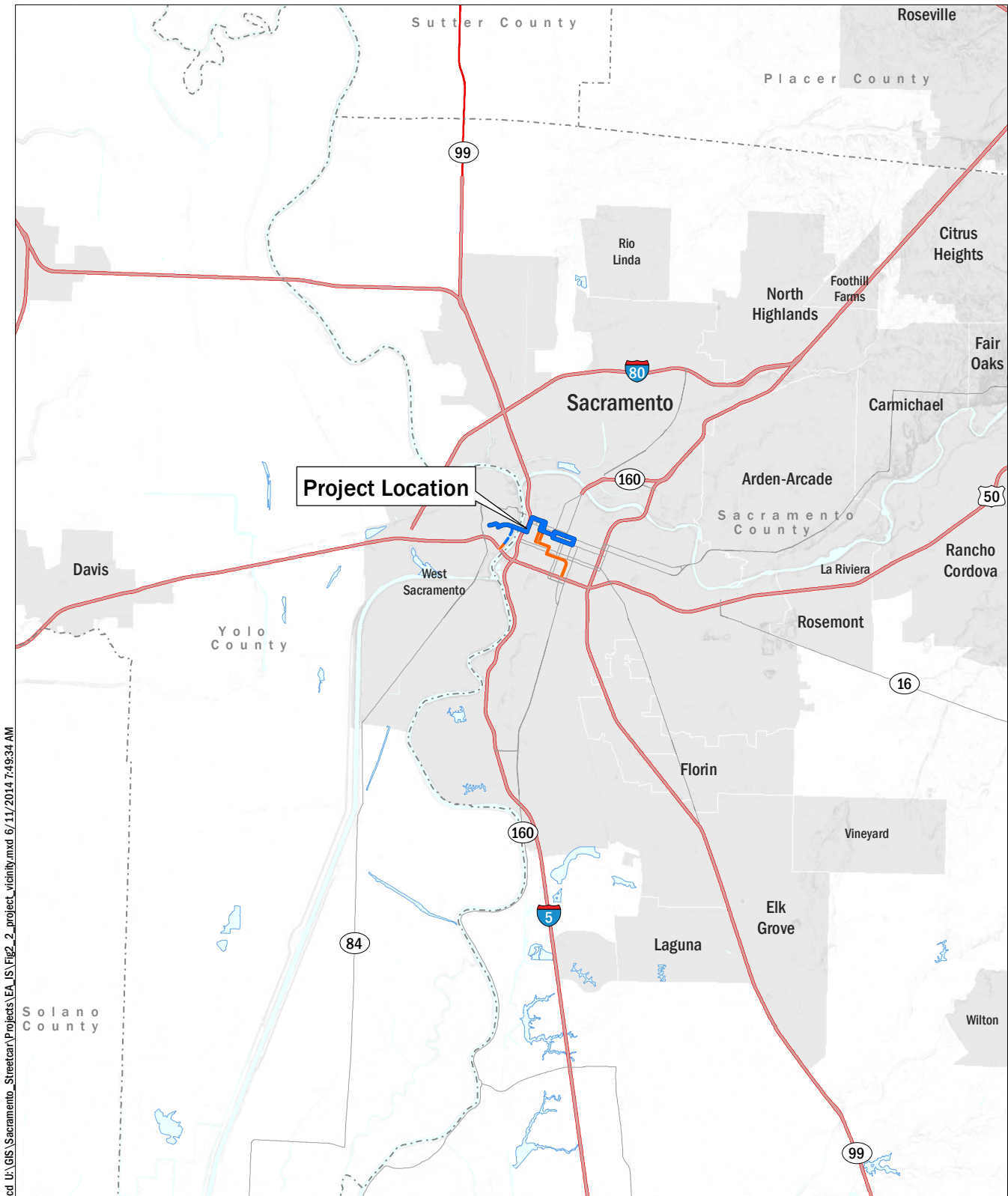
FIGURE 2-1

01/12/15 vss/hk S:\Riverfront Streetcar\Fig 2-1 from Hiroko\Fig2_1_Proj_comp_F&P.mxd

Source: Fehr & Peers, 2013



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PROJECT VICINITY

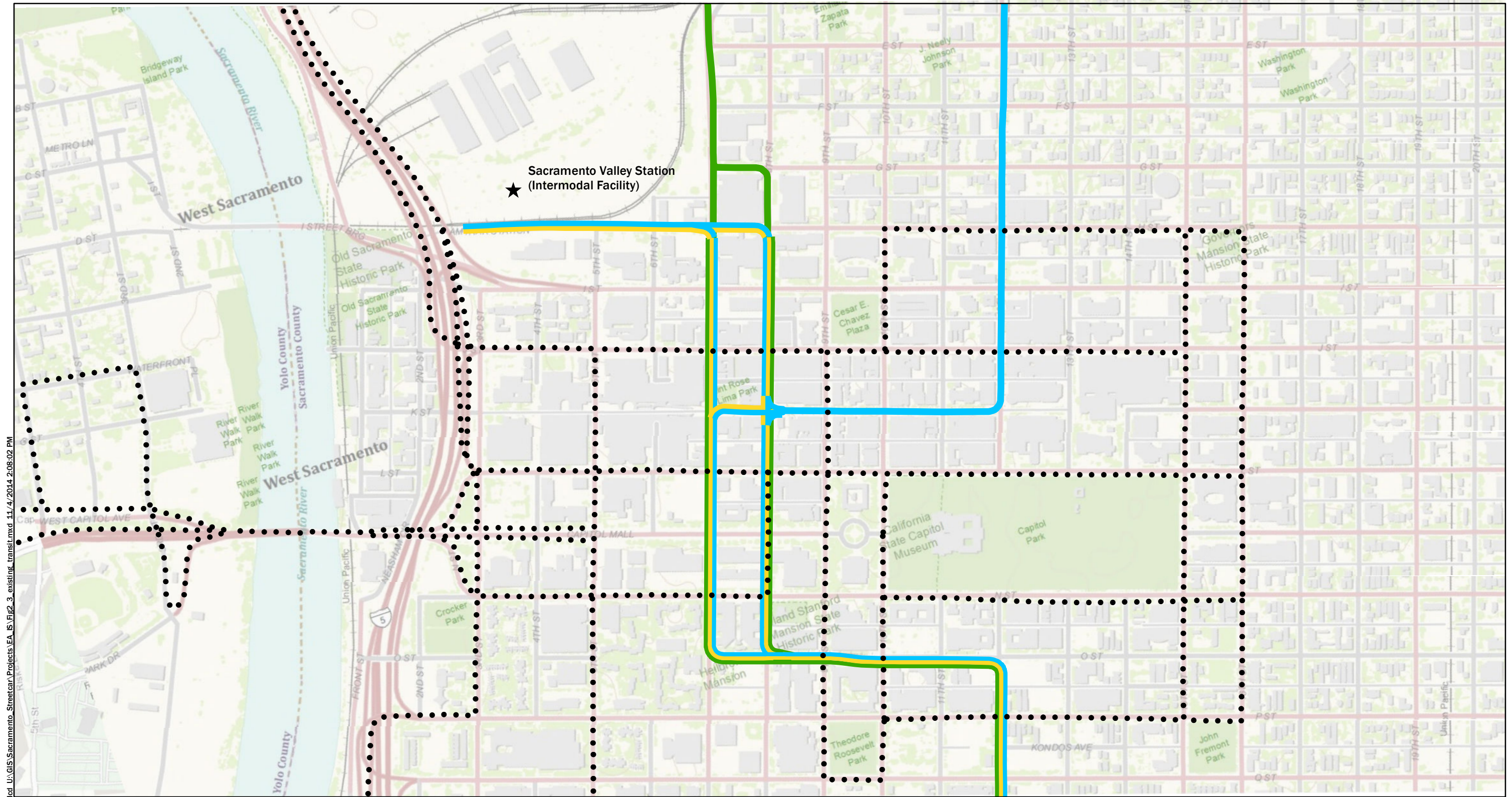
June 2014 Downtown/Riverfront Streetcar Project
27560885 Sacramento & West Sacramento



FIGURE 2-2



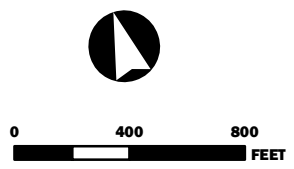
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I:\GIS\Sacramento_Streetcar\Projects\EA_S\Fig2-3_existing_transit.mxd 11/4/2014 2:08:02 PM

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

- YoloBus Routes
- SacRT Routes
- Blue Line
- Gold Line
- Green Line



EXISTING TRANSIT SERVICES

November 2014 Downtown/Riverfront Streetcar Project
27560885 Sacramento & West Sacramento



FIGURE 2-3



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existing transit operations, which primarily consist of intercity service provided by YCTD. By augmenting local transit services in the urban core, the Project would provide another opportunity for transit use and facilitate increased pedestrian access that is ideal in compact urban core areas.

Data on current and projected population and employment to indicate growth in the study area were obtained from SACOG. The data are available by traffic analysis zones (TAZs), which are sub-districts used to disaggregate regional data. Although the TAZ analysis area is slightly larger than the study area, it illustrates the substantial growth in population and employment resulting from planned development in West Sacramento and Downtown Sacramento. The following is a sampling of the projects (approved or under construction as of this writing) that are fueling this growth, as provided by economic development staff from Sacramento and West Sacramento:

City of Sacramento

- ESC – K Street between 5th and 7th streets – 17,500-seat arena and 1.5 million square feet of mixed-use development (office, hotel, retail, and residential)
- 1000 K Street Redevelopment – 38,000 square feet of retail, 12,000 square feet of office;
- Railyards Riverfront Parcel 35 – 900 residential units, 15,000 square feet of retail, and possibly 500 hotel rooms;
- Railyards Parcel 40 – 1.93-acre site with 96 residential units, 115,200 square feet of office, and 38,000 square feet of retail;
- State Courthouse Parcel 41 – 405,000 square feet of office;
- Railyards Parcel 44 – 1.96-acre site with 227 residential units, 250,000 square feet of office, and 16,500 square feet of retail;
- Railyards Parcel 43 – 2.56-acre site with 455 residential units, 500,000 square feet of office, and 12,000 square feet of retail;
- Railyards Parcel 42 – 1.19-acre site with 273 residential units, 300,000 square feet of office, and 6,200 square feet of retail;
- 7th and H streets – 150 residential units;
- 700 block K Street – 1.16-acre site with 137 residential units and 60,000 square feet of retail;
- 800 block K and L streets – 1.21-acre site with 137 residential units and 22,000 square feet of retail;
- Berry Hotel – 729 L Street – 104 residential units; completed;
- Metropolitan 1000 block J Street (north) – 0.98-acre site with 320 residential units and 13,000 square feet of retail;
- Cathedral Square 1000 block J Street (south) – 0.7-acre site with 242 residential units and 7,000 square feet of retail;
- 831 L Street – 0.78-acre site with 350,000 square feet of office and 7,000 square feet of retail;
- Meridian 2 Office Tower – 0.9-acre site with 520,000 square feet of office and 7,000 square feet of retail;
- Aura – 0.96-acre site with 668,000 square feet for office;



- Legado de Ravel 16th and O streets – 84 residential units and 13,000 square feet of commercial; completed;
- The Eviva Midtown 16th and N streets – 118 residential units and 5,000 square feet of commercial; under construction;
- 16 Powerhouse 16th and P Streets – 50 residential units and 7,700 square feet of retail; under construction; and
- Warehouse Artist Lofts – 11th and R Streets – 116 residential units and 13,000 square feet of commercial/retail; under construction.

City of West Sacramento

- Delta Lane Residential – 175 residential units and 5,000 square feet of retail;
- Capitol Yards– 8.5-acre site with 350 residential units and 5,000 square feet of retail;
- Park Moderns/Habitat NW, NE, SW, and SE – 125 residential units;
- Rivermark Apartments – 959 Bridge Street –70 units; under construction;
- One Riverfront Plaza – 7.24-acre mixed-use development;
- California State Teachers’ Retirement System Headquarters, 3rd and E streets – 600,000 square feet of offices, 20,000 square feet of commercial; completed;
- River 1 – commercial office, retail, and restaurant uses;
- River 2 – 20-story tower with 150 condominium units;
- Ironworks at the Triangle – 196 residential units.

Based on the 2012 MTP/SCSSACOG predicted that the number of residents, households, and workers in this area would increase measurably by 2035, especially in West Sacramento (Table 2-1). Population and employment increases are often accompanied by increases in person trips. These increases may introduce or exacerbate existing traffic congestion in the study area.

2.4.2. Roadway Congestion

The proposed streetcar alignment travels along a corridor that consists of the established downtown core of Sacramento and the developing city center of West Sacramento, both of which are directly connected by the Tower Bridge, and indirectly connected by the I Street Bridge to the north and the Pioneer (Highway 50) Bridge to the south. Traffic congestion on all three bridges is currently moderate to high, and projected to increase—in some cases markedly. The data in Table 2-2, also from the 2012 MTP/SCS³, present volume-to-capacity (V/C) ratios followed by LOS equivalents, which indicate the degree of congestion along roadway segments and local intersections, in parentheses. Higher V/C ratios and LOS equivalents of E or F indicate greater congestion.

³ The data presented relates to the MTP/SCS planning process. Current baseline conditions for traffic were utilized in assessing transportation related impacts, see Section 4.13.



**Table 2-1
2008 and 2035 (Projected) Population and Employment Numbers for Study Area as
Identified in the 2012 MTP/SCS**

	2008	2035	% increase
Residents			
Sacramento	4,592	11,732	155
West Sacramento	831	7,227	770
Total Residents	5,423	18,959	250
Households			
Sacramento	3,443	7,169	108
West Sacramento	395	3,081	680
Total Households	3,838	10,250	167
Workers			
Sacramento	60,374	66,181	10
West Sacramento	1,911	7,365	285
Total Workers	62,285	73,546	18
Source: SACOG, 2012 MTP/SCS .			

The Tower Bridge: The traffic data for the Tower Bridge during peak commute periods reveal a highly congested picture by 2035. The V/C ratio in 2008 was 38 percent (LOS C) in the morning and 55 percent (LOS C) in the afternoon. SACOG projects that congestion will increase to 73 percent (LOS D) during peak morning hours and 87 percent (LOS D) during peak afternoon hours by 2035.

I Street Bridge: The I Street Bridge is congested during the PM peak period, and projected to worsen by 2035. Its V/C ratio in 2008 was 53 percent (LOS C) in the morning and 70 percent (LOS D) in the afternoon. Construction of the proposed C Street Bridge is scheduled to replace the existing I Street Bridge by year 2035.

C Street Bridge: SACOG anticipates that the proposed C Street Bridge will be constructed and in operation by year 2035, at which time the I Street Bridge will no longer serve automobile traffic. Projections for 2035 anticipate that congestion will be 135 percent (LOS F) in the morning commute hours and 142 percent (LOS F) in the afternoon commute period.



**Table 2-2
Existing and Projected Traffic Patterns**

Roadway		Time Period	Existing (2008) Conditions		Cumulative (2035) Conditions		
			Volume	Volume/ Capacity Ratio – LOS Equivalent	Volume	Volume/ Capacity Ratio – LOS Equivalent	
I Street Bridge		AM Peak Hour	1,000	0.53 – C	I Street Bridge replaced by new C Street to Railyards Boulevard Bridge		
		PM Peak Hour	1,300	0.70 – D			
		Daily	12,300	0.68 – B			
C Street to Railyards Boulevard Bridge ¹		AM Peak Hour	Bridge does not yet exist.		3,900	1.35 – F	
		PM Peak Hour			4,100	1.42 – F	
		Daily			48,800	1.36 – F	
The Tower Bridge		AM Peak Hour	1,100	0.38 – C	2,100	0.73 – D	
		PM Peak Hour	1,600	0.55 – C	2,500	0.87 – D	
		Daily	12,300	0.34 – A	25,400	0.71 – C	
Highway 50 Bridge	Highway 50 EB	AM Peak Hour	5,700	0.70 – C	7,800	0.96 – E	
		PM Peak Hour	7,500	0.92 – E	9,200	1.13 – F	
	Highway 50 WB	AM Peak Hour	7,300	1.03 – F	8,900	1.25 – F	
		PM Peak Hour	7,600	1.07 – F	9,600	1.35 – F	
	Both Directions		Daily	176,000	1.10 – F	217,600	1.36 – F

Source: Fehr & Peers; Sacramento Area of Governments, 2008; 2035 SACMET Model Data for MTP/SCS 2035.
Notes:
1. The SACMET MTP/SCS 2035 model assumes the new C Street to Railyards Boulevard Bridge will have four travel lanes; on October 18, 2011, the Sacramento City Council subsequently approved the “neighborhood-friendly” bridge concept, which could result in the construction of a two-lane crossing of the Sacramento River at this location.
EB = eastbound
LOS = Level of Service
WB = westbound

Pioneer (Highway 50) Bridge: The Pioneer Bridge, which is congested during PM peak hours, is also projected to worsen by 2035. The V/C ratio in 2008 was 70 percent (LOS C) in the morning and 92 percent (LOS E) in the afternoon in the eastbound direction. Projections for 2035 indicate that the V/C ratio will increase to 96 percent (LOS E) in the morning peak and 113 percent (LOS F) in the afternoon peak, producing continuous stop-and-go conditions over the bridge. Similarly, in the westbound direction, the V/C ratio in 2008 of 103 percent (LOS F) in the morning peak and 110 percent (LOS F) in the afternoon peak are projected to increase to 135 percent (LOS F) and 136 percent (LOS F), respectively, by 2035.

The SACOG MTP/SCS and several other local planning documents, adopted by the City of Sacramento and City of West Sacramento, call for the construction of new bridges across the Sacramento River in the immediate vicinity of the Tower Bridge. This includes a replacement of the I Street Bridge and a new Broadway Bridge. Future plans for these Sacramento River crossings also call for implementation of significant new transit service on these bridges, including the



Downtown/Riverfront Streetcar line. The Highway 50 Corridor System Management Plan (Caltrans, 2011) specifies a 20-year “Concept LOS,” which is the performance metric used by Caltrans to reflect the minimum level or quality of operations acceptable for an individual highway segment within the 20-year planning period; LOS F in the case of the Pioneer Bridge. The Pioneer Bridge has a Concept LOS “F” because the improvements required to bring the LOS to “E” are not feasible due to environmental, right-of-way, financial, and other constraints. The application of multi-modal corridor management strategies are called for to reduce the severity and duration of congestion, and to provide viable travel options and information that will enable a traveler to avoid severe freeway congestion. The Downtown/Riverfront Streetcar Project, other related transit service across the Tower Bridge, and other new facilities are part of the long-term plan to provide multi-modal service across the Sacramento River. Therefore, the Project would not have a substantial impact on the Pioneer Bridge or other parallel bridges.

2.4.3. Air Quality

As indicated below, the cities of Sacramento and West Sacramento are in air districts that are not in compliance with federal and State air quality standards for ozone and fine particulate matter. Emissions from motor vehicle exhaust, industrial facilities and electric utilities, gasoline vapors, and chemical solvents are major sources of nitrogen oxide and volatile organic compounds, which are ozone precursors, as well as particulate matter equal to or less than 10 micrometers in diameter (PM₁₀), and particulate matter equal to or less than 2.5 micrometers in diameter (PM_{2.5}). Given the projected increase in traffic congestion discussed earlier, there is the potential that air quality could worsen in Sacramento and West Sacramento.

2.4.3.1. City of Sacramento

The City of Sacramento falls in the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD), which encompasses all of Sacramento County. The attainment status for air emissions in the SMAQMD is indicated in Table 2-3.



**Table 2-3
Sacramento Metropolitan Air Quality Management District
Air Quality Standards Attainment Status Chart**

Criteria Pollutant	California Standard	Federal Standard
Ozone	Nonattainment Classification = Serious (1-hour and 8-hour standards)	Nonattainment, Classification = Severe-15 ¹ (8-hour standard)
Particulate Matter 10 Microns in diameter	Nonattainment (24-hour Standard and Annual Mean)	Nonattainment ² , Classification = Moderate (24-hour standard)
Particulate Matter 2.5 Microns in diameter	Nonattainment (annual standard)	Nonattainment (24-hour standard)
Carbon Monoxide	Attainment (1-hour and 8-hour standards)	Attainment (1-hour and 8-hour standards)
Nitrogen Dioxide	Attainment (1-hour standard)	Attainment (annual standard) ³
Sulfur Dioxide	Attainment (1-hour and 24-hour standards)	Attainment (3-hour, 24-hour, and annual standards) ⁴
Lead	Attainment (30-day standard)	Attainment (Calendar Quarter)
Visibility Reducing Particles	Unclassified (8-hour standard)	No Federal Standard
Sulfates	Attainment (24-hour standard)	No Federal Standard
Hydrogen Sulfide	Unclassified (1-hour standard)	No Federal Standard
<p>Source: SMAQMD, 2013.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. A formal request for voluntary reclassification from “serious” to “severe” for the 8-hour ozone nonattainment area with an associated attainment deadline of June 15, 2019, was submitted from the Air Resources Board to the U.S. Environmental Protection Agency (U.S. EPA) on February 14, 2008. U.S. EPA approved the request effective June 4, 2010. 2. Air Quality meets Federal PM₁₀ standards. The Air Quality Management District must request redesignation to attainment and submit a maintenance plan to be formally designated to attainment. 3. Nitrogen Dioxide – New 1-hour standard 100 parts per billion, effective April 12, 2010. 4. Sulfur Dioxide – New 1-hour standard 75 parts per billion, effective August 23, 2010. 		



2.4.3.2. City of West Sacramento

The City of West Sacramento is part of the Yolo-Solano Air Quality Management District (YSAQMD), which includes all of Yolo County and the eastern portion of Solano County. The attainment status for air emissions in the Yolo-Solano district is indicated in Table 2-4.

**Table 2-4
Yolo-Solano Air Quality Management District
Air Quality Standards Attainment Status Chart**

Criteria Pollutant	California Standard	Federal Standard
Ozone	Nonattainment (1-hour and 8-hour standards)	Nonattainment (8-hour standard)
Particulate Matter 10 Microns in diameter	Nonattainment (24-hour Standard and Annual Mean)	Unclassified (24-hour standard)
Particulate Matter 2.5 Microns in diameter	Not Applicable	Partial Nonattainment (24-hour standard)
Carbon Monoxide	Attainment (1-hour and 8-hour standards)	Attainment (1-hour and 8-hour standards)
Nitrogen Dioxide	Attainment (1-hour standard)	Attainment (annual standard)
Sulfur Dioxide	Attainment (1-hour and 24-hour standards)	Attainment (24-hour, and annual standards)
Lead	Attainment (30-day standard)	Attainment (Calendar Quarter)
Visibility Reducing Particles	Attainment (8-hour standard)	No Federal Standard
Sulfates	Attainment (24-hour standard)	No Federal Standard
Hydrogen Sulfide	Attainment (1-hour standard)	No Federal Standard

Source: YSAQMD, 2013.

2.4.4.



2.4.5. Transit Issues

The study area is served by two primary transit operators: RT and YCTD. RT provides local and regional service in the County and City of Sacramento; and YCTD provide intercity bus service between Yolo County and Downtown Sacramento. The YCTD routes operate primarily Monday through Friday during commute hours. A few of the main routes, such as Routes 40, 42A, and 42B, operate 7 days a week with hourly headways from morning until night time. There is currently inadequate service to meet localized travel demand between the two cities over the Tower Bridge. LRT serves a large geographic area, but does not cross into West Sacramento. Although buses and LRT serve Downtown and Midtown Sacramento, there is a need for improved local transit service that could serve the urban core by connecting the developing areas in West Sacramento with Downtown Sacramento activity centers, and providing transit opportunities for day trips in Downtown Sacramento, and between Midtown Sacramento and Downtown Sacramento. In addition, the Project would likely supplement and improve the efficiency of LRT and bus service by providing transit connections in Downtown Sacramento once passengers disembark from regional transit services, and by locating stops at shorter intervals at strategic locations near activity and transit nodes. The MTP/SCS identified specifications for transit service that could accommodate a dense, compact urban core, such as encouraging 53 percent of all transit services (bus and rail) to operate 15-minute or better service by 2035, versus 24 percent of services today.

2.4.6. Downtown Sacramento Planning Context

The need for transportation improvements to better link Downtown Sacramento and West Sacramento is supported by the goals described in the following local and regional plans:

- The six major planned developments mentioned in Section 2.4.1 of this document.
- City of West Sacramento General Plan. The City of West Sacramento is currently updating its General Plan, which will incorporate Smart Growth policy statements and New Urbanism development standards that promote urban transit.
- City of West Sacramento Strategic Plan 2013-2017-2018. This plan included the Project as one of the City's top priorities.
- West Sacramento Bridge District Specific Plan, which seeks to develop West Sacramento's riverfront and connect it to the dense urban fabric of Downtown Sacramento through alternative modes of transportation, which include streetcar.
- City of Sacramento 2030 General Plan. The General Plan Update was adopted in 2009. This plan promotes transit and Smart Growth as a way to accommodate population growth. The City is currently undergoing a 5-year update of the General Plan.
- The 2003 Sacramento Riverfront Master Plan. This plan promotes riverfront neighborhoods and cross urban districts in the cities of Sacramento and West Sacramento.
- The Sacramento Region Blueprint, adopted by SACOG in 2004, is a plan for growth that promotes compact, mixed-use development and more transit choices as an alternative to low-density development.



- The RT Transit Master Plan. This plan was developed in 2009 to present a package of transit investments and increased service frequencies to augment transit ridership in the Sacramento region that supports the Sacramento Region Blueprint.
- California adopted Senate Bill 375, which requires a Sustainable Communities Strategy to be added to transportation plans throughout California. The SACOG MTP/SCS for 2035, adopted April 19, 2012. The MTP/SCS is a long-range plan for transportation in the region built on the Blueprint.



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CHAPTER 3. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the Action Alternative, which is the Project, a proposed streetcar system linking the cities of Sacramento and West Sacramento.

3.1. Action Alternative

The Action Alternative (the Project) includes a 3.3-mile initial line that would extend from the West Sacramento Civic Center to the Midtown entertainment and retail district in the City of Sacramento. It would include 12 westbound and 13 eastbound stations. It is described below by track segment, starting from the western terminus at the West Sacramento Civic Center, and moving east to the eastern terminal loop in Sacramento east of the Sacramento Convention Center.

3.1.1. Track Type and Location Descriptions by Segment

A summary of the track segment descriptions is included in Table 3-1. The proposed alignment is depicted in Figure 3-1, and in the Preliminary Alignment Plans included in Appendix B.

3.1.1.1. West Sacramento Civic Center

The Sacramento Streetcar alignment's western terminus would be in the center median of West Capitol Avenue (a four-lane roadway with two lanes in each direction) just west of Merkley Avenue and adjacent to the West Sacramento Civic Center. The terminus would be a single (stub) terminal track configured to accommodate vehicle reversing. The tail track would be long enough to accommodate two streetcars. It could also be used to store an out-of-service streetcar and still provide adequate room for turnbacks for regular service. From this terminus, streetcars would travel about 200 feet on a single-tail track and transition to a double track approaching the proposed West Sacramento Civic Center Station in front of City Hall. The alignment would cross a left-turn lane in the median directly to the west of the West Sacramento Civic Center Station. This station would have a center platform in the median directly facing City Hall to the north and the Sacramento City College Center and West Sacramento Transit Center to the south. A mid-block crossing constructed as part of the West Capitol Avenue streetscape project, which connects the Civic Center and the Sacramento City College Center, will facilitate pedestrian access from the proposed streetcar platform in the median.

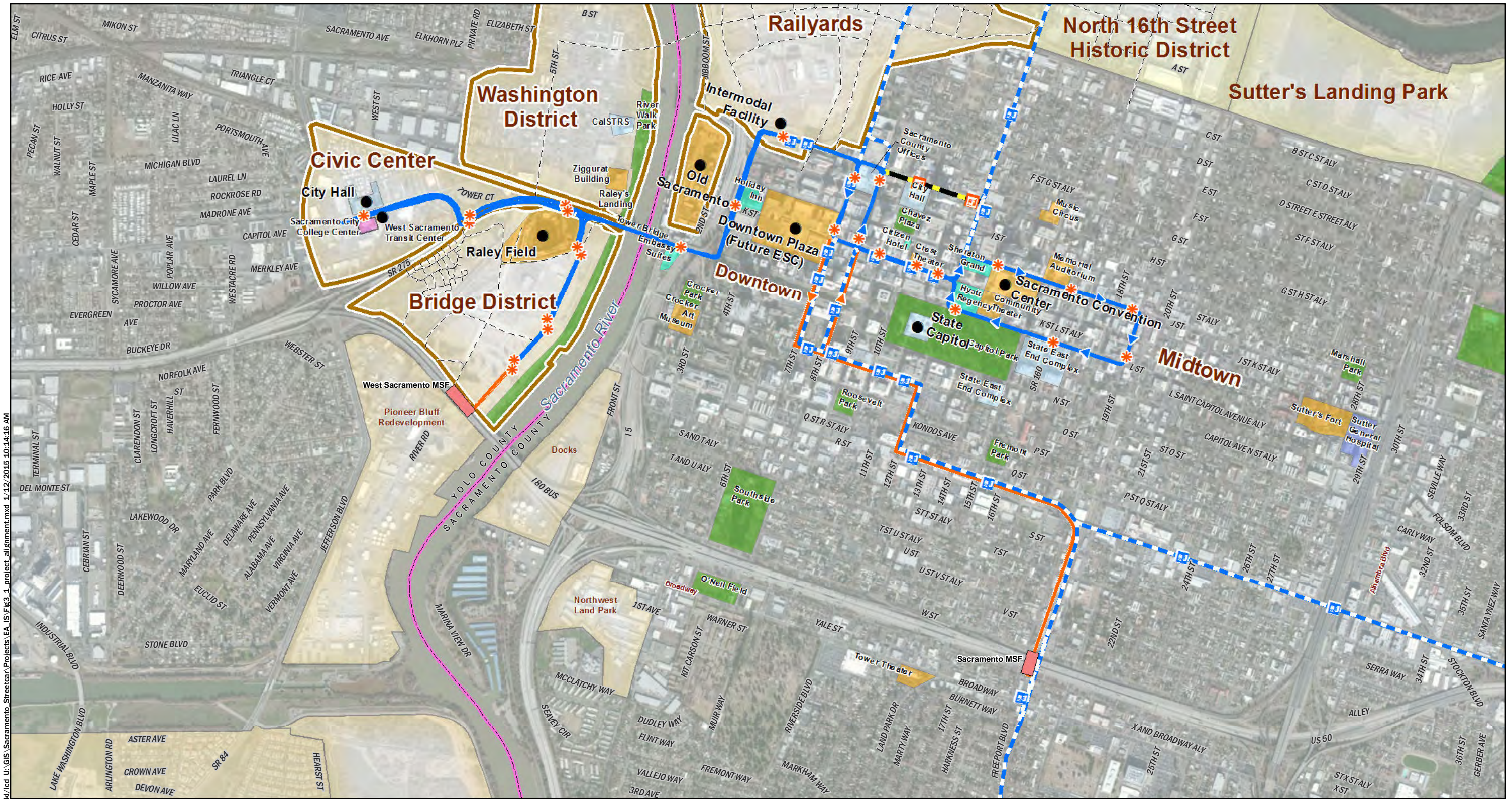
3.1.1.2. Via West Capitol Avenue – West Sacramento Civic Center Station to Garden Street

From the West Sacramento Civic Center Station to Merkley Avenue, the two-track alignment would operate exclusively in the center median along West Capitol Avenue. East of the West Sacramento Civic Center Station, the two-track alignment would operate exclusively in the center median along West Capitol Avenue. This is consistent with the West Capitol Avenue Streetscape Master Plan (2007), which anticipated the need to accommodate the streetcar tracks within the median, including removal of existing trees as necessary. As the eastbound track approaches the signalized intersection at Merkley Avenue, it would operate in both a dedicated lane and in the mixed-flow lane adjacent to the left-turn lane.



**Table 3-1
Proposed Track Configuration**

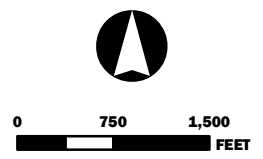
Segment	Track	Proposed Configuration
West Sacramento Civic Center Terminal	Single/ Double	Stub track in center median/exclusive double track in center median.
Via West Capitol Avenue – West Sacramento Civic Center Station to Garden Street	Double	Exclusive operation in center median from West Sacramento Civic Center Station to Merkley Avenue. Center-lane operation in mixed flow on two-way street along West Capitol Avenue from Merkley Avenue to Garden Street.
Garden Street to Tower Bridge Gateway	Double	Center-lane operation in mixed flow on two-way street.
Via Tower Bridge Gateway – Garden Street to Raley Field Station	Double	Curb-lane operation in mixed flow on two-way street. In the future, an additional eastbound track will be added to Tower Bridge Gateway between 5th Street and 3rd Street. The second track will be used for special -related light rail service.
Via Tower Bridge Gateway – Raley Field Station to the Tower Bridge	Single	Transitioning to center-lane operation in exclusive median on two-way street, with the number of existing travel lanes reduced from 4 to 2.
Via Riverfront Street – Tower Bridge Gateway to Mill Street (Future phase.)	Double	Curb-lane operation in mixed flow on two-way street.
The Tower Bridge	Single	Operation in an exclusive median in the center of the bridge, with four existing travel lanes reduced to two travel lanes.
Via Capitol Mall – Front Street to 3rd Street (Sacramento)	Single	Exclusive operation in center median.
Via 3rd Street (Sacramento) – Capitol Mall to I Street	Double	Center-lane operation in mixed flow on two-way street.
Sacramento Intermodal Transportation Facility	Double	Combination of exclusive and shared operation through west side and rear of existing Depot building.
Via H Street – 5th Street to 7th Street/8th Street	Single	Left-side, exclusive operation using existing LRT tracks.
Via 7th Street and 8th Street – H Street to K Street	Double (split pair)	Left-side, mixed-flow operation on one-way couplet using existing LRT tracks and new track south of J Street to accommodate transition to K Street.
K Street – 7th Street to 12th Street	Double	Exclusive operation in center of transit mall (7th Street to 8th Street) and mixed-flow operation (8th Street to 12th Street) using existing LRT tracks.
Eastern Terminal Loop – 12th Street, J Street, 19th Street, L Street	Single	Right-side operation on two-way street (12th Street)/left-side operation on one-way streets (J Street, 19th Street, and L Street) all in mixed-flow operation.
Light-Rail Transit (LRT) on H Street	Double	Relocation of LRT tracks, between 7th Street and 12th Street, from K Street to H Street. Revises traffic flow on H Street from one-way to two-way operation. Streetcars located in mixed-flow operation in curb lane.



U:\GIS\Sacramento_Streetcar\Projects\EA_IS\Fig3_1_project_alignment.mxd 1/12/2015 10:44:16 AM

Source: Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- * New Streetcar Platforms
- Existing Light Rail Station
- New Light Rail Station
- Proposed Streetcar Alignment
- Existing Light Rail Route
- H Street LRT Relocation
- Maintenance Facility Access
- Proposed MSF Locations
- County Boundary



PROJECT ALIGNMENT

January 2015
27560885

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 3-1



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From Merkley Avenue, the double-track alignment would operate in mixed flow, using the center lanes of West Capitol Avenue. Approaching the T-intersection of West Capitol Avenue and Garden Street, which marks the beginning of Garden Street, general vehicle traffic continuing eastbound on West Capitol Avenue would cross the eastbound streetcar alignment and enter a dedicated left-turn lane to continue eastbound on West Capitol Avenue.

3.1.1.3. Garden Street to Tower Bridge Gateway

Along a short segment of Garden Street (a four-lane roadway with two lanes in each direction), streetcars would operate in the center lanes in mixed flow. At the signalized Garden Street/Tower Bridge Gateway intersection, the eastbound streetcar alignment would turn from Garden Street to the right lane of Tower Bridge Gateway. The westbound streetcar would make a sharp turn from the right lane of Tower Bridge Gateway to the center of Garden Street, requiring a curb setback to ease the turning radius. Vehicles turning east onto Tower Bridge Gateway from Garden Street would cross the eastbound streetcar alignment into a left-turn pocket. Westbound streetcars would cross two northbound lanes of traffic on Garden Street. Traffic signal phasing would be designed to allow safe movement of streetcars across traffic lanes at this intersection.

3.1.1.4. Via Tower Bridge Gateway – Garden Street to Raley Field Station

East of the Garden Street/Tower Bridge Gateway intersection, the eastbound and westbound streetcar alignments would operate in the respective curb lanes of Tower Bridge Gateway in mixed-flow traffic. Streetcars would stop at the Garden/Tower Bridge Gateway station. This station would have side platforms along the curb of Tower Bridge Gateway, next to a YCTD bus stop pull-out.

The streetcar alignments would continue in the curb lanes of Tower Bridge Gateway and under the Union Pacific Railroad overcrossing between Garden Street and 5th Street. Under the current configuration, the 15-foot vertical clearance of the overcrossing is lower than the 19-foot minimum vertical clearance required by the California Public Utilities Commission (CPUC) for a streetcar to operate under the overcrossing. To accommodate streetcar operation along this portion of Tower Bridge Gateway, the applicants would seek a CPUC waiver of the clearance standard. RT has been granted these waivers in the past, and a waiver for this location was discussed with the CPUC in 2007.

At the signalized Tower Bridge Gateway/5th Street intersection, vehicles along Tower Bridge Gateway (eastbound and westbound) wishing to turn right onto 5th Street would be required to cross the streetcar alignment to access the right-turn lanes. A second eastbound track will be added east of the Tower Bridge Gateway/5th Street intersection. When this improvement is added within five years of opening service the southerly track closest to Raley Field will serve ongoing regular service, and will accommodate a four-car light rail train laying over. The second eastbound track in the traffic lane will be used by the streetcar during special events when LRT trains are using the southerly track. The existing eastbound bike lane on Tower Bridge Gateway between 5th Street and 3rd Street would be maintained as a bicycle bypass behind the station platform. The westbound streetcar alignment would remain in mixed-flow traffic in the curb lane on the northern side of Tower Bridge Gateway. This configuration would allow right-turning vehicles to cross the track just before reaching the Tower Bridge Gateway/



5th Street intersection. Just west of Riverfront Street/3rd Street, side platforms on both sides of Tower Bridge Gateway would provide riders with a station stop at Raley Field.

3.1.1.5. Via Tower Bridge Gateway – Raley Field Station to the Tower Bridge

After stopping at the Raley Field station, the eastbound streetcar alignment would cross the sidewalk to enter the Tower Bridge Gateway/3rd Street intersection. A special traffic signal phase using a track circuit, loop detector, or train-to-wayside communication would be required at this intersection to permit the transition of eastbound streetcars from the far right curb to the center of Tower Bridge Gateway, directly to the east of the intersection. In the opposite direction, westbound streetcars would transition from the center-running alignment west of the Tower Bridge across the 3rd Street/Tower Bridge Gateway intersection. Westbound streetcars would travel through the 3rd Street/Tower Bridge Gateway intersection on a special traffic signal phase. The special traffic signal phase would allow westbound streetcars to transition from the center lane to the curb lane and access the station platform west of 3rd Street across from Raley Field.

3.1.1.6. Via Riverfront Street – Tower Bridge Gateway to Mill Street

Streetcars would operate in mixed-flow traffic in the respective curb lanes along Riverfront Street, between Tower Bridge Gateway and Mill Street. The streetcar alignment would transition from eastbound Tower Bridge Gateway to southbound Riverfront Street via a connection from the southernmost curb lane along Tower Bridge Gateway. The streetcar alignment would transition from westbound Tower Bridge Gateway to southbound Riverfront Street via the center-running alignment along Tower Bridge Gateway. Northbound streetcars along Riverfront Street would transition to eastbound Tower Bridge Gateway via an alignment in the existing right-turn lane. Stations would be included at Ballpark Drive, Grand Street, and at Garden Street.

Streetcars crossing the Tower Bridge into West Sacramento would alternate traveling to the south along Riverfront Street and to the west along Tower Bridge Gateway and West Capitol Avenue to the Civic Center terminus. As the Bridge District fully develops, more frequent routing of streetcars to Riverfront Street will be implemented to provide service to the Bridge District. Funding to construct this segment will be pursued concurrently with the implementation of the initial system and the Riverfront Street segment would be in service within 5 years of opening.

3.1.1.7. The Tower Bridge

Across the Tower Bridge, streetcars would operate on a single track in an exclusive median in the center of the bridge. The four lanes currently operating over the bridge would be reduced to two lanes. The single track would restore the original rail alignment on the Tower Bridge without requiring modification to the bridge's structural integrity or design, or the functioning of the bridge lift mechanism. The design concept was approved by the Caltrans District Director on June 2, 2014.

East of the Tower Bridge in Sacramento, streetcars would approach an existing at-grade crossing with the active railroad track owned by the Sacramento Southern Railroad. This track crossing, east of the Tower Bridge and west of Front Street, would require full interlocking, per CPUC regulations (i.e., General Order 33-B), to prevent collisions. The interlocking at this location would be part of a system



of multi-functional interlockings between the Raley Field Station and the Old Sacramento Station. The interlocking is needed to control a complex set of operational circumstances in a very compact area, including the single-track streetcar occupancy signaling for the Tower Bridge, the diamond crossing of the Sacramento Southern Railroad, and the Tower Bridge lift operation. Any connection of the streetcar tracks to the Sacramento Southern Railroad would require reviews/approvals from the Federal Railroad Administration (FRA). If approvals are required, it is assumed that FRA would be a cooperating agency under NEPA. Coordination with FRA was initiated in 2008.

3.1.1.8. Via Capitol Mall – Front Street to 3rd Street (Sacramento)

East of Front Street, the streetcar alignment would remain as an exclusive single-track operation in the median of Capitol Mall to a single-platform median at Old Sacramento Station. The Old Sacramento Station would be just west of the new signalized intersection at 2nd Street, which will be constructed by the City of Sacramento as part of the Interstate 5 (I-5) Riverfront Reconnection Project. This new intersection will facilitate pedestrian access to the Old Sacramento Station center platform. The design of the Old Sacramento Station and streetcar alignment would conform to the improvements proposed as part of the I-5 Riverfront Reconnection project.

East of the Old Sacramento Station, the streetcar alignment would continue in an exclusive single-track operation in the median of the Capitol Mall overcrossing of I-5. Just east of the I-5 overcrossing, the single-track streetcar alignment would split into a double-track alignment in an exclusive widened median before turning north through the signalized Capitol Mall/3rd Street intersection to 3rd Street.

3.1.1.9. Via 3rd Street – Capitol Mall to I Street

Between Capitol Mall and L Street, 3rd Street is currently a one-way roadway with three southbound lanes. From L Street to the K Street pedestrian undercrossing, 3rd Street is a two-way roadway with three southbound lanes and two northbound lanes. From the K Street pedestrian undercrossing to J Street, 3rd Street is a two-way roadway with two southbound lanes, one southbound left-turn lane into the K Street parking garage, and two northbound lanes. The two northbound lanes become right-turn-only lanes at J Street. From J Street to its terminus at I Street, 3rd Street is a two-way roadway with one exclusive southbound lane, one dual southbound/left-turn lane at J Street, and one southbound left-turn-only lane at J Street. The northbound roadway in this segment consists of one lane with a mandatory left turn at I Street.

The City of Sacramento has adopted plans for improvements to 3rd Street, including extending 3rd Street north from I Street to the Sacramento Intermodal Transportation Facility (SITF). As part of these improvements, 3rd Street would be converted to two-way traffic for the entire segment north of Capitol Mall, with three southbound lanes and one northbound lane between Capitol Mall and J Street. Southbound left-turn lanes would be provided into the K Street garage and at J Street.

Along 3rd Street between Capitol Mall and J Street, streetcars would operate in the center lanes in mixed flow. A center-median station platform would be provided at K Street to provide a connection to the Sacramento Downtown Plaza and the pedestrian undercrossing to Old Sacramento.



3.1.1.10. Sacramento Intermodal Transportation Facility/Railyards

The City of Sacramento has plans for an extension of 3rd Street north from its present terminus at I Street to the SITF. The streetcar would operate in shared traffic on this new roadway connection between I Street and one block north, where it would turn east to connect with the existing LRT tracks behind Sacramento Valley Station. Streetcar vehicles would share the existing LRT stop north of the existing Depot building, providing intermodal connections, as well as service to the Railyards.

3.1.1.11. Via H Street – 5th Street to 7th Street/8th Street

On H Street, between 5th Street and 7th Street/8th Street, streetcars would use the existing RT LRT tracks, which operate in an exclusive two-way, single track on the northern side of the roadway.

3.1.1.12. Via 7th Street and 8th Street – H Street to K Street

On 7th Street and 8th Street, streetcars would use the existing LRT tracks, which operate on the left side of this one-way couplet southbound on 7th Street, and northbound on 8th Street between H Street and K Street. Streetcars would stop at the existing LRT station stops at 8th and H streets, and at 7th and I streets. Along 7th Street just north of J Street, the streetcar alignment would diverge from the existing RT LRT tracks along the eastern side of 7th Street to a new alignment along the western side of 7th Street. This new alignment would provide a large-radius curve to enable southbound streetcars to transition to eastbound K Street without impacting Saint Rose of Lima Park. A streetcar-only station platform would be constructed along the western side of 7th Street prior to the turn onto K Street. This station would serve the new ESC.

3.1.1.13. Via K Street – 7th Street to 12th Street

Along K Street between 7th Street and 12th Street, streetcars would operate using RT's double-track configuration in the center of K Street, and stop at existing LRT station stops which would be modified to remove the existing mini-high platforms and construct new streetcar platforms to allow level boarding of the streetcar via a ramp that will extend from the vehicle at the push of a button. At the 12th Street/ J Street intersection, a new junction would be constructed containing automatic switch control to allow streetcars to diverge from the LRT tracks at 12th Street and J Street, and to reconnect with the LRT tracks at 12th Street and K Street. Because streetcar and LRT vehicles moving through these junctions would be operating at low speed, full interlocking would not be needed.

3.1.1.14. Eastern Terminal Loop – 12th Street, J Street, 19th Street, and L Street

At the K Street/12th Street intersection, the streetcar alignment would travel along the proposed Eastern Terminal Loop on a single-track alignment that would loop clockwise, beginning at the K Street/12th Street intersection. In this segment, 12th Street has two southbound lanes and one northbound lane. At the K Street/12th Street intersection, streetcars would travel north along 12th Street in mixed-flow operation on the existing RT LRT tracks to J Street.

At the 12th Street/J Street intersection, the streetcar alignment would transition to the northernmost travel lane and continue east along J Street (a three-lane, one-way eastbound roadway) in mixed-flow operation to 19th Street. At the J Street/19th Street intersection, the



streetcar alignment would turn south onto 19th Street (a two-lane, one-way southbound roadway) and continue in the easternmost travel lane in mixed-flow operation for two blocks to L Street. At the 19th Street/L Street intersection, the streetcar would turn west onto L Street (a two- to three-lane, one-way westbound roadway), and continue in the southernmost travel lane in mixed-flow operation to 12th Street. At the L Street/12th Street intersection, the westbound streetcar alignment would turn north to the easternmost travel lane of 12th Street in mixed-flow operation for one block before turning west onto K Street, completing the loop.

Streetcar operation through the 12th Street/J Street, J Street/19th Street, 19th Street/L Street, and L Street/12th Street intersections may require the installation of special traffic signal phasing to allow the safe movement of streetcars across traffic lanes at these intersections. Stations in this segment would be constructed on J Street at 13th Street, 16th Street, and 19th Street; on 19th Street at L Street; and on L Street at 16th Street and at 13th Street.

3.1.1.15. LRT on H Street Relocation

As a component of the Downtown/Riverfront Streetcar Project, existing LRT operations will be relocated from K Street to H Street. To accommodate this relocation, new LRT tracks would be constructed along H Street (a three-lane, one-way roadway) between 8th Street and 12th Street. LRT vehicles would then operate on this new alignment, rather than on K Street; only streetcars would operate on K Street. As part of this relocation, H Street would be converted from a one-way roadway to a two-lane, two-way roadway. Eastbound and westbound LRT vehicles would operate in the appropriate mixed-flow curb lane. New LRT-only stations with side-boarding platforms would be constructed along both sides of H Street between 9th Street and 11th Street in front of Sacramento City Hall. Existing on-street parking between 9th Street and 11th Street would be removed as needed as part of the Project.

The relocation of LRT to H Street will be undertaken within five years of the opening year. In the interim, Streetcar and LRT would coexist along the K street portion of the Streetcar alignment. Where appropriate, this EA/IS addresses the potential combined effects of Streetcar and LRT (see Sections 4.10, Noise and Vibration and Section 4.13 Transportation).

3.1.2. Station Location and Design Elements

3.1.2.1. Approximate Station Spacing

Preliminary alignment and typical station platform plans are included in Appendix B of this EA/IS. The spacing standard for the proposed streetcar is 1,200 to 1,400 feet between stations (approximately ¼ mile), which is typical spacing for streetcar systems. Local bus systems typically have closer spacing (between 800 to 1,000 feet), and modern line-haul LRT systems usually have longer spacing of up to 1 mile. Spacing of ¼ mile allows reasonable walking access to stations along the line.

This spacing is similar to the existing LRT station spacing along K Street, but closer together than the typical LRT station spacing on the line segments outside of Downtown Sacramento. The Project design is intended to offer accessibility to the system similar to the type of accessibility found on a transit mall. Curb heights at streetcar stops need to be at least 8 inches above top of rail to accommodate ADA requirements for low-floor modern streetcars.



3.1.2.2. Description of Station Platform Locations

Proposed station platform locations are shown in Table 3-2. In places where streetcars share track with RT LRT services, streetcars would stop at RT's existing LRT stations. New stations would be built where track would be used exclusively by streetcars. These locations are marked as "New" in Table 3-2.

**Table 3-2
Proposed Station Platform Locations**

Item	Location	New or Existing	Single or Double Track	Side or Center Platforms
Westbound				
Station	19th Street and L Street	New	Single	Side
Station	L Street and 16th Street	New	Single	Side
Station	L Street and 12th Street	New	Single	Side
Station	K Street and 10th Street	Existing	Double	Side
Station	8th Street and K Street	Existing	Single	Side
Station	8th Street and H Street	Existing	Single	Side
Station	SITF Sacramento Valley Station/Railyards	Existing	Double/Single	Center/Side
Station	3rd Street and K Street	New	Double	Center
Station	Old Sacramento Station	New	Single	Center
Station	Raley Field Station	New	Double	Side
Station	Tower Bridge Gateway/Garden Street	New	Double	Side
Station	West Sacramento Civic Center	New	Double	Center
Eastbound				
Station	West Sacramento Civic Center	New	Double	Center
Station	Tower Bridge Gateway/Garden Street	New	Double	Side
Station	Raley Field Station	New	Double	Side
Station	Old Sacramento Station	New	Single	Center
Station	3rd Street and K Street	New	Double	Center
Station	SITF Sacramento Valley Station/Railyards	Existing	Double/Single	Center/Side
Station	7th Street and I Street	Existing	Single	Side
Station	7th Street and K Street	New	Single	Side
Station	9th Street and K Street	Existing	Double	Side
Station	K Street and 11th Street	Existing	Double	Side
Station	J Street and 13th Street	New	Single	Side
Station	J Street and 16th Street	New	Single	Side
Station	J Street and 19th Street	New	Single	Side
Southbound Riverfront Street				
Station	Riverfront Street and Ballpark Drive	New	Double	Side
Station	Riverfront Street and Grand Street	New	Double	Side



**Table 3-2
Proposed Station Platform Locations**

Item	Location	New or Existing	Single or Double Track	Side or Center Platforms
Station	Riverfront Street and Garden Street	New	Double	Side
Northbound Riverfront Street				
Station	Riverfront Street and Garden Street	New	Double	Side
Station	Riverfront Street and Grand Street	New	Double	Side
Station	Riverfront Street and Ballpark Drive	New	Double	Side

Potential locations for new Streetcar platforms and stations necessary to serve the relocation of LRT to H Street are illustrated in Figure 3-1. Existing LRT stations are also identified.

3.1.3. Station Integration

3.1.3.1. Yolo County Transportation District

To complement streetcar service and to make transit operation more efficient following the start of streetcar operation, YCTD may truncate eastbound service for Lines 40/41 and 240 at the West Sacramento Civic Center station. Truncation of Yobolus Lines 40/41, focusing on the West Sacramento Transit Center, will minimize duplication of service, particularly in Downtown Sacramento, while closely coordinating with streetcar service. This feeder local service is an important element in maximizing streetcar ridership and connectivity to and from the entire city of West Sacramento, provide sufficient recovery time for buses to stay on schedule, and offer riders efficient transfer opportunities at the Transit Center to and from streetcars. In addition to weekday daytime synchronization, bus service hours of operation will be modified to synchronize with streetcars during weekday mornings and on weekends. Once high-density development occurs in West Sacramento, and pending the availability of new revenue sources, YCTD may increase bus frequency.

3.1.3.2. Integration with New Loading Zones

New Streetcar Stations. Low-cost “Portland-style” stops would be designed with a berthing area 60 to 65 feet in length, and a boarding area 40 to 45 feet in length. Station elements may include such amenities as a canopy mounted on structural supports, supplemental lighting, fare machines, schedule and patron information rack, bench, lean rail, trash receptacle, sign with stop name, and an ADA pedestrian warning strip running the length of the boarding area. The use of real-time information technology may be installed in shelters to provide patrons with information on the arrival time of the next streetcar.



Shared Stations with RT LRT. Where streetcars share trackage with LRT services, streetcars would stop at RT's existing LRT stations at specified boarding locations in the RT station areas. RT stations are sized for four-car LRT trains, which are approximately 400 feet long, whereas a streetcar is approximately 65 to 95 feet long. A portion of the platform may need to be rebuilt to an 8-inch height to accommodate ADA accessibility into the low-floor streetcars.

3.1.3.3. Disabled Boarding

Until the existing light rail vehicle fleet converts to low-floor vehicles, stations serving both LRT and streetcars will have separate accommodations for disabled boarding. Existing wayside ramps would allow disabled riders access to the existing high-floor RT LRT vehicles. For streetcars, disabled boarding would be handled through car-borne bridge ramps. This would preclude the need to construct new wayside ramps or adapt RT's ramps for vehicles with different floor heights.

3.1.3.4. New Pedestrian Circulation

To facilitate pedestrian circulation, new crosswalks would be constructed at proposed stations with platforms in the center median. The new crosswalks would be laid out in a staggered configuration at the West Sacramento Civic Center, Old Sacramento, and 3rd Street/K Street stations.

3.1.3.5. Connection to West Sacramento Transit Center

The Project would provide a direct connection to the West Sacramento Transit Center, at the southern side of West Capitol Avenue across from the West Sacramento City Hall. The transit center and the streetcar platform would be linked through the provision of pedestrian walkways, signage, and lighting. The Transit Center serves YCTD, which provides regional, intercity, and local fixed-route services throughout Yolo County and a number of neighboring cities.

3.1.4. Traction Power Systems

3.1.4.1. Power Delivery System and Substation Locations

The traction power substations would be in the publicly owned right-of-way. Substations would convert electrical current to the proper voltage for streetcars, and occupy approximately 800 square feet of space). The streetcar line will be powered by two new substations in West Sacramento and existing LRT facilities in Sacramento. Two potential substation locations would be on existing publicly owned property: one on the south side of Tower Bridge Gateway, between the Union Pacific Railroad Bridge and Garden Street; and the other on the north side of Tower Bridge Gateway, also between the Union Pacific Railroad Bridge and Garden Street. There would also need to be a traction power substation incorporated into the future maintenance and storage facility (MSF) in West Sacramento to support operation of the future Riverfront Street alignment.



3.1.4.2. Overhead Contact System (OCS)

The streetcar will receive power from a contact wire that is positioned over the tracks, referred to as the Overhead Contact System (OCS). A single 0.6-inch-diameter copper wire will be supported by a combination of span wires, cantilever arms, and pull-off wires similar to the OCS system that is in place today for the light rail system in Downtown Sacramento. Span wires run perpendicular to the tracks and attach to poles or other structures on both sides of the track. Pull-off wires are used in curves and run from the contact wire to a support on the outside of the curve. Cantilever arms are rigid supports that attach to poles or other structures. The distance between points supporting the contact wire (span length) depends on track curvature, location of turnouts, other special trackwork, traction power substations, and locations where one segment of contact wire is electrically isolated from the next. The maximum span length on straight track for a direct suspension contact system (i.e., a single contact wire with fixed terminations) is typically 120 feet, and span lengths are reduced as curve radii decrease.

The OCS system will be designed during the final design phase of the Project. The design will minimize the size and quantity of supports while maintaining required wire tension and position and structural factors of safety. OCS poles are typically tapered tubular steel poles mounted on a concrete foundation. Reinforced concrete foundations are typically circular, from 30 to 42 inches in diameter, and from 10 to 20 feet in depth depending on pole loading, pole size, and geotechnical conditions. Specialized foundations with split footings, offset caps, or spread footings can be designed to avoid underground conflicts. Poles would be placed in public right-of-way in sidewalks or medians. Street lights and traffic signal poles can also be designed to support the OCS (joint use poles). It is also possible to attach OCS to suitable buildings, as has been done in a few places in Downtown Sacramento for the LRT system.

During final engineering/design, detailed research and testing will be utilized to avoid historic features, with particular attention to determining the location of underground hollow sidewalks in areas where previous investigations have not been conclusive. These methods could include asking permission to enter adjacent buildings where access to below ground is possible, remote sensing equipment, test drilling, and/or ground penetrating radar. Avoidance options include modifying proposed OCS pole locations, modifying track and system elements that are causing a conflict, modifying the foundation type, using a building attachment, or attaching span or pull-off wires to a backbone wire between two other poles or structures. These techniques can also be applied to avoid other cultural resources that might be discovered during the construction process.

The Project sponsors have evaluated that portion of the Project alignment within the Raised Streets Hollow Sidewalks District and have determined the following (tracking the alignment from west to east).



- On 3rd Street from L to I Street, discovery of hollow sidewalks is highly unlikely given construction of I-5 to the west, and the parking structures and hotels to the east. All indications are that when historic buildings were removed, the hollow sidewalks were filled in.
- After the alignment passes I Street, there are no known or expected hollow sidewalks until the alignment turns south on 7th Street. There are existing light rail tracks along the east side of the street, with existing poles that support the OCS with cantilever arms. The streetcar alignment runs down the west side of the street, and there are surveyed hollow sidewalks on the west side of the street at the corner of J and 7th Streets. The hollow sidewalks are likely to be avoided through the use of the existing poles, OCS, streetlight, or traffic light, in the vicinity or attachments to non-historic buildings.
- On 7th Street between J and K Streets there is very low potential for hollow sidewalks given the construction of the Downtown Plaza shopping center in 1971.
- The alignment moves on to the south side of K Street, with both surveyed and unsurveyed hollow sidewalks. Again, however, there are existing poles and non-historic structures that provide ample opportunities to avoid the resources.
- At K and 8th Streets there is the need to install a new crossover. OCS poles may be required. There are hollow sidewalks on the north side of the street confirmed by survey. The south side has not been surveyed, but there is a good chance of discovery in that location. Again, there are numerous existing poles in this location.
- On K Street, between 8th Street and 12th Street, and on to 12th and J Streets, the Project will use existing OCS infrastructure.
- Where the alignment turns east onto J Street from 12th Street, there are known hollow sidewalks, but there is an existing OCS span wire attached to the building on the northwest corner of the intersection.
- On J Street between 12th and 13th, there are hollow sidewalks on the south side of the street and the potential for hollow sidewalks on the north side. The buildings on the north side of the street are, however, not historic, so the likelihood that there are intact hollow sidewalks is low.
- As the alignment moves from Midtown back into the Raised Streets Hollow Sidewalks District, there is a very small potential for hollow sidewalks on the north side of L Street, between 13th and 12th, due to the construction of the Hyatt Regency Hotel in 1988.
- On 12th Street between L and K, there is potential for hollow sidewalks on both sides of the street, but more so on the west side due to the construction of the Hyatt Regency on the east side. Utilization of existing poles is highly likely here.
- On H Street between 7th and 12th, for the relocation of the light rail tracks, there is potential for hollow sidewalks on the south side of H Street, although this area has mostly non-historic buildings on the south side (e.g., the Sacramento County Administration Building, Sacramento City Hall, the California Environmental Protection Agency building).



3.1.5. Operating Plan

The proposed streetcar service would operate 7 days per week. For opening day service on weekdays, streetcars would operate with 15-minute headways from 7:00 a.m. to 6:00 p.m., and 20-minute headways from 6:00 p.m. to 11:00 p.m. On Saturdays, Sundays, and holidays, streetcars would operate from 7:00 a.m. to 11:00 p.m., with 20-minute headways.

In the future, the streetcar service is proposed to operate as two routes. In an alternating pattern, the streetcars crossing into West Sacramento from Sacramento across the Tower Bridge would follow two different branches in West Sacramento. One branch would continue straight on Tower Bridge Gateway at Riverfront Street and serve the West Sacramento Civic Center. The other branch would turn south on Riverfront Street to serve the Bridge District. The headway on these two branches would be twice the headway in Sacramento. The two routes are illustrated in Figure 3-2.

Planned operations along the streetcar route also includes consideration for the operation of light rail vehicles from Sacramento to Raley Field in West Sacramento for special event service. This special event service is only intended when the passenger capacity of a single streetcar is expected to be surpassed. AAA minor league baseball games, concerts and other special events will be served. Design and construction of the infrastructure, including track, signaling, overhead catenary system, etc., will meet criteria that supports both streetcar and light rail operations.

The proposed operations of light rail service along the streetcar alignment will be coordinated with streetcar operations. The streetcar and light rail operations will be controlled and monitored through a single operations control center, and the system will be designed such that the signal system will be "coordinating/controlling" access to segments of the shared track areas to avoid conflicting movements. Because of the coordinated operations control and design of the system, light rail operations will not negatively affect streetcar service and vice versa. It is expected that a nonprofit model of governance will be developed to oversee streetcar operations and planning for development of streetcar alignments to be initiated in the future. The current plan also contemplates that the newly formed governing body would contract with RT for operations and maintenance of the streetcar system. As an existing rail operator, RT has the technical expertise and experience to provide these services

3.1.6. Potential Ridership

The ridership estimates prepared for the Sacramento Streetcar System Plan (February 2012) indicate that the streetcar starter line would have daily nonevent patronage of up to 5,800 riders on opening day (estimated to be 2016). SACOG (2015) recently has estimated that the streetcar project will have approximately 25,300 boardings per day by 2036. Transit boardings include transfers from one transit vehicle to another vehicle. Many of the streetcar riders are shifting from other transit service in Sacramento and West Sacramento. The net new transit trips, once the boardings-to-trips and shifts from other transit routes are accounted for, are about 6,400 trips per day. (This does not include ridership from the special events locations like Raleys Field, the ESC, and the convention center).



3.1.7. Integration with Sacramento Regional Transit District

Streetcar integration with existing RT LRT operations would occur on the Sacramento portion of the proposed alignment along the segments from Sacramento Valley Station on H Street and on 7th and 8th streets, where streetcars would operate on existing LRT track. The preferred platform configuration for the low-floor modern streetcar would allow a wheelchair to board using a push-button-activated ramp, 4 feet, 6 inches from the centerline of tracks and 8 inches above the top of rail.

3.1.8. Vehicle Types

A modern streetcar will be employed for the starter line. The propulsion technology has yet to be identified, but the vehicle procurement process may include options for either traditional overhead electrification or a combination of overhead electrification and on-board energy storage that would allow streetcar vehicles to travel “off-wire” for some parts of the alignment. The agency sponsors will determine the propulsion technology based on the availability of vehicles that can provide for low-floor operation and can meet FTA Buy America requirements. The streetcars would be double-ended and double-sided, with operating controls at both ends. They could also board passengers from either side of the car.

The modern streetcar is a double-ended articulated vehicle. An example of this type of vehicle is the Skoda-Inekon T-10 car, which is used in Portland and Tacoma. These vehicles are 66 feet long and 8 feet wide, with a seating capacity of 41 and a total capacity of 140 (including standees). The top speed of the Skoda vehicles is approximately 43 miles per hour (mph). Per CPUC General Order 143-B, the top speed of the streetcar will be the posted speed limit, not to exceed 35 mph. These cars are partially low floor, and have three doors per side of the car for right- or left-side boarding and double-ended operation. Disabled boarding is accomplished in the center low-floor section through use of a bridge ramp that extends out to the curb or platform, and provides level boarding into the low-floor center section.

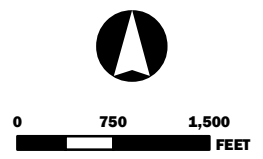
Depending upon interpretation, the streetcar alternatives may not meet the current buff-strength requirements of the CPUC General Order 143-B, Safety Rules and Regulations Governing LRT Transit. For any vehicle alternatives advanced further into the process of Project definition and analysis, compliance with CPUC General Order 143-B should be addressed in the vehicle specifications, and should be discussed between the Project management staff and CPUC staff.



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Source: Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- * New Streetcar Platforms
- Existing Light Rail Station
- New Light Rail Station
- Proposed Streetcar Alignment
- Existing Light Rail Route
- H Street LRT Relocation
- Maintenance Facility Access
- Tower Bridge Gateway Route
- Riverfront Street Route
- Proposed MSF Locations
- County Boundary



OPERATIONAL ROUTES

January 2015
27560885

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento

FIGURE 3-2



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3.1.9. Storage and Maintenance

3.1.9.1. West Sacramento Civic Center Stub Track

The West Sacramento Civic Center Terminal would have a single (stub) track for vehicle reversing; however, the terminal would not have provisions for storage, except for one car that could be stored beyond the portion of track used for reversing.

3.1.9.2. Maintenance and Storage Facility

As part of the Project, an MSF would be constructed to store and maintain the streetcar vehicles when not in use. The MSF will accommodate daily and routine vehicle inspections, interior/exterior cleaning of the streetcars, preventive (scheduled) maintenance, unscheduled maintenance, and component change-out. Heavy-duty repairs, including, but not limited to, air conditioner servicing, truck repairs, wheel replacements, component rebuilds and installations, body repair, painting, and wheel truing⁴ will be performed at the existing RT Maintenance Facility at 2700 Academy Way.

The MSF would be constructed in Sacramento beneath the Business 80/Highway 50 elevated freeway viaduct between X Street, W Street, 19th Street, and RT's South Line LRT tracks, on land currently owned by Caltrans and leased to the City of Sacramento for parking. The approximately 1.5-acre site would be configured to fit approximately 11 streetcars. The site would be accessed from the existing LRT tracks.

In addition to the Sacramento site, a second MSF could be constructed in the future in West Sacramento beneath the Business 80/ 50 freeway (Pioneer Bridge) near South River Road and Mill Street/Riverfront Street in Caltrans right of way. The approximately 3.0-acre site would accommodate approximately 11 streetcars. The site would be accessed from future streetcar tracks along Riverfront Street and would provide supplemental service to support the Riverfront Street operations and other Project needs. The West Sacramento MSF site would also include a traction power substation.

3.1.10. Capital Cost

Funding for the Project will be provided through a variety of sources that includes, but is not limited to: CMAQ, State Proposition 1B – PTMISEA (Public Transportation Modernization, Improvement and Service Enhancement Account), local funding (i.e., sales tax and property-based assessments) and FTA Small Starts Grant monies. Table 3-3 provides an estimate of capital costs based on preliminary design completed to date. An updated capital cost estimate will be made pending refinement of design details for trackwork, passenger information systems, overhead contact system, traction power, signaling, revenue collection, the maintenance and storage facility (MSF), traffic signal modifications, and vehicle specifications and requirements. The costs

⁴ Wheel truing is the process of removing a thin layer of the wheel tread and flange to restore the wheel's roundness, tread taper, and flange thickness. Wheels can develop flat spots and other abnormalities if the wheels lock up during a stop or slide during acceleration.



summarized in Table 3-3 include the track and systems work, civil and roadway engineering, stop shelters and amenities, six vehicles, and soft costs associated with design and construction. The estimated capital cost is \$154,159,600 in 2014 dollars and \$165,938,300 in year of expenditure (YOE) dollars.

**Table 3-3
Estimated Capital Costs**

Cost Category	Quantity	2014 Dollars (x000)	Year of Expenditure Dollars (x000)
10 Guideway and Track Elements (Route Miles)	4.89	\$17,652,000	\$18,818,000
20 Stations, Stops, Terminals, Intermodal (Number)	23	\$4,121,000	\$4,488,400
30 Support Facilities: Yards, Shops, Admin. Buildings		\$14,869,700	\$15,851,900
40 Sitework and Special Conditions		\$18,730,300	\$19,967,600
50 Systems		\$29,226,000	\$32,008,000
Construction Subtotal (10 - 50)		\$84,599,000	\$91,133,900
60 Right-of-Way, Land, Existing Improvements		\$ -	\$ -
70 Vehicles (Number)	6	\$29,106,000	\$32,305,600
80 Professional Services (Applies to Cats. 10-50)		\$26,440,100	\$27,786,200
Subtotal (10 - 80)		\$140,145,100	\$151,225,700
90 Unallocated Contingency		\$14,014,500	\$14,712,600
100 Finance Charges		\$ -	\$ -
Total Project Cost (10 - 100)		\$154,159,600	\$165,938,300

Source: HDR, 2014

3.1.11. Annual Operating Costs

The estimated annual operating cost for the Project is approximately \$3.5 million. Due to unresolved details concerning governance and the organizational structure for management of operations, it would be prudent to assume a 10 percent contingency. The operating costs presented in this analysis should be considered a very preliminary estimate, subject to refinement as the Project is more fully defined and analyzed in greater detail, in both its operational and organizational aspects.

Operating costs are a direct function of the system's headway, span of service, and cycle time. To reduce operating costs, headways can be lengthened, span of service can be reduced, or cycle time can be reduced. Cycle-time reductions would require speeding up the service through transit priority measures, such as installing signal priority or operating in private right-of-way instead of mixed flow. Reducing the cycle time would allow more efficient use of fewer resources (i.e., making



the same number of trips with fewer operators and vehicles, because the vehicles are making the cycle faster).

3.1.12. Construction Activities

Construction, start-up, and testing of the system would take approximately 21 months. The Project would incorporate the streetcar into the existing built environment while minimizing reconstruction. Utility relocations that cannot be avoided would be completed first. The relocation of existing utilities will be coordinated with utility providers; specific locations are not known at this time. However, any utility relocations would occur within existing right-of-way and, based on prior LRT construction, would not exceed a depth of 8-feet. It is also currently intended to limit construction staging and laydown areas to existing street rights-of-way and the proposed MSF sites. The MSF sites will be the primary location for construction laydown activities.

The length of street closed at any one time for track installation—and the decision to construct streetcar tracks in one direction at a time or both simultaneously—would require the development of construction phasing and traffic management plans, and review of these plans by stakeholders. Given the differing street and development patterns along the streetcar route, it is likely that different staging and traffic management approaches would be needed. Based on experience from other modern streetcar projects in the United States, a segment length of three city blocks appears to provide a good balance between expediting the work and minimizing construction impacts. Three city blocks also provides enough work to make the construction operation efficient without reaching beyond what the contractor can accomplish during normal work shifts. Three blocks of streetcar track can be installed in approximately 3 weeks, based upon construction practices in Portland by an experienced contractor.

Depending on locations, short-duration lane closures may be required to install pole foundations, poles, and overhead wire; reconstruct curb and gutter; modify traffic signals; construct platforms; temporary staging and materials storage; and, perform other miscellaneous work.

Caltrans (the owner of the Tower Bridge) has indicated that streetcar construction activities with the bridge locked in the up position will not be allowed. In addition, Caltrans has indicated that previous efforts to perform construction operations on the lift span while maintaining its operation have been problematic due to difficulties in maintaining weight balance. Consequently, construction staging is proposed to take advantage of discrete, off-season closure periods with the lift span locked in the down position. This will require U.S. Coast Guard (USCG) coordination. Closures affecting river traffic will be limited to off-peak boating season, and will need to be coordinated with the river cruise companies and USCG⁵. For previous projects, USCG has allowed short-duration

⁵ USCG staff (David Sulouff) participated in a January 23, 2014 agency informational meeting and indicated at that time that water traffic would have the right-of-way over roadway traffic. The current proposed system is in compliance, as it allows water traffic to pass through unhindered. The planning/design team has confirmed that this would continue with the project. Mr. Sulouff stated that since there will be no change to navigational clearances or to the appearance of the Tower Bridge, USCG will have no input.



(up to 4 days) off-peak-season closures with the lift span locked in the down position. For such a closure, USCG will require that the Project demonstrate that any construction operation requiring closure in the down position cannot be performed—either under normal bridge operation or with the bridge locked in the up position.

In addition, construction activities on the bridge deck will require a detour for at least one direction of vehicular traffic during active work periods, but bicycle and pedestrian traffic would be maintained on at least one of the sidewalks. To maximize the productivity during the out-of-operation periods, a detour of both directions of vehicular traffic would be preferred to maintenance of even one direction of traffic. Closures impacting vehicular traffic may be limited to the River Cats' off-season and periods outside of the Thanksgiving to New Year's holiday season. Work on the approach spans could be performed with extended lane reductions to one lane in each direction, with nighttime closures for operations requiring vehicles on the span.

Following is a summary of the proposed construction stages and durations for the major work elements on the Tower Bridge. These are based on the assumption that the bridge can be returned to lift operation at the end of each closure period by use of four water-filled traffic barriers near the corners of the bridge to balance the weight of the lift span. One scenario to expedite construction would be to close the bridge to vehicular traffic for a continuous period of up to 30 days during which it would be out of operation for the periods indicated in the following descriptions of the stages. Alternatively, after the first stage of concrete removal, the bridge could have water-filled traffic barriers installed, and be rebalanced with water in the traffic barriers prior to being reopened to two lanes of vehicular traffic between stages.

Stage 1 – Preparation for Deck Removal (assume two 6-hour closures)

- Set traffic control for single-lane operation in each direction using plastic traffic water-filled barrels (bridge to be operational with barrels in place).
- Sawcut bridge deck.

Stage 2 – Deck Removal and Replacement (assume 8 days, three shifts each; or break into three 4-day closures)

- Set traffic control for detour.
- Install Deck Shoring and Girder Bracing.
- Remove concrete and remaining portions of rails and hardware.
- Set Fiber-Reinforced Plastic panels.
- Place reinforcing steel.
- Install rails with insulated rail boots and gage ties.
- Place lightweight concrete over girders.
- Initial Cure.
- Place Plastic Barrels.
- Temporary rebalance.



Stage 3 – Place Polyester Concrete Overlay (assume 2 days to resume lift operation, open two lanes of traffic)

- Set traffic control for detour.
- Prep deck for overlay.
- Place polyester concrete overlay.
- Remove deck shoring/girder bracing.

Stage 4 – Install Rail Locks (assume 4-day closure)

- Set traffic control for detour.
- Install rail lock system at lift span joints.

Stage 5 – Install Overhead Catenary System (OCS) (1-week lane reduction)

- Set traffic control for one lane operation in each direction.
- Install OCS.

3.2. Permits Required

The Project may require the following permits to be obtained prior to implementation.

- The Central Valley Regional Water Quality Control Board National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activities;
- Standard Building, Encroachment, and Grading plan check approvals from the cities of Sacramento and West Sacramento;
- Permits from the local regulatory agency for the storage of hazardous materials, and a Waste Generators Identification Number from the State.
- A CPUC waiver for a streetcar to operate under the Union Pacific Railroad overcrossing between Garden Street and 5th Street.
- FRA approvals for connection to the Sacramento Southern Railroad.
- USCG approval for construction-related restriction to Tower Bridge operation.
- Project plan review, approvals for the streetcar to cross streets and railroads, and approval of a System Safety and Security Plan by the Cities of Sacramento and West Sacramento.
- Caltrans encroachment permit(s) for work to be completed in Caltrans right-of-way or affecting operations of Caltrans facilities.

3.3. No Action Alternative

The No Action Alternative is a basis for comparison of the travel benefits and environmental effects of the Action Alternative (Project). The No Action Alternative includes the existing transportation system and all projects in SACOG's MTP/SCS that are programmed to serve the study area and expected to be completed by 2017, the anticipated opening year for the proposed Streetcar. The No



Action Alternative includes current transit service in the corridor and changes to transit service bus routes and schedules planned as outlined in RT’s Transit Master Plan, Short-Range Transit Plan (SRTP), and ADA/Paratransit Plan, in addition to YCTD’s SRTP.

The No Action Alternative assumes normal maintenance and replacement of existing facilities and equipment as their design life is exceeded. The improvements associated with the Action Alternative are those that could be made in addition to those that are part of the No Action Alternative. The No Action Alternative does not include a significant new transit capital improvement (streetcars) in connecting West Sacramento to Downtown Sacramento.

3.4. Alternatives Previously Considered

Sacramento neighborhoods were once connected by small electric transit vehicles. These were not long commuter trains, but rather single-unit trolleys or streetcars. Operating between 1870 and 1947, the streetcar system was located in the Central City and transported people between their homes and their workplaces. The planning process for restoring streetcar service to the downtown core area of Sacramento has been ongoing for the past two decades. Table 3-4 provides a summary of key planning studies and alternatives considered that have been taken over the last 20 years to address transit needs.

**Table 3-4
Previous Planning Efforts - Alternatives Development and Screening**

Previous Study	Transit Alternatives Considered	Screening Process	Elimination of Alternatives
<p>Downtown Sacramento Historic Streetcar Study (Korve Engineering 1995)</p>	<p>Six preliminary alignment alternatives were designed to provide a trolley service to link activity centers (i.e., Downtown Plaza, Old Sacramento, the Convention Center) for visitors, workers and residents and to revitalize Downtown Sacramento.</p> <p>Vehicle type was also considered, including the use of actual historic trolleys or replica cars. Replica cars were determined to be less costly and would be built to current technological standards as well as ADA accessible.</p>	<p>Initial screening was based on:</p> <ul style="list-style-type: none"> - Ridership - connectivity to activity centers and other transit - support of land use and urban design policies - reduction in single occupancy vehicle travel - support for downtown economic base <p>Four alignment alternatives were selected for further evaluation based on qualitative and quantitative criteria including:</p> <ul style="list-style-type: none"> - rider experience - transportation system factors - engineering feasibility - environmental issues - financial opportunities - new miles of tracks - years to complete - ridership potential - capital cost - operating and maintenance cost - reduction in single occupancy vehicle use - support of land use/urban design policies - community acceptance 	<p>Of the four alternatives subject to final screening, two were rejected based on:</p> <ul style="list-style-type: none"> - low to poor level of effectiveness in community acceptance, meeting project goals and objectives, transportation system factors, and environmental issues - linkages to fewer activity centers <p>lack of linkage to Old Sacramento</p>



**Table 3-4
Previous Planning Efforts - Alternatives Development and Screening**

Previous Study	Transit Alternatives Considered	Screening Process	Elimination of Alternatives
<p>Phase 1 Summary Report Downtown/Riverfront Streetcar Study (City of Sacramento, City of West Sacramento, YCTD and RT 2007) and Downtown/Riverfront Streetcar Study Final Environmental Impact Report (City 2009)</p>	<p>Initial evaluation of transit mode options narrowed to Streetcar. Three rail transit alternatives linking Downtown Sacramento and West Sacramento were evaluated to determine the most efficient traffic and streetcar operation scenario and to assess whether structural reinforcements would be needed for the Tower Bridge crossing. Vehicle type was also considered and it was determined that replica vintage trolleys or modern streetcars would be preferred as a streetcar circulator between West Sacramento, Sacramento, and the riverfront.</p>	<p>Evaluation criteria were used for reviewing and assessing the candidate alignments. An initial 21 criteria are grouped into five sub-categories:</p> <ul style="list-style-type: none"> - Fundability - Cost Effectiveness - Minimize Construction and Cost Impacts - Maximize Development Opportunities - Relationships to Local Goals <p>Environmental screening was undertaken to identify major environmental issues that could result from construction and operation of the proposed streetcar project and detailed in an Environmental Screening Technical Memo. Preliminary environmental issues associated with all alignments focused on potential traffic and transportation impacts along the alignment (particularly on and in the vicinity of Tower Bridge) and potential cultural resource impacts resulting from project construction and operation.</p>	<p>The criteria resulting in elimination of potential routes included:</p> <ul style="list-style-type: none"> - Connectivity to most popular destinations - Physical barriers (e.g. railroad crossings) - Available right of way - Existing utilities - Existing traffic circulation - Infrastructure reconstruction cost <p>The preferred alignment was determined to meet project objectives, serve the civic and cultural heart of West Sacramento, and reach the Midtown area of Sacramento.</p>
<p>Sacramento Streetcar Systems Plan (City of Sacramento 2012)</p>	<p>The Plan identified four primary streetcar routes or route segments, located within the core of the Central City, comprise the heart of the Sacramento Streetcar Network and represent the lines with the highest expected near-term performance.</p> <p>Two additional routes are recommended in areas planned for major development/ redevelopment. This includes the Railyards, River District, and the Arden Fair Mall/Cal Expo areas.</p>	<p>Stage 1 - Route screening was used to select the streetcar routes for more detailed Stage 2 evaluation, including:</p> <ul style="list-style-type: none"> - identification of key activity centers - candidate streets - cost-constraints due to physical barriers - adequate connections to activity centers - duplication of existing transit service - ridership potential based on existing and planned development <p>Stage 2 - The following criteria were used to evaluate the 12 candidate routes:</p> <ul style="list-style-type: none"> - projected ridership - population and employment per track mile (existing, 2035, and growth – from existing to 2035) - economic development - connectivity assessment - environmental consideration - transit operations - traffic issues <p>Stage 3 – performance based on transit network goals including:</p> <ul style="list-style-type: none"> - maximized number of passenger trips - maximized operating efficiency (minimum cost for maximum ridership) - potential to create positive impacts for economic growth; improved land use 	<p>The criteria resulting in elimination of potential routes included:</p> <ul style="list-style-type: none"> - an initial route with the highest potential for success in the opening year - support of economic revitalization in the Central City - connection to the Sacramento Intermodal Transportation Facility - Connection with West Sacramento - meet federal funding criteria for cost effectiveness, economic development effects and public transportation supportive land uses



**Table 3-4
Previous Planning Efforts - Alternatives Development and Screening**

Previous Study	Transit Alternatives Considered	Screening Process	Elimination of Alternatives
		patterns; Reduced congestion levels; improved air quality and reduced GHG emissions	

In 1995, a feasibility study was completed for restoring historic trolley service (Korve 1995). The study included an alternatives analysis, a feasibility assessment, funding analysis, institutional arrangements, and an implementation plan. Six preliminary alignment alternatives were designed to provide a trolley service to link activity centers (i.e., Downtown Plaza, Old Sacramento, the Convention Center) for visitors, workers and residents and to revitalize Downtown Sacramento. As a result of qualitative and quantitative screening criteria, two final alignments were considered to address the study goals and objectives of providing linkage between the primary activity centers and land uses.

Subsequently, as discussed in Section 2.1, in 2006 the cities of West Sacramento and Sacramento, in cooperation with RT and YCTD, formed a partnership to study the reintroduction of streetcar service to connect the cities of West Sacramento and Sacramento and their shared riverfront. A Phase I feasibility study, which included a discussion of technology, alignment, financing opportunities, and operating plans, was completed in May 2007, and summarized in the Phase 1 Summary Report, Downtown/Riverfront Streetcar Study. The City Council of West Sacramento adopted the findings of the Phase 1 report on May 9, 2007.

In the Phase I Study, the initial evaluation of transit mode options was narrowed to Streetcar. As noted in the Phase 1 Report, streetcar is a different form of transit than either LRT or bus since it is as an urban circulator and a pedestrian accelerator, intended to support the “walkable urbanism” of both Downtown Sacramento and West Sacramento and their shared riverfront. According to the 2007 study:

“the typical streetcar trip is not strictly to work - although many of the thousands of new Downtown residents will use it for that purpose. Most of the nine trips per day generated by the typical household are not related to the trip from home to work. These are the trips this urban circulator type of transit is designed to capture. These more typical urban circulation trips include:

- Lunch or dinner trips by workers who have commuted downtown by transit or who “park once” and then walk or use the streetcar for other trips
- Downtown workers on both sides of the River crossing to go to retail, restaurant, office, and other inviting destinations
- Trips between business locations for mid-day meetings;
- Visitors circulating between the hotel and convention center core in Downtown and destinations in Old Sacramento, along the waterfront, Midtown and the Crocker Art Museum



- Lunch or dinner trips by downtown residents
- Residents, employees and visitors visiting Raley Field
- Employees and visitors connecting to the larger regional transit network, and - in the next stage of the project - to the Capitol Corridor at the Amtrak station”

In May 2007, the City of Sacramento City Council adopted a Resolution (2007 310) approving the alignment proposed in the feasibility study and authorizing the City Manager to direct staff to continue to work with its MOU partners through the completion of the environmental review and the preliminary design phase of the Project. The Project was evaluated pursuant to CEQA and in 2009 a Final Environmental Impact Report (EIR) was certified by the City of West Sacramento, acting as lead agency. The 2009 Streetcar Project Alternative was developed based on findings from the Project’s Phase 1 Feasibility Study (Phase 1 Summary Report, May 2007), and on refinements to the alternative’s alignment, track configuration, and station locations during a Phase 2 process. The Project refinements resulted from consultation with the participating agencies through their representatives on the Technical Advisory Committee. In addition, coordination was conducted with the Cities of West Sacramento and Sacramento engineering and planning staff to integrate the streetcar alignment and station locations with development plans and infrastructure improvements carried out by the respective jurisdictions. At several locations, traffic analyses and engineering studies were performed for this purpose. These studies involved the location of the alignment along Capitol Mall, the track configuration at Tower Bridge Gateway and 3rd Street, the terminal at the West Sacramento Civic Center, and the Convention Center loop at the eastern end of the Project. Additional coordination with Caltrans regarding the streetcar track and lane configuration over Tower Bridge was also undertaken.

Table 3-5 summarizes the evaluation of the initial list of alternatives based on the ranking of transit alternatives by evaluation factor. The rankings of high, medium, or low for a range of key factors provide a way to eliminate less feasible alternatives. They also underlie the reasons for the cooperating agencies’ s The 2009 Streetcar Project Alternative was developed based on findings from the Project’s Phase 1 Feasibility Study (Phase 1 Summary Report, May 2007), and on refinements to the alternative’s alignment, track configuration, and station locations during Phase 2. The Project refinements resulted from consultation with the participating agencies through their representatives on the Technical Advisory Committee. In addition, coordination was conducted with the Cities of West Sacramento and Sacramento engineering and planning staff to integrate the streetcar alignment and station locations with development plans and infrastructure improvements carried out by the respective jurisdictions. At several locations, traffic analyses and engineering studies were performed for this purpose. These studies involved the location of the alignment along Capitol Mall, the track configuration at Tower Bridge Gateway and 3rd Street, the terminal at the West Sacramento Civic Center, and the Convention Center loop at the eastern end of the Project. Additional coordination with Caltrans regarding the streetcar track and lane configuration over Tower Bridge was also undertaken.

Table 3-5 summarizes the evaluation of the initial list of alternatives based on the ranking of transit alternatives by evaluation factor. The rankings of high, medium, or low for a range of key factors



provide a way to eliminate less feasible alternatives. They also underlie the reasons for the cooperating agencies' selection of the streetcar as the best alternative to meet the proposed Project Purpose and Need, advance Project goals, and improve transit in the study area within budget constraints.

Rubber-tired alternatives, such as diesel buses, shuttles, and motorized cable cars, were eliminated due to the potential for additional air pollutants generated, the increased reliance on fossil fuel propulsion, and the use of congested traffic lanes. In addition, by adding to the increased traffic volumes, bus and shuttle transit could become a contributor to cumulative traffic impacts and ambient noise increases. Also, rubber-tired transit would not fulfill West Sacramento's redevelopment goals for transit-oriented development as well as rail. The Phase 1 study also examined the extension of light rail from Sacramento into West Sacramento. Although this would fulfill the City of West Sacramento's redevelopment goals and would have many of the same attributes as a streetcar, light rail is more expensive in terms of capital and operating costs. In light of these findings, the Phase 1 study concluded that the streetcar mode was the most feasible and environmentally sound.

Table 3-5 Matrix of Project Alternatives

Factor Considered	Project Alternative			
	Bus	Rubber-Tired Cable Car	Streetcar	Light Rail
Supports Project Goals and Objectives	Medium	Medium	High	High
Supports Redevelopment Plans	Low	Low	High	High
Enhances Environmental Quality	Medium	Medium	High	High
Can Operate on Tower Bridge without Affecting the Historic Structure	High	High	High	High
Proven Technology	High	High	High	High
Can Accommodate Demand without Substantial O&M Cost	Medium	Medium	Medium	Medium
Within Capital Cost Budget	High	High	High	Medium
Stakeholder Support	Low	Low	High	Medium
Service Can Be Readily Expanded	High	High	High	High
Source: City of West Sacramento 2008				



It should be noted that the Phase 1 study was not a CEQA or NEPA analysis and did not quantify relative levels of effects. Following adoption of the Phase 1 report, the City of West Sacramento, acting as the lead agency, completed a project-level EIR in April 2009 that evaluated a streetcar line that would connect West Sacramento with the City of Sacramento via the Tower Bridge. The streetcar alignment evaluated in the EIR would extend from the West Sacramento Civic Center to the Sacramento Convention Center following a general alignment along West Capitol Avenue, Tower Bridge Gateway, Capitol Mall, and K Street (see Figure 2-1).

In the Downtown/Riverfront Streetcar Study Draft EIR (Draft EIR) (City of West Sacramento 2008), the proposed Streetcar Project Alternative was compared with the No-Project Alternative to determine which would be the Environmentally Superior Alternative. As indicated in Chapter 4 and Sections 5.1, 5.2, and 5.3 of the Draft EIR, the Streetcar Project Alternative was considered the Environmentally Superior Alternative for the following reasons:

- **Land Use:** The Streetcar Project Alternative supports the City of West Sacramento's redevelopment goals of encouraging development near transit stops.
- **Employment:** The Streetcar Project Alternative would create construction and operations jobs without creating added demand for housing, because the regional labor pool could fulfill the employment requirements of the proposed project.
- **Transportation:** In contrast to the No-Project Alternative, which produces cumulative traffic impacts on study area roads, particularly on the approach roads to the Tower Bridge, the Streetcar Project Alternative would reduce automobile trips over the Tower Bridge over the long term and, as a result, help the cities overcome cumulative traffic congestion and circulation problems on the approach roads to the Tower Bridge.
- **Parks and Recreation:** The Streetcar Project Alternative would improve access to parklands along the Sacramento River and in the area surrounding the Capitol and connect them with neighborhoods along the alignment.
- **Air Quality:** By shifting some automobile trips to transit, the Streetcar Project Alternative would support regional air quality goals to reduce vehicle miles traveled.
- **Noise:** Noise levels along the proposed alignment are forecasted to exceed local thresholds over the planning horizon under the No-Project Alternative. Sensitive receptors along the alignment may be subjected to unacceptable future ambient noise levels due to the increased traffic volumes on the major streets that contain the alignment. Unlike the No-Project Alternative, the Streetcar Project Alternative does not make a considerable contribution to unacceptable cumulative noise levels. Mitigations are identified that reduce noise and vibrations impacts to a less than significant level.
- **Energy:** The streetcar is a non-polluting, electric-powered vehicle that lessens reliance on fossil fuels. If the proposed project were in operation, an additional 3,134 kWh of annual energy usage, or a 4 percent increase, would be required. This is not considered a substantial increase in energy consumption and represents a very small percentage of electric power generated by SMUD. In addition, trips made on buses and cars between West Sacramento and Downtown



Sacramento that may be diverted to the streetcar would balance the additional electrical power required for streetcar operation.

In an effort to further refine the alignment within the City of Sacramento and to address funding concerns, the City of Sacramento embarked on the Sacramento Streetcar Planning Study in early 2011. The Sacramento Streetcar Planning Study was accepted by the Sacramento City Council in February 2012. This study established minor modifications to the initial alignment including using 3rd Street in lieu of 7th/8th streets and extending the Midtown loop from 15th Street to 19th Street. This study and established the Locally Preferred Alternative (LPA).

Based on the previous planning considerations and alternatives considered, other alternatives, were found to not meet the stated purpose and need and were not carried forward for detailed consideration in this EA/IS.



CHAPTER 4. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Introduction

This chapter presents information on the environmental setting in the Project area, as well as the environmental consequences of the No Action Alternative and the Action Alternative. The affected environment and environmental consequences are supported by additional technical studies/memoranda prepared for the following topics: Air Quality/Greenhouse Gas Emissions, Biological Resources, Cultural Resources, Environmental Justice/Socioeconomics, Health Risk Assessment, Noise/Vibration, and Transportation.

Resources with No Concern

Public Services and Safety and Security are not addressed separately and in detail in this chapter. The Project would not induce a substantial increase in population in the study area beyond that projected in regional plans. Therefore, the Project would not require an increase in public services such as schools or fire/protection. In addition, the Project would not require new or additional safety and security measures beyond what is described for the Project in Chapter 3, Project Description.

The Project would not disrupt emergency services or response time during construction or operation. The Project sponsor will develop a Construction Traffic and Parking Management Plan that will be subject to review and approval by the City of West Sacramento Traffic Engineer, the City of Sacramento Department of Transportation, Caltrans, and local emergency service providers, including the fire and police departments. The plan will ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. As described in Section 3.1.1 and 3.1.12, the Project includes bicycle and pedestrian elements to ensure the safety of bicyclists and pedestrians during construction and operation of the Project.

General Methodology

This EA/IS assesses both direct impacts (an effect that is caused by an action and occurs at the same time and place) and indirect impacts (an effect that is caused by an action but is later in time or farther removed in distance, but still reasonably foreseeable). The analysis of environmental impacts considers the context, duration, intensity, and type of impact.

Cumulative Impacts

CEQ's regulations to implement NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or



nonfederal) or person undertakes such other actions” (40 Code of Federal Regulations [CFR] Section 1508.7). Cumulative impacts are addressed for both of the alternatives considered.

Cumulative impacts were determined by combining the impacts of the Project being considered with other past, present, and reasonably foreseeable future actions. It was therefore necessary to identify other ongoing or reasonably foreseeable future projects in the cities of Sacramento and West Sacramento, and if applicable, the surrounding region.

Actions identified by SACOG as potentially having a cumulative impact in conjunction with the Project include those transportation projects serving the study area listed in the SACOG MTP; the Bridge District Specific Plan; the Sacramento Railyards and Docks Area Specific Plans; the I-5 Riverfront Reconnection Project; and the Sacramento ESC in addition to the projects listed in Section 2.4.1.

4.1. Aesthetics and Visual Resources

4.1.1. Introduction to the Analysis

This section describes the existing aesthetics and visual resources in the Project area; discusses applicable regulations; and evaluates the potential effects of implementation of the Project alternatives. For the purposes of this section, the study area is defined as the area within ¼ mile of the proposed alignment. As described below, the Project’s effects on aesthetics and visual resources would not be adverse.

4.1.2. Regulatory Setting

The following documents describe visual and aesthetic guidelines for development in the study area that pertain to the Project.

4.1.2.1. State

Capitol Area Plan/Capitol View Protection Act (California Government Code Section 8160-8169). The Capitol Area Plan, approved by the Director of the California State Department of General Services in July 1997, is the official State master plan for land use and development on State-owned land in the Capitol Area (California State Department of General Services, 1997). The Capitol Area Plan provides for the orderly development in a statutorily defined, geographic area to the south, east, and west of the State Capitol Building and Capitol Park. The Capitol View Protection Act (CVPA) (Government Code Sections 8162.5., 8162.6, 8162.7, 8162.8, and 8162.9) defines the height and setback requirements for development along Capitol Mall and for new buildings surrounding the Capitol, to restrict intrusion on the viewshed of the Capitol building. The CVPA accounts for public improvements planned by the City of Sacramento and other public agencies in the Capitol area, including plans for regional transit development.



4.1.2.2. Local

City of Sacramento 2030 General Plan

The Aesthetic Resources section of the 2030 General Plan's Environmental Resources Element includes policies to "provide for the maintenance and protection of significant visual and aesthetic resources, which contribute to the identity and character of Sacramento" (City of Sacramento, 2009a). The following goals and policies are relevant to the Project:

Goal ER 7.1 Visual Resource Preservation. Maintain and protect significant visual resources and aesthetics that define Sacramento.

Policies:

- **ER 7.1.1 Protect Scenic Views.** The City shall seek to protect views from public places to the Sacramento and American rivers and adjacent greenways, landmarks, and urban views of the downtown skyline and the State Capitol along Capitol Mall.
- **ER 7.1.4 Standards for New Development.** The City shall seek to ensure that new development does not significantly impact Sacramento's natural and urban landscapes.
- **ER 7.1.5 Lighting.** The City shall minimize obtrusive light by limiting outdoor lighting that is misdirected, excessive, or unnecessary.
- **ER 7.1.6 Glare.** The City shall require that new development avoid the creation of incompatible glare through development design features.

Sacramento Central City Urban Design Guidelines – Central Core

The Central City Urban Design Guidelines is a compilation of design guidelines for the districts and neighborhoods that comprise the Central City Community Plan Area. Together, these guidelines convey the City's expectations for design excellence in the Central City—from the traditional urban neighborhoods surrounding the downtown Central Core, to the redevelopment areas of the former Southern Pacific Railyards and the northern River District (City of Sacramento, 2009b). The document includes separate sections for several design review districts, including the Central Core (Section 3) and the Railyards (Section 5). These guidelines establish a framework of urban design concepts intended to inform all decisions relating to the physical form and character of public and private development throughout the Central City.

City of West Sacramento General Plan

The City of West Sacramento General Plan's Urban Structure and Design Element (Section VIII) contains several Urban Structure and Design goals and policies to enhance the visual environment. (City of West Sacramento, 1990). The Project-related goals and policies are:

- **Goal B:** To enhance the relationship of the City and the Sacramento River.



- **Policy 6.** The City shall promote the enhancement of the areas where the I Street and Tower Bridges meet the riverfront to create strong, positive and memorable entryways into West Sacramento and to reinforce the historical significance of these bridges.
- **Goal E.** To create a distinctive Central Business District that serves as the City's most important civic and pedestrian-oriented commercial area.
- **Policy 2.** The City shall take the lead in upgrading the visual quality of the streets in the Central Business District.

4.1.3. Affected Environment

The existing visual and aesthetic environment along the proposed alignment is described by segment below (from the western end of the proposed alignment to the eastern end).

4.1.3.1. West Sacramento

The study area at the western terminus of the Project consists of the City of West Sacramento's Civic Center complex of buildings, including City Hall, the West Sacramento Center of Sacramento City College, the Turner Community Library, the West Sacramento Community Center and the West Sacramento Transit Center. As shown in Figure 4.1-1, the area is characterized by mid-rise buildings set back from the roadway with limited vistas. The proposed alignment will run along West Capitol Avenue, which was the subject of a multi-million dollar streetscape project completed in 2010. The project included a "road diet" to narrow the street and widen the sidewalks; and the addition of new streetlights, street trees, median landscaping, and street furniture. The streetscape improvements extend to Garden Street and the intersection with Tower Bridge Gateway, which was also enhanced with the completion of an extensive streetscape improvement program in 2011. That project included the addition of 20-foot-wide landscaped sidewalks; 6-foot-wide bicycle lanes; landscaping and irrigation; new curbs and gutters; a new landscaped median; bus stops with shelters; and pedestrian and street lighting.

Views along Riverfront Street are dominated by large expanses of undeveloped land interrupted with vertical elements such as trees and street standards in the foreground and background; larger structures such the Ziggurat Building, the CalSTRS headquarters building, and the Tower Bridge are visible in the distance (Figure 4.1-2). The Sacramento River shoreline visible east of Riverfront Street contains a nearly continuous band of mature riparian vegetation, and is an important visual amenity for the City of West Sacramento. Riverfront Street ends just north of the elevated structure of the Highway 50 freeway which dominates this portion of the corridor (site of the proposed West Sacramento MSF).

4.1.3.2. The Tower Bridge

Approaching the Tower Bridge (an historic resource listed on the National Register of Historic Places [NRHP]) from the west, the view from the proposed alignment focuses on the massiveness and crosshatched texture of the bridge's structural elements, accentuated by the arched bracing over the road that frames the view across the embankment to Downtown Sacramento



(Figure 4.1-3). Long views of Downtown Sacramento high-rise buildings are interrupted by road signs and mature trees that line the foreground. The river's riparian vegetation and natural areas adjacent to the Tower Bridge are central to the high scenic quality of the shoreline.

4.1.3.3. Sacramento

The view from the eastern end of the Tower Bridge along Capitol Mall terminates at the State Capitol building (Figure 4.1-4). Both the State Capitol building and the Tower Bridge are key visual resources in Sacramento. The eastward-facing perspective from the Tower Bridge is accentuated by the tall buildings and trees that line the Mall. Traffic signals, street signs, and light poles clutter and interrupt the view.

Downtown Sacramento roadways along the proposed alignment exhibit a cohesive element of existing street trees and large urban structures. However, long-range views are limited due to the presence of mid- and high-rise buildings (Figures 5.1-5 and 5.1-6). Downtown Sacramento roadways with views of existing LRT track and overhead catenary exist along H Street (Figures 5.1-7 and 4.1-8), 7th Street (Figure 4.1-9), 8th Street (Figure 4.1-10), K Street (Figure 4.1-11), J Street (Figure 4.1-12) and 19th Street (Figure 4.1-13). The area in the vicinity of the proposed Sacramento MSF is characterized by one- and two-story single- and multi-family residences, mature street trees, and low-rise commercial structures with limited long-range views. The sites of the West Sacramento MSF (see Figure 4.1-14) and Sacramento MSF are dominated by the elevated structure of the Highway 50 freeway.

4.1.4. Environmental Effects

The following section identifies and describes visual and aesthetics changes that would result if the alternatives were implemented. The existing visual landscape surrounding the proposed alignment provides the baseline data for comparing the No Action Alternative with the visual and aesthetic quality of the area if the Project is implemented.

This section includes an analysis to determine if the Project would:

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings in a State scenic highway.
- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light or glare that would adversely affect day- or nighttime views in the area.

There are no designated State scenic highways in the study area. As described in Section 4.3, Biological Resources, tree removal required due to construction of the Project would comply with all applicable regulations, thus minimizing potential long-term adverse visual effects related to tree removal. Therefore, impacts related to State scenic highways and tree removal are not discussed further in the analysis.



4.1.4.1. No Action Alternative

The No Action Alternative would retain the existing visual setting in the study area. Modifications to the skyline and development of vacant and underused blocks would occur according to West Sacramento and Sacramento General Plans. The visual changes to the existing setting from these planned development projects are subject to separate environmental analysis for each project or plan area.

4.1.4.2. Action Alternative

Like other vehicles traveling through this environment, streetcars would move through the urban landscape, temporarily altering the view of the person on the street. Therefore, this analysis focuses on the placement of permanent Project features along the proposed alignment. These would include poles, overhead catenary wires and structures, station platforms/shelters, track, and the MSF options. Project elements that would permanently change the urban landscape are expected to blend in with the existing visual clutter of street signs, existing overhead utility and LRT overhead catenary, traffic signals, bus shelters, and utility poles that currently line the proposed alignment. The Project would maintain visual and aesthetic compatibility with the existing environment.

Specific locations along the alignment have important viewshed attributes. This analysis focuses on these particular locations to determine if the Project would alter, obstruct, or degrade the visual quality or character of the environment at these locations according to the criteria listed above.

Effects on a Scenic Vista, Substantial Alteration or Obstruction of Scenic Resources, or Degrade the Existing Visual Character or Quality

West Sacramento Civic Center. The Project's western termination in front of the West Sacramento Civic Center would add a streetcar platform, shelter, overhead catenary, and signage in the middle of West Capitol Avenue directly in front of City Hall. Once constructed, these features would not substantially alter the general urban visual conditions along the proposed alignment, obstruct long-range views, or degrade the existing visual character. Figure 4.1-7 depicts a visual simulation of the potential view with implementation of the Project. As shown, the primary visual feature of the Project, the catenary system, is integrated with the light standards and aboveground utility lines that parallel the roadway. The overhead catenary and poles would be partially obscured from viewers by numerous trees that line the roadway. No adverse visual effects would occur at this location.

Tower Bridge Gateway and Riverfront Street. The visual elements of the Project along Tower Bridge Gateway and Riverfront Street would complement and conform to the light standards and utility poles that line the roadways. Any visual change caused by integrating streetcar facilities into the urban landscape would be minor and would not result in long-term adverse effects or degrade the existing visual character or quality. The West Sacramento MSF would be constructed beneath the elevated structure of the Highway 50 freeway and would not block existing scenic vistas or degrade the existing visual character or quality surrounding the freeway.

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**VIEW LOOKING WEST
ALONG WEST CAPITOL AVENUE**

January 2015
27560893

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-1



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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**VIEW LOOKING NORTH ALONG
RIVERFRONT ROAD NEAR GARDEN STREET**

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-2



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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**VIEW LOOKING EAST ON TOWER BRIDGE
GATEWAY NEAR RIVERFRONT STREET**

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-3



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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VIEW LOOKING EAST FROM TOWER BRIDGE

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-4



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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**VIEW LOOKING SOUTH ALONG THIRD STREET
NEAR K STREET**

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento

URS

FIGURE 4.1-5



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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**VIEW LOOKING WEST ALONG L STREET
ADJACENT TO THE CAPITOL PARK**

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-6



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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**SIMULATION OF STREETCAR SERVICE
AT WEST SACRAMENTO CITY HALL**

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-7



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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**VIEW LOOKING WEST ALONG H STREET
ADJACENT TO CITY HALL**

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-8



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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VIEW LOOKING SOUTH ALONG 7TH STREET

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-9



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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VIEW LOOKING SOUTH ALONG 8TH STREET

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-10



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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VIEW LOOKING WEST ALONG K STREET

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-11



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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VIEW LOOKING WEST ALONG J STREET

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-12



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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VIEW LOOKING NORTH ALONG 19TH STREET

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-13



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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WEST SACRAMENTO MSF

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Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.1-14



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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The Tower Bridge. The placement of overhead catenary on the Tower Bridge would add to the visual clutter to the structure; however, this alteration would be considered minimal. The overhead catenary would not block views of the bridge structure or alter views from the bridge, and Project features would not substantially alter the historic features of the bridge. In addition, the Project's physical elements would restore a historic component to the Tower Bridge, which originally had electric trains operating across the bridge. Therefore, the Project would not result in adverse visual effects to the Tower Bridge or degrade the existing visual character or quality in the vicinity of the bridge. For additional information related to historic resources, refer to Section 4.4, Historic, Archaeological, and Paleontological Resources.

Downtown and Midtown Sacramento. In downtown and midtown Sacramento, new overhead catenary and station platforms would add to the visual clutter of the existing streetscape along those sections of the proposed alignment that do not currently have LRT service. However, similar to other segments along the proposed alignment, the additional visual elements associated with the Project would not obstruct, alter, or degrade existing views in these segments or degrade the existing visual character or quality in downtown or midtown Sacramento. The addition of overhead catenary would have no effect on long-range views in downtown and midtown Sacramento, because such views are limited due to the built-up urban nature of the area. Any visual change caused by integrating streetcar facilities into the urban landscape would be minor and would not result in long-term adverse effects. The Sacramento MSF would be constructed beneath the elevated structure of the Highway 50 freeway and would not block existing scenic vistas or degrade the existing visual character or quality surrounding the freeway.

Light or Glare Affecting Views in the Area

Station Platforms. Potential lighting for the station stops along the proposed alignment would comply with applicable standards for wattage, shielding, and security. The incremental increase in light would not affect views of the State Capitol or the Tower Bridge, or substantially contribute to existing light and glare along the public right-of-way. As a result, no adverse effect from potential station platform lighting is expected.

Maintenance and Storage Facility Options. Lighting for West Sacramento MSF option or the Sacramento MSF option would also comply with applicable standards. Both facilities are proposed to be constructed beneath the elevated structure of Highway 50. The incremental increase in light would be contained beneath Highway 50, and would not substantially contribute to existing light and glare along the public right-of-way. As a result, no adverse effects from the MSF options are expected.

4.1.4.3. Construction Effects

During construction of the Project, temporary changes in views of and from the alignment would occur due to the introduction of construction equipment and associated vehicles into the viewshed of public roadways. Safety and directional signage would also be a visible element. Construction staging areas within public rights-of-way adjacent to roadways could also be in the foreground views.



However, these changes would be temporary in nature. Construction is anticipated to take place in only a three-block segment along the proposed alignment at any one time. The duration of construction in these three-block segments is anticipated to be approximately three weeks, based on construction practices in Portland by an experienced contractor. Either of the MSF options would be constructed beneath existing freeway viaducts with limited viewpoints. Therefore, construction activities associated with the Project would not result in adverse effects to visual resources.

4.1.5. Measures to Minimize Harm

Compliance with State and local policies and regulations would ensure the Project has no effect on aesthetic and visual resources.

4.1.6. Cumulative Effects

As indicated above, the Project would add poles, overhead catenary, station platforms with shelters, and track to the existing urban landscape. These elements would conform to existing street furniture and utility lines present along the streetcar alignment and would represent a minor addition to the existing visual landscape in the Project area. Changes to the visual landscape resulting from nearby planned development projects, including the construction of mid-rise and high-rise buildings, would represent a greater change due to their size and bulkiness relative to existing conditions. The Project would contribute to this change on a cumulative basis, but the contribution would not be cumulatively considerable, and no adverse cumulative visual effects would result.



4.2. Air Quality and Global Climate Change

4.2.1. Introduction to the Analysis

This section describes the methods that were used to evaluate existing air quality conditions in the Project area, and potential air quality and greenhouse gas (GHG) effects related to the Project. This section also addresses measures to minimize harm and cumulative effects. This analysis is based on the Air Quality and GHG Technical Memorandum prepared for the Project in June 2014 (URS, 2014d). In addition, SACOG (2015) has prepared a supplemental GHG analysis that addresses the regional GHG benefits that would result from implementation of the Project and is summarized below.

4.2.2. Regulatory Setting

4.2.2.1. Federal

Clean Air Act

The federal government, through the U.S. Environmental Protection Agency (U.S. EPA), has established primary and secondary National Ambient Air Quality Standards (NAAQS) for criteria pollutants under the provisions of the Clean Air Act (CAA). The U.S. EPA has also promulgated new 8-hour ambient air quality standards for ozone (O₃) and PM_{2.5}, and has classified air basins (or portions thereof) as being in “attainment,” “nonattainment,” or “unclassified” for criteria air pollutants. An area is designated as being in attainment if the pollutant concentrations are consistently below the NAAQS, and it is classified as being in nonattainment if pollutant concentrations exceed the NAAQS. Nonattainment areas are also classified as marginal, moderate, serious, severe, or extreme, depending on the severity of the recorded violations.

For areas classified as being in nonattainment, the CAA requires states to develop and adopt a State Implementation Plan (SIP), which is an air quality plan showing how the NAAQS will be attained. In California, the U.S. EPA has delegated SIP preparation to the California Air Resources Board (CARB), which in turn has delegated authority to the individual air quality management districts. The SIP is a living document that is periodically modified to reflect the latest emission inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The U.S. EPA has responsibility to review all state SIPs to determine if they conform to the mandates of the CAA and will achieve air quality goals when implemented. If the U.S. EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan for the nonattainment area and may impose additional control measures.

Hot Spot Analysis

On March 10, 2006, the U.S. EPA issued a final transportation conformity rule (40 CFR 51.390 and Part 93) that addresses local air quality impacts in PM₁₀ and PM_{2.5} nonattainment and maintenance areas. The final rule requires a hot spot analysis to be performed for a Project of Air Quality



Concern (POAQC) or any other project identified by the PM_{2.5} SIP as a localized air quality concern. Transportation conformity, under CAA Section 176(c) (42 United States Code [USC] 7506[c]), requires that federally supported highway and transportation project activities conform to the SIP, if one exists. The rule provides criteria and procedures to ensure that these activities will not create new violations, worsen existing violations, or prevent adherence to relevant NAAQS, as described in 40 CFR 93.101.

Hazardous Air Pollutants

The CAA Amendments regulate hazardous air pollutants (HAPs). These are airborne pollutants that are known to have adverse human health effects. However, unlike criteria pollutants, there are no adopted ambient air quality standards for HAPs. HAPs have been regulated at the federal level since the CAA of 1977 under 40 CFR Part 61.

4.2.2.2. State

California Clean Air Act

In California, the lead air quality agency is CARB. The role of CARB is to maintain oversight authority in air quality planning, develop programs for reducing emissions from motor vehicles, develop air emissions inventories, collect air quality and meteorological data, achieve and maintain NAAQS, and implement the California Clean Air Act (CCAA), adopted in 1988.

Under the CCAA, CARB has promulgated the California Ambient Air Quality Standards (CAAQS), which are equal to or more stringent than the NAAQS. As with the NAAQS, air basins are classified as being in attainment or nonattainment with respect to State standards. The CCAA requires that each air basin exceeding State standards for O₃, carbon monoxide (CO), sulfur dioxide (SO₂), PM₁₀, PM_{2.5}, or nitrogen dioxide (NO_x) develop a plan aimed at achieving those standards in accordance with California Health and Safety Code 40911. The California Health and Safety Code Section 40914 requires each air district that is in nonattainment to design a plan for all categories, except particulate matter, that will achieve an annual reduction in district-wide emissions of 5 percent or more, averaged every consecutive 3-year period, unless an approved alternative measure of progress is developed. In addition, the air quality management districts are required to prepare an air quality attainment plan designed to attain and maintain the CCAA requirements.

Toxic Air Contaminants

California also regulates toxic air contaminants (TACs), a class of airborne pollutants similar to HAPs. CARB formally identified diesel particulate matter as a TAC, prompting CARB to begin searching for means to reduce diesel particulate matter emissions. In 2000, CARB approved the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, which outlines a comprehensive and ambitious program. This program includes the development of numerous new control measures over the next several years aimed at substantially reducing emissions from new and existing on-road vehicles (e.g., heavy-duty trucks and buses); off-



road equipment (e.g., graders, tractors, forklifts, sweepers, and boats); portable equipment (e.g., pumps); and stationary engines (e.g., stand-by power generators).

4.2.2.3. Local

The SMAQMD and the Yolo-Solano Air Quality Management District (YSAQMD) regulate air quality by establishing local air quality regulations, permitting stationary sources, and planning activities related to air quality in Sacramento and Yolo counties. Criteria mass emission significance thresholds established by SMAQMD and YSAQMD are shown in Table 4.2-1 and Table 4.2-2.

**Table 4.2-1
Summary of Significance Thresholds for SMAQMD**

Air Pollutant	lbs/day
Construction NO _x	85
Operational ROG	65
Operational NO _x	65
Source: SMAQMD, 2013	
Notes:	
NO _x = nitrogen dioxide	
ROG = reactive organic gases	
SMAQMD = Sacramento Metropolitan Air Quality Management District	

**Table 4.2-2
Summary of Significance Thresholds for YSAQMD
(Applicable to both construction and operational emissions)**

Air Pollutant	Significance
ROG	10 (tons/yr)
NO _x	10 (tons/yr)
PM ₁₀	80 (lbs/day)
CO	Violation of a State ambient air quality standard for CO
Source: YSAQMD, 2007	
Notes:	
CO = carbon monoxide	
NO _x = nitrogen dioxide	
PM ₁₀ = particulate matter equal to or less than 10 micrometers in aerodynamic diameter	
ROG = reactive organic gases	
YSAQMD = Yolo-Solano County Air Quality Management District	

4.2.2.4. Greenhouse Gases

Federal Efforts to Reduce GHG Emissions. The issue of global climate change is an important national and global concern that is being addressed in several ways by the federal government. On



October 5, 2009, President Obama signed Executive Order 13514, which sets sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance (CEQ, 2014). Requirements of the Executive Order that pertain to the Project include:

- 30 percent reduction in vehicle fleet petroleum use by 2020;
- 95 percent of all applicable contracts will meet sustainability requirements; and
- Development of guidance for sustainable federal building locations in alignment with the Livability Principles put forward by the Department of Housing and Urban Development, the Department of Transportation, and the U.S. EPA.

Transportation emissions account for 29 percent of U.S. GHG emissions, and over 5 percent of global GHG emissions. Recognizing this concern, The FTA and the Federal Highway Administration (FHWA) are working with other agencies through the U.S. Department of Transportation's (USDOT) Center for Climate Change and Environmental Forecasting to implement strategies to reduce the transportation sector's contribution to GHGs—particularly carbon dioxide (CO₂) emissions—and to assess the risks to transportation systems and services from climate change. Strategies developed in USDOT's 2010 Report to Congress include introducing low-carbon fuels, increasing vehicle fuel economy, improving transportation efficiency, and reducing carbon-intensive travel activity (USDOT, 2010).

State and Local Efforts to Reduce GHG Emissions. The Global Warming Solutions Act (Assembly Bill 32 [AB 32]) was signed into law in 2006; it was intended to reduce production of GHGs in California. Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, describing the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan must be updated every 5 years. CARB is currently (March 2014) in the process of updating the Scoping Plan.

In 2004, the Sacramento region was classified as a “serious” nonattainment area, with an attainment deadline of June 15, 2013. This classification was based on the 8-hour O₃ design value of 107 parts per billion at Cool, California, calculated from O₃ concentrations monitored from 2001 to 2003. To satisfy U.S. EPA requirements, CARB has submitted the 2013 Sacramento Area Regional 8-Hour Ozone Attainment Plan, which includes the SMAQMD and the YSAQMD. The 2013 Sacramento Area Regional 8-Hour Ozone Attainment Plan is the current federal O₃ plan for the two air districts. It sets out stationary source control programs and statewide mobile source control programs for attainment of the 8-hour O₃ ambient air quality standards (CARB, 2013). The plan sets out a strategy for attaining the 1997 federal 8-hour O₃ standard in the Sacramento Nonattainment Area by 2018 (CARB, 2013). In November 2010, CARB approved the PM₁₀ Implementation/Maintenance Plan and Redesignation Request for Sacramento County. The plan shows that the 1987 standard for PM₁₀ was attained, and establishes the strategy for maintaining the standard through 2022.

4.2.3. Affected Environment

The Project will be in Sacramento and Yolo counties, under the jurisdiction of the SMAQMD and the YSAQMD. Both of the management districts are in the Sacramento Valley Air Basin (SVAB). Annual



statistics for O₃, PM₁₀, and PM_{2.5} conditions from 2010 to 2012 in the SVAB are compared to corresponding State standards below (CARB, 2014).

- Annual maximum 1-hour O₃ concentrations in the SVAB ranged from 0.123 to 0.125 parts per million (ppm), which exceed the California 1-hour standard of 0.09 ppm;
- Annual maximum 8-hour O₃ concentrations in the SVAB ranged from 0.098 to 0.112 ppm, which exceed the California 8-hour standard of 0.07 ppm;
- Annual average PM₁₀ concentrations in the SVAB ranged from 21.0 to 25.1 micrograms per cubic meter (µg/m³), which exceed the California annual standard of 20 µg/m³; and
- Annual average PM_{2.5} concentrations in the SVAB ranged from 15 to 19 µg/m³, which exceed the California Annual Standard of 12 µg/m³.

As shown in Table 4.2-3, Sacramento County is designated as nonattainment for the O₃, PM₁₀, and PM_{2.5} CAAQS, and nonattainment for the O₃ and PM₁₀ NAAQS. Sacramento County is designated as attainment or unclassified for the remaining CAAQS and NAAQS. As shown in Table 4.2-4, Yolo County is designated as nonattainment for the O₃ and PM₁₀ CAAQS, and nonattainment for the O₃ NAAQS. Yolo County is designated as attainment or unclassified for the remaining CAAQS and NAAQS.

4.2.4. Environmental Effects

This section includes an analysis based on the Air Quality and GHG Technical Memorandum prepared for the Project in June 2014 (URS, 2014d). A project would be determined to have adverse effects to air quality if it:

- Conflicts with or obstructs implementation of the applicable air quality plan;
- Conflicts with U.S. EPA transportation conformity regulations under the Federal CAA;
- Violates any air quality standard or contributes substantially to an existing or projected air quality violation;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for O₃ precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors affecting a substantial number of people.

In addition, a project would have an adverse effect related to GHG emissions or global climate change if it:

- Generates GHG emissions, either directly or indirectly, that may have an adverse effect on the environment; or
- Conflicts with an agency's applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHG.



**Table 4.2-3
 Federal and State Attainment Status for Sacramento County**

Parameter	State Standard	Federal Standard
O ₃	Nonattainment Classification: Serious (1-Hour and 8-Hour Standards)	Nonattainment Classification: Serious (8-Hour Standard)
PM ₁₀	Nonattainment (24-Hour Standard and Annual Mean)	Nonattainment ^a , Classification: Moderate (24-Hour Standard)
PM _{2.5}	Nonattainment (Annual Standard)	Attainment/Unclassified (24-Hour Standard and Annual Mean)
CO	Attainment (1-Hour and 8-Hour Standards)	Attainment (1-Hour and 8-Hour Standards)
NO ₂	Attainment (1-Hour Standard)	Attainment (Annual Standard)
SO ₂	Attainment (1-Hour and 24-Hour Standards)	Attainment (1-Hour, 24-Hour, and Annual Standards)
Lead	Attainment (30-Day Standard)	Attainment (Calendar Quarter)
Visibility Reducing Particles	Unclassified (8-Hour Standard)	No Federal Standard
Sulfates	Attainment (24-Hour Standard)	No Federal Standard
Hydrogen Sulfide	Unclassified (1-Hour Standard)	No Federal Standard
Source: SMAQMD, 2013 Notes: CO = carbon monoxide NO ₂ = nitrogen dioxide O ₃ = ozone PM ₁₀ = particulate matter equal to or less than 10 micrometers in diameter PM _{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter SO ₂ = sulfur dioxide SMAQMD = Sacramento Metropolitan Air Quality Management District ^a Air quality currently meets federal PM ₁₀ standards. The SMAQMD must request redesignation to attainment and submit a maintenance plan to be formally designated to attainment. Current area designations based on data collected during 2001-2003.		



**Table 4.2-4
 Federal and State Attainment Status for Yolo County**

Parameter	State Standard	Federal Standard
O ₃	Nonattainment (1-Hour and 8-Hour Standards)	Nonattainment (8-Hour Standard)
PM ₁₀	Nonattainment (24-Hour Standard and Annual Mean)	Unclassified
PM _{2.5}	Unclassified	Unclassified
CO	Attainment (1-Hour and 8-Hour Standards)	Unclassified
NO ₂	Attainment (1-Hour Standard)	Attainment (Annual Standard)
SO ₂	Attainment (1-Hour and 24-Hour Standards)	Attainment (24-Hour and Annual Standards)
Lead	Attainment (30 Day Standard)	Attainment (Calendar Quarter)
Visibility-Reducing Particles	Unclassified (8-Hour Standard)	No Federal Standard
Sulfates	Attainment (24-Hour Standard)	No Federal Standard
Hydrogen Sulfide	Unclassified (1-Hour Standard)	No Federal Standard
Source: YSAQMD, 2014 Notes: CO = carbon monoxide NO ₂ = nitrogen dioxide O ₃ = ozone PM ₁₀ = particulate matter equal to or less than 10 micrometers in diameter PM _{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter SO ₂ = sulfur dioxide		

4.2.4.1. No Action Alternative

The No Action Alternative would continue to implement measures identified in the air district’s air quality attainment plan to bring the region into conformity with State and federal guidelines. As population grows in the area, congestion-related emissions would likely increase in the Downtown Sacramento and West Sacramento. This could result in adverse effects to existing air quality.



4.2.4.2. Action Alternative

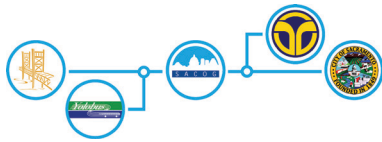
Streetcar Operational Emissions

The streetcar vehicles would be electrically powered, so operation of the vehicles would not result in direct emissions that would have the potential to exceed either air quality management district's significance thresholds. Traffic emissions would not be expected to increase because the availability of an alternative mode of travel in the Project area would likely result in reduced use of light-duty trucks and automobiles.

The Project does not meet the definition of a POAQC as described in the U.S. EPA final rule, 40 CFR 93.123(b)(1). SMAQMD recommends a tiered screening approach to CO hotspot analysis. This methodology provides a conservative indication of whether project-generated vehicle trips will result in the generation of CO emissions that contribute to an exceedance of the thresholds of significance. SMAQMD's recommended screening criteria are divided into two tiers. The second tier of SMAQMD's screening policy tests proposed projects based on vehicles per intersection, whether a project contributes to increased emissions in confined areas, and whether the mix of vehicle types at an intersection is anticipated to be substantially different from the County average. Based on the traffic study for intersections in Sacramento, the Project would satisfy the second tier of SMAQMD's CO hotspots screening policy. The traffic resulting from the Project is not expected to cause or contribute to a violation of the CAAQS or NAAQS, and no adverse effects would result. Therefore, the Project is not expected to cause or contribute to a violation of the CAAQS or NAAQS, so no adverse effects would result.

Maintenance and Storage Facility Operational Emissions

The Air Quality and GHG Technical Memoranda used CalEEMod to estimate emissions from operation of the Sacramento MSF option, because the Sacramento MSF option would be the larger of the two MSF options under consideration; therefore, it represents the conservative option. The essential maintenance and storage operations would be the same regardless of which site is selected. The model used building footprint areas to calculate emissions associated with worker commuting, water supply and waste disposal, and management and use of small combustion sources such as space heating. The results of CalEEMod modeling of MSF emissions are presented in Table 4.2-5. There is the potential for both the West Sacramento and Sacramento sites to be used for the Project, although if the West Sacramento option were selected, the Sacramento site would not be used for maintenance functions, and it would only potentially be used for storage. To account for the possibility that both site options might be used for the Project, the modeled result was doubled to provide the total potential emissions.



**Table 4.2-5
Estimated MSF Operational Emissions**

Activity	Emissions (tons per year)										
	ROG	NO _x	CO	SO ₂	Fugitive PM ₁₀	Exhaust PM ₁₀	PM ₁₀ Total	Fugitive PM _{2.5}	Exhaust PM _{2.5}	PM _{2.5} Total	CO _{2e}
Area	0.13	0.00	0.00	0.000		0.000	0.00		0.000	0.000	0
Energy	0.01	0.05	0.04	0.000		0.004	0.00		0.004	0.004	167
Mobile	0.14	0.41	1.53	0.002	0.15	0.006	0.15	0.04	0.005	0.045	193
Waste						0.000	0.00		0.000	0.000	15
Water						0.000	0.00		0.000	0.000	16
Total for one MSF	0.28	0.46	1.57	0.003	0.15	0.009	0.16	0.04	0.009	0.049	391
Total for two MSFs	0.56	0.92	3.14	0.006	0.3	0.018	0.32	0.08	0.018	0.098	782
Total Emissions for one MSF (converted to pounds per day)	1.52	2.51	8.58	0.01	0.81	0.05	0.87	0.22	0.05	0.27	2,142
Total Emissions for two MSFs (converted to pounds per day)	3.04	5.02	17.16	0.03	1.63	0.10	1.73	0.44	0.10	.054	4,284
Project Below All Thresholds of Significance?	Y	Y					Y				

Source: URS 2014c

Notes:

CO = carbon monoxide
CO_{2e} = equivalent carbon dioxide
MSF = maintenance and storage facility
NO_x = nitrogen dioxide
PM_{2.5} = particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter
PM₁₀ = particulate matter equal to or less than 10 micrometers in aerodynamic diameter
ROG = reactive organic gases
SO₂ = sulfur dioxide

Operational thresholds for both YSAQMD and SMAQMD are 65 pounds per day of reactive organic gases (ROG) and NO_x, and 80 pounds per day of Total PM₁₀. As shown in Table 4.2-5, all CalEEMod estimated values were well below these thresholds. According to the SMAQMD’s CEQA policy, pollutants such as SO₂ are of less concern because operational activities are not likely to generate substantial quantities of this pollutant and the Sacramento Valley Air basin has been in attainment for this pollutant for multiple years. For operational PM_{2.5} emissions that cannot be assessed against the District’s Operational pollutant screening table, the District recommends quantifying maximum daily emissions. Operational emissions from one MSF or two MSFs would remain below all specified



thresholds of significance and would not have an adverse effect to air quality. Based on these estimates, operational emissions from the MSFs would not result in adverse effects to air quality.

A recent analysis of the GHG benefits resulting from project implementation (SACOG 2015) has determined that the Project will result in substantial regional GHG savings. The method used for the analysis is consistent with requirements in California SB375 and draws on methods used by the State of California's Cap and Trade program and results from SACOG's state-of-the-art travel forecasting model. The analysis found that by 2036, the end year for SACOG's Metropolitan Transportation Plan/Sustainable Communities Strategy currently under development, the Project will generate greenhouse gas savings of 25.5 tons of reduced carbon dioxide (CO₂) per day. The majority of these savings stem from the Project's strong ability to attract new growth into the corridor it serves. The Economic Benefits Analysis Report's (Strategic Economics 2013) mid-range estimates are that the Project will lead to 1,555 more housing units and 3,600 more employees within a corridor 3 blocks each direction from the line than would locate in that area if the project is not built. This new growth is very efficient from a transportation perspective. The 1,555 additional housing units generate only 42% of the vehicle miles traveled per person daily compared to if those units located elsewhere in the region and the 3,600 employees generate only 53% of the daily vehicle miles traveled compared to locating elsewhere in the region. The reduced vehicle miles of travel save 21.5 tons of carbon dioxide emissions per day. An additional 4 million tons of carbon dioxide is saved every day through shifts from car trips to streetcar trips throughout the area served by the streetcar. This would be a beneficial effect.

Transportation Conformity

As the designated metropolitan planning organization for the region, SACOG is responsible for ensuring that transportation projects and plans do not impede the region's clean air goals. SACOG evaluates all projects included in the federal MTP and the Metropolitan Transportation Improvement Program to ensure consistency with air quality objectives - a process referred to as finding or determining conformity. The Project is listed in SACOG's 2012 MTP/SCS, which was adopted on April 19, 2012. A regional conformity determination on the MTP/SCS was made by FTA/FHWA on May 3, 2012. The Project is also included in SACOG's financially constrained 2013-2016 Metropolitan Transportation Improvement Program (MTIP). The design concept and scope of the Project is consistent with the project description in the 2012 MTP/SCS, the 2013-2016 MTIP, and the traffic assumptions of the SACOG's regional emissions analysis. Therefore, the Project is in conformity with the SIP, will not otherwise interfere with timely implementation of any transportation control measures in the applicable SIP, and is not a project of air quality concern because it does not have the potential of increasing utilization and/or emissions from diesel vehicles.

Hazardous Air Pollutants/Toxic Air Contaminants

Air quality management districts consider any project that has the potential to expose public receptors to a substantial level of TACs to have an adverse effect on air quality. The Project is not forecasted to be



a major source of HAPs or TACs. During the operations phase of the Project, onsite activities would include the maintenance and repair of the streetcars. This would involve the use of hydraulic lifts, power tools, and use of materials for cleaning and degreasing vehicle parts. No onsite emissions would occur from the use of electricity to power the tools used for the maintenance activities. However, emissions would be generated with the use of detergents and solvents associated with vehicle maintenance activities. The solvents would only be used as needed for the intermittent repair and maintenance of the streetcars. Because of the small quantities of solvent anticipated to be used for streetcar vehicle maintenance, and the SMAQMD limitations on solvent VOC content and emissions, the Project would not result in a substantial health risk to public receptors from HAPs or TACs.

Odors

In general, odors are usually associated with sources such as wastewater treatment plants, composting facilities, and chemical plants. Such inherently odorous sources are not part of the Project. The Project is an electric streetcar with no operational emissions and no direct odorous emissions. Therefore, no adverse effects related to the generation of odors would occur.

Greenhouse Gas Emissions

Operation of the streetcar vehicles would require electricity consumption, which would indirectly generate GHGs. Based on proposed operation of the streetcar, vehicles are estimated to travel 85,337 vehicle miles per year. This is based on a weekday trip rate of six streetcars per hour during peak hours (7 a.m. to 6 p.m.) and three streetcars per hour during nonpeak hours (6 p.m. to 11 p.m.). Trip rates on Saturdays, Sundays, and holidays would be three streetcars per hour from 7 a.m. to 11 p.m. Each streetcar is assumed to travel the length of the alignment (3.3 miles). It is estimated that a streetcar uses 8.1 kilowatt-hours (kWh) per vehicle mile traveled, which would yield 691,226 kWh per year of electricity usage.

Portions of the track would operate in both Pacific Gas and Electric Company (PG&E) and Sacramento Municipal Utility District (SMUD) service areas. The Technical Memorandum conservatively assumed all power would be supplied by PG&E, because the GHG intensity factors for PG&E (640 pounds per megawatt-hour) are higher than those for SMUD. Multiplying the electricity use by the GHG emission factor yields 202 tons indirect CO₂ per year.

Operation of the MSF would also result in emissions of GHGs from facility energy use, vehicle use by employees, generation and disposal of waste, and use of water. The same CalEEMod output model was used to project GHG emissions associated with MSF operational activities. As a conservative approach, the model assumed both MSF options would be operational as part of the Project, with some combination of maintenance and storage functions being shared by the West Sacramento and Sacramento sites. Operational emissions are presented in Table 4.2-6.



**Table 4.2-6
 Estimated GHG Emissions from Operation of Two MSF Facilities**

Activity	CO ₂ e (metric tons per year)
Area	<0.001
Energy	334
Mobile	386
Waste	30
Water	32
Total	782

Source: URS 2014c
 Notes:
 Area emissions include emissions from the use of consumer products, fireplaces, and landscaping equipment.
 CO₂e = equivalent carbon dioxide
 GHG = greenhouse gas
 MSF = maintenance and storage facility

Net operational emissions are therefore 782 + 202 = 984 metric tons per year.

The Sacramento and Yolo-Solano air quality management districts do not have quantitative thresholds for GHG emissions, but the level of emissions shown in Table 4.2-6 is well below published thresholds in other air districts (URS, 2014d). For example, the Bay Area Air Quality Management District published a significance threshold of 1,100 metric tons of GHG emissions per year. Moreover, increased streetcar ridership would result in direct reductions in the use of light trucks and automobiles that otherwise would be used. Therefore, operational emissions from the Project are not expected to result in adverse effects.

4.2.4.3. Construction Effects

Construction of the Project would result in short-term effects to the existing air quality in the area. These effects include temporary increases of CO, CO₂, NO_x, PM₁₀, PM_{2.5}, ROG, and sulfur oxide (SO_x) emissions. Emissions resulting from the construction of the Project are broadly categorized as follows:

- Equipment exhaust (CO, CO₂, NO_x, PM₁₀, PM_{2.5}, ROG, and SO_x);
- Fugitive dust from earth moving activities (PM₁₀, PM_{2.5});
- Employee vehicle emissions (CO, CO₂, NO_x, PM₁₀, PM_{2.5}, SO_x, and ROG);
- Construction truck emissions (CO, CO₂, NO_x, PM₁₀, PM_{2.5}, SO_x, and ROG); and
- Paving emissions (ROG).



Both SMAQMD and YSAQMD recommend using the Roadway Construction Emissions Model (RoadMod) for estimating emissions from new road construction, road widening, pipeline construction, and bridge and overpass construction projects. SMAQMD RoadMod Version 7.1.5.1 was used to estimate short-term construction air quality effects of the Project.

The Air Quality and GHG Technical Memorandum assumed that each three block construction segment would be 1,000 feet, which is the typical distance between streetcar stops. Based on a total alignment length of 17,000 feet and a segment length of 1,000 feet, the entire alignment construction was assumed to take place in a sequence of 17 segments. The segment width was assumed to be 12 feet, and therefore a segment area would be 0.28 acre (segment length of 1,000 feet multiplied by segment width of 12 feet and converted to acres). The Air Quality and GHG Technical Memorandum conservatively assumed that the maximum area disturbed in a single day is equal to the entire segment area (i.e., 0.28 acre).

As noted in the Project Description, the 2009 EIR states that the depth of material removed would range from 12 to 18 inches. The Air Quality and GHG Technical Memorandum conservatively assumed that all of this material would be hauled offsite, and that the depth of material removed is 20 inches (1.67 feet). This result was used to estimate average daily soil material exported of 49.3 cubic yards per day (segment area of 12,000 square feet, multiplied by the 1.67-foot depth of material removed divided by the number of days per segment, and converted to cubic yards). Based on this average daily value, the Air Quality and GHG Technical Memorandum conservatively assumed that the maximum daily soil exported would be five times the average, or 246.91 cubic yards.

Based on the values above, RoadMod model inputs for a single 1,000-foot segment of alignment construction activity were determined first. Based on model inputs, RoadMod generated emission estimates for water and other onsite trucks, soil hauling, and worker commute trips. RoadMod's PM₁₀ and PM_{2.5} estimates assumed 50 percent control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified. Based on user model inputs, RoadMod automatically applied internal emission factors, assumptions about equipment usage, load factors, and vehicle miles traveled to calculate maximum daily emissions for each phase of construction. RoadMod produced maximum daily emission rates across all construction phases for each pollutant and summarizes these results in an output table. Table 4.2-7 provides the RoadMod output, and shows maximum daily emission rates for all construction activities for each pollutant.



Table 4.2-7
Estimated Combined Daily Maximum Off-road and On-road Emissions
from Alignment Construction

(Maximum lbs/day)									
ROG	CO	NO _x	PM ₁₀ - Total	PM ₁₀ - Exhaust	PM ₁₀ - Fugitive Dust	PM _{2.5} - Total	PM _{2.5} - Exhaust	PM _{2.5} - Fugitive Dust	CO ₂
6.4	31.3	62.5	6.4	3.6	2.8	3.8	3.3	0.6	7,530
Source: URS 2014c Notes: Total PM ₁₀ emissions shown above are the sum of exhaust and fugitive PM ₁₀ dust emissions. Total PM _{2.5} emissions shown above are the sum of exhaust and fugitive PM _{2.5} dust emissions. CO = carbon monoxide CO ₂ = carbon dioxide NO _x = nitrogen dioxide PM ₁₀ = particulate matter equal to or less than 10 micrometers in diameter PM _{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter ROG = reactive organic gases									

Construction of the Project would create short-term emission increases of criteria pollutants and precursors. The maximum estimated emissions from the RoadMod were 6.4 lbs/day of ROG, 31.3 lbs/day of CO, 62.5 lbs/day of NO_x, and 6.4 lbs/day of PM₁₀, all below the YSAQMD and SMAQMD construction thresholds.

The CalEEMod v.2013.2.2 was used to estimate emissions from construction of an MSF in Sacramento. The analysis assumes that the construction-related emissions would be the same for the West Sacramento MSF option, because the constructed facilities would be the same. Table 4.2-8 provides a summary of CalEEMod model results for construction of the MSF facility. The phase with the highest daily NO_x emissions is the building construction phase, which is highlighted in bold underline in Table 4.2-8 (SMAQMD has a daily maximum threshold for NO_x). The phase with the highest daily PM₁₀ emissions is the grading construction phase, which is also highlighted in bold underline in Table 4.2-8 (YSAQMD has a daily maximum threshold of significance for PM₁₀).

This estimate assumed phases with maximum daily emissions from both the MSF construction and alignment construction would overlap. Combined off-road and on-road emissions from construction of both the MSF and the alignment are presented in Table 4.2-9. These emissions represent a conservative estimate of maximum daily emissions. As shown, projected emission levels are below thresholds, and as a result, no adverse air quality effects would occur related to construction activities.



**Table 4.2-8
Estimated Maximum Daily Emissions from MSF Construction**

Phase	Maximum lbs/day									
	ROG	CO	NO _x	PM ₁₀ Total	Exhaust PM ₁₀	Fugitive PM ₁₀	PM _{2.5} Total	Exhaust PM _{2.5}	Fugitive PM _{2.5}	CO _{2e}
Demolition	1.5	9.4	12.0	1.0	0.9	0.1	0.9	0.8	0.0	1,295
Site Preparation	1.4	7.7	14.3	1.5	0.9	0.6	0.9	0.8	0.1	1,035
Grading	1.5	9.4	12.0	<u>1.7</u>	0.9	0.8	1.3	0.8	0.4	1,295
Building Construction	1.6	9.6	<u>14.8</u>	1.1	1.0	0.1	1.0	0.9	0.0	1,394
Paving	1.3	8.5	11.6	0.9	0.7	0.1	0.7	0.7	0.0	1,261
Architectural Coatings	120.9	2.0	2.6	0.2	0.2	0.0	0.2	0.2	0.0	300
Maximum lbs/day	120.9	9.6	<u>14.8</u>	<u>1.7</u>	1.0	0.8	1.3	0.9	0.4	1,394

Source: URS 2014c

Notes:
Underlined bolded numbers show the maximum daily emission rates for the phased construction work.

CO = carbon monoxide PM₁₀ = particulate matter equal to or less than 10 micrometers in diameter
CO_{2e} = equivalent carbon dioxide PM_{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter
NO_x = nitrogen dioxide ROG = reactive organic gases

**Table 4.2-9
Estimated Daily Maximum Emissions from Alignment and MSF Construction**

Phase	Maximum lb/day									
	ROG	CO	NO _x	PM ₁₀ Total	Exhaust PM ₁₀	Fugitive PM ₁₀	PM _{2.5} Total	Exhaust PM _{2.5}	Fugitive PM _{2.5}	CO _{2e}
Maximum Alignment	6.4	31.3	62.5	6.4	3.6	2.8	3.8	3.3	0.6	7,530
Maximum MSF	120.9	9.6	14.8	1.7	1.0	0.8	1.3	0.9	0.4	1,394
Maximum Total	127.3	40.9	77.3	8.1	4.6	3.6	5.1	4.2	1.0	8,229
SMAQMD/YSAQMD CEQA Daily Significance Thresholds ¹	N/A	N/A	85	80	N/A	N/A	N/A	N/A	N/A	N/A
Project Emissions Below Significance Thresholds?			Y	Y						

Source: URS 2014c

Notes:
¹ SMAQMD's daily significance threshold is for NO_x. YSAQMD's daily threshold is for PM₁₀. The districts do not have quantitative thresholds for other emissions. However, because the estimated emissions for NO_x and PM₁₀ are below thresholds, it is reasonable to assume that emissions for pollutants with no significance thresholds are also less than adverse.

CEQA = California Environmental Quality Act
CO = carbon monoxide
CO_{2e} = equivalent carbon dioxide
lb/day = pounds per day
MSF = maintenance and storage facility
NO_x = nitrogen dioxide
PM₁₀ = particulate matter equal to or less than 10 micrometers in diameter
PM_{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter
ROG = reactive organic gases
SMAQMD = Sacramento Metropolitan Air Quality Management District
YSAQMD = Yolo-Solano Air Quality Management District



Construction Greenhouse Gas Emissions

Construction of the Project would result in minor temporary increases in GHG emissions. These increases would be associated with the operation of construction equipment, material-hauling vehicles, and construction employee vehicles. Construction of the Project is not expected to conflict with the State's goals of reducing GHG emissions, because the emissions are small and temporary and would therefore have no adverse effect on global climate change.

4.2.5. Measures to Minimize Harm

Construction of the Project would result in short-term, local emissions on a daily basis. However, based on the size of the affected area and compliance with applicable federal, State, and local regulations for the control of construction-generated emissions and fugitive dust, all Project emissions would be below regulatory thresholds, and short-term air quality effects would be minor. All projects are required to implement the SMAQMD's Basic Construction Emission Control Practices. These Practices include watering exposed construction area, limiting vehicle speeds on unpaved roads and cleaning paved roads. These measures collectively reduce PM dust emissions by approximately 54 percent. Therefore, no mitigation measures to minimize harm are necessary.

4.2.6. Cumulative Effects

As stated in each air district's environmental guidelines, if a project's emissions would be less than the air district's thresholds of significance, the project would not be expected to result in a cumulatively considerable contribution to the cumulative effects. The Project is below all quantitative thresholds of significance of both air districts. Therefore, cumulative impacts from emissions are not anticipated to be substantial.



4.3. Biological Resources

4.3.1. Introduction to the Analysis

This section describes the existing biological resources, including habitats and potential special-status species along the proposed alignment; discusses applicable regulations; and evaluates the potential effects of the Project. As described below, implementation of the Project would not result in adverse effects to biological resources. Information in this section is summarized from a biological resources memorandum prepared for the Project (URS, 2014a).

4.3.2. Regulatory Setting

The following describes federal, state, and local environmental laws and policies influencing management of biological resources in the vicinity of the Project.

4.3.2.1. Federal

Federal Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (ESA) in 1973 to protect those species that are endangered or threatened with extinction. ESA is intended to operate in conjunction with NEPA to help protect the ecosystems upon which endangered and threatened species depend.

ESA prohibits the “take” of endangered or threatened wildlife species. “Take” is defined to include harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species, or any attempt to engage in such conduct (ESA Section 3 [3][19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 CFR Section 17.3). Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR Section 17.3). Actions that result in take can result in civil or criminal penalties.

Interagency Consultation and Biological Assessments. Section 7 of the ESA provides a means for authorizing the “take” of threatened or endangered species by federal agencies, and applies to actions that are conducted, permitted, or funded by a federal agency. The statute requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS), as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of critical habitat for these species. If a proposed project “may affect” a listed species, or destroy or modify critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the potential effect.



Habitat Conservation Plans. Section 10 of the ESA requires the obtaining of an Incidental Take Permit from the USFWS by non-federal landowners for activities that might incidentally harm (or “take”) endangered or threatened wildlife on their land. To obtain a permit, an applicant must develop a Habitat Conservation Plan that is designed to offset any harmful impacts the proposed activity might have on the species.

Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of State and federal laws. The federal Migratory Bird Treaty Act (MBTA) (USC Sections 703 through 712) makes it unlawful, unless expressly authorized by permit pursuant to federal regulations, to “pursue, hunt, take, capture, kill, attempt to take, capture or kill, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export at any time, or in any manner, any migratory bird, or any part, nest, or egg of any such bird.”

This includes direct acts, with the exception of harassment and habitat modification, which are not included unless they result in direct loss of birds, nests, or eggs. Most bird species in California fall under the protection of the MBTA, except those species that belong to the families not listed in any of the four treaties, such as wrenit (*Chamaea fasciata*), European starling (*Sturnus vulgaris*), California quail (*Callipepla californica*), ring-necked pheasant (*Phasianus colchicus*), and chukar (*Alectoris chukar*), among others less common in California. The MBTA is administered by the USFWS Division of Migratory Bird Management.

Clean Water Act

Federal Jurisdiction. The U.S. Army Corps of Engineers (Corps) regulates discharge of dredge or fill material into waters of the U.S. under Section 404 of the Clean Water Act (CWA). “Discharges of fill material” is defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines (33 CFR Section 328.2[f]). In addition, Section 401 of the CWA (33 United States Code [USC] 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Waters of the U.S. include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and nontidal waters are described below.



- Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR Section 328.3[b]). Presently, to be a wetland, a site must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the “normal circumstances” for the site.
- The lateral extent of nontidal waters is determined by delineating the ordinary high water mark (OHWM) (33 CFR Section 328.4[c][1]). The OHWM is defined by the Corps as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (33 CFR Section 328.3[e]).

Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Corps for the construction of any structure in or over any navigable waters of the U.S.

Protection of Wetlands, Executive Order 11990

Executive Order 11990 aims to avoid direct or indirect new construction in wetlands when a practicable alternative is available. If wetland impacts cannot be avoided, all practicable measures to minimize harm must be included.

Protection of Migratory Bird Populations, Executive Order 13186

Executive Order 13186 directs each federal agency taking actions that have or may have adverse impacts on migratory bird populations to work with the USFWS to develop an MOU that will promote the conservation of migratory bird populations. This includes avoiding and minimizing adverse impacts on migratory bird resources when conducting agency actions; restoring and enhancing migratory bird habitats; and preventing or abating the pollution or detrimental alteration of the environment for the benefit of migratory birds.

Invasive Species, Executive Order 13112

Executive Order 13112 requires federal agencies to work cooperatively to prevent and control the introduction and spread of invasive plants and animals.

4.3.2.2. State

California Endangered Species Act

The State of California enacted the California Endangered Species Act (CESA) in 1984. CESA is similar to ESA, but pertains to State-listed endangered and threatened species. CESA requires State agencies to consult with the California Department of Fish and Wildlife (CDFW; formerly the California Department of Fish and Game [CDFG]) when preparing CEQA documents. The purpose is



to ensure that the State lead agency actions do not jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available (Fish and Game Code Section 2080). CESA directs agencies to consult with CDFW on projects or actions that could affect listed species; directs CDFW to determine whether jeopardy would occur; and allows CDFW to identify “reasonable and prudent alternatives” to the project consistent with conserving the species. CESA allows CDFW to authorize exceptions to the State’s prohibition against take of a listed species, if the “take” of a listed species is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish and Game Code Section 2081).

CDFW Species of Concern

In addition to formal listing under ESA and CESA, species receive additional consideration by CDFW and local lead agencies during the CEQA process. Species that may be considered for review are included on a list of “Species of Special Concern,” developed by CDFW. The list tracks species in California whose numbers, reproductive success, or habitat may be threatened.

California Rare Plant Rank (formerly known as CNPS Lists)

The CDFW and California Native Plant Society (CNPS) jointly maintain a list of plant species native to California that has low population numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. These plants are assigned a California Rare Plant Rank (CRPR) code, and those plants having a CRPR code receive consideration under CEQA review. The following identifies the definitions of the CRPR rankings:

- List 1A: Plants presumed Extinct in California;
- List 1B: Plants Rare, Threatened, or Endangered in California and elsewhere;
- List 2: Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere;
- List 3: Plants about which we need more information – A Review List; and
- List 4: Plants of limited distribution – A Watch List.

Each listing category is also qualified with a “threat rank.” The threat ranks are as follows:

- 0.1 – Seriously threatened in California (more than 80 percent of occurrences threatened/high degree of immediacy of threat);
- 0.2 – Fairly threatened in California (20 to 80 percent occurrences threatened/moderate degree of immediacy of threat); and
- 0.3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known.



California Fish and Game Code

CDFW is a trustee agency that has jurisdiction under Section 1600 et seq. of the California Fish and Game Code. Under Sections 1602 and 1603, a private party must notify CDFW if a Project will “substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds except when the department has been notified pursuant to Section 1601.” If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures that will allow protection of those resources. If these measures are agreeable to the parties involved, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures. Additionally, CDFW may assert jurisdiction over native riparian habitat adjacent to aquatic features, including native trees over 4 inches in diameter at breast height.

4.3.2.3. Local

City of Sacramento

The City of Sacramento’s 2030 General Plan Environmental Resources Element includes the following relevant biological resources protection policies.

- **ER 1.1.1.** Conservation of Open Space. The City shall continue to preserve, protect, and provide access to designated open space areas along the American and Sacramento rivers, floodways, and undevelopable floodplains.
- **ER 2.1.1.** Resource Preservation. The City shall encourage new development to preserve onsite natural elements that contribute to the community’s native plant and wildlife species value and to its aesthetic character.
- **ER 2.1.4.** Retain Habitat Areas. The City shall retain plant and wildlife habitat areas where there are known sensitive resources (e.g., sensitive habitats, special-status, threatened, endangered, candidate species, and species of concern). Particular attention shall be focused on retaining habitat areas that are contiguous with other existing natural areas and/or wildlife movement corridors.
- **ER 2.1.5.** Riparian Habitat Integrity. The City shall preserve the ecological integrity of creek corridors, canals, and drainage ditches that support riparian resources by preserving native plants and, to the extent feasible, removing invasive nonnative plants. If not feasible, adverse impacts on riparian habitat shall be mitigated by the preservation and/or restoration of this habitat at a 1:1 ratio, in perpetuity.
- **ER 2.1.6.** Wetland Protection. The City shall preserve and protect wetland resources including creeks, rivers, ponds, marshes, vernal pools, and other seasonal wetlands, to the extent feasible. If not feasible, the mitigation of all adverse impacts on wetland resources shall be required in compliance with State and Federal regulations protecting wetland resources, and if applicable, threatened or endangered species. Additionally, the City shall require either on or offsite



permanent preservation of an equivalent amount of wetland habitat to ensure no net loss of value and/or function.

- **ER 2.1.10. Habitat Assessments.** The City shall consider the potential impact on sensitive plants for each project requiring discretionary approval and shall require preconstruction surveys and/or habitat assessments for sensitive plant and wildlife species. If the preconstruction survey and/or habitat assessment determines that suitable habitat for sensitive plant and/or wildlife species is present, then either (1) protocol-level or industry-recognized (if no protocol has been established) surveys shall be conducted; or (2) presence of the species shall be assumed to occur in suitable habitat on the project site. Survey Reports shall be prepared and submitted to the City and CDFG or USFWS (depending on the species) for further consultation and development of avoidance and/or mitigation measures consistent with State and federal law.
- **ER 2.1.11. Agency Coordination.** The City shall coordinate with State and Federal resource agencies (e.g., CDFG, Corps, and USFWS) to protect areas containing rare or endangered species of plants and animals.
- **ER 3.1.2. Manage and Enhance.** The City shall continue to plant new trees, ensure new developments have sufficient right-of-way width for tree plantings, manage and care for all publicly owned trees, and work to retain healthy trees.
- **ER 3.1.3. Trees of Significance.** The City shall require the retention of trees of significance (such as heritage trees) by promoting stewardship of such trees and ensuring that the design of development projects provides for the retention of these trees wherever possible. Where tree removal cannot be avoided, the City shall require tree replacement or suitable mitigation.

City of Sacramento City Code Tree Provisions

The City of Sacramento's City Code has provisions to protect city street trees as a significant resource to the community. It is the City's policy to retain city street trees when possible regardless of their size. When circumstances will not allow for retention, permits are required to remove the street and heritage trees that are in City jurisdiction. The City of Sacramento defines heritage trees as those that meet any of the following criteria:

- Any tree of any species with a trunk circumference of 100 inches or more, which is of good quality in terms of health, vigor of growth, and conformity to generally accepted horticultural standards of shape and location for its species.
- Any native *Quercus* (oak) species, *Aesculus California* (buckeye) or *Platanus Racemosa* (California sycamore), having a circumference of 36 inches or greater when a single trunk, or a cumulative circumference of 36 inches or greater when a multi-trunk.
- Any tree 36 inches in circumference or greater in a riparian zone. The riparian zone is measured from the center line of the water course to 30 feet beyond the high water line.
- Any tree, grove of trees, or woodland trees designated by resolution of the city council to be of special historical or environmental value or of significant community benefit (Prior code Section 45.04.211).



Under the City of Sacramento tree ordinance, a project applicant must obtain a permit from the City prior to the removal, pruning, trimming, or construction activities that may affect the health of trees that are protected by the tree ordinance.

City of West Sacramento General Plan

The City of West Sacramento's General Plan Natural Resources Element identifies the following policies relevant to the protection of biological resources in the city.

Goal C: To protect sensitive vegetation and wildlife communities and habitat in West Sacramento.

2. The City shall support State and federal policies for the preservation and enhancement of riparian and wetland habitats by incorporating, as deemed appropriate, the findings and recommendations of the Sacramento Greenway Plan, CDFG, and the USFWS into site specific development proposals.
3. The City shall require site-specific surveys to identify significant wildlife habitat and vegetation resources for development projects in or near riparian or wetland areas.
4. The City shall support mitigation measures which provide for no net loss of riparian or wetland habitat acreage and value by regulating development in and near these habitats and promoting projects that avoid sensitive areas. Where habitat loss is unavoidable, the City shall seek replacement on at least a 1:1 basis. Replacement entails creating habitat that is similar in extent and ecological value to that displaced by the project. The replacement habitat should consist of locally occurring, native species and shall be located as close as possible to the project site or be part of a larger replacement habitat project.
5. To minimize disturbance to wildlife, the City shall require the provision and maintenance of an adequate setback between significant wetland habitat and adjacent development. The buffer shall be landscaped with native or compatible introduced ornamental vegetation and may be used for passive recreation purposes.
9. The City shall seek to preserve populations of rare, threatened, and endangered species by ensuring that development does not adversely affect such species or by fully mitigating adverse effects.
10. The City shall not approve projects that would cause unmitigable impacts on rare, threatened, or endangered wildlife or plant species.
11. The City shall implement measures to ensure that development in the City does not adversely affect fishery resources in the Sacramento River, Deep Water Ship Channel, and Lake Washington.
13. The City shall promote the use of native plants, especially valley oaks, for landscaping roadsides, parks, and private properties. In particular, native plants should be used along the Sacramento River and in areas adjacent to riparian and wetland habitats."



City of West Sacramento Tree Preservation Regulations

Chapter 8.24 of West Sacramento’s Municipal Code addresses the removal and preservation of heritage trees, landmark trees, and “street trees” on private and public property. West Sacramento defines a heritage tree as any living tree, including “street trees,” with a trunk circumference of 75 inches or more, or a native oak with a trunk circumference of 50 inches or more, both measured 4 feet 6 inches from ground level. The circumference of multi-trunk trees is based on the sum of the circumference of each trunk. A landmark tree is defined as any tree or stand of trees especially prominent or stately, or a tree of historical significance as designated by the West Sacramento city council. A “street tree” is defined as any tree growing or placed in the tree maintenance strip of a public right-of-way. West Sacramento’s tree preservation ordinance states that tree permits must be obtained from the City’s tree administrator before any act that would harm or lead to the unnatural death or destruction of a street, landmark, or heritage tree. These acts include work within a tree’s dripline area (the ground under its canopy) that might endanger the tree, such as digging, trenching, root cutting, compacting soil, or placing fill material.

4.3.3. Affected Environment

This section describes the existing biological resources, including vegetation and aquatic communities, fish and wildlife habitat, and special-status species potentially present in the study area. Database searches were conducted for a 5-mile radius from the project site as is typical and due to the forage behavior of raptors. Biological field surveys were conducted in the study area September 10, 2013 and January 31, 2014 by a URS biologist to assess: (1) vegetation cover types; (2) existing habitat for special-status plant and wildlife species; and (3) presence of special-status plant and wildlife species.

For the purposes of this section, the study area is defined as the Project “footprint,” or the area that would be disturbed or replaced by the new Project facilities and adjacent areas. The vegetation community in the study area is mostly urban landscaped or ornamental vegetation, with a mixture of native and nonnative ornamental trees and shrubs along sidewalks and medians. Undeveloped areas are generally poorly vegetated, with some weedy, ruderal vegetation. Along the Sacramento River near the Tower Bridge, a narrow band of large-stature riparian woodland occurs, dominated by Fremont cottonwood and valley oak. The study area supports a relatively low diversity of wildlife because it is in an urbanized area subjected to frequent human activity. Most wildlife species observed or expected in the study area are adapted to urban environments, and several are nonnative species. Habitat types found in the study area are described below.

4.3.3.1. Habitat Types

Disturbed/Developed

Disturbed/developed lands in the study area generally include roadways, residential and commercial developments, parking areas, vacant/disturbed lots, parks, and other private/public infrastructure. Disturbed/developed lands in the study area are dominated by bare ground or



common, nonnative species, and no native habitats exist in these areas. Dominant vegetation species observed in this community includes weedy, nonnative grasses and forbs such as riggut broome (*Bromus diandrus*), wild oats (*Avena fatua*), scarlet pimpernel (*Anagallis arvensis*), radish (*Raphanus sativus*), black mustard (*Brassica nigra*), and cheese weed (*Malva parviflora*). This habitat is present in patches along the alignment, as well as the proposed West Sacramento and Sacramento MSFs

Several species of birds, such as swallows and martins, as well as pallid bats, have the potential to nest or roost on structures. Barn swallows, cliff swallows, and rock doves nest in the Tower Bridge. The pallid bat typically roosts in structures such as bridges (especially wooden and concrete girder designs), at the Tower Bridge, and the overpass at the West Sacramento MSF site (Western Bat Working Group, 2005). Potential for occurrence of pallid bat is low, given the lack of California Natural Diversity Database (CNDDDB) records within a 5-mile radius, and the level of human activity present in the study area.

Ornamental

Ornamental landscaping is present in portions of the study area, and consists of urban landscaping lining streets and sidewalks. This habitat is mostly in association with the alignment through West Sacramento and Downtown Sacramento. Ornamental areas are those landscaped with a mixture of native and nonnative vegetation, including shrubs, trees, and vines planted for aesthetic purposes. Common tree species observed in these areas include American elm (*Ulmus americana*), Monterey pine (*Pinus radiata*), California fan palm (*Washingtonia filifera*), London planetree (*Platanus acerifolia*), western sycamore (*Platanus racemosa*), alder (*Alnus* sp.), California pepper tree (*Schinus molle*), and cork oak (*Quercus suber*). At the West Sacramento MSF site, a small grove of California redwoods (*Sequoia sempervirens*) is planted along the southern boundary of the site.

Wildlife species observed in this habitat include rock dove (*Columba livia*), western scrub jay (*Aphelocoma californica*), and American crow (*Corvus brachyrhynchos*). Pallid bats likely do not use trees near the study area as maternity roosts, because the species typically uses rock crevices for reproduction and rearing young. In addition, none of the redwood trees along the edge of the West Sacramento MSF site contain hollows appropriate for maternity roosts.

Drainage Ditch

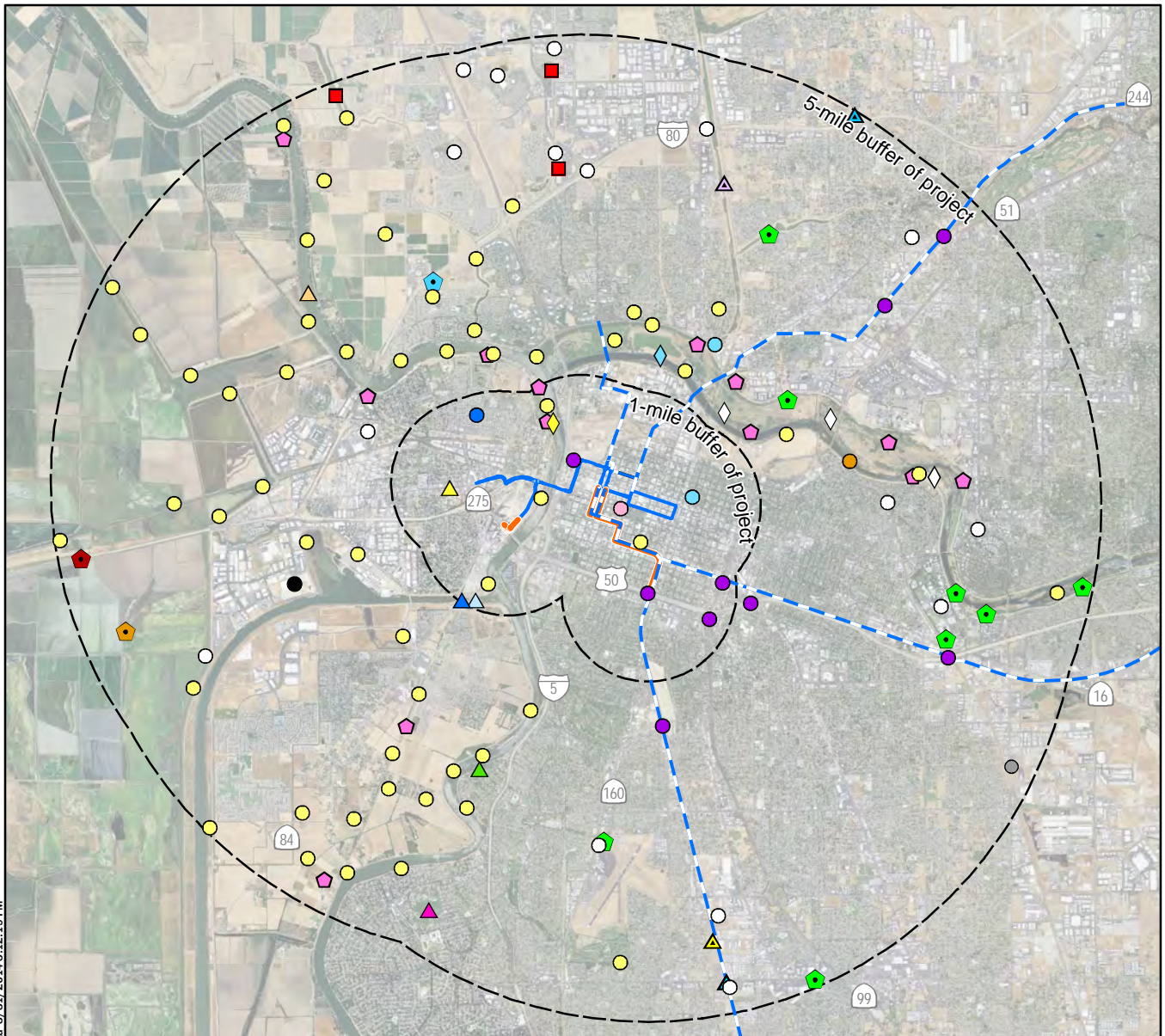
A concrete-lined drainage ditch runs south to north through the West Sacramento MSF site. The ditch drains stormwater from the open lot to the northwest and exits the site in a culvert under 5th Street. Construction of an MSF at this location would result in the modification of the stormwater drainage system for the site. This feature is not considered a potential jurisdictional water of the U.S., because it is an artificial channel that lacks hydric vegetation and soils, and is an isolated feature that lacks connectivity to waters of the U.S. regulated under the CWA. No water was observed in the ditch during the January 31, 2014, site visit. Bordering the drainage ditch are nonnative grasses and forbs such as wild oats and prickly lettuce (*Lactuca serriola*), and invasive species like tree of heaven (*Ailanthus altissima*) and wild tobacco (*Nicotiana glauca*).



4.3.3.2. Special-Status Species

The study area was assessed for its potential to support federal- and State-listed and special-status plant and animal species, based on habitat suitability comparisons with reported occupied habitats. The study area consists of urban and residential development that supports very little habitat for federal- and State-listed species. Appendix C provides a list of the species, their status, and the likelihood of their occurrence in the Project study area. The biological resources memorandum (URS 2014a) also provides a summary of regionally occurring special-status species obtained from USFWS, CNDDDB, and CNPS lists and evaluates whether the species have the potential to occur within the study area based on habitat types observed during the biological surveys. Twenty-seven special-status species (23 wildlife species and 4 plant species) have been recorded within 5 miles of the study area (CDFW, 2014b; CNPS, 2014)(Figure 4.3-1). No special-status plants are known to occur in the Project area, and none were observed during site visits; therefore, they are not addressed further in this EA/IS. However, the following special-status wildlife species and sensitive habitats have the potential to occur in the Project area or be affected by the Project, and will be analyzed below:

- Nesting birds protected by the MBTA and California Fish and Game Code, as well as the State-Threatened Swainson's hawk, that have the potential to nest in ornamental or natural vegetation in the vicinity or in trees that may be removed by construction of the Project;
- Bats, swallows, and martins that have the potential to roost or nest in structures affected by construction of the Project, such as the Tower Bridge; and
- Street trees protected by City of Sacramento and West Sacramento ordinances, that may have to be removed for the Project or affected during construction.
- The Project area consists of urbanized, developed, or disturbed habitats that provide low-quality habitats for most special-status wildlife species. Several special-status bird species forage in or near the study area, especially along the Sacramento River. Many native birds, including raptors such as barn owls and Swainson's hawk, are known to nest in ornamental landscaping and riparian trees in the vicinity of the Project, and in developed areas. Migratory birds have the potential to nest in ornamental trees and shrubs at the West Sacramento MSF site, and at the Tower Bridge. Occupied nests and eggs are protected by California Fish and Game Code Sections 3503 and 3503.5, and the MBTA (50 CFR Sections 10 and 21).



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- | | | |
|----------------------------------|--|---------------------------------------|
| — Proposed Streetcar Alignment | ▲ Sacramento splittail | ▲ hoary bat |
| — Existing Light Rail Route | ◆ Sanford's arrowhead | ● least Bell's vireo |
| — H Street LRT Alignment | ◆ Suisun Marsh aster | ▲ longfin smelt |
| — Maintenance Facility Access | ● Swainson's hawk | ● purple martin |
| ● American badger | ● bank swallow | ● song sparrow ("Modesto" population) |
| ▲ California linderiella | ○ burrowing owl | ● tricolored blackbird |
| ● Cooper's hawk | ▲ chinook salmon - Central Valley spring-run ESU | ◆ valley elderberry longhorn beetle |
| ◆ Ferris' milk-vetch | ▲ chinook salmon - Sacramento River winter-run ESU | ▲ vernal pool fairy shrimp |
| ◆ Sacramento Valley tiger beetle | ■ giant garter snake | ▲ vernal pool tadpole shrimp |
| ▲ Sacramento perch | ◆ great blue heron | ◇ white-tailed kite |
| | | ◆ woolly rose-mallow |

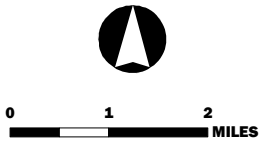
Source: Imagery, USDA NAIP, 2012; CNDDDB, CA DFG, September 2013.

CNDDDB RECORDS SEARCH

March 2014 Downtown/Riverfront Streetcar Project
27560885 Sacramento & West Sacramento



FIGURE 4.3-1





Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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The Swainson's hawk (*Buteo Swainsoni*) was listed as a threatened species in 1983 by the California Fish and Game Commission. It breeds in stands with few trees in riparian areas, and in oak savanna in the Central Valley, and forages in adjacent grasslands, agricultural fields, or livestock pastures. Swainson's hawks breed in California and winter in Mexico and South America. Swainson's hawks usually arrive in the Central Valley in March, and migrate south between September and October. Their nests usually occur in trees near the edges of riparian stands, in lone trees or groves of trees in agricultural fields, and in mature roadside trees. Valley oak, Fremont cottonwood, walnut, and large willow ranging in height from 40 to 85 feet are the most commonly used nest trees. The riparian corridor along the Sacramento River is between 350 and 500 feet from the proposed alignment along Riverfront Street. There is suitable nesting habitat in the tall riparian trees in this corridor for Swainson's hawk and other raptors protected under the MBTA. There is a CNDDDB record occurrence from 2010 of a Swainson's hawk nesting in the riparian habitat on the western bank of the Sacramento River, 600 feet south of the Tower Bridge. Occasionally, Swainson's hawks also nest in large-stature trees in developed areas.

During the site visit in September 2013, a great blue heron was observed immediately south of the Tower Bridge along the edge of the Sacramento River. No rookeries were observed or are anticipated to occur at this location due to the limited area of suitable habitat to support a rookery. Suitable nesting habitat for the great blue heron and purple martin occurs along the riparian corridor adjacent to the Tower Bridge, outside the edges of the study area. However, given the level of existing human activities at this location, Project activities in the study area are not anticipated to adversely affect these species.

Several species of birds—such as barn swallows, cliff swallows, and rock doves—nest in the Tower Bridge. The CNDDDB lists purple martin as occurring north of the study area, with nesting colonies occurring on the eastern side of the Sacramento River. The martin has the potential to nest in structures such as the Business 80/Highway 50 overpass.

The Pallid bat (*Antrozous pallidus*) is a State species of concern and roosts in structures such as bridges, especially wooden and concrete girder designs (Western Bat Working Group, 2005). The pallid bat also uses hollow trees, caves, and rock crevices for roosting, but also uses man-made structures such as mines, old buildings, and the undersides of bridges if suitable structure and seclusion are available. The hoary bat (*Lasiurus cinereus*) is also a State species of concern and generally roosts in dense foliage of medium to large trees in sites that are hidden from above. Limited potential habitat for these species is present in the study area, and there is one CNDDDB record occurrence of a hoary bat within 1 mile of the study area.

Distribution of these species is difficult to study and therefore poorly known. For roosts to be suitable for pallid bat, they must adequately protect roosting individuals from high temperatures. Pallid bat is extremely sensitive to human disturbance of roosting sites. Some special-status bat species are present in several of the older buildings in the older portions of West Sacramento, in the Port district, and in human-made structures along the Sacramento River and Deep Water Channel (City of West Sacramento, 2009a). Potential habitat for bats occurs under the Business 80/



Highway 50 overpass at the site of the West Sacramento MSF, and in the stand of redwoods planted along the southern edge of the West Sacramento MSF site.

Pallid bats likely do not use trees near the study area as maternity roosts, because the species typically uses rock crevices for reproduction and rearing young. In addition, none of the redwood trees along the edge of the West Sacramento MSF site contain hollows appropriate for maternity roosts.

4.3.4. Environmental Effects

This section includes an analysis to determine if the Project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

An evaluation of whether or not an effect on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial effects would be those that would diminish, or result in the loss of, an important biological resource; or those that would obviously conflict with local, State, or federal resource conservation plans, goals, or regulations.

No Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or State conservation plans apply to the study area or will be affected by Project activities. The Project area lies outside of the proposed South Sacramento Habitat Conservation Plan.

4.3.4.1. No Action Alternative

The no action alternative would not implement the Project, and changes to the roadway rights-of-way in the study area would occur primarily because of planned development and roadway improvements unrelated to the Project. Landscape improvements are likely to be included as part of the development requirements or as adjunct street improvement projects done by the cities.



These improvements would be subject to their own regulations for the protection of biological resources. The no action alternative would not result in project-specific construction activities in the study area, and no effects to biological resources would occur.

4.3.4.2. Action Alternative

Field surveys in the study area confirm that there would be limited effects to biological resources due to the existing highly disturbed environment of the proposed alignment. The study area does not contain suitable habitat for special-status plant species and no special-status plant species or suitable habitat were observed during the site visits. Potential effects on biological resources along the alignment and proposed avoidance and mitigation measures are described below.

Nesting Raptors and other MBTA-Protected Birds

Raptors and migratory bird species protected under CESA, the MBTA, and/or California Fish and Game Code have potential to nest in street trees and forage in the study area. Removal, trimming, or other disturbance of trees and vegetation for construction in the study area could result in adverse effects to these species.

Construction of the streetcar system in the existing right-of-way would involve minimal permanent effects to biological resources. Based on the existing habitat conditions present in the study area, the special-status species most likely to occur along or adjacent to the proposed alignment (and therefore potentially affected by Project activities) are the State-listed threatened Swainson's hawk, and other nesting raptors and migratory birds protected under the MBTA and/or California Fish and Game Code. Direct effects to nesting birds may occur during removal of trees or other vegetation that might provide nesting habitat. Indirect effects from construction disturbance during the breeding season, caused by factors such as noise (e.g., generators, heavy equipment, vehicles, and river barges), lights, or vibration, could lead to nest abandonment or premature fledging.

A stand of redwood trees along the southern border of the West Sacramento MSF site, and street trees throughout the Project, may be affected by Project activities. Trees provide potential nesting habitat for raptors and other migratory birds. Construction of the West Sacramento MSF would result in the modification of a concrete-lined drainage channel that currently drains the paved lot from east to west. Vegetation growing in the disturbed areas, such as at the West Sacramento MSF site, is predominantly nonnative and invasive, and removal would ground nesting habitat.

Construction activities at the Project sites have the potential to result in indirect effects to Swainson's hawks, or to other nesting migratory birds or raptors. Swainson's hawk and other raptors could nest within 500 feet of the study area in tall trees in the riparian corridor. Construction of the Project could result in direct and/or indirect effects to Swainson's hawk if this species begins nesting adjacent to the Project area prior to construction. Construction activities in the vicinity of a nest have the potential to result in forced fledging or nest abandonment by adult hawks. Barn swallows, cliff swallows, and rock doves nest on the Tower Bridge; construction during the nesting season could result in displacement of these species due to noise, light, and vibration.



Operation of the Project is expected to have no impact on nesting birds, including raptors. The Project area is an existing urbanized environment, with substantial vehicle traffic noise and vibration. Operation of the Project would not substantially change existing levels of light and noise in the Project area or vicinity (see Section 4.6, Noise and Vibration). Therefore, no mitigation measures are required for Project operations.

Roosting Bats

Direct effects to roosting bats may occur during removal of trees or structures that might provide roosting habitat. Indirect effects from construction such as noise (e.g., generators, heavy equipment, vehicles, and river barges), lights, or vibration, could affect roosting bats. Pallid bat and hoary bat are known to occur in the vicinity of the proposed alignment. Due to the high level of development and urban activities in the vicinity of the proposed alignment, the potential for bat species to be present is very low. There is potential roosting and foraging habitat for the pallid bat, which is known to nest in various human structures such as bridges (especially wooden and concrete girder designs), on the Tower Bridge, as well as under the Business 80/Highway 50 overpass above the West Sacramento MSF site (Western Bat Working Group, 2005), although the potential for disturbance to roosting habitat is very low. Pallid bats likely do not use trees in the study area as maternity roosts, because the species typically uses rock crevices for reproduction and rearing of young. In addition, none of the redwood trees along the edge of the West Sacramento MSF site contain hollows appropriate for maternity roosts. The most suitable habitat for pallid bat in the study area is around and inside man-made structures. Construction activities on the Tower Bridge and in the vicinity of the West Sacramento MSF could potentially result in direct and indirect adverse effects to the Pallid bat if they begin roosting on the undersides of the Business 80 overpass or the Tower Bridge prior to construction.

The hoary bat prefers trees at the edges of clearings, but will also use tree cavities, rock crevices, and even squirrel nests; however, in urban areas it prefers very densely vegetated habitat. Potential for occurrence of the hoary bat is low, given the level of human activity present in the study area, and only one CNDDDB record (historical occurrence of the hoary bat) within 5 miles of the study area. The study area does not support suitable dense vegetation for the hoary bat.

Operation of the Project is expected to have no impact on roosting bats. The Project area is an existing urbanized environment, with substantial vehicle traffic noise and vibration. Operation of the Project would not substantially change existing levels of light and noise in the Project area or vicinity (see Section 4.6, Noise and Vibration). Therefore, no mitigation measures are required for Project operations.

Street Trees

Numerous large ornamental trees are planted in and along the edge of the proposed alignment. These trees could, in some locations, interfere with the safe operation and maintenance of equipment during Project construction and operation. Therefore, some trees and other mature vegetation may need to be trimmed or removed during construction activities. Removal of street trees would require



compliance with applicable City of Sacramento and City of West Sacramento regulations. Implementation of Measures to Minimize Harm, listed below, would avoid adverse effects associated with the removal of trees and other mature vegetation during Project construction and operation.

4.3.4.3. Construction Effects

Construction of the streetcar system in the existing right-of-way would involve minimal permanent effects to biological resources. As noted above, construction of the Project could result in the trimming or removal of street trees, and could potentially affect a stand of redwood trees along the southern border of the West Sacramento MSF site. Construction of the West Sacramento MSF would also result in the modification of a concrete-lined drainage channel that currently drains the paved lot from east to west. Construction activities have the potential to result in effects to Swainson's hawks, or other nesting migratory birds or raptors. Direct effects to nesting birds may occur during removal of trees or other vegetation that might provide nesting habitat. Indirect effects from construction disturbance during the breeding season, caused by factors such as noise (e.g., generators, heavy equipment, vehicles, and river barges) or vibration, could lead to nest abandonment or premature fledging. No construction would take place in riparian habitats, as the Project alignment across the Sacramento River would occur above the riparian area on the Tower Bridge. All Project activities would take place in developed and paved urban areas that do not support wetland habitat. In addition, pollution prevention measures included in applicable National Pollutant Discharge Elimination System (NPDES) programs and Stormwater Management Plans (SWMPs), as well as the best management practices (BMPs) described in Section 4.8 (see below) will avoid adverse water quality effects resulting from accidental spills and runoff. Therefore, no effects to waters of the U.S. would occur.

4.3.5. Measures to Minimize Harm

Mitigation Measure Bio-1: Nesting Birds

To avoid direct impacts to nesting birds during construction, including raptors such as Swainson's hawk and migratory birds, the following impact avoidance and minimization measures shall be implemented.

Conduct site preparation, such as vegetation removal, and initiate construction, during the non-nesting season (generally September 1 through February 15). If work is initiated during the nesting season (generally February 15 through August 31), then a qualified biologist shall conduct a pre-construction survey within 2 weeks prior to construction to determine if active nests occur in the project area or could be affected in the vicinity. If at any time during construction there is a delay of activities of at least 2 weeks during nesting season, then surveys shall be conducted again. The surveys must cover the construction area footprint, and out a distance of at least 250 feet for passerines and 500 feet for raptors. Surveys for Swainson's hawk shall follow the methods described in the Swainson's hawk Technical Advisory Committee Guidelines. If no active nests are identified, then no impacts would be expected, and no further measures are required.



If active bird nests are identified, one or more of the following additional measures are required:

- Construction in the vicinity of the nest must be delayed until a qualified biologist has determined that the nest is no longer active, or has been abandoned, or young have fledged.
- If construction cannot be delayed, then a qualified biologist with stop work authority shall establish a non-disturbance buffer with either modified or no ground-disturbing work, and monitor the nest site to determine if nesting behavior is being disrupted. CDFW and USFWS shall be consulted to reach concurrence on the suitability of the non-disturbance buffer, considering line of site, distance, species, and type of activities proposed near the nest. If nesting behavior is disrupted, then work activities shall be redirected to other areas and/or modified in such a way that no further disruption is observed. Monitoring, if needed, shall occur at least twice per week during construction until the nest is no longer active.

Responsibility: Project Sponsor/Contractor

Schedule: If required for work initiated during nesting season, preconstruction surveys shall occur within 2 weeks prior to construction initiation during the nesting season (February 15 through August 31). For Swainson's hawks, the schedule shall follow the protocol in Swainson's Hawk Technical Advisory Committee Guidelines, including preconstruction surveys during Period 1 (January 1 through March 20), Period 2 (March 20 through April 5), and Period 3 (April 5 through April 20).

Reporting: Project Sponsor/Contractor shall submit reports of pre-construction nest surveys and daily monitoring events to responsible agencies, including the lead agency, USFWS, and CDFW.

Impact with Implementation: With implementation of the above measure, construction of the project would avoid impacts to nesting migratory birds and raptors protected under the MBTA and the California Fish and Game Code, and no further measures are required to reduce the impact to less than significant.

Mitigation Measure Bio-2: Bird nests on structures

Swallow nests and nests of other species, such as martins, that could be affected by construction shall be removed prior to new ground disturbance during the non-nesting season. Swallows are persistent, and continued monitoring and maintenance is required to ensure that nests that are initiated are removed. Nest removal is commonly accomplished mechanically with a jet of high pressure water, such as with a fire hose. As the birds attempt to build new nests, they shall be removed as needed, typically weekly or even daily, before they are completed. Alternatively, exclusion devices could be installed on structures to prevent new nests from being established during construction. Pre-emptive nest removal, prevention of new nesting, and ongoing monitoring and maintenance during nesting season, would avoid disruption of active nests on structures during construction.

Responsibility: Project Sponsor/Contractor



Schedule: Within 2 weeks prior to construction initiation during the nesting season (February 15 through August 31).

Reporting: Project Sponsor/Contractor shall submit reports of pre-construction bat surveys and daily monitoring events to responsible agencies, including the lead agency, USFWS, and CDFW.

Impact with Implementation: With implementation of the above measure, construction of the project would avoid impacts to nesting swallows and other bird species on structures, and no further measures are required to reduce the impact to less than significant.

Mitigation Measure BIO-3: Roosting Bats

The most suitable habitat for pallid bat in the study area is around and inside man-made structures. Preconstruction bat surveys would be conducted to inspect the undersides of the Tower Bridge and the Business Interstate 80 (I-80) overpass for roosting bats. A qualified biologist shall inspect structures and trees prior to removal or construction to determine if bats are roosting. If no roosting bats are found, no further mitigation would be necessary. If bats are present, the biologist shall direct the installation of one-way exclusion devices to allow bats to vacate the structure or tree prior to construction. Exclusionary devices, such as plastic sheeting, or plastic or wire mesh, can be used to allow bats to exit but not reenter any occupied roosts. Expanding foam and plywood sheets can be used to prevent bats from re-entering unoccupied roosts during construction. Exclusion devices shall be inspected, monitored, and maintained on structures during construction. Excluding bats from project trees and structures would avoid construction related impacts to this species.

Responsibility: Project Applicant

Schedule: Within 2 weeks prior to construction initiation.

Reporting: Project Applicant shall submit reports of pre-construction bat surveys and daily monitoring events to responsible agencies, including the lead agency, USFWS, and CDFW.

Impact with Implementation: With implementation of the above measure, construction of the project would avoid impacts to roosting bats, and no further measures are required to reduce the impact to less than significant.

Mitigation Measure BIO-4: Replace any removed tree per City of Sacramento and City of West Sacramento requirements.

At this time, there are no tree removals anticipated within the City of Sacramento. In West Sacramento, 15 recently planted London plane trees in the median of West Capitol Ave in front of West Sacramento City Hall will likely be removed. There is also one landmark-sized liquid amber tree in front of City Hall that also may be affected. Should trees need to be removed for construction, the Project sponsor will follow the applicable conditions of the City of Sacramento or City of West Sacramento requirements for replacing removed trees. The ordinances require a



permit for tree removal or impacts to street trees, and either replanting and maintaining replacement trees at an appropriate ratio specified by the cities under the ordinance, or the payment of an in-lieu fee to the cities. The in-lieu fees fund the planting and maintaining of street trees in the cities, and therefore compensate each jurisdiction for in-kind replacement.

Provisions related to the removal of street trees are included in Section 12.56.070 of the Sacramento City Code, and provisions related to the replacement of street trees are included in Section 12.56.090. Permits for tree removal are granted by the Director of the City's Department of Transportation, usually with the condition that a replacement tree would be planted in a location determined by the City. Generally, if the tree being removed is 6 inches or larger in diameter, measured 4.5 feet above ground, then the replacement would need to be at least 24-inch box size. If the City street tree being removed is smaller than 6 inches in diameter, measured 4.5 feet above ground, then the replacement tree would be a minimum of 15-gallon can size.

Heritage or landmark trees in the City of West Sacramento can be removed only by permit granted by the City's Tree Administrator, and usually require the replacement of a living tree on the property or in the City in a location approved by the Tree Administrator. More specifically, replacement trees will be planted at the rate of 1-inch-diameter of replacement plant for every 1-inch-diameter of tree removed. In the event that the property owner is unable to replace the tree on his/her property or in an area approved by the Tree Administrator, the Tree Administrator would require the property owner to pay an in-lieu fee to the City. However, if a tree is in need of removal solely because it poses a risk to persons or property, or if the tree acts as a host for a plant that is parasitic, a replacement tree or in-lieu fee would not be required. If a non-heritage, non-landmark street tree is being removed, the ordinance stipulates that the replacement tree should be of a size and species in compliance with the City of West Sacramento's Landscape Development Guidelines.

Responsibility: Project Applicant

Schedule: Prior to construction initiation.

Reporting: Project Applicant shall submit an arborist report and tree permit application to the City of Sacramento and City of West Sacramento, describing each tree that could be affected by construction. The application would propose either replanting an appropriate quantity of new trees and/or payment of the appropriate in-lieu fee as specified under the ordinance.

Impact with Implementation: With implementation of the above measure, construction of the project would fully mitigate the loss of street trees by either replanting an appropriate quantity in each jurisdiction or paying an in-lieu fee to the cities to replant and maintain street trees to offset the loss of trees resulting from project construction. Therefore, compliance with each city tree ordinance would reduce this significant impact to less than significant.



4.3.6. Cumulative Effects

A number of ongoing and approved projects are underway in the West Sacramento and Sacramento downtown area, in the vicinity of the Project As with construction of the Proposed Project, construction projects have the potential to affect local plant communities, wetland resources, and wildlife habitats by direct removal or temporary disturbance during construction. Nearly all of the construction sites, however, can be characterized as urban infill and are entirely surrounded by existing urban development. In general, projects on urban infill sites are not expected to result in substantial losses of plant communities, wetland resources, or wildlife habitats, or to have substantial adverse effects on special-status plant or wildlife species. As such, these types of urban infill projects would not be expected to result in an adverse cumulative effect to these types of resources.

With the implementation of the Measures to Minimize Harm described above, Project-related operational or construction effects to biological resources in the study area and in the immediate vicinity of the study area would be minimized, and no adverse effects would occur. The Project would not result in adverse cumulative effects.



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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4.4. Historic Architectural, Archaeological, and Paleontological Resources

4.4.1. Introduction to the Analysis

This section includes a description of the Historic Architectural, Archaeological, and Paleontological Resources present in the vicinity of the Project and the potential for construction, operation, and cumulative effects related to the Project to result in adverse effects to these resources. In addition, this section provides a discussion of minimization/avoidance measures designed to avoid and minimize adverse effects, as well as an assessment of cumulative impacts. FTA is currently seeking concurrence from SHPO on a finding of no adverse effect pursuant to 36 CFR 800.5(b). Appendix D documents Section 106 consultation efforts undertaken to date.

Information in this section is based on the Archaeological Resources Assessment for the Downtown/Riverfront Streetcar Project (URS, 2015) and the Built Environment Resource Report Downtown/Riverfront Streetcar Project (JRP, 2015). As described in these reports and elaborated upon in Section 4.4.3.3 below, an Area of Potential Effects (APE) was defined for the Project that includes the public right-of-way of the streets along the proposed alignment, and the two MSF options. At streetcar stations proposed to be on the side of the street along the curb and at the potential MSF sites, adjacent properties were also included in the APE for the Historic Architectural analysis. For the purposes of this section, the study area is defined as the APE and an adjacent ¼-mile buffer zone for the purpose of database searches

4.4.2. Regulatory Setting

4.4.2.1. Federal Regulations

In compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 United State Code [USC]Section 470f [2008]), any federal undertaking must “take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register.” The implementing regulations for Section 106 are found under 36 CFR Section 800, as amended (2001). Consultation with the State Historic Preservation Officer (SHPO) and other consulting parties, such as Native American tribes or local governments, is an integral part of the Section 106 process. FTA initiated consultation with the SHPO on the adequacy of the APE in a letter dated November 8, 2013. The SHPO responded by letter on December 10, 2013, requesting clarification of the vertical APE for the Project. The Project proponents met with the SHPO to review the overall Project, including the APE, on September 24, 2014. Consultation efforts are ongoing and are documented in Appendix D. Consultation efforts with Native American tribes and other interested parties are summarized in Section 4.4.3.5.

To determine eligibility for the NRHP, criteria must be considered. As provided in 36 CFR Section 60.6, the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of national, State and local importance. The significance of a resource must be considered in its historic context, and the resource must possess integrity of location, design, setting, materials, workmanship, feeling, and association.



Resources must also be at least 50 years old, except in rare cases, and meet one of the following criteria to be considered eligible for the NRHP:

- (A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- (B) That are associated with the lives of persons significant in our past; or
- (C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (D) That has yielded, or may be likely to yield, information important in prehistory or history.

For archaeological sites evaluated under Criterion D, integrity requires that the site remain sufficiently intact to convey the expected information to address specific important research questions.

Paleontological resources are classified as nonrenewable scientific resources and are protected by federal and State statutes, most notably by the 1906 Federal Antiquities Act. Professional standards for assessment and mitigation of adverse impacts on paleontological resources have been established by the Society of Vertebrate Paleontology (SVP) (1995, 1996). The SVP has established standard guidelines (SVP, 1995, 1996) that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation.

4.4.2.2. State Regulations

The Project must also comply with the CEQA, whereby it must be determined if a project causes a substantial adverse change to a unique archaeological resource or a historical resource, pursuant to Sections 21083.2 and 21084.1 of the Public Resources Code (PRC), respectively.

Section 15064.5 of the State CEQA Guidelines also notes that “a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.” Responsible agencies are expected to identify potentially feasible measures to mitigate significant adverse changes in the significance of a historical resource before they approve such projects. Historical resources are those that:

- Are listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) (PRC 5024.1[k]);
- Are included in a local register of historical resources (PRC 5020.1) or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g); or
- Are determined by a lead State agency to be historically significant.



Similar to the federal regulations, CEQA considers impacts to cultural resources a significant effect to the environment only if those resources meet specific significance criteria for the CRHR. These criteria are set forth in PRC 5024.1 and defined as any resource that:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- (2) Is associated with lives of persons important in our past;
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- (4) Has yielded, or may be likely to yield, information important in prehistory or history.

Furthermore, impacts to "unique archaeological resources" are considered under CEQA, as described under PRC 21083.2. A unique archaeological resource implies an archaeological artifact, object, or site, for which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one of the following criteria:

- (1) The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information; or
- (2) The archaeological artifact, object, or site has a special and particular quality, such as being oldest of its type or the best available example of its type; or
- (3) The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

A non-unique archaeological resource is an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources that do not qualify for listing on the CRHR receive no further consideration under CEQA.

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under California PRC Section 5097.98.

City of Sacramento

Cultural resources are addressed under the Historic and Cultural Resources (HCR) Element of the 2030 Sacramento General Plan (City of Sacramento, 2009a). Given the large number of historic buildings and structures that exist in the city, the goals and policies tend to focus on preservation of the built environment. However, concern for archaeological resources is also evident. Those goals and policies relevant to HCR and the Project are listed below.



Goal HCR 2.1: Identification and Preservation of Historic and Cultural Resources. Identify and preserve the city's historic and cultural resources to enrich our sense of place and our understanding of the city's prehistory and history.

- Policy HCR 2.1.1., Identification. The City shall identify historic and cultural resources including individual properties, districts, and sites (e.g., archaeological sites) to provide adequate protection of these resources.
- Policy HCR 2.1.2., Applicable Laws and Regulations. The City shall ensure that City, State, and Federal historic preservation laws, regulations, and codes are implemented, including the California Historical Building Code and State laws related to archaeological resources, to ensure the adequate protection of these resources.
- HCR 2.1.3, Consultation. The City shall consult with the appropriate organizations and individuals (e.g., Information Centers of the California Historical Resources Information System (CHRIS), the Native American Heritage Commission (NAHC), and Native American Groups and individuals to minimize potential impacts to historic and cultural resources.
- HCR 2.1.6, Planning. The City shall take historical and cultural resources into consideration in the development of planning studies and documents.
- HCR 2.1.15, Archaeological Resources. The City shall develop or ensure compliance with protocols that protect or mitigate impacts to archaeological, historic, and cultural resources including prehistoric resources.

The City's dedication to preserving its historic past is also codified in Chapter 17.604, Historic Preservation, of the Sacramento City Planning and Development Code. Again, although the code primarily focuses on the built environment, it is inclusive of archaeological resources. The purpose of the code, pursuant to Article I, Chapter 17.604.1000, Part B, is to

1. Establish a city preservation program;
2. Provide mechanisms, through surveys, nominations and other available means, to identify significant historic, prehistoric and cultural resources, structures, districts, sites, landscapes and properties within the city;
3. Provide mechanisms and procedures to protect and encourage the preservation of the city's historic and cultural resources; and
4. Provide standards, criteria and processes, consistent with State and federal preservation standards and criteria, for the identification, protection and assistance in the preservation, maintenance and use of historic and cultural resources.

The code also establishes the Sacramento Register of Historic and Cultural Resources (SRHCR) and defines the criteria for eligibility to the register as a landmark, district, or a contributor to a landmark or district, as well as outlining review procedures for projects that might impact historic resources in the city.



City of West Sacramento

The Recreational and Cultural Resources section of the City of West Sacramento General Plan (City of West Sacramento, 1990; revised 2004) contains two goals and associated policies related to the preservation of cultural resources. The goals are:

Goal F. To preserve and enhance West Sacramento's historical heritage; and

Goal G. To protect West Sacramento's Native American heritage.

The policies of Goal F focus on the built environment resources of the city. The three policies listed under Goal G refer to archaeological resources and are summarized below.

1. Require developers to do a record search at the Northwest Information Center of the CHRIS at Sonoma State University;
2. Prohibits the city from knowingly approving public or private projects that may adversely affect an archaeological site, and will not approve projects that might affect such sites without conducting site evaluations or mitigating the adverse effects according to the recommendations of a qualified archaeologist; and
3. Protects archaeological sites through development permits requiring onsite monitoring by qualified personnel of excavation work in areas identified as sensitive for archaeological resources. Excavation shall cease in any place where artifacts or skeletal remains are discovered until they have been examined and evaluated by a qualified archaeologist and arrangements have been made to avoid or otherwise protect valuable resources.

4.4.3. Affected Environment

4.4.3.1. Area of Potential Effects

The APE is defined under 36 CFR 800.16(d) as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." A preliminary APE has been defined for the Project and is included as Figure 4.4-1. Because the Project will be constructed entirely within the public right-of-way, the direct APE is restricted to the public right-of-way along the Project route where construction activities, such as the laying of track, establishment of station stops, and installation of OCS poles, have the potential to impact historic properties. This includes the outside edge of the street/sidewalk right-of-way. The two power substations would also be located on public property, one on each side of Tower Bridge Gateway between the Union Pacific Railroad Bridge and Garden Street at the west end of Tower Bridge. Both of the proposed locations for maintenance and storage facilities are within public rights-of-way beneath elevated portions of Business 80/Highway 50; one is in West Sacramento and the other is in Sacramento. The West Sacramento Maintenance Facility, at the south end of the Riverfront Street extension, covers about 3 acres. The proposed location of a maintenance station beneath the Business 80/Highway 50 interchange between X Street, W Street, and 19th Street, an area of about 1.5 acres, is a discontinuous element of the Project APE.



The Project will limit construction staging and laydown areas to existing street rights-of-way and the MSF sites. The direct APE accommodates the use of MSF sites for construction staging and laydown. The direct APE is applicable to both archaeological and built environment cultural resources (Figure 4.4-1).

The indirect APE was delineated to include the adjacent legal parcel or parcels where a new streetcar stop is proposed for a location on the edge of the street (Figure 4.4-1). Adjacent parcels were not included for those stops proposed for the street median. The indirect APE is designed to take into account visual, audible, or atmospheric intrusions resulting from the platform locations, vibrations from construction activities, or change in access or use that might affect historic properties of the built environment.

A vertical APE was defined to address subsurface disturbances caused by Project construction. New track construction and utility conduit construction are not anticipated to go beyond a depth of 3 feet; therefore, this depth is applicable to the entire area identified for the direct APE where tracks will be laid. Construction of new station stops, including features such as canopy mounted on structural supports, supplemental lighting, and fare machines, will be designed to not exceed 3 feet in depth. As discussed in Section 3.1.4.1, installation of OCS poles has the potential to reach depths of 20 feet. Therefore, the vertical APE for those individual locations where OCS installation may occur is 20 feet. OCS poles used for the existing light rail system in Sacramento will be used whenever possible, or contact wires may be attached to suitable buildings in the Downtown Sacramento, to avoid positioning new poles in areas that contain historic properties. The maximum span length between poles is 120 feet on straight track; that distance is reduced on curves and around corners. It is estimated that up to 328 new OCS poles may be installed within the APE. Power substations would be placed on a concrete slab foundation that would be no more than 3 feet deep. New underground duct banks to house electrical cable at the power substations would be no more than 5 feet deep. The maintenance facility will also likely be constructed on a concrete slab foundation with ground disturbance limited to a depth of 3 feet. However this facility will also require a service bay—which is a pit up to 8 feet deep—and the installation of OSC poles. It may be necessary to relocate existing utilities during construction. The relocation of utilities will be coordinated with utility providers and, thus, specific locations are currently unknown; however, based on prior LRT construction, any potential relocation of utilities will not exceed 8 feet deep.

As a result, the vertical APE for most of the Project (new tracks; concrete slabs for new stations, power substations, and the maintenance facility) has a depth of 3 feet. Localized locations will have a larger vertical APE: 5 feet for concrete duct banks at the power stations; 8 feet for the service bay at the maintenance station and potential utility relocations; and up to 20 feet at OCS pole locations.

4.4.3.2. Prehistoric Context

The study area lies directly adjacent to one of the most intensively archaeologically studied areas in California: the Sacramento/San Joaquin River Delta and adjoining sections of the Sacramento and San Joaquin valleys. Beginning in the last decade of the nineteenth century, avocational



archaeologists recovered thousands of artifacts from numerous sites in the Delta vicinity. A general synthesis of these early works is found in Schenk and Dawson (1929). Currently, archeologists use a number of the various sequences provided over the years, often in a combined form. After many debates and numerous revisions, the cultural sequence for the central California region currently stands as follows:

Paleo-Indian Period (11,550 to 8550 B.C.)

Archaeological associations with the earliest human occupation in the Central Valley are rare, although they are assumed to be present buried under many feet of sediment. This period represents highly mobile populations who frequented the shores of late Pleistocene lakes and sloughs. Artifacts are sparse and include basally thinned and fluted projectile points. Although a few Paleo-Indian sites have been recorded in the southern San Joaquin Valley, evidence of this time period has been virtually absent from the Sacramento Valley (Rosenthal et al., 2007:151).

Lower Archaic Period (8550 to 550 B.C.)

Similar to the Paleo-Indian Period, Lower Archaic Period sites are largely restricted to the southern San Joaquin Valley. Wide-stemmed projectile points, chipped stone crescents, large bladelet flakes and unifacial tools are the most prominent artifacts associated with the Lower Archaic on the valley floor, but handstones and millstones have been found in contemporaneous sites in the foothills. Thus, the populations at this point in time began to rely more on seasonal plant exploitation to supplement the hunting of game (Rosenthal et al., 2007:151-152).

Middle Archaic/Windmill Pattern (ca. 3000 B.C. to 500 B.C.)

The artifact assemblage characteristic of this cultural manifestation includes a variety of flaked stone, ground stone, baked clay, and shell items reflecting exploitation of diverse subsistence resources and acquisition of materials from distant geographic areas through trade. The burial pattern of Windmill cemeteries and grave plots is unique in that virtually all of the interments are ventrally extended, with the head oriented to the west. The primary exception to this burial pattern is that aged females were buried in a flexed position. Social stratification can be inferred from the burial practices of Windmill peoples. Males appear to generally have higher status than females, as evidenced in their deeper and artifactually richer graves. Social status may have been at least partially inherited, for some female, child, and infant burials contained elaborate grave associations, while others lacked such wealth (Moratto, 1984:201-207).

Upper Archaic/Berkeley Pattern (ca. 500 B.C. to A.D. 500)

The Berkeley Pattern represents a gradual shift in adaptation and material culture that appears to have originated in the San Francisco Bay region. The subsistence practices of Berkeley peoples differ from that of the Windmill population in that the use of acorns for food seems to have increased dramatically. The reliance on acorns is evidenced in the increase in mortars and pestles recovered from Berkeley Pattern sites. Other differences in material culture include the occurrence



of an extensive bone tool kit, unique knapping techniques, and certain types of shell beads and pendants in Berkeley Pattern sites. Burial practices of Berkeley peoples also differed from those of Windmill Pattern sites. No longer were interments oriented towards the west; instead, Berkeley Pattern burials are flexed with variable orientation (Moratto, 1984:207-211).

Emergent Period/Augustine Pattern (ca. A.D. 500 to A.D. 1880)

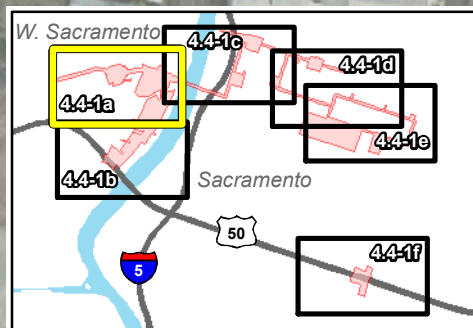
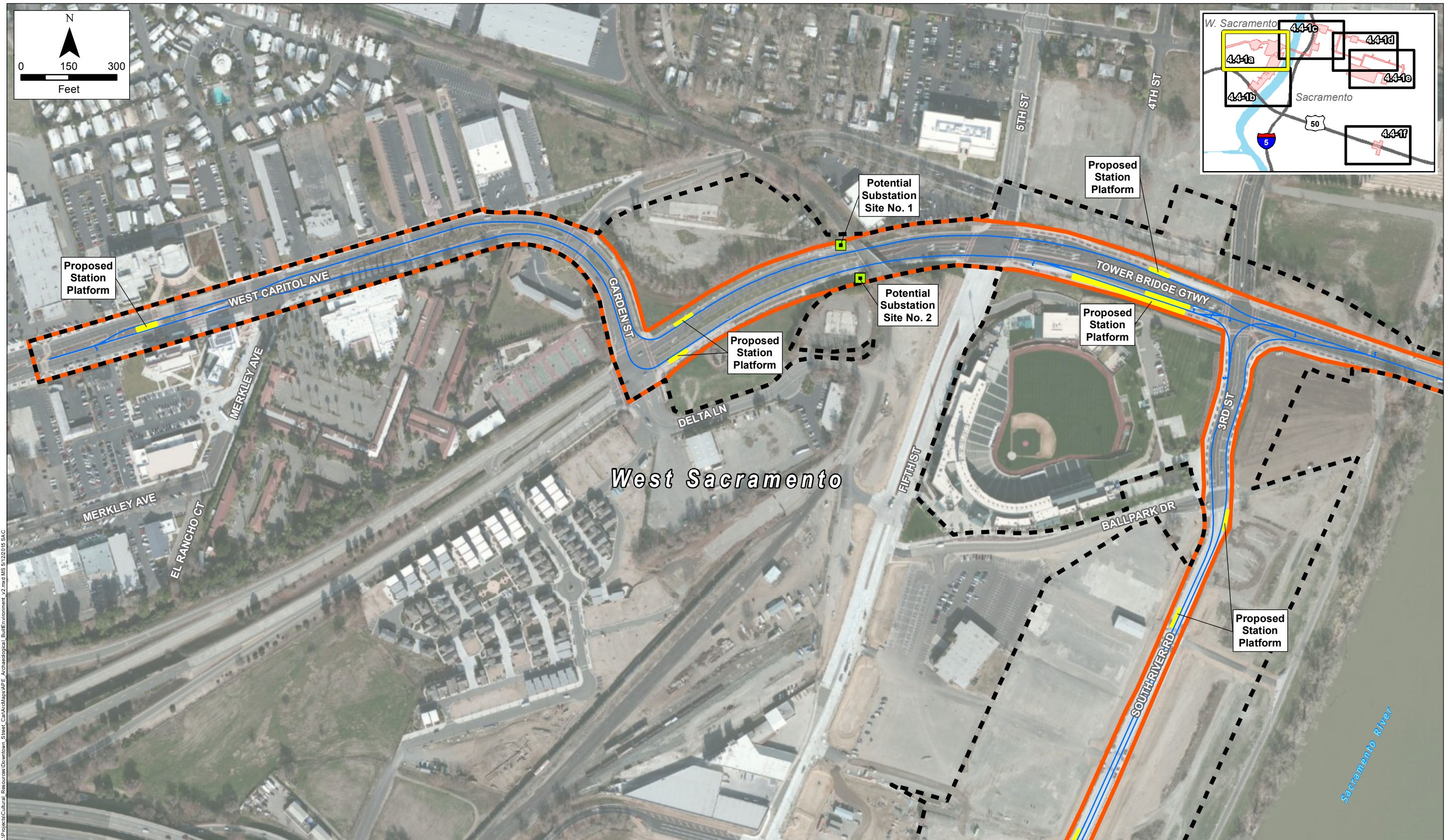
The Augustine Pattern reflects local innovation in technology, as well as the incorporation of new developments with traits of the Berkeley Pattern. The artifact assemblages of Augustine Pattern sites indicate an increased reliance on acorns. Many burials continue to be flexed; however, cremation becomes the mortuary practice for high-status burials. Extensive trade networks developed to accommodate the resource and social needs of the burgeoning populations (Moratto, 1984:211-214).

4.4.3.3. *Historic Context*

Early Sacramento

European settlement in the Sacramento Valley began when Spanish and Mexican governors issued large land grants to various individuals. One of the grantees was Swiss immigrant John Augustus Sutter, who first settled the Sacramento area in 1839, upon receipt of a land grant from Mexican Governor Juan Alvarado. Sutter built a complex of buildings on a knoll near the confluence of the Sacramento and American rivers called Sutter's Fort. From 1839 until 1848, Sutter's Fort served as a ranch headquarters, regional entrepot, and destination for immigrants into California.

The early development of Sacramento is directly attributable to the onslaught of gold seekers rushing to the slopes of the Sierra Nevada following the discovery of gold in 1848 on the American River upstream from Sacramento. The city served as the gateway to the central Sierra mines and as a regional commercial and transportation hub. Sutter's son, John Sutter Jr., joined his father in September 1848 and laid out the town of Sacramento as a grid of streets and town lots extending 34 blocks east from the waterfront. His plan established numbered streets running north to south, and lettered streets running east to west. Most blocks were divided into eight 80-foot by 150-foot lots. The town plan was adopted in December 1848, and after a survey by Captain W.H. Warner, Sacramento grew rapidly. By June 1849, there were 100 buildings, and by October the town had 2,000 permanent residents, with thousands passing through on the way to and from the gold fields. The new town was centered on the waterfront, or Front Street, which bustled as a transfer point for goods and passengers, with shipping docks and warehouses. East from Front Street, a commercial district developed along I Street, J Street, K Street, and L Street.



Potential Substation Site (construction depth of 5 feet)	Archaeological Area of Potential Effects (APE)	Proposed Maintenance Area (construction depth of 3 to 8 feet)
Indirect Area of Potential Effects (APE)	Proposed Station Platform (construction depth of 3 feet)	Existing Rail Stop
Existing Track		
Proposed Track (construction depth of 3 feet)		



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- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Existing Track
- Indirect Area of Potential Effects (APE)
- Proposed Station Platform (construction depth of 3 feet)
- Existing Rail Stop
- Proposed Track (construction depth of 3 feet)

Archaeological and Indirect Area of Potential Effects (APE)

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Figure 4.4-1b



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- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Existing Track
- Indirect Area of Potential Effects (APE)
- Proposed Station Platform (construction depth of 3 feet)
- Existing Rail Stop
- Proposed Track (construction depth of 3 feet)

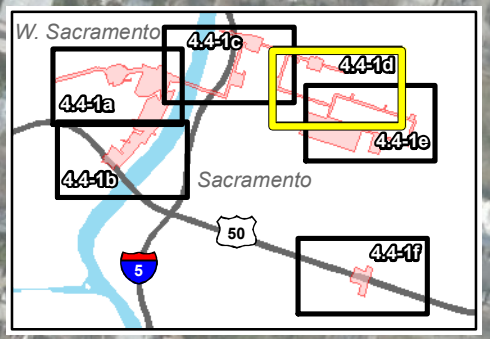
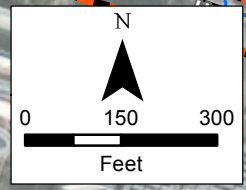
Archaeological and Indirect Area of Potential Effects (APE)

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Sacramento & West Sacramento



Figure 4.4-1c



Potential Substation Site (construction depth of 5 feet)	Archaeological Area of Potential Effects (APE)	Proposed Maintenance Area (construction depth of 3 to 8 feet)
Existing Track	Indirect Area of Potential Effects (APE)	Proposed Station Platform (construction depth of 3 feet)
Proposed Track (construction depth of 3 feet)	Existing Rail Stop	

Archaeological and Indirect Area of Potential Effects (APE)

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Figure 4.4-1d



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Potential Substation Site (construction depth of 5 feet)	Archaeological Area of Potential Effects (APE)	Proposed Maintenance Area (construction depth of 3 to 8 feet)
Existing Track	Indirect Area of Potential Effects (APE)	Proposed Station Platform (construction depth of 3 feet)
Proposed Track (construction depth of 3 feet)	Existing Rail Stop	



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- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Existing Track
- Indirect Area of Potential Effects (APE)
- Proposed Station Platform (construction depth of 3 feet)
- Existing Rail Stop
- Proposed Track (construction depth of 3 feet)

Archaeological and Indirect Area of Potential Effects (APE)

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Sacramento & West Sacramento



Figure 4.4-1f



As Sacramento grew after 1850, J Street became the primary commercial corridor because it was the main road leading east out of the city. By 1851, J Street was occupied from Front Street eastward beyond 10th Street with stores, saloons, hotels, grocery stores, and other concerns vying for the business of visitors and residents alike. Other businesses occupied adjacent I, K, and L streets. Early streets during this time were dirt, but were gradually paved with cobblestones. Public transportation services also began to emerge. Among the first were horse-drawn carriages conveying passengers from 3rd and R streets to 2nd and K streets; in 1861, tracks were laid on some city streets for a horse-drawn trolley system.

As the commercial center developed, Sacramento became a top contender for the permanent site of the State capital. After convening in San Jose, Vallejo, Benicia, and Sacramento from 1850 to 1854, State legislators ultimately chose Sacramento as the permanent State capital in 1854. The county courthouse building served as the Capitol building from this date until a new building could be built. Land for the new Capitol was granted by the City of Sacramento to the State in 1860, and was bounded by L, N, 10th, and 12th streets. Construction began on the building in 1863 and it was occupied in 1869, although work continued until 1874.

Upon completion of the Capitol building, the surrounding grounds were landscaped to create Capitol Park. A section of the proposed streetcar route for Project runs along the northern side of Capitol Park on L Street between 12th and 15th streets and a new stop is proposed adjacent to the park on L Street near 12th Street. The original plantings in the park were made in 1870 and only covered the area between L, N, 10, and 12th Street. The plantings were laid out in a formal geometric pattern. The State then bought the land from 12th to 15th Street, and the plantings were gradually expanded as far as 14th Street between 1875 and 1900. Buildings were constructed on the portion bound by 14th, 15th, L, and N streets, including the California State Fair Pavilion and State Printing Office. The easternmost area of the park was developed into the California Gardens section of the park beginning in 1914, and the park reached its current size of 40 acres. The park is renowned for a diverse collection of hundreds of plants from around the world, and it also contains a variety of monuments and memorials dedicated to soldiers, firefighters, and peace officers. The first of these was the Civil War Memorial Grove dedicated in 1897.

Flooding and the Raising of Sacramento Streets

Frequent flooding from the American and Sacramento rivers in the early years of Sacramento presented a potential obstacle to growth. Sacramento experienced its first major flood in January 1850 when the American River overflowed and inundated four-fifths of the city, an event that prompted construction of the first levees. These early structures proved inadequate as floodwaters again spread over the city in 1852 and 1853. Undaunted, a group of citizens consisting largely of business owners funded work to strengthen the levees, improve drainage, and raise Sacramento's streets. Work began on the street raising in the summer of 1853 and by the end of the year I, J, and K streets had been raised as much as 5 feet from Front Street to between 6th Street and 9th Street, depending on the roadway.



This work, aided by lower than average rainfall, kept Sacramento safe from flooding until the winter of 1861-1862 when more than 30 inches of rain fell over a 2-month period, overwhelming the levee and flooding the city. By this time, a robust business district had developed along I, J, and K streets and any notions of abandoning and moving the city were out of the question. In March 1862, a group of individuals who owned and operated businesses along J Street met to discuss the flooding problem. The group voted to raise and grade the business district above high water. Supporters of the “high grade,” as it was called, believed that it would not only improve public health, but also raise property values. Those who opposed the construction called themselves “low-graders.” Before local government had a chance to adopt any official ordinance regarding the proposal, many property owners began raising and grading streets on their own. Spurred by such actions, the Board of Supervisors authored Ordinance #124, “Fixing the Grade of the Streets.” Although it was not officially adopted, the ordinance identified the new high water mark at 22 feet 9 inches above the Sacramento River, and set up a fixed grade for the business district in relationship to that mark.

The City Board of Trustees, eager to implement and manage the street-raising project, used Ordinance #124 as a rough guideline. In 1864, the Board of Trustees authorized proposals to fill Front Street south of I Street to high grade. It was the regrading of Front Street that served as a catalyst for downtown owners to elevate the rest of the city to the high grade level specified in the City’s ordinance. The majority of the work was completed by 1869, but continued until 1878. In the end, 2.5 miles of street were raised an average of 9.5 feet, while the lowest streets were raised 14 feet. The project reduced the risk of flood damage downtown and caused property values in this area to increase by 50 to 60 percent.

20th Century Downtown and Midtown Development

In 1900, Sacramento was in the midst of an economic boom and agriculture in the surrounding rural areas had shifted from wheat production to fruit, vegetable, and orchard crops. Because of its central location and transportation links, the city became a regional canning, processing, and shipping center for these crops. Overall, Sacramento experienced remarkable industrial growth during the first 30 years of the twentieth century, with over 600 factories operating in the city by 1929. The economic boom led to the population steadily increasing during these decades, reaching 44,696 in 1910, nearly 66,000 in 1920, and 93,750 by 1930.

As more people moved to Sacramento, the city gradually spread out to fill in the original grid and beyond. Enabling the expansion was the establishment of an electric streetcar line in 1896 by the Sacramento Electric Power and Light Company. The new system reached into all parts of the city and freed people from having to live so close to their place of work or stores. As a direct result of the streetcars, Sacramento’s first suburb, Oak Park, was subdivided southeast of the original grid. When PG&E took over this streetcar system in 1906, it had 11 lines running throughout Sacramento, and the company continued to expand service into the 1930s. In addition to local trolley systems, Sacramento was also served by interurban systems including the Northern Electric Company that served stops across Yolo County and north to Marysville and Chico. The Northern Electric line (which became the Sacramento Northern Railway Company) ran from West Sacramento across the M Street Bridge



(predecessor to the Tower Bridge) into Sacramento to 8th Street where it turned to the north and south. This interurban system also had a line running along Jefferson Boulevard in West Sacramento.

City expansion during this period was largely residential, and a clear difference remained between the commercial district west of 16th Street and the largely residential district east of 16th that came to be known as Midtown. What had been a very sparsely settled area before 1890, Midtown swiftly developed into a residential district comprising distinct neighborhoods. By the 1930s, most of the lots in Midtown had been built upon, primarily with residential buildings.

Although Midtown has always been a largely residential district, corridors of businesses did develop along the edges and through the center of the district. The main commercial streets through Midtown were extensions of the main commercial streets in downtown—J Street and K Street—that also carried the streetcar lines. The large multi-story commercial, retail, and office buildings of downtown transitioned to one- or two-story buildings east of 16th Street in Midtown. These businesses were generally small, service-oriented businesses that catered to local customers. Other main commercial streets in Midtown were 16th Street, Alhambra Boulevard, and Broadway, all on the edges of the district, with some small businesses such as corner stores, laundries, and auto sales and repair shops scattered throughout the district. The R Street industrial freight rail corridor also extended into Midtown by the late nineteenth century, and continued to be the location of warehouses, light industry, and wholesalers. Concomitant with the residential and industrial growth was new commercial construction, with nearly 30 new buildings downtown in the 1920s.

Sacramento weathered the Depression, and like much of California, was revived by an influx of population during World War II because of the military's presence in and near the city, specifically McClellan Air Base, the Sacramento Army Depot, and Mather Field, which all helped stimulate the economy and fueled continued population growth. The military bases remained active after the war and new industry also moved to the area during the post-war expansion, including private defense contractors such as Aerojet-General and McDonnell-Douglas Aircraft, which opened plants just east of the city limits. Between 1940 and 1950, the number of residents increased from 105,958 to 135,761. This trend continued into the 1950s and 1960s, as government and industry remained prominent employers, new freeways facilitated transportation, and the city solidified its role as a regional retail and commercial hub.

Post-World War II Downtown and West End Redevelopment

Portions of the study area for the Project are in a part of Sacramento broadly referred as the West End. Although the West End does not have clearly defined boundaries, the area is roughly bounded by the Sacramento River, 10th Street, I Street, and Broadway. The West End included the original Sacramento waterfront and the oldest parts of Sacramento, but by 1900, it entered a period of transition. Up until that time, the area had been the focus of Sacramento's river transportation and local economy, those who could afford to move to Midtown. As this process continued, the West End transformed into a predominantly working-class neighborhood that was home to itinerant laborers and immigrants. Speculators in the West End wasted little time subdividing parcels, constructing



shanties in alleys and converting what were once comfortable private homes into rentals, “flopouses,” flats, and boardinghouses, further exacerbating the downward spiral of this area.

The West End’s economic and physical decline continued in the 1920s and 1930s as property values dropped and the tax base dwindled. Crime increased, and after World War II the West End became a focal point for city planning officials and municipal reformers. The *Sacramento Union* described the area’s “overcrowding, dingy surroundings, hodge-podge use of buildings, poor sanitation, and floating panhandlers” in 1952 as a “breeding place for tuberculosis, a strong-arm robbery and dope sale district and wino-hunting grounds for the police paddy wagon,” and the area soon became a focus of redevelopment. The movement to address dilapidated conditions in the West End was part of a nationwide campaign to eliminate “slums” in major metropolitan areas through federal involvement. Congress passed the Housing Act in 1937 to help eliminate deficient housing and provide adequate dwellings for low-income people by providing federal government funds for the construction of housing. In 1949, Congress passed a second Housing Act that put in motion the removal of substandard housing through the clearance of slums and providing decent homes for needy Americans. This act was a dramatic departure from previous legislation because it emphasized the elimination of substandard housing along with construction of large-scale residential and commercial development in blighted areas.

After the passage of the second act, Sacramento’s municipal leaders took their first step toward redeveloping the West End. On February 3, 1950, the Sacramento City Council passed Ordinance No. 1480, which outlined the boundaries of Urban Redevelopment Area Number 1, which roughly paralleled the boundaries of the West End. The city released its first detailed redevelopment plan a month later, calling for the destruction of many older structures and construction of high-rise public housing facilities among other new buildings in the redevelopment zones. Redevelopment Area Number 1 stalled and was tabled in 1953; it was later replaced with three smaller projects that covered the entire West End.

Urban policy in the U.S. changed dramatically under the Eisenhower Administration, and in 1954 a new Housing Act passed reflecting the administration’s commitment to urban renewal, although at the expense of public housing. The 1954 Housing Act redirected funding away from public housing to nonresidential redevelopment projects. Encouraged by federal support, Sacramento City officials pushed forward with their redevelopment plans, and on July 1, 1954, San Francisco real estate developer Ben Swig introduced to the Sacramento Chamber of Commerce a redevelopment proposal that had as its centerpiece a shopping mall on K Street from 2nd through 12th streets. The plan consisted of an entirely new shopping and business district in the redevelopment area, along with a K Street pedestrian mall between 2nd and 12th streets, and no public housing.

The redevelopment project began with the demolition of buildings in 1959. Major new buildings included the Capitol Towers complex in the four-block area of 5th, 7th, N, and P streets; Macy’s Department Store, bounded by K, L, 4th, and 5th streets; Crocker National Bank, on Capitol Mall between 4th and 5th streets; Capitol Plaza Hotel (Holiday Inn) between K, 3rd, 4th and J streets;



and the Downtown Plaza, a \$60 million, six-block shopping development built in stages from 1969 to 1978. Overall, 25 new developments arose out of the 15-block area between 1960 and 1980.

Coinciding with this project was the acquisition by Caltrans of three blocks in the Old Sacramento Historic District for the new I-5. After receiving clearance from the federal government in late 1961, the freeway project commenced, resulting in the relocation and demolition of additional buildings and the creation of Old Sacramento. By 1972, all West End buildings originally labeled “undesirable” by the Sacramento Redevelopment Agency in the 1950s had been demolished. The construction of I-5 and the extensive redevelopment projects in the West End resulted in many changes to the built environment in the study area, such as the elimination of the raised streets and hollow sidewalks on K Street between I-5/3rd Street, and 7th Street, as well as ushering in other related changes like the end of streetcar/interurban service between West Sacramento and Sacramento in the 1960s.

The Southern Pacific Depot and the Tower Bridge

Two major construction projects in the study area reflect the early-twentieth-century growth of Sacramento: the Southern Pacific Depot and the Tower Bridge. Southern Pacific’s passenger traffic at the Sacramento depot increased to the point that a new depot building was needed to replace the one built in 1879. Groundbreaking for the new steel-and-brick building occurred in May 1925. The San Francisco architectural firm of Bliss and Faville designed the Mediterranean Style building, and Davison and Nichol森, also of San Francisco, were the general contractors. In addition to functioning as a passenger depot, the building housed the general offices of the Southern Pacific Sacramento Division, as well as those lines of the company between San Francisco and Portland. Also in the building was the company telephone board, which connected every station in the Sacramento Valley, an assembly hall, and storage space. The large, high-ceiling waiting room featured a large mural depicting the 1863 groundbreaking of the transcontinental railroad, painted by John A. McQuarrie. The year after completion of the new depot, an average of 86 trains and 4,500 passengers passed through the Sacramento station daily. Southern Pacific ceased passenger service in 1971 and Amtrak took over passenger operations at the depot. Recently, the passenger platforms were moved several hundred yards north, and the depot is now called the Sacramento Valley Station.

Just as increased rail traffic created the need for a new train depot, increased vehicle traffic made necessary a new bridge into the city. By 1930, the old Sacramento Northern/M Street Bridge, constructed in 1911, was inadequate to handle the volume of traffic crossing the bridge. The California Department of Highways and Public Works recognized the need for a new bridge and entered into an agreement with the Sacramento Northern Railroad Company, which owned the bridge, to relinquish its rights to the old bridge in return for a franchise to operate over the new bridge until 1960. Following signing of the agreement, work began on the Tower Bridge in 1934. Alfred Eichler designed the steel through truss vertical-lift bridge in the Moderne Style, and George Pollock & Company built the structure. Work concluded on the bridge in late 1935, with trains renewing service in November 1935, and the bridge formally opened to vehicle traffic on January 11, 1936.



When built, a single track of the Sacramento Northern rail line ran down the middle, flanked by two traffic lanes in each direction, and sidewalks. The bridge was 738 feet long and 54 feet wide. At the time, the Tower Bridge was the only vertical-lift bridge in the California highway system. It also was recognized in 1936 with a second-place prize in a bridge design competition held by the American Institute of Steel Construction. The bridge carried the traffic of U.S. Highway 40 (M Street in Sacramento), the highway now known as I-80. In mid-1963, the railroad tracks and railroad switching and locking mechanisms were removed, because the Sacramento Northern railway obtained trackage rights to use the Southern Pacific Railroad's nearby tracks over the I Street Bridge. The bridge was originally painted silver and remained this color until 1976, when it was repainted ochre. In 2001, local residents voted to paint the structure the current gold. Recently, the sidewalks on each side of the bridge were widened from their narrow 3 to 4 feet, to 10 feet.

West Sacramento

On the western side of the Sacramento River is the City of West Sacramento. No historically significant built environment resources remain in the West Sacramento portion of the APE, even though the area was settled by Europeans about the same time as Sacramento was founded on the opposite bank of the river. The first community in this area was established by Margaret McDowell, who owned 600 acres of land by 1850 and acquired another 160 acres in 1851, on which she laid out the town of Washington just across the river from the Sacramento embarcadero. Washington, from its inception, was economically dependent on Sacramento. The ferries and later bridges connecting Washington with Sacramento provided the economic stimulus for a small business district to emerge that consisted of hotels, saloons, and restaurants catering to travelers, as well as a few larger industrial works. One important early industry to locate in Washington was the California Steam Navigation Company, which was founded in 1859, and built and operated steamships on the Sacramento River. Another notable early industry to open in Washington was a salmon cannery. The rich farmland surrounding Washington in Yolo County also fostered truck gardens and dairy farms that supplied the growing city of Sacramento.

Washington remained a very small community in the nineteenth century, and did not receive a permanent post office until 1895. Because there was already a town in California named Washington, the post office was called Broderick. A few years later, in 1907, a group of PG&E investors, encouraged by projected values of Sacramento Valley land following reclamation, founded the West Sacramento Land Company and began subdividing land to the south and west of Washington, calling it West Sacramento. They also invested in the Northern Electric Railway Company, which was building interurban streetcar lines in the Sacramento Valley. This interurban line would eventually run from Marysville to West Sacramento and across the river to form a beltline around Sacramento. A second line traveled west from West Sacramento to the western edge of Yolo County. As a part of the interurban system, the company constructed the M Street Bridge between 1911 and 1912—roughly in the location of the current Tower Bridge—to carry the interurban electric rail, pedestrian, and automotive traffic. The land development company experienced financial difficulties and its project never fully developed, but the railway company was taken over by Sacramento Northern, which continued to operate the interurban system.



By the 1910s, Washington had adopted the name of its post office and was officially called Broderick. Transportation continued to be a stimulus for economic growth in the small community following completion of the Yolo Causeway on the new State highway in 1916, which increased vehicular traffic through Broderick. Although the new road did not directly enter Broderick and skirted the community, a row of auto camps, and eventually, motels catering to automotive traffic developed along the route between the causeway and the M Street Bridge; the highway eventually became Highway 40 and is now West Capitol Avenue. Other service businesses catering to the traveling public such as gas stations and restaurants also opened along this route. The small residential area northwest of Broderick, originally known as Riverbank, also got a post office and a name change about this time, and became “Bryte,” named for a pioneering local farmer named Mike Bryte. Bryte, Broderick, and West Sacramento were sometimes collectively known as “East Yolo” in the early twentieth century, and collectively remained fairly small in population through the Second World War.

The commercial strip along West Capitol Avenue was the only dense development in the area, and eastern Yolo County remained largely agrarian until after World War II, when the deep-water port facilities were built on the Sacramento River. Voters approved the formation of a port district and Port Commission in 1947, and the Port of Sacramento was completed in 1963. The port stimulated associated shipping businesses, especially trucking firms. Trucking continued to be a major industry as the State highway was substantially expanded to four lanes across the Yolo Causeway to the Tower Bridge in 1954. Within about a decade, the highway was further modernized and rerouted across a new bridge over the Sacramento River in 1971, a route now known as I-80. Additional residential growth also occurred after World War II, as the area surrounding West Sacramento essentially became a suburb of Sacramento. Most commercial development that occurred in West Sacramento was centered around West Capitol Avenue, with industrial facilities extending southward along Jefferson Boulevard. Difficulties with municipal services and continued growth convinced the communities of Broderick, Bryte, and West Sacramento to combine and incorporate as the City of West Sacramento in 1987. Major development in recent times has been the Southport subdivision, construction of Raley Field, and the ongoing redevelopment of the Sacramento Riverfront area.

4.4.3.4. Existing Resources

Historic Architectural Resources

There are nine properties 45 years old⁶ or older in the APE (JRP 2015). Of these nine properties, the Tower Bridge, the Southern Pacific Depot, and the State Capitol Building and Grounds are listed in the NRHP, while the Raised Streets Hollow Sidewalks (RSHS) District was surveyed and evaluated in 2008/2010⁷ and determined eligible for the NRHP (Figure 4.4-2). The Llewellyn Williams Mansion at 923 H Street was listed in the SRHCR in 1977, although it had not been formally evaluated using the criteria for the NRHP or CRHR. This property, along with the four others that have never

⁶ Although resources must be 50 years or older to be eligible for the NRHP, it is common practice to include evaluations of all cultural resources that will become 50 years old by the time a project is scheduled to be completed. As a result, an age of 45 years, or pre-1968, was the selected cut-off for resource evaluation for this Project.

⁷ Tremaine first recorded and evaluated a Buried Urban Landscape District in 2008 (Tremaine 2008a). This district was then assimilated into Downey’s RSHS District (Downey 2010a, 2010b), the label by which the historic property is most commonly referred.



been evaluated (901 H Street, 1819 J Street, 1827/1831 J Street, and 1901 L Street), were recorded and evaluated for the Project in accordance with Section 106 of the NHPA; Section 15064.5(a)(1)-(4) of the CEQA Guidelines using the criteria outlined in Section 5024.1 of the PRC; and the SRHCR. Only one of the previously unevaluated properties (923 H Street) appears eligible for the NRHP, CRHR, and the SRHCR, although these eligibility determinations are subject to SHPO review and concurrence.

All of the nine historic architectural resources are briefly described below and are summarized in Table 4.4-1. A comprehensive evaluation discussion is contained in the Built Environment Resource Report Downtown/Riverfront Streetcar Project (JRP, 2015). Representative photos of the architectural resources are included in the JRP 2015 report, which may be accessed at: <http://www.riverfrontstreetcar.com/project-documents/>.

**Table 4.4-1
Properties 45 Years Old or Older in APE and Historic Status**

Name/Address	Built Date	Eligible for SRHCR	Eligible for CRHR	Eligible for NRHP
Previously Evaluated Resources				
The Tower Bridge	1936	Yes; listed	Yes; listed	Yes; listed
Southern Pacific Depot	1925	Yes; listed	Yes; listed	Yes; listed
State Capitol Building and Grounds	1860-1874	Yes; listed	Yes; listed	Yes; listed
RSHS Historic District	8,000 BC-1835 ¹ ; 1835-1915	Not yet evaluated	Not yet evaluated	Yes
Newly Evaluated Resources				
901 H Street	1964	No	No	No
923 H Street	1885	Yes ² ; listed	Yes ²	Yes ²
1819 J Street	1957	No	No	No
1827/1831 J Street	1936	No	No	No
1901 L Street	1967	No	No	No
Source: JRP Historical Consulting, 2015; URS, 2015.				
Notes:				
¹ The RSHS District also contains a prehistoric component and period of significance that dates from 10,000 years BC through AD 1835 (Tremaine 2008a).				
² This property was previously listed in the SRHCR, but not formally evaluated under Section 17.134.170 (A)(1) (2) of the Sacramento City Code. It was formally evaluated for the SRHCR, NRHP, and CRHP by JRP, 2015.				
CRHR = California Register of Historical Resources NRHP = National Register of Historic Resources RSHS = Raised Streets Hollow Sidewalks SRHCR = Sacramento Register of Historic and Cultural Resources				

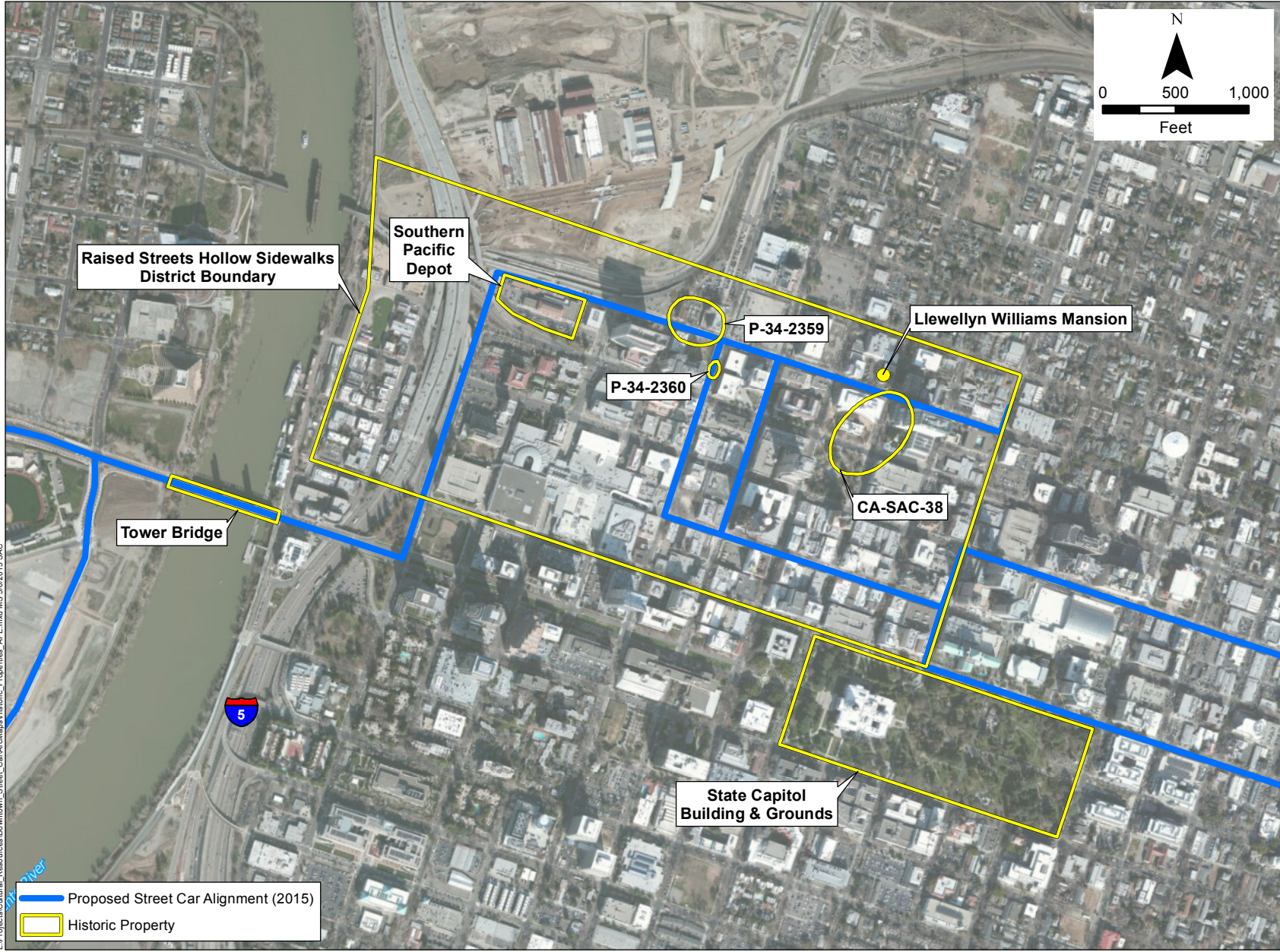


Figure 4.4-2
 Historic Properties in the Downtown/Riverfront Streetcar Project APE



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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The Tower Bridge

The Tower Bridge is a vertical lift bridge across the Sacramento River, linking West Sacramento in Yolo County to the west, with the capital of California, Sacramento, in Sacramento County to the east. Work began on the Tower Bridge in 1934. Alfred Eichler designed the steel through truss vertical lift bridge in the Moderne Style, and George Pollock & Company built the structure. Work concluded on the bridge in late 1935, with trains renewing service in November 1935, and the bridge formally opened to vehicle traffic on January 11, 1936. When built, a single track of the Sacramento Northern rail line ran down the middle, flanked by single traffic lanes, and sidewalks. At the time, the Tower Bridge was the only vertical lift bridge in the California highway system. It also was recognized in 1936 with a second place prize in a bridge design competition held by the

American Institute of Steel Construction. The bridge carried the traffic of U.S. Highway 40 (M Street in the City of Sacramento), the highway now known as I-80. In mid-1963, the railroad tracks and railroad switching and locking mechanisms were removed as the Sacramento Northern railway obtained trackage rights to use the Southern Pacific Railroad's nearby tracks over the I Street Bridge.

The Tower Bridge was listed in the NRHP on June 24, 1982 (NRHP Reference No. 82004845), under the areas of transportation and engineering, as the only vertical lift span bridge on the California highway system, and as an example of restrained Streamlined Moderne design applied to a utilitarian structure (Criterion C) at the state level. The period of significance is 1934 to 1936. The bridge is also listed in the CRHR.

The Southern Pacific Depot

The historic Sacramento station is part of a complex that dates back to 1863 and the Central Pacific Railroad's construction of the western portion of the first transcontinental rail line. The current station opened in 1926, and is the fourth station built by Southern Pacific in this vicinity. It sits on an approximately 240-acre railyard that was originally filled with buildings and equipment necessary for the fabrication of locomotives and rolling stock. Designed by the San Francisco architectural firm of Bliss and Faville, the three story station is Renaissance Revival in style. A reinforced concrete frame is faced with Italian sienna-colored brick trimmed with terracotta. The waiting room includes a 40-foot-high barrel vaulted ceiling, Philippine mahogany woodwork, and marble floors. A mural by John A. MacQuarrie is located on the east wall of the waiting room, depicting the 1863 groundbreaking ceremony of the Central Pacific Railroad.

The Southern Pacific Railroad Company's Sacramento Depot was listed on the NRHP on April 21, 1975 (#75000457). It is also listed on the CRHR and the SRHCR. The Southern Pacific Railroad Company's Sacramento Depot was listed on the NRHP on April 21, 1975 (#75000457) under the areas of commerce and transportation, as a major western transportation center (Criterion A) and architecture (Criterion C). The period of significance is 1925. The nomination form does not identify the level of significance, but is likely state level. The property is also listed in the CRHR and the Sacramento Register.



State Capitol Building and Grounds

The State Capitol Building and Grounds is located between 10th and 16th and L and N streets, in Downtown Sacramento. The historic Capitol was designed by architects M.F. Butler and Ruben Clark. Its style is an adaptation of Roman Corinthian architecture. Work began in 1860, and by late 1869 the Capitol was partly occupied. In 1874, construction ended at a cost of \$2.45 million. The west wing, which once housed all branches of government, is now a legislative facility. Its design and construction are tributes to California's pioneer architects, craftsmen, and builders.

The Capitol and grounds were listed on the NRHP on April 3, 1973 (#73000427), and listed as a California Historical Landmark in 1974. It is also listed on the CRHR and SRHCR. The Capitol and grounds were listed on the NRHP on April 3, 1973 (#73000427), under the areas of politics (Criterion A) and architecture (Criterion C) at the state level, with a period of significance from 1860 through 1874. The property is also listed in the CRHR and the Sacramento Register, and was listed as a California Historical Landmark in 1974.

RSHS Historic District

The **RSHS District** covers a portion of Sacramento roughly bounded by Front Street on the west, 11th Street on the East, I Street to the north, and L Street to the south.⁸ This area encompasses those city blocks that were raised in the 1860s and 1870s in response to subsequent years of severe flooding. The raising of the streets buried the streetscape of the earliest days of the city and resulted in the creation of an open, below-grade space currently referred to as the hollow sidewalks. The many features of this buried urban landscape are discussed below under Archaeological Resources, while the hollow sidewalks are addressed as historic architectural features due to the fact that they are the original first levels of buildings that lined the streets that were raised. The hollow sidewalks retain elements of storefronts, end walls, brick building walls, and corbelled buttresses, among other architectural features, that lie directly below the existing sidewalks and streets of present-day Sacramento. The presence of hollow sidewalks below today's streetscape is often marked by cast iron and quartz skylights embedded in the modern day sidewalk.

Hollow sidewalks were once present throughout the area defined by the RSHS, and Downey (2010a) lists 44 locations in and immediately adjacent the District that contain known sections of hollow sidewalk, although not all of those segments have been formally recorded. On the other hand, research by Page & Turnbull (2009) also identified locations where they no longer exist due to redevelopment efforts. These locations in the Project area are along 3rd Street adjacent to I-5, and the area encompassed by 3rd, J, 7th, and L streets due to construction of the Downtown Plaza in 1971. The status of the hollow sidewalks outside of the 44 locations listed by Downey and the destroyed sections identified by Page & Turnbull remains unknown. This includes portions of 7th, 12th, J, K, and L streets in the Project study area.

⁸ After Tremaine (2008a), whose boundaries are slightly larger than Downey (2010a, 2010b).



The RSHS District has been determined eligible for the NRHP “under Criterion A at the State level of significance in the areas of Social History, Politics and Government, and Commerce for its association with the efforts of Sacramento’s business leaders to deal with flooding in the 1860s so as to maintain a viable business district and create an environment that would support the presence of the state capital (Downey 2010b).” Under Criterion C, the district was found eligible at the state level for its design and method of construction, and under Criterion D, for its potential to yield potential information about nineteenth century “vernacular design and construction of retaining walls and bulkheads” (Downey, 2010b). Furthermore, although not officially listed on the SRHCR, the City of Sacramento has made a preliminary determination that RSHS Historic District is eligible as a historic resource for CEQA purposes during environmental review for projects they have sponsored.

The **Llewellyn Williams Mansion at 923 H Street** is a three story structure built in the high-style Italianate design. Constructed in 1885, it is the work of master architects Seth Babson and James Seadler, both of whom left their marks on the cityscape of late 19th century Sacramento by designing a number of signature buildings, such as the Leland Stanford Mansion, Crocker Mansion, and Sacramento Bank Building. The property appears to be historically significant under NRHP Criterion C, CRHR Criterion 3, and SRHCR Criteria iii and iv as an important example of an Italianate Style residence and as the work of a master.

The resources at **901 H Street, 1819 J Street, 1827/1831 J Street, and 1901 L Street** are all commercial buildings built between 1936 and 1967 in the downtown and Midtown areas of Sacramento. These buildings were built in existing and long established commercial/retail areas and do not represent specific contributions to this pattern of commercial development and did not have a significant impact on this development trend. As such, these properties do not have strong or important associations within the context of downtown or Midtown Sacramento commercial areas (Criterion A/1/i). These properties do not have important associations with the lives of persons who made significant contributions to history at the local, state or national level (Criterion B/2/ii). Under Criterion C/3/iii & iv, none of these four buildings are significant as an important example of a type, period, or method of construction. They are generally modest and typical expressions of their respective styles and periods, and lack architectural distinction. Additionally, none are the work of a master architect. As a result, none of these buildings are considered eligible for listing in the NRHP, CRHR, or SRHCR.

Concurrence from the SHPO is pending on the eligibility status of the Llewellyn Williams Mansion at 923 H Street, and the buildings at 901 H Street, 1819 J Street, 1827/1831 J Street, and 1901 L Street.

Archaeological Resources

Record searches completed as part of the analysis identified four previously recorded archaeological resources in the APE, all in the City of Sacramento. No archaeological resources were identified within the APE on the western side of the Sacramento River, nor are there any known archaeological resources in the areas of either MSF site.



The four identified resources in Sacramento include two prehistoric sites and one historic-era site, and the RDHS District. The prehistoric sites, both of which contained burials, have the potential to be under H Street between 6th Street and 7th Street, and in the vicinity of 10th Street in Sacramento. Evidence of one site was encountered at 3 to 10 feet below street level, while the other was discovered at depths of 9 to 20 feet. The single historic-era site is a Gold Rush-era camp under 7th Street near H Street. This site is between about 5 and 8.5 feet below street level. All three of these sites are also listed as contributing elements to the RSHS District, and are considered individually eligible for the NRHP.

The buried historic-era features of the RSHS District urban landscape (see Figure 4.4-3) are considered archaeological resources, and are contributing elements to the district. Except for the hollow sidewalks and associated raised street earthworks, none of these resources have been determined eligible for the NRHP individually based on their own merit (Tremaine 2008a). Although Sutter Lake/China Slough is a California State Historic Landmark, it is not a NRHP-eligible property. Archaeological elements associated with the RSHS Historic District include:

- underground, or hollow, sidewalks, 1864-1876;
- redwood plank crosswalks;
- stacked streets dating from 1850 (including cobbled roads);
- street rail track dating from 1870;
- early 20th century redwood conduit;
- mid-20th century concrete duct banks;
- brick sewer main, circa 1880;
- wood sewer dating to 1854;
- raised street earthworks, 1864-1876; and
- Sutter Lake/China Slough (also State Historic Landmark No. 594).

Evidence of cobblestone streets (as part of the stacked streets element) and street rail track have been discovered at depths as shallow as 2 feet below the current pavement along 7th Street, and on H Street between 8th and 9th streets. The remaining elements are minimally 3 feet below the ground surface, and most are below 8 feet (Tremaine and Ferris, 2009). Table 4.4-2 provides the depths of known resources along the Sacramento LRT route in the vicinity of H, I, 6th, 7th, and 8th streets. Although it is not certain that any of these features would be at these same depths—if they are present at all—throughout the APE in or adjacent to the area defined as the RDHS District, this information provides some guidelines for anticipating their potential subsurface locations.

The record searches identified numerous additional previously recorded sites within 0.25 mile of the APE, but outside of the Project's area of direct impact. Previously recorded sites are found in both Yolo and Sacramento counties, which attests to the general archaeological sensitivity of the region.

No surface archaeological remains were identified during the field reviews conducted for the Project. However, archival research indicates that the APE east of the Sacramento River is



extremely sensitive for the presence of buried cultural resources. The potential to encounter buried cultural resources in the APE west of the Sacramento River is low due to the relatively more-recent development of West Sacramento. This suggests that temporal layers representing an evolving urbanization, similar to those in Sacramento, do not exist. Also, the fact that the large amount of recent redevelopment in and immediately adjacent to the study area in West Sacramento did not discover buried historic-era sites or features like those in Sacramento supports the notion that they are not common, if they exist at all. The possible presence of buried prehistoric archaeological sites, however, cannot be completely discounted for the area west of the Sacramento River because they may be deeply buried by silt.

**Table 4.4-2
 RSHS District Elements**

Project Segment	Element Depth	Potential Locations within the APE
Prehistoric site	3 to 10 feet	H Street between 6th and 7th streets
Prehistoric site	10 feet	H Street in the vicinity of 10th Street
Historic-era Gold Rush site	5 to 8.5 feet	7th Street between H and I streets
Hollow sidewalks	8 feet ¹	Anywhere in the RSHS District except 3rd Street, and parts of J, K, L, and 7th streets where urban redevelopment has occurred
Redwood crosswalks	8 feet	Anywhere in the RSHS District
Cobbled roads	2 to 3 feet	Anywhere in the RSHS District
Street rail track	2 feet	Along I, J, K, 3rd, 7th, and 8th streets
Redwood conduit	3 to 5 feet	Anywhere in the RSHS District
Concrete duct bank	Various; below 3 feet	Anywhere in the RSHS District
Brick sewer main	9 to 10 feet	Along 3rd and 7th streets with crossings at various other streets
Wood sewer box	8 feet	Anywhere in the RSHS District
Raised street earthworks	Surface to 8 feet	Anywhere in the RSHS District
Sutter Lake/China Slough (SHL No. 594) ²	At grade	Area of the Southern Pacific Depot north of I Street and between 2nd and 5th streets
Notes:		
¹ This pertains to the actual sidewalks, themselves. The resource also refers to the space between the sidewalk and the present street bed. ² Sutter Lake, also known as China Slough, was reclaimed by 1907, largely with dredged material from the American River. The southern limits of the lake occupied the location of the Southern Pacific Depot north of I Street and between 2nd and 5th streets.		



Paleontological Resources

Paleontological resources include fossil remains, as well as fossil localities and rock or soil formations that have produced fossil material. Fossils are the remains or traces of prehistoric animals and plants. Fossils are important scientific and educational resources because of their use in (1) documenting the presence and evolutionary history of particular groups of now extinct organisms; (2) reconstructing the environments in which these organisms lived; and (3) determining the relative ages of the strata in which they occur and of the geologic events that resulted in the deposition of the sediments that formed these strata and in their subsequent deformation.

The proposed alignment is in what is known as the Great Valley, which consists of Quaternary sedimentary deposits. Quaternary sediments are defined as:

[G]ravels laid down by large river systems throughout the state. Both of these types of deposits contain well-preserved vertebrate and plant fossils, similar to the flora and fauna we see today. Glaciers developed in the Sierra Nevada during colder climate intervals, and large lakes formed in the Great Valley, Owens Valley, and the Salton Sea. (Source: http://www.paleoportal.org/index.php?globalnav=time_space§ionnav=state&state_id=10&period_id=7)

The City of Sacramento is at the confluence of two rivers and has deep alluvial soils. Pleistocene fauna has only been found in deep (i.e., >20-foot) excavations during construction of Arco Arena in North Natomas and at the Sacramento Regional Sanitation Wastewater Treatment Plant, 10 miles south of Downtown. Per the City of Sacramento 2030 General Plan Master EIR (Geology Soils, and Mineral Resources), the City of Sacramento is not highly sensitive for paleontological resources present in fossil-bearing soils and rock formations. Most of the Downtown area has been excavated and filled. Artificial fills, surface soils, and high-grade metamorphic rocks do not contain paleontological resources. While such materials were originally derived from rocks, they have been altered, weathered, or reworked such that the discovery of intact fossils would be rare. Therefore, there is little potential for the project area to contain fossils.

4.4.3.5. Native American Consultation

A request was made to the California NAHC on October 21, 2013 for a Sacred Lands File Search and a list of Native American organizations and individuals who may have knowledge of cultural resources in the Project area. The NAHC replied by fax on November 18, 2013, stating that there are no previously identified cultural resources listed in the sacred lands file in the Project area. The NAHC also provided a list of 16 organizations and individuals to contact regarding cultural resources. Letters were sent on November 19, 2013, to each of the organizations and individuals provided by the NAHC. The letters briefly described the proposed Project and invited those contacted to share any information they might have about significant cultural resources within the Project area.

Letter responses were received from two federally recognized tribes, the Shingle Springs Band of Miwok Indians and the Yocha Dehe Wintun Nation. In a letter dated December 11, 2013, the Shingle Springs Band of Miwok Indians provided notice that they would like to initiate formal consultation for



the Downtown/Riverfront Streetcar Project, and requested that they be a consulting party to the Project. The letter, furthermore, requested copies of all record search materials and all environmental reports, and identified two points of contact. The Yocha Dehe Wintun Nation responded on December 17, 2013, recommending that cultural monitors be present during any ground disturbing activities. The Yocha Dehe also identified a point of contact for their tribe.

Following receipt of the letter from the Shingle Springs Band of Miwok Indians, numerous attempts were made via email and telephone to arrange a meeting with the tribe, FTA, and SACOG. To date, there has been no additional contact from the tribe and no meeting has occurred. However, FTA will continue consultation with federally recognized tribes per 36 CFR Section 800.2(c)(2)(ii) and non-federally recognized tribes as other consulting parties per 36 CFR Section 800.2(c)(5). All correspondence with the NAHC and the organizations and tribes identified by the NAHC, including the Shingle Springs Band of Miwok Indians, is listed in Table 4.4-3.

**Table 4.4-3
Native American Correspondence**

Date	Name, Position	Tribal Affiliation	Method of Communication	Response
October 21, 2013	California Native American Heritage Commission	N/A	Email; requesting search of sacred lands files and for a list of Native American contacts	November 18, 2013; faxed letter with names of 16 knowledgeable Native American individuals.
November 19, 2013	Jason Camp, THPO	United Auburn Indian Community*	Letter; requesting information	No response
November 19, 2013	Cynthia Clark, Native Cultural Renewal Committee	Yocha Dehe Wintun Nation*	Letter; requesting information	No response
November 19, 2013	Grayson Coney, Cultural Director	T'si-Akim Maidu	Letter; requesting information	No response
November 19, 2013	Rose Enos	No affiliation	Letter; requesting information	No response
November 19, 2013	Kesner Flores	No affiliation	Letter; requesting information	No response



**Table 4.4-3
 Native American Correspondence**

Date	Name, Position	Tribal Affiliation	Method of Communication	Response
November 19, 2013	Daniel Fonseca, Cultural Resource Director	Shingle Springs Band of Miwok Indians*	Letter; requesting information	December 11, 2013; letter requesting formal consultation and copies of all completed record searches and surveys including "environmental, archaeological and cultural reports." Identified Andrew Godsey and Angela Rivera as contacts.
November 19, 2013	Nicholas Fonseca, Chairperson	Shingle Springs Band of Miwok Indians*	Letter; requesting information	No response
November 19, 2013	Marcos Guerrero, Tribal Preservation Committee	United Auburn Indian Community*	Letter; requesting information	No response
November 19, 2013	Leland Kinter, Native Cultural Renewal Committee	Yocha Dehe Wintun Nation*	Letter; requesting information	No response
November 19, 2013	Judith Marks	Colfax-Todds Valley Consolidated Tribe	Letter; requesting information	No response
November 19, 2013	Marshall McKay, Chairperson	Yocha Dehe Wintun Nation*	Letter; requesting information	December 17, 2013; letter recommending cultural monitors during ground disturbance activities. Identified James Sarmiento as contact.
November 19, 2013	Eileen Moon, Vice Chairperson	T'si-Akim Maidu	Letter; requesting information	No response
November 19, 2013	April Wallace Moore	No affiliation	Letter; requesting information	No response
November 19, 2013	Hermo Olanio, Vice Chairperson	Shingle Springs Band of Miwok Indians*	Letter; requesting information	No response



**Table 4.4-3
Native American Correspondence**

Date	Name, Position	Tribal Affiliation	Method of Communication	Response
November 19, 2013	Gene Whitehouse, Chairperson	United Auburn Indian Community*	Letter; requesting information	No response
November 19, 2013	Charlie Wright, Chairperson	Cortina Band of Indians*	Letter; requesting information	No response
March 4, 2014	Andrew Godsey, Assistant Cultural Resource Director	Shingle Springs Band of Miwok Indians*	Phone call; request to set up a meeting with FTA	No response
March 4, 2014	Angela Rivera, Administrative Assistant	Shingle Springs Band of Miwok Indians*	Phone call; request to set up a meeting with FTA	No response
March 4, 2014	Andrew Godsey and Angela Rivera	Shingle Springs Band of Miwok Indians*	Email; request to set up a meeting with FTA	No response
March 18, 2014	Andrew Godsey and Angela Rivera	Shingle Springs Band of Miwok Indians*	Email; request to set up a meeting with FTA	No response
April 1, 2014	Daniel Fonseca, Cultural Resource Director	Shingle Springs Band of Miwok Indians*	Email; request to set up a meeting with FTA	No response
April 2, 2014	Daniel Fonseca, Cultural Resource Director	Shingle Springs Band of Miwok Indians*	Email; request to set up a meeting with FTA	No response
August 1, 2014	Nick Fonseca, Tribal Chairman, Daniel Fonseca, Cultural Resource Director, Andrew Godsey and Angela Rivera	Shingle Springs Band of Miwok Indians*	Email; request to set up a meeting with FTA	No response
October 3, 2014	Nick Fonseca, Tribal Chairman, Daniel Fonseca, Cultural Resource Director, Andrew Godsey and Angela Rivera	Shingle Springs Band of Miwok Indians*	Email; request to set up a meeting with FTA	No response

*Denotes Federally recognized tribe

4.4.4. Environmental Effects

The analysis of potential effects on cultural resources is conducted in consultation with the State Historic Preservation Officer and, as appropriate, any Native American tribe that attaches religious and cultural significance to historic properties within the APE pursuant to the regulations implementing Section 106 of the NHPA at 36 CFR 800.5. This assessment is based on the Criteria of Adverse Effect, which state that an undertaking has an effect on a historic property when the undertaking may alter,



directly or indirectly, the characteristics of the property that may qualify the property for inclusion in the NRHP (36 CFR Part 800.5[a][1]). An effect is considered adverse when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. A finding of no adverse effect (36 CFR 800.5[(b)]) may be reached when an undertaking is modified to avoid impacts whenever possible, or when conditions that are consistent with the Secretary of Interior's standards for the treatment of historic properties (36 CFR 68) are imposed.

This section also includes a CEQA analysis to determine if the Project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource (defined as a unique archaeological resource which does not meet CRHR criteria) pursuant to Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

A non-unique archaeological resource is given no further consideration, other than the simple recording of its existence by the lead agency.

4.4.4.1. No Action Alternative

Under the No Action Alternative, no Project-related construction activity would take place in the APE or the study area. Therefore, the No Action Alternative would have no effect or impact to NRHP- and/or CRHR-listed, or eligible to be listed resources, or paleontological resources.

4.4.4.2. Action Alternative

As described above, there are five historical resources/historic properties in the APE for the Project: the Tower Bridge, the Southern Pacific Depot, the State Capitol Building and Grounds, the Llewellyn Williams Mansion (923 H Street), and the RSHS District. Potential Project effects on the Tower Bridge, the Southern Pacific Depot, the State Capitol Building and Grounds, and the Llewellyn Williams Mansion are summarized below. Potential Project effects on the RSHS District, including both hollow sidewalks and archaeological resources, and on paleontological resources are summarized under Construction Effects.

The Project would have no adverse effect on the Tower Bridge, the Southern Pacific Depot, the State Capitol Building and Grounds, or the Llewellyn Williams Mansion. The significance of these resources would not be altered or materially impaired as a result of the Project because the Project would not diminish the physical characteristics of the properties that convey their historical significance and that justify their eligibility for listing in the NRHP, CRHR, and SRHCR.



Historic Architectural Resources

The Tower Bridge

The Project would not compromise the historic integrity of the Tower Bridge, nor its ability to convey its historical significance, although the resource is within the APE. The installation of the streetcar tracks and overhead catenary system (OCS) on the bridge would restore one of its original historic uses, as a bridge carrying a streetcar line, which is not an adverse change to the historic integrity of design, setting, materials, workmanship, feeling, or association of the Tower Bridge property. The Project does not include large-scale demolition, destruction, or major alteration of the bridge or its components. The Project does not introduce new incompatible elements, but instead reintroduces elements related to its historic use. The Project would not cause an adverse effect or substantial adverse change to the Tower Bridge historic property; therefore, no treatment measures are required or proposed.

The Project would include some changes to the bridge deck, which has already undergone several modifications, including removal of most of the original rails and replacement of most of the roadway surface. The proposed alterations to the substructure would be minimal and do not have the potential to alter primary character-defining elements of the bridge. The lightweight deck is considered one of the character-defining features of the bridge, and the Project would require the removal of a strip from the center of the deck of the lift span. The strip to be removed would not constitute an adverse effect/substantial adverse change because the deck has been previously modified and the deck originally carried a rail line in this location. This may somewhat diminish the integrity of a previously altered feature, but the action would not cause an overall adverse effect or substantial adverse change that would cause this feature to no longer contribute to the significance of the bridge.

The Project would install the OCS in a manner that will require minimal alteration to the original fabric and character-defining features of the bridge. The specifications for the OCS fasteners will call for clamp-on attachments that would avoid direct physical alteration to the bridge trusses, which are a character-defining feature of the bridge. Bolting into the structure would be considered on a case-by-case basis, and welding will be generally prohibited. Installation of OCS equipment would ensure that as much of the original material of the bridge structure is protected during construction as possible.

The new OCS may be designed to use the concrete pylons as support for OCS wires, in keeping with the historic use and design of the bridge, which originally included overhead wires attached to these pylons. New OCS poles would be installed along the streetcar route in general, and along the streets leading to the bridge; and bridge pylons may be used to support OCS. The use of the existing concrete pylons would be consistent with their historic use, and would not constitute an adverse effect or significant adverse change to these character-defining elements of the bridge.

The installation of streetcar tracks and OCS equipment on the Tower Bridge can, therefore, be accomplished with minimal alteration of the original fabric and character-defining features of the bridge. The Project would not compromise the historic integrity of the bridge, nor its ability to convey



its historical significance. The Project would not cause an adverse effect or substantial adverse change to the Tower Bridge historic property; therefore, no treatment measures are required or proposed.

Southern Pacific Depot

The Project calls for installation of streetcar tracks extending from 3rd Street, across I Street, west of the depot building on the Southern Pacific Depot property, and construction of a passenger platform north of the depot at the location of an existing RT LRT passenger platform. Historically there have been a variety of tracks for a variety of types of rail surrounding the depot. The National Register nomination for this property identified the depot building and annex as the only contributing components of this property, which are in the indirect, or architectural, APE. The Project does not include demolition, destruction, or alteration of the depot building or annex, and therefore would not cause a direct adverse change to the buildings.

The Project would also not cause an indirect adverse change through the introduction of new visual features. The location of the new track alignment west of the depot is about 200 feet away from the depot and is currently a parking lot. Installation of this segment of track would not constitute an adverse indirect visual impact because the tracks would be a minor alteration to the setting and would be generally consistent with existing transportation infrastructure in the vicinity of the depot; namely, freeway onramps and light- and heavy-rail transportation features. Similarly, the new platform construction would also not constitute an adverse indirect visual impact because it is being built at the location of an existing light-rail platform, and any changes would be minor. The Project would not constitute a direct or indirect adverse effect/substantial adverse change to this property; therefore, no treatment measures are required or proposed.

State Capitol Building and Grounds

The Project would include construction of a new passenger platform on the southern side of L Street between 12th Street and 13th Street adjacent to Capitol Park. The California State Capitol National Register Nomination Form identifies the State Capitol Building and Grounds boundary as 10th Street, L Street, 15th Street, and N Street, and includes Capitol Park, all of which are located in the indirect, or architectural, APE. The nomination form gives a period of significance for the property as 1860-1874 – the period of construction for the Capitol Building. It does not clearly identify the character defining features of Capitol Park, but describes it as having “more than 800 varieties of plants” and “thousands of shrubs, trees, flowers and spacious lawns.” In addition to the designed landscape and vegetation, the park contains many memorials and monuments that have been installed over the years.

Encircling the park is a row of palm trees planted about 25 feet apart on a narrow strip of land between the sidewalk and the street. Construction of the new platform on the southern side of L Street, east of 12th Street, will not require the removal of these palm trees. As a result, the Project would not cause a direct adverse effect/substantial adverse change to this historic property. Although the streetcar platform would introduce a new visual feature at the edge of the State Capitol Building and Grounds property, it would be very small in scale in comparison to the scale and setting of the historic property.



The Project would not constitute a direct or indirect adverse effect/substantial adverse change to this property; therefore, no treatment measures are required or proposed.

Llewellyn Williams Mansion (923 H Street)

The Project includes the construction of new passenger platforms on the northern and southern sides of H Street between 9th and 10th streets. The Llewellyn Williams Mansion at 923 H Street is on the northern side of this block at the northwestern corner of 10th and H streets. The Project would not include demolition, destruction, or alteration of the property, as it is in the indirect, or architectural, APE. Construction of the proposed passenger platform on the street in front of the building would not compromise the historic integrity of the property, nor its ability to convey its historical significance. The proposed passenger platform would be a minor alteration to the setting of this property and would also not compromise the property's ability to convey its historical significance. The setting for this property has already been heavily altered through the construction of modern street facilities and modern buildings. Even though the historic building was subject to three moves, and it is currently back in its original location, the original garden setting of the house no longer exists. In addition, the building is surrounded by modern buildings on all sides. The historic setting of this property has already been completely compromised, and the construction of a passenger platform will not further diminish its integrity. The Project would not constitute a direct or indirect adverse effect/substantial adverse change to this property; therefore, no treatment measures are required or proposed.

4.4.4.3. Construction Effects

The contributing elements to the RSHS District are described in Section 4.4.3.4, Archaeological Resources. All streets in the APE within the Downtown Sacramento portion of the proposed alignment have the potential to contain buried cultural remains, including hollow sidewalks. 3rd, 7th, 8th, H, and K streets within the APE all fall within the RSHS District and have the potential to cover one or more of the contributing elements, including the two known prehistoric sites and the Gold Rush-era camp site, at depths as shallow as 2 feet below the modern pavement. Even though 19th, J, and L streets along the proposed alignment are outside of the RSHS District, remnants of earlier streets may be found below the modern asphalt. In addition, historic streetcar rail tracks may be present on J Street and crossing L Street at 15th Street, or crossing 19th Street at K Street. Similarly, old sewer lines may be encountered where they crossed 12th, J, and L streets.

Whenever possible, the Project will make use of infrastructure constructed for the LRT system. Table 4.4-4 identifies those sections of the Project route that will require new track along with the various elements of the RSHS District that might be present. Segments are numbered, consistent with numbering in Figure 4.4-3. Although some existing LRT stations will be shared with the Project, numerous others will be constructed along streets without LRT (see Table 3-2 for proposed station platform locations).

Construction of new track is generally expected to require excavation from 12 to 18 inches, up to a maximum of 3 feet, while station platform construction is also expected to require excavations no more



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than 3 feet in depth. As a result, the only elements of the RSHS Historic District that may be disturbed in some locations by the installation of new track and the station platforms are cobbled roads and historic streetcar rail track, which were previously found at depths as shallow as 2 feet during Sacramento LRT construction. All other elements of the Historic District are below 3 feet in depth.

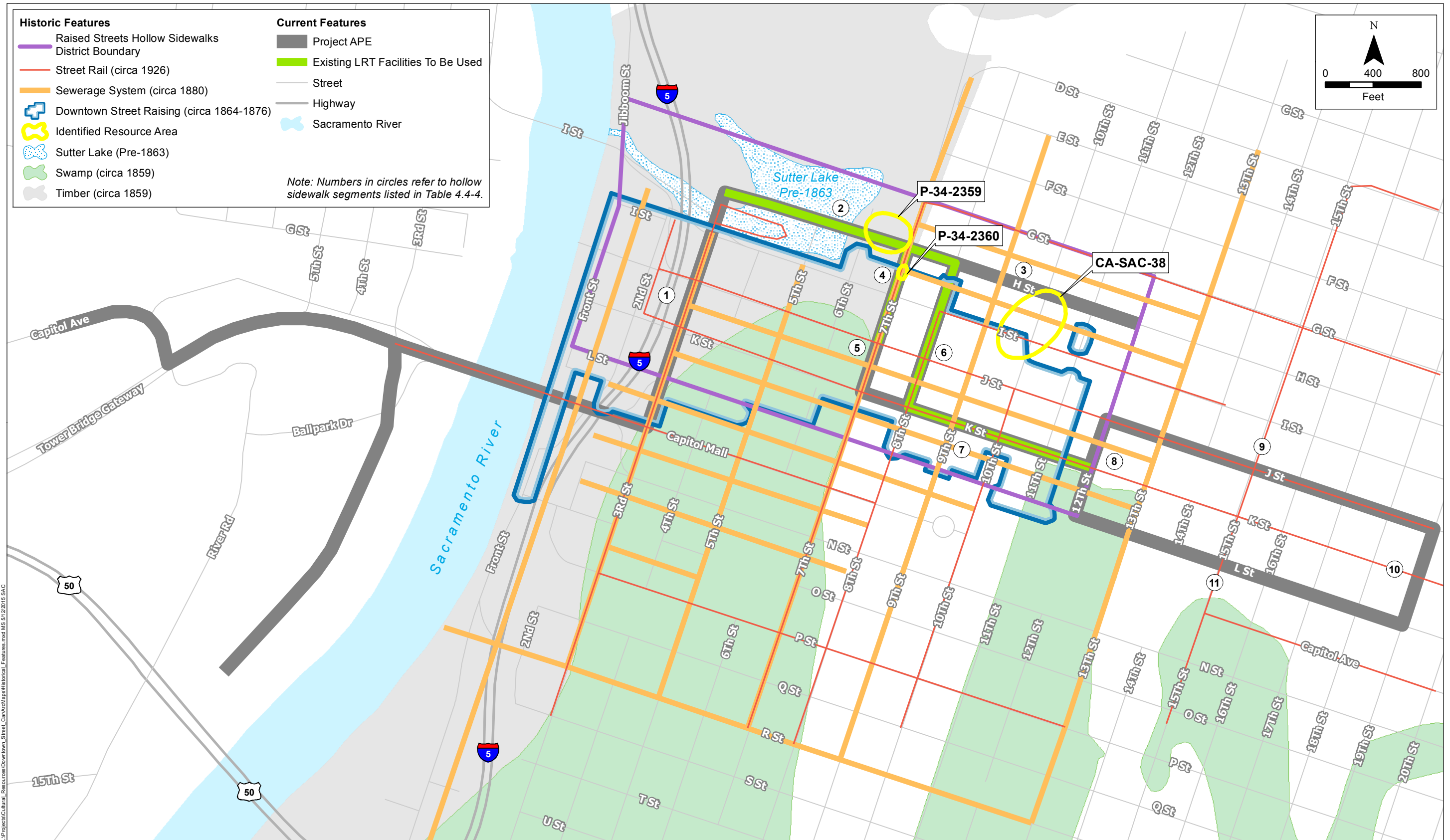


Figure 4.4-3
Raised Streets Hollow Sidewalk
District Contributing Elements



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**Table 4.4-4
Construction Segments with Associated RSHS District Elements**

Street Segment	Track	Possible Buried Resources
1. 3rd Street – L Street to north of Southern Pacific Depot	new	None likely due to extensive redevelopment, including I-5, Downtown Plaza, new onramp to northbound I-5, recent Sacramento Intermodal Transportation Facility improvements. However, possible buried resources include hollow sidewalks; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
2. H Street – Southern Pacific Depot to 8th Street	LR	One prehistoric site; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box.
3. H Street – 8 th Street to 12 th Street	new	One prehistoric site; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box.
4. 7th Street – H Street to J Street	LR	One prehistoric site; hollow sidewalks; one historic-era Gold Rush site; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.
5. 7th Street – J Street to K Street	new	None likely due to construction of Downtown Plaza and previous LR installation. However, possible buried resources include hollow sidewalks; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
6. 8th Street – H Street to K Street	LR	Hollow sidewalks; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
7. K Street – 7th street to 12th street	LR	Hollow sidewalks; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
8. 12 street – J Street to L Street	new	Hollow sidewalks; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.
9. J Street – 12th Street to 19th Street	new	Hollow sidewalks; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
10. 19th Street – J Street to L Street	new	Redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.
11. L Street – 12th Street to 19th Street	new	Hollow sidewalks; redwood crosswalks; cobble roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.



New track construction is proposed for 3rd, 7th (between J and K streets), 12th (between L and K streets), 19th, H Street (between 8th and 12th streets), J, and L streets (see Figure 4-1). Historic street cars ran only on 3rd, 7th and J streets in the Project APE. Because 3rd street has been part of significant redevelopment projects in Sacramento, it is unlikely that historic streetcar rail tracks remain beneath the current pavement. Similarly, Page & Turnbull (2009) recognized the area of 7th Street between J and K streets as having been destroyed due to the construction of the Downtown Plaza; therefore, historic streetcar rail track is not expected at this location. J Street within the APE is outside of the RSHS Historic District; therefore, any disruption of historic streetcar rail track would not adversely affect the District, and because the track is not considered individually eligible for the NRHP, such impacts would not affect a historic property.

The cobbled roads may be found on any of the streets where new track is scheduled to be laid. As previously discussed, it is not expected that shallow historic remains would be present along 3rd Street or on 7th Street between J and K streets within the RSHS District. The only location within the District that might contain cobbled roads is H Street between 8th and 12th streets. Intact cobbled roads are maintained in other parts of the RSHS District (e.g., Old Town) where they exist in a setting compatible to this feature. The integrity of cobbled roads found in other portions of H Street has been poor (Tremaine and Ferris, 2009:47) and they are likely to be in the same condition on H Street between 8th and 12th streets due to subsequent road upgrades over the decades. Therefore, should cobbled roads be discovered in this portion of the APE there would be no adverse effect to the historic property. Furthermore, the cobbled roads are not individually eligible for the NRHP, so any impact to the cobbles outside of the RSHS District would not constitute an effect to a historic property under Section 106.

Because they require cast-in-drilled-hole foundations of several feet, the installation of OCS poles could penetrate into the hollow sidewalks. The known hollow sidewalk segments of the RSHS District are considered contributing resources to the District, and are considered a historical resource for the purposes of CEQA. These features exist below the existing sidewalks and access is often restricted by private land owners, so many stretches of the hollow sidewalks have not been verified or thoroughly recorded. Given these circumstances, it is possible that hollow sidewalks may be encountered during construction with installation of OCS poles. Disturbance to the hollow sidewalks and constitute a direct adverse effect/substantial adverse change to the RSHS Historic District by physically altering a resource that contributes to the significance of the historic district. Such alteration to a hollow sidewalk segment could diminish the segment's integrity of materials, workmanship, design, feeling, and association, and therefore the integrity of the historic district as a whole, and diminish its ability to that convey its historical significance.

As previously mentioned, the Project will use existing LRT infrastructure whenever possible, in lieu of new OCS poles. Section 3.2.4.1 discusses the Project route relative to the known and potential presence of hollow sidewalks in and adjacent to the RSHS District, and identifies where existing poles and buildings suitable for securing wires are located. New poles would only be necessary in the areas where new track would be laid. Similar to the previous analyses of other elements of the District, the potential presence of hollow sidewalks along 3rd Street and 7th Street between J and



K streets is considered to very low (see Figure 4.4-4). Where new track is proposed for along 12th street, existing poles would be used rather than of constructing new OCS poles. Along J Street, between 12 and 13th streets, construction of new OCS poles can be avoided by attaching wires to non-historic buildings along the block. As Project design continues and the placement of poles becomes more certain, particular attention will be paid to those areas that are sensitive for the presence of hollow sidewalks, and additional studies may be required to verify their presence. Should hollow sidewalks be found in areas of proposed OCS poles, avoidance measures will be taken. These measures could include modifying the proposed OCS pole locations; modifying track and system elements that have created a conflict; modifying the foundation of the OCS poles; using buildings to attach wires; or attaching wires to a backbone wire between poles or structures. Through these avoidance techniques, there will be no adverse effect to the hollow sidewalks or the RSHS District.

Human remains have been found at approximately 10 feet below the ground surface during excavation in areas area adjacent to the APE along H Street between 6th and 7th streets, and in the vicinity of 10th Street. The Project will run along existing LRT tracks between 5th and 8th streets. New track would be laid for the extension of LRT on H Street between 8th and 12th streets, but the depth of construction would not be expected to disturb ground below 3 feet. Therefore, the Project would not affect deeply buried intact human remains known to be in the vicinity of this portion of Project. However, there is the possibility of encountering human remains or items generally associated with graves in a disturbed context in the vicinity of previously identified sites with burials. In addition, human remains may be discovered anywhere in the APE by virtue of the fact that it is not possible to know where all such remains might exist; though it is more likely that burials would be found in areas that were once higher ground. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. Implementation of the measures described below would be required in the event of discovery of human remains during construction of the Project.

Although the areas surrounding the proposed alignment are not highly sensitive for paleontological resources, discoveries have been made in the Sacramento Valley in the past. Therefore, it is possible that these types of resources could be found during construction of the Project. Ground-disturbing activities in fossil-bearing soils and rock formations have the potential to damage or destroy paleontological resources that may be present below the ground surface. Therefore, any earth-disturbing activities resulting from implementation of the Project could damage or destroy fossils in these rock units, thereby causing a substantial change in the significance of the resource.



4.4.5. Operational Effects

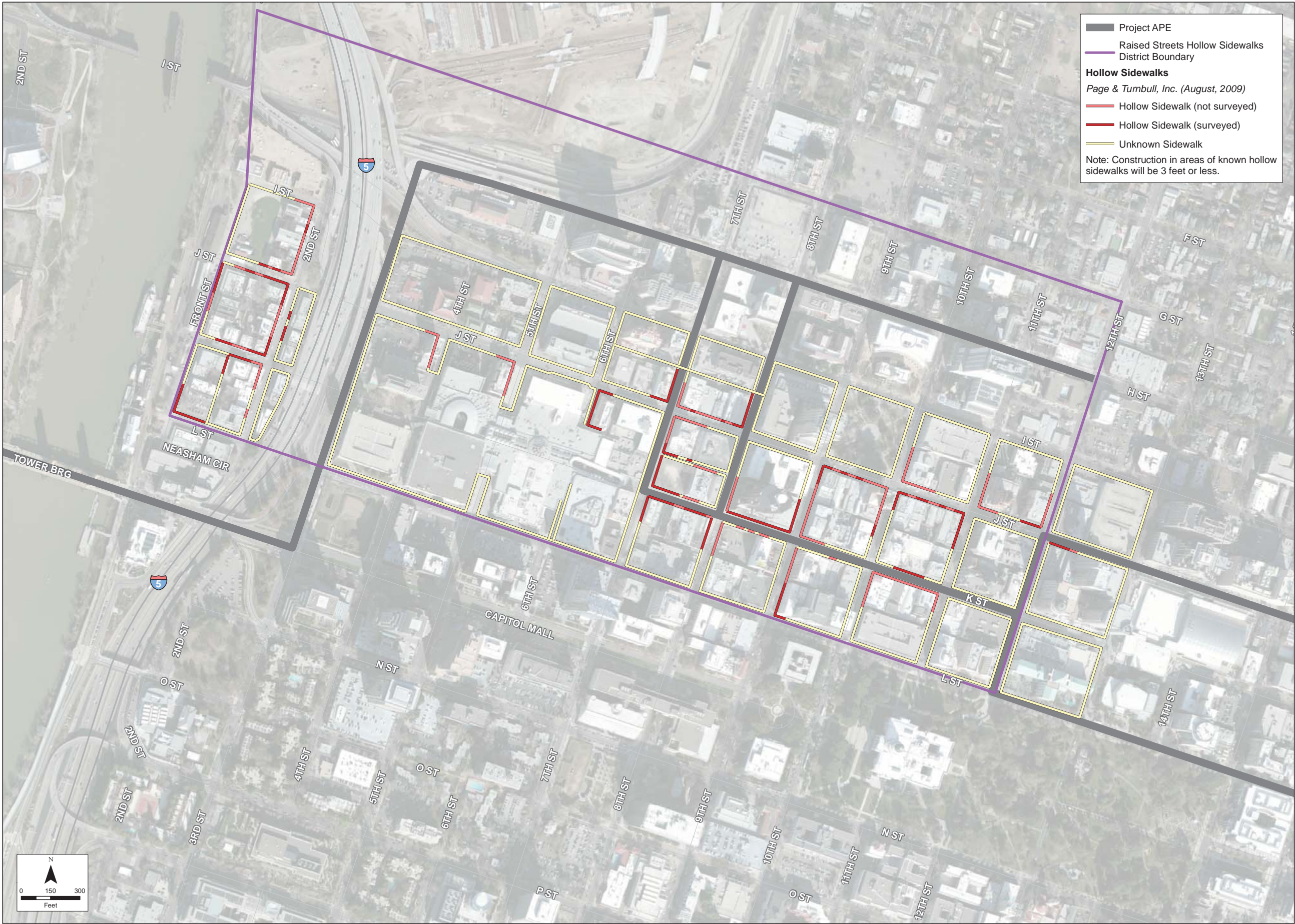
No adverse vibration or visual effects have been identified for operation of the Project. Therefore, operation of the project would not cause an adverse impact or substantial adverse change to any of the historic properties or historical resources within the APE. The operation of the Project will not require ground disturbing activities in new areas of the APE. Any potential ground disturbance would be the result of infrastructure maintenance in areas that had previously been disturbed by construction. Because impacts to archaeological resources would occur only during ground disturbance in previously undisturbed areas, project operations would not affect archaeological resources.

4.4.6. Measures to Minimize Harm

The Project has been designed to avoid adverse effects to historic properties. However, as described above, construction activities could result in impacts to the RSHS Historic District, and historic and prehistoric archaeological resources listed and eligible for listing in the NRHP, CRHR, and SRHCR. In addition, construction activities could disturb paleontological resources. To avoid and minimize the potential impacts related to inadvertent discovery during construction of the Project, the following measures are proposed.

Mitigation Measure CR-1: Pre-construction resource identification.

Additional identification efforts will consist of further archival research and subsurface exploration to avoid impacts to historic properties. As the Project design is advanced, additional archival research will be conducted to help identify specific locations in the APE where contributing elements of the RSHS District may exist. This research will target those areas of the design that coincide with known or likely below-grade hollow sidewalks or raised street structures. Preconstruction subsurface explorations will be conducted where construction is anticipated to approach the vertical limits of the APE in areas sensitive for cultural resources (both pre-historic and historic). The Project proponent will also coordinate with the City of Sacramento and property owners to obtain permission to access any remaining hollow sidewalk segments that are identified or suspected to exist in areas that could be affected by construction, particularly installation of OCS poles. If access is obtained and hollow sidewalks are present, the potentially affected hollow sidewalk segment(s) will be field recorded and the data collected will be added to the existing RSHS District Department of Parks and Recreation (DPR) 523 recordation forms (Downey, 2010),





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following the protocol described in the Unanticipated Discovery Plan (UDP) for the Project described below. This recordation will capture data about the hollow sidewalks/raised streets that are not readily available, and will improve access to information about these historic resources. If access cannot be obtained, the Project proponent will use ground-penetrating radar or other means to confirm the presence or absence of hollow sidewalk segments in the construction footprint. Should hollow sidewalks be identified in areas of potential OCS pole location, avoidance options will be executed. These options include modifying the proposed OCS pole locations, modifying track and system elements that are causing a conflict, modifying the pole foundation type, using a building attachment, or attaching span or pull-off wires to a backbone wire between two other poles or structures. The attachment of wires to adjacent buildings may require modification of the APE to accommodate those buildings, which would also necessitate re-consultation with the SHPO. No structures that are historic properties would be selected for wire attachment.

Furthermore, if research or field investigation confirms the presence of historic or prehistoric archaeological resources that are eligible for the NRHP, and that would be in conflict with Project construction, the Project proponent will revisit the design to avoid adverse effects to historic properties.

Mitigation Measure CR-2: Monitoring.

All ground-disturbing activities in Downtown Sacramento (not including the Sacramento MSF option) will be monitored by a qualified archaeologist and, when appropriate, a Native American representative of any tribe that has been determined a consulting party to the Project. If any prehistoric or historic-era features, or human remains, are exposed during construction, work will stop or be redirected to allow for recordation, including photography, measurements, and Global Positioning System/Geological Information System (GPS/GIS) data. Field recordation data will be added to the existing P-34-2358/RSHS District DPR 523 recordation form (Downey, 2010; Tremaine, 2008).

Mitigation Measure CR-3: Discovery.

Inadvertent discovery of cultural resources. If cultural resources are encountered at a location beyond the Downtown Sacramento area, or in locations not identified by research or other investigations during the pre-construction period, work will stop or be redirected within 50 feet of the finds to allow for recordation, including photography, measurements, and GPS/GIS data in accordance with the UDP.

Inadvertent discovery of hollow sidewalk. If hollow sidewalk features or raised street structures are encountered in locations not identified by research or other investigations during the pre-construction period, work will stop in order to allow recordation. The field recordation data collected (e.g., photography, field measurements, and GPS/GIS data) will be added to the existing RSHS District DPR 523 (Downey, 2010) recordation form. This recordation will follow the protocol for treating cultural resources identified as inadvertent discoveries described in the UDP for the



Project. The UDP will describe treatment for both prehistoric and below-grade historic-era resources, including all elements that contribute to the RSHS District.

Inadvertent discovery of human remains. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. If human remains are encountered, work should halt within 100 feet of the remains and, as required by law, the Sacramento or Yolo County Coroner should be notified immediately. If human remains are of Native American origin, the Coroner must notify the NAHC within 24 hours of that determination. Pursuant to California Public Resources Code 5097.98, the NAHC, in turn, will immediately contact an individual who is most likely descended from the remains (aka: a Most Likely Descendent [MLD]). The MLD has 48 hours to inspect the site and recommend treatment of the remains. The landowner is obligated to work with the MLD in good faith to find a respectful resolution to the situation and entertain all reasonable options regarding the descendants' preferences for treatment. The treatment of human remains will be further discussed in the UDP.

Mitigation Measure CR-4: Prepare an UDP.

An UDP will be developed prior to the initiation of construction. The UDP will provide detailed descriptions of protection and mitigation measures for archaeological resources in the APE. The UDP will include guidelines for avoidance of historic properties and establishment of environmentally sensitive areas; data recovery guidelines for those known historic properties/historical resources that cannot be avoided by Project design; protocols for treating cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as unanticipated discoveries, including human remains; monitoring during construction; responsibilities and coordination with Native American tribes and individuals; and curation of recovered materials. The UDP will address treatment for both prehistoric resources, including human remains, and historic-era resources, including all elements that contribute to P-34-2358/RSHS District. All activities outlined in the UDP will be conducted under the direction of individuals who meet the professional qualification standards in Archaeology and Historic Preservation, Secretary of Interior's Standards and Guideline (Federal Register, Volume 48, No. 190, September 29, 1983).

As Project design progresses, all effort will be made to avoid known historic properties in the APE. Resources avoided by Project design will be identified as environmentally sensitive areas to ensure that these locations are not inadvertently encroached upon during construction. Newly identified cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as inadvertent discoveries during construction will require testing to assess their research potential and eligibility for the listing in the NRHP and the CRHR. Archaeological testing will proceed with guidance from the National Park Service Guidelines for Evaluating and Registering Archeological Properties (National Park Service, 2000). Evaluation efforts will involve archival research and archaeological fieldwork. Fieldwork methodologies will be tailored to the location, circumstance, and nature of the find. It therefore may be appropriate to use mechanical trenching techniques, controlled excavation units, or block exposures, shovel sampling explorations, or any



combination of the above. All newly identified resources will be thoroughly mapped, photographed, located through Global Positioning System (GPS), and recorded on DPR 523 forms. If resources are found to be eligible to the NRHP or the CRHR, and they cannot be avoided by construction, data recovery will be required. Data recovery will conform to the principles in Parts I and II of Treatment of Archaeological Properties: A Handbook (Advisory Council on Historic Preservation, 1980), the "Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation" (Federal Register, Vol. 48, September 29, 1983, pp. 44716-44742), and appropriate SHPO guidelines. Data recovery may involve archaeological excavation, or for resources such as hollow sidewalks, detailed recordation on DPR 523 forms.

All construction will immediately cease within 100 feet in all directions of the discovery of human remains, which will then be treated in accordance with the requirements of Section 7050.5 of the California State Health and Human Safety Code. If the County Coroner determines that the remains are of Native American origin, the coroner will notify the California NAHC, and the provisions of Section 5097.98 of the California Public Resources Code will be followed.

All subsurface construction related to the Project will be monitored by a professional archaeologist, and as appropriate, by a Native American representative. Monitors will be responsible for working with construction personnel and identifying cultural resources that may be uncovered during ground disturbance. If unanticipated cultural materials are unearthed, the monitor will have the authority to immediately halt work to allow the onsite archaeological monitor to inspect and assess the materials, determine whether additional analysis of the find is warranted, or whether construction can proceed without further analysis. Should additional analysis be required, testing protocols will be developed.

The FTA and the Project proponent will continually consult with Native American tribes about the treatment of resources of ancestral significance throughout Project development and construction. The UDP will define the responsibilities of the Native American tribes or individuals who are consulting parties to the Project. Native American monitors will have the opportunity to be present during testing and data recovery excavations on prehistoric and multicomponent sites, and during all construction activities in areas determined sensitive for the presence of subsurface prehistoric or ethnographic resources. It is recommended that Native American monitors meet the minimum qualifications in the guidelines provided by the NAHC (2012). Participating tribes will ultimately be responsible for identifying the individuals who will represent their tribe as monitors. The Native American monitors are expected to report to their tribal government or designee to keep them informed of Project activities. The Native American monitors and archaeological monitors will work together as a team to observe ground-disturbing activities.

All cultural materials and associated records resulting from identification, evaluation, and treatment of historic properties conducted under the UDP shall be properly maintained in accordance with 36 CFR Part 79, and the provisions under 43 CFR Part 10 if the archaeological materials are determined to be of Native American origin, and the State of California's Guidelines for the Curation of Archeological Collections (State Historical Resources Commission, Department



of Parks and Recreation, 1993). The Project proponent will consult with Native American tribes and individuals affiliated with the cultural materials on repatriation, as appropriate. If the Project proponent and consulting tribes cannot agree, the FTA will ensure that all cultural materials discovered on State lands are curated.

Mitigation Measure CR-5: Train construction personnel on paleontological resources, and cease work in event of paleontological discovery.

The Project applicant shall retain a qualified paleontologist to carry out all actions related to paleontological resources. Prior to the start of any ground-disturbing activities, the qualified paleontologist shall train all construction personnel working on the Project. The training shall include an overview of potential paleontological resources that could be encountered during ground-disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the qualified paleontologist for further evaluation and action, as appropriate. The training should also include an overview of penalties for unauthorized artifact collecting or intentional disturbance of paleontological resources.

If any items of paleontological interest are discovered, the contractor shall be required to immediately suspend all work activities within 100 feet of the discovery site and immediately contact the lead agency. Work shall not be resumed until authorization is received from the lead agency and any recommendations received from a qualified paleontologist are implemented. Any accidental discovery of paleontological resources during construction shall be evaluated by the qualified paleontologist. If it is determined that the Project could damage a unique paleontological resource, as defined per the CEQA Guidelines, mitigation shall be implemented in accordance with PRC Section 21083.2, and Section 15126.4 of the CEQA Guidelines. If avoidance is not feasible, the paleontologist shall develop a treatment plan in consultation with the lead agency.

The treatment plan shall be a site-specific plan in report format that shall:

1. Detail strategies for the management of the affected paleontological sites;
2. Include standards for further testing, sampling, documentation, data recovery, preservation and protection, analysis, and report preparation;
3. Outline an effective preservation plan or data recovery and documentation plan for those resources that the paleontologist has determined to have significant research or other value;
4. Provide a schedule for the implementation of the treatment plan; and
5. Provide a cost estimate for mitigation strategies, including testing, data recovery, curation, and report preparation.

With implementation of these measures, there would be no adverse effects to historic architectural or archaeological resources, prehistoric resources, or paleontological resources. FTA therefore proposes a finding of no adverse effect to historic properties pursuant to 36 CFR 800.5(b) that is



subject to concurrence with the SHPO and review of this environmental document. There would also be no significant adverse impacts on archaeological resources under CEQA due to project construction and/or operations.

4.4.7. Cumulative Effects

Cumulative impacts can result from incremental actions that are collectively adverse to an environmental resource. If a project results in development features or changes to existing environmental conditions that are incompatible with archaeological resources that exist within the vicinity of the project site, an incremental contribution to a cumulative impact could result. A review of developments near the proposed Project did not identify any adverse effects on archeological resources. With implementation of the above-described avoidance measures, the Project would not result in adverse effects to historic resources. Therefore, the Project would not contribute to cumulative impacts to historic resources in the Project area. If previously undiscovered archaeological or paleontological resources are inadvertently exposed during construction activities, an incremental effect to such resources may occur. However, the Project and the other planned future projects in the Project vicinity that are subject to NEPA-and/or CEQA-level review would be required to consider mitigation for impacts to historical or unique archaeological resources. If these resources are properly evaluated and managed according to mitigation measures, no adverse cumulative impact to archaeological or paleontological resources is expected to occur.



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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4.5. Geology and Soils

4.5.1. Introduction to the Analysis

This section evaluates the Project's potential effects related to geology, soils, and seismicity. Potential seismic impacts are assessed with respect to exposure of people or structures to geologic hazards, liquefaction, and earthquake-induced landslides. Overall, compliance with the California Building Code and local policies would ensure that all effects related to geology and soils would not be adverse.

4.5.2. Regulatory Setting

4.5.2.1. Federal

Clean Water Act

The CWA of 1972 includes provisions for the protection of water quality and reduction of soil erosion. The CWA regulates the discharge of pollutants into watersheds throughout the nation. Regulation of discharges under the CWA also pertains to construction sites where soil erosion and stormwater runoff and other pollutant discharges could affect downstream water quality. The CWA is described in greater detail in Section 4.8, Hydrology and Water Quality.

Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act of 1977 was enacted to reduce the risks to life and property from future earthquakes. The act established the National Earthquake Hazards Reduction Program to educate and improve the understanding and prediction of hazards, improve building codes and land use practices, and to reduce the risk of earthquakes through improved design and construction techniques. The National Earthquake Hazards Reduction Program Act (NEHRPA) of 1990 amended this program and designated the Federal Emergency Management Agency as the lead agency. Other NEHRPA agencies include the National Institute of Standards and Technology, the National Science Foundation, and the U.S. Geological Survey.

International Building Code

The International Building Code is a national standard building code that sets forth minimum standards for construction, and has been adopted and modified for California conditions. Typically, State and local jurisdictions adopt building standards that are at least as stringent, if not more. The California Building Standards Code (2013 or newest edition) contains the minimum standards for design and construction throughout the State. Some design considerations associated with seismic hazards need to address the appropriate building codes for a particular site. The cities of Sacramento and West Sacramento are in Seismic Zone 3, so all development in these cities must comply with all standards applicable for this zone.



4.5.2.2. State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1971 provides laws meant to reduce loss of life and property associated with surface fault rupture throughout the State of California. The act requires earthquake faults to be identified and zoned to ensure public safety. Safety is protected by prohibiting building most structures for human occupancy across active faults that are a potential hazard (CDC, 2014a).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 directs the State of California Department of Conservation, California Geological Survey, and the Seismic Hazards Zonation Program, to “identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking.” The purpose of the Act is to mitigate damage to property and loss of life by identifying, evaluating, and minimizing seismic hazards (CDC, 2014b).

4.5.2.3. Local

City of Sacramento General Plan

The City of Sacramento General Plan includes policies concerning seismic safety in its Geology, Soils, and Mineral Resources Section (City of Sacramento, 2009a). This section includes policies that apply to the Project area, such as:

- **EC 1.1.1 Review Standards.** The City shall regularly review and enforce all seismic and geologic safety standards and require the use of BMPs in site design and building construction methods.
- **EC 1.1.2 Geotechnical Investigations.** The City shall require geotechnical investigations to determine the potential for ground rupture, earth shaking, and liquefaction due to seismic events, as well as expansive soils and subsidence problems on sites where these hazards are potentially present.

City of West Sacramento General Plan

The City of West Sacramento General Plan contains goals and policies regarding health and safety as related to geologic and seismic hazards (City of West Sacramento, 2004). Relevant geological and seismic policies in Section VII, Health and Safety, are listed below:

- The City shall require preparation of geotechnical reports and impose appropriate mitigation measures to ensure, within the limits of technical and economic feasibility, that new structures are able to withstand the effects of seismic activity, including liquefaction.



- Underground utilities, particularly water and natural gas mains, shall be designed to withstand seismic forces.
- The City shall request that responsible agencies regularly inspect and repair area levees, as needed, to ensure structural integrity in the event of seismic activity.

4.5.3. Affected Environment

This section addresses the geologic environment and the potential geologic and seismic hazard effects related to the Project. Baseline geologic, geomorphic, and seismic conditions for the Sacramento region are also discussed.

4.5.3.1. Local Geology

The Project is in the central portion of California's Central Valley Geomorphic Province, an area characterized by relatively flat topography and a thick sequence of sedimentary deposits. Most of the site is underlain by Quaternary Alluvium, which is dominated by relatively coarse-grained natural levee and channel deposits; however, the westernmost portion of the Project, in West Sacramento, is underlain by finer-grained alluvium known as Basin Deposits (Helley and Harwood, 1985).

4.5.3.2. Soils

The U.S. Department of Agriculture, Natural Resource Conservation Service has characterized soils east of the Sacramento River as "Urban Land," which is largely paved or covered with residential and commercial construction. The western portion of the proposed alignment in Yolo County is underlain by soil types known as Lang Sandy Loam; Lang Sandy Loam, deep; Sycamore silt loam; and Valdez silt loam, deep (NRCS, 2014). These soils are semi-stable, have moderate to moderately rapid permeability, slow surface runoff, and their erosion hazard is minimal to none (USDA, 1972).

4.5.3.3. Regional Faults and Seismic Hazards

The Project would not be in an Alquist-Priolo Fault Zone, and is therefore not susceptible to surface rupture, nor is subsidence known to occur in the area (CDC, 2006). The Project area is in a relatively seismically quiescent area between two areas of documented tectonic activity. The Pacific Coast Ranges to the west contain many active faults that are associated with the northwest-trending San Andreas Fault system. The Pacific Coast Ranges-Sierran Block boundary zone contains potentially active "blind" thrust faults, which are capable of producing moderate to large earthquakes (Jennings, 1994). Although there are no known faults in the vicinity, the potential for destructive seismic and geologic hazards is a serious consideration when reviewing development plans for commercial and residential expansion and transportation projects in the Project area (Sacramento County, 2011).



4.5.4. Environmental Effects

This section identifies and discusses the effects to geology and soils resulting from the Project, and includes an analysis to determine if the Project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area, or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42;
 - Strong seismic ground shaking; or
 - Landslides.
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State.
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

4.5.4.1. *No Action Alternative*

The No Action Alternative would not implement the Project, and changes to the roadway rights-of-way in the study area would occur primarily because of planned development and roadway improvements unrelated to the Project. These projects would be designed using applicable standards for geologic issues, and would be undertaken using BMPs for addressing grading, soil, and seismicity issues. Therefore, no adverse effects would result.



4.5.4.2. Action Alternative

Geology and Soils

As part of the Project, an MSF would be constructed to store and maintain the streetcar vehicles when not in use. Two sites are under consideration for a potential MSF: one in Sacramento and the other in West Sacramento. Design of the MSFs would comply with Table 18-1-B of the Uniform Building Code. Compliance with the above-mentioned policies and regulations would ensure that the Project would not present a risk to life or property.

Mineral resources or expansive soils do not occur in the Project area. Therefore, no adverse effects would result.

Installation of septic tanks or alternative wastewater disposal systems is not included in the Project; soil capable of adequately supporting such improvements is not required. No adverse effects would occur.

Seismic Hazards

Adverse effects associated with seismicity include the risk of loss, injury, or death from the rupture of a known earthquake fault, strong seismic ground-shaking, seismically related ground failure (including liquefaction), or landslides. As indicated above, the proposed alignment is in a seismically quiescent, semi-stable geologic unit, and no active faults are known to exist in its vicinity. Accordingly, the potential for ground displacement due to surface faulting is considered negligible. All Project facilities would be designed and constructed in compliance with applicable seismic standards. Therefore, the Project would not result in an increased exposure to potential adverse effects associated with seismicity, and no effect would occur.

Landslide and Debris Flow Hazards

A landslide is any mass of earth or rock that slides, flows, or falls downhill. Landslides can occur from factors such as heavy rainfall, improper construction or grading, earthquakes, weak or loose rock and soil, and steep slopes (CGS, 2007). Debris flows or mudslides are flows of mud that might include rocks, vegetation, and debris. They are a common type of fast-moving landslide that generally occurs during intense rainfall on previously saturated soil. Debris flows are more likely on steep, concave parts of hillsides (CGS, 2014). The Project would be constructed in an area that is essentially flat terrain, where landslides and debris flows do not occur (City of Sacramento, 2009a). Therefore, no effect would occur.

4.5.4.3. Construction Impacts

In general, Project-related construction activities could disturb vegetation and ground cover that stabilize surface soils, making the Project site soils more susceptible to erosion. Project construction could also result in the loss of topsoil—a nutrient-rich soil layer that can be lost during excavation and backfilling. The Project site is nearly flat, and would be constructed largely in



existing roadway rights-of-way that are currently paved. Minimal portions of the Project site would be cleared and graded in preparation for construction of the West Sacramento MSF option and the non-revenue track to the MSF site. As part of the clearing and grading, an unknown but likely small amount of topsoil would need to be removed. This soil would likely be reused or disposed of on site.

Grading associated with construction of the Project would be considered minor because the majority of construction would occur in existing roadways. As discussed in Section 4.8, Hydrology and Water Quality, compliance with applicable regulations and proper implementation of general construction BMPs would ensure that effects associated with loss of soil would be negligible.

4.5.5. Measures to Minimize Harm

As mentioned above, the potential for ground displacement due to surface faulting is considered negligible. Compliance with the above-mentioned policies and regulations would ensure the Project has no adverse effect to geology and soils.

4.5.6. Cumulative Effects

Geologic features, such as seismicity or soil stability, are site-specific and project-specific; and there is little, if any, cumulative relationship between implementation of the Project and other projects throughout the study area. The Project would have no effect to geology and soils; geologic and seismic conditions in the region would be similar to those already occurring. Therefore, because geologic hazards are site-specific, the Project, in combination with other past, present, and reasonably foreseeable future projects, would not create an adverse cumulative effect on geological resources.



4.6. Energy and Public Utilities

4.6.1. Introduction to the Analysis

This section describes transit energy use and major public utility infrastructure along the proposed alignment. The discussion presents the types of utilities operating in the cities of West Sacramento and Sacramento. In addition, this section evaluates environmental impacts and provides a discussion of the regulatory and environmental setting, potential impacts associated with the Project, minimization/avoidance measures designed to reduce adverse effects, and cumulative impacts.

4.6.2. Regulatory Setting

4.6.2.1. State

State Alternative Fuels Plan (Assembly Bill 1007)

The State Alternative Fuels Plan was prepared by the California Energy Commission, in partnership with the California Air Resources Board, to increase the use of alternative fuels in California. The plan is coupled with a series of implementing requirements and a summary of actions that can be taken by the industry itself to innovate and promote alternative fuel use and production.

4.6.2.2. Local

City of Sacramento 2030 General Plan – Utilities Element (2009a)

Policies in the Utilities Element of the City of Sacramento 2013 General Plan support a wide range of programs to reduce waste, use recycled building materials, and support the recycling of construction and landscaping waste. These policies are consistent with Sacramento's desire to be a more sustainable community. Water, wastewater, stormwater drainage, solid waste, energy, and telecommunications systems will be expanded concurrent with new development, population, and employment growth. Emphasis is placed on improving infrastructure in the downtown area, in other urban centers and corridors, and around transit stations to support infill and intensified development consistent with priorities for "smart growth." The following policies apply to the Project in the City of Sacramento.

- **Policy U 5.1.1 Zero Waste.** The City shall achieve zero waste to landfills by 2040 through reusing, reducing, and recycling solid waste; and using conversion technology if appropriate.
- **Policy U 5.1.2 Landfill Capacity.** The City shall continue to coordinate with Sacramento County in providing long-term landfill disposal capacity.
- **Policy U 5.1.15 Recycled Materials in New Construction.** The City shall encourage the use of recycled materials in new construction.
- **Policy U 5.1.16 Recycling and Reuse of Construction Wastes.** The City shall require recycling and reuse of construction wastes, including recycling materials generated by the demolition



and remodeling of buildings, with the objective of diverting 85 percent to a certified recycling processor.

City of Sacramento Urban Water Management Plan (2010)

The City's Urban Water Management Plan (UWMP) was prepared in accordance with California's Urban Water Management Planning Act of 1983, which requires urban water suppliers servicing 3,000 or more connections or 3,000 acre feet per year or more to prepare a UWMP. The 2010 UWMP serves as an update to the 2005 UWMP. The 2010 UWMP presents a description of the City's current water supply system and facilities, including water treatment facilities, distribution, and storage; identifies key water demands that are or that will need to be met by the City; reviews available water supplies; discusses water supply reliability and a water shortage contingency plan; reviews demand management measures; and discusses complicating factors surrounding climate change.

City of West Sacramento General Plan (Policy Document Revised and Adopted 2004, Background Report 2009a)

This City of West Sacramento General Plan Background Report describes various services provided to City residents. The report focuses primarily on water, sanitation, schools, fire protection, and law enforcement, describing the various systems and their capacities, and discussing their implications for the General Plan. The following policies from Section IV, Public Facilities and Services of the City of West Sacramento General Plan Policy document, apply to the Project.

Goal D

- **Policy 1.** The City shall study and actively pursue methods of solid waste recycling and reuse, including source separation, with the goal of reducing its solid waste generation by 50 percent by the year 2000. Recycling methods that involve the production of energy shall be considered.
- **Policy 4.** The City shall maintain close contact with the Yolo County Public Works Department concerning the City's continuing use of the Yolo County Central Landfill and its capacity projections.

City of West Sacramento Municipal Code, Chapter 8.08

Chapter 8.08 of the City's Municipal Code establishes diversion rates for recycling. Projects subject to the recycling requirements are required to divert at least 50 percent of the construction and/or demolition debris generated from a project, except that concrete/asphalt shall be diverted to the maximum amount feasible as determined by administrative policy. During the term of the construction or demolition project, the applicant shall recycle or divert the required percentage of materials, in accordance with the construction and demolition debris recycling plan and any procedures established by the City Manager. The applicant shall keep records of the materials recycled, including the weight of the materials diverted. Within 60 days following the completion of the construction and/or demolition project, the applicant shall submit a "recycling report" to the department of public works and



community development department that demonstrates compliance with the recycling requirements, as established by the construction and demolition debris recycling plan.

4.6.3. Affected Environment

4.6.3.1. Sacramento Public Utilities

Table 4.6-1 provides a summary of public utility infrastructure in the City of Sacramento in the general vicinity of the proposed alignment. Utility service providers are described in the paragraphs below.

**Table 4.6-1
 Potential Utility Encroachment City of Sacramento**

Utility/Owner	Item
City of Sacramento	Underground Pipelines for Combined Storm/Sewer, Storm Drains, Water Lines, Electrical Street Lighting, Traffic Signal Systems
SMUD	Underground Electrical Lines
RT	Underground Electrical Lines
Western Union Telegraph	Underground Communication Lines
ATT	Underground Communication Lines
Level 3	Underground Communication Lines
Verizon	Underground Communication Lines
Surewest	Underground Communication Lines
Comcast	Underground Communication Lines
WCG	Underground Communication Lines
PacBell	Underground Communication Lines
360 Net	Underground Communication Lines
ELI	Underground Communication Lines
MCI	Underground Communication Lines
Qwest	Underground Communication Lines
XO	Underground Communication Lines
Brooks	Underground Communication Lines
Source: Psomas, 2014.	



Water

Water services are currently provided by the Sacramento Department of Utilities. Approximately 85 percent of the water provided comes from the Sacramento and American rivers. The Department operates and maintains two water treatment plants (E.A. Fairbairn and Sacramento River Water Treatment plants) and eight pump stations (SDPU, 2014). According to the City of Sacramento Department of Utilities, 2010 UWMP, the E.A. Fairbairn Water Treatment Plant has a current design capacity of 200 million gallons per day (mgd), following the expansion completed in late 2005. Currently, the California Department of Public Health has permitted a capacity of 160 mgd; and the Sacramento River Water Treatment Plant has a reliable capacity of approximately 135 mgd, although the City is currently rehabilitating the facility to return capacity to 160 mgd (City of Sacramento, Department of Utilities, 2011).

Wastewater

Wastewater generated in Sacramento is collected and transmitted to the Sacramento Regional Wastewater Treatment Plant (SRWWTP), at 8521 Laguna Station Road in Elk Grove. The SRWWTP is operated by the Sacramento Regional County Sanitation District (SRCSD). The permitted design flow capacity is 181 mgd (average dry weather flow), and the average daily wastewater treatment in 2013 was approximately 116 mgd (SRCSD, 2014).

Stormwater

The proposed alignment would be constructed in an area of Sacramento that is partly served by a combined sewer system (CSS), and partly by a system that separates sanitary and stormwater flows. The CSS routes sewage and drainage in a single pipeline. Most of the combined sewage is treated in two primary treatment plants dedicated to the combined system. The construction of combined sewers for the specific use of conveying both sanitary and storm flows was discontinued in 1946, due to concerns regarding potential negative water quality impacts to local streams and rivers. Since that time, separate sanitary and stormwater sewers have been constructed in newer parts of the City, and some portions of the original CSS have been improved to separate sanitary and stormwater flows.

The separate stormwater sewer system is owned and operated by the Sacramento Area Sewer District, which then conveys the wastewater to the SRWWTP. The SRWWTP is currently permitted to discharge an average dry weather flow of 181 mgd, and a daily peak wet-weather flow of 392 mgd. Stormwater collected through this system is ultimately discharged into creeks, lakes, and rivers (City of Sacramento, Department of Utilities, 2011).

Solid Waste

The Recycling and Solid Waste Division of the Department of General Services currently provides solid waste services to the City of Sacramento. The Recycling and Solid Waste Division provides garbage, recycling, yard waste collection, and street sweeping to more than 124,000 residential



customers in the City of Sacramento (2014). Solid waste collected by the City is conveyed to one of two transfer stations: the Sacramento Recycling and Transfer Station, which is permitted for 2,500 tons per day; or the North Area Transfer Station, which is permitted for 2,400 tons per day (CalRecycle, 2014c, d). Waste brought to this station is transported to the Kiefer Landfill, which is operated by Sacramento County and maintains a permitted capacity of 10,815 tons per day. The landfill has nearly 113 million cubic yards of available capacity, and is estimated to have sufficient capacity to maintain operations through 2064 (CalRecycle, 2014b). Construction and demolition waste collected in the City may be disposed of at Kiefer Landfill, L and D Landfill, the Yolo County Landfill, or Forward Landfill (City of Sacramento, 2009a).

Gas and Electricity

Gas services are currently provided by the PG&E through underground pipelines in the vicinity of the proposed alignment. Electrical services in the City of Sacramento are currently provided by SMUD through overhead and underground lines in the vicinity of the proposed alignment. Currently, no overhead SMUD electrical lines cross the proposed alignment.

4.6.3.2. West Sacramento Public Utilities

Table 4.6-2 provides a summary of public utility infrastructure in the City of West Sacramento that may encroach in the Project right-of-way in the general vicinity of the proposed alignment. Utility service providers are described in the paragraphs below.

**Table 4.6-2
 Potential Utility Encroachment
 City of West Sacramento**

Utility/Owner	Item
City of West Sacramento	Underground Pipelines for Storm Drains, Sanitary Sewers, Water Lines, Electrical Street Lighting, Traffic Signal Systems
PG&E	Overhead Electrical and Underground Lines, Underground Gas Pipelines
Kinder Morgan	Underground Gas Pipeline
ATT	Underground Communication Lines
Level 3	Underground Communication Lines
Source: Psomas, 2014.	



Water

Water services are currently provided by the City of West Sacramento through the Bryte Bend Water Treatment Plant at 400 North Harbor Boulevard. The Water Treatment Plant draws water from the Sacramento River, and has a capacity to treat 60 mgd. Current daily volumes are approximately 7 mgd (Jones, 2014).

Wastewater

Wastewater generated in West Sacramento is collected and transmitted to the SRCSD's SRWWTP. The plant has a permitted design flow capacity of 181 mgd (average dry-weather flow), and the average daily wastewater treatment in 2013 was approximately 116 mgd (Regionalsan.com).

Stormwater

Stormwater services are currently provided by the City of West Sacramento through a system of buried pipes, street gutters, roadside ditches, and pump stations. The ultimate destination for stormwater in West Sacramento is local waterways (cityofwestsacramento.org). According to the City's General Plan, the City's stormwater system is in good condition and has not experienced any issues associated with overflow or exceedance of capacity, even during the winter months. Stormwater is not treated.

Solid Waste

Solid waste services are currently provided by Waste Management of Sacramento under a franchise agreement. Ultimately, most waste from West Sacramento is disposed of at the Yolo County Central Landfill, a Class III sanitary landfill. The landfill's maximum permitted capacity is 49,035,200 cubic yards. The estimated remaining capacity to date is approximately 36,555,700 cubic yards (CalRecycle, 2014a; Santillano, 2014).

Gas and Electricity

Both gas and electrical services in West Sacramento are provided by PG&E. Gas services are currently provided through underground pipelines in the vicinity of the proposed alignment. Electrical services provided by through overhead and underground lines in the vicinity of the proposed alignment. Currently, only one overhead PG&E electrical line crosses the proposed alignment west of the UPRR bridge over Tower Bridge Gateway.



4.6.3.3. Transit Energy Consumption

Sacramento Regional Transit

RT operates a fleet of 188 full-sized buses, 21 community-based service buses, and 76 light rail vehicles using a wide range of energy sources. According to the 2011 National Transit Database, RT's annual energy consumption for 2011 consists of the following:

- 33,674,920 kilowatt hours (kWh) for electric propulsion;
- 6,468 gallons of diesel;
- 41,433 gallons of gasoline; and
- 2,015,975 gallons of compressed natural gas (CNG).

Yolo County Transit

YCTD operates a fleet of 51 full-size buses—all of which are powered by CNG—and 10 paratransit vehicles. According to the 2011 National Transit Database, YCTD's annual energy consumption for 2011 consists of the following:

- 517,577 gallons of CNG and
56,637 gallons of diesel.

4.6.4. Environmental Effects

This section includes an analysis to determine if the Project would:

- Result in a wasteful, inefficient, or unnecessary consumption of energy;
- Result in a significant demand on regional energy supply or requirement of substantial additional capacity;
- Exceed wastewater treatment requirements of the Central Valley Regional Water Quality Control Board (CVRWQCB);
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand, in addition to the provider's existing commitments;
- Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs; or
- Comply with federal, State, and local statutes and regulations related to solid waste.



4.6.4.1. No Action Alternative

The No Action Alternative would not require modifications to existing utility lines beyond those required for planned street improvements, and/or those associated with development projects. Standard mitigation procedures for disrupting or displacing utility lines would be employed.

The No Action Alternative could result in increased gasoline consumption when compared to the current conditions, assuming growth in travel demand would not be accommodated by an expanded transit system. Without the Project, more automobile trips could occur, which could result in increased energy consumption.

4.6.4.2. Action Alternative

Energy

Implementation of the Project would require electric power and substations to feed the catenary system, and energy to power construction equipment. The anticipated energy impact of operating the Project was determined using the assumptions listed below.

- The RT light-rail system operating at published schedules with four-car trains operating with a 900 alternating current limit;
- The Project operating at 10-minute headways with a single-car streetcar, partial shared track, and shared power sources with the RT light-rail system; and
- The system runs at 1 hour with fully loaded vehicles.

It was estimated that the energy delivered to the RT light-rail operation is approximately 13,536 kWh. When the Project and the RT light-rail system operate concurrently, the energy delivered by all substations is estimated to be approximately 13,802 kWh. Therefore, if the Project were in operation, an additional 266 kWh of energy use, or a 2 percent increase, would be required. This is not considered a substantial increase in energy consumption. In addition, trips made on buses and cars between West Sacramento and Downtown Sacramento that may be diverted to the streetcar would reduce fossil fuel consumption, thereby counterbalancing the additional electrical power required for streetcar operation. Relative to the No Action Alternative, this would be a beneficial effect, and consistent with Policy U 6.1.3 (City Fleet Fuel Consumption) of the City of Sacramento 2030 General Plan. Therefore, the direct long-term effects of the Project on energy would be minor.

Public Utilities

Streetcar operation would not require any new utility services aside from electrical power. The operation of the streetcar would not require or result in the construction of new water, wastewater treatment, or stormwater drainage facilities or expansion of existing facilities, because the Project would be constructed in existing right-of-way in paved roads already served by existing infrastructure. Operation of the Project is not expected to exceed wastewater treatment



requirements of the CVRWQCB, because additional wastewater would not be generated. No solid waste disposal services would be required as part of streetcar operation. No short- or long-term indirect effects to water, wastewater treatment, or stormwater drainage facilities are anticipated as a result of streetcar operation; therefore, no effect would occur.

As part of the Project, an MSF would be constructed to store and maintain the streetcar vehicles when not in use. Two sites are under consideration for a potential MSF: one in Sacramento and the other in West Sacramento. Both of the proposed MSF options would need power, solid waste removal, water, and wastewater treatment. However, the increase in demand and use of these utilities would be minor because of the small number of employees present at the MSF at any one time. The MSF sites would require water supplies to serve the Project for cleaning purposes. This water use would be incrementally minor and would not require any new or expanded entitlements. Both of the MSF options would also require wastewater treatment and solid waste disposal. However, operation of the MSF is not expected to exceed wastewater treatment requirements of the CVRWQCB, because wastewater from the site would be minimal, due of the small number of employees present at the MSF at any one time. Therefore, the operation of either of the MSF options would not require or result in the construction of new water, wastewater treatment, or stormwater drainage facilities, or expansion of existing facilities.

Solid waste disposal from maintenance activities would be minimal. The Project would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs. Operation of the MSF would comply with federal, State, and local statutes and regulations related to solid waste. Local policies include Policy U 5.1.1 (Zero Waste and Policy) and Policy U 5.1.2 (Landfill Capacity) from the City of Sacramento's 2030 General Plan, and Policy 4 under Goal D of the City of West Sacramento General Plan Public Facilities and Services Element. Therefore, no adverse effects related to solid waste or landfills serving the MSF options would occur. No short- or long-term direct or indirect effects to water, wastewater treatment, or stormwater drainage facilities are anticipated, and no adverse effects would occur.

4.6.4.3. Construction Impacts

The Project would incorporate the streetcar into the existing built environment while minimizing reconstruction. Portions of the proposed alignment are anticipated to cross over underground utilities in the public right-of-way. To minimize disruption, coordination with utility providers would be necessary for all utilities that require relocation. Generally, however, the shallow depth (less than 3 feet) of the track bed and use of embedded track would avoid utility disruption during construction, and would allow access to utility lines directly beneath the track bed. As a result, no long-term disruption to service or relocation of the utility lines is expected to occur, so effects would not be adverse. If temporary or long-term utility conflicts cannot be readily overcome, mitigation measures would be required, as indicated below. The relocation of utilities will be coordinated with utility providers; specific locations are not known at this time. However, any utility relocation would occur within existing right-of-way and, based on prior LRT construction, would not exceed a depth of 8-feet.



Construction of the streetcar tracks in the roadway would generate minimal waste material, including excavated asphalt and base material in some locations. Project construction would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs. Furthermore, the Project would comply with federal, State, and local statutes and regulations related to solid waste, including policies U 5.1.1 (Zero Waste), U 5.1.2 (Landfill Capacity), U 5.1.15 (Recycled Materials in New Construction), and U 5.1.16 (Recycling and Reuse of Construction Wastes) from the City of Sacramento 2030 General Plan. Therefore, no short- or long-term direct effects would occur to landfills in the area.

Construction activities associated with the Project would require energy to power construction equipment required to install poles, pole foundations, and overhead wire; reconstruct curbs and gutters; modify traffic signals; construct platforms; and complete other miscellaneous work. In contrast to the energy used for operation, the energy required during construction would be temporary and minimal in that it would be limited to specific construction activities. Therefore, direct short-term construction impacts related to energy consumption would be minor.

4.6.5. Measures to Minimize Harm

Mitigation Measure EPU-1: Utility Disruption.

Design, construction, and inspection of required utility work would be completed in accordance with applicable statutes. Where feasible, utility relocations would be undertaken in advance of Project construction. SACOG and/or RT would coordinate with affected service providers to ensure that all utility work is performed in accordance with appropriate requirements and criteria. Coordination with the utility providers would be initiated during the preliminary engineering phase of the Project and would continue through final design and construction. Coordination efforts would include planning for utility re-routes, identification of any other potential conflicts, and formulation of strategies for overcoming problems that may arise to ensure minimum disruption of utility service or operation during the utility work and Project construction.

If unexpected underground utilities are encountered, the construction contractor would coordinate with the utility provider to develop plans to address the utility conflict, protect the utility if needed, and limit service interruptions. Any short-term, limited service interruptions of known utilities would be scheduled well in advance, and appropriate notification would be provided to users.

SACOG and/or RT would coordinate with all utility providers during the design phase of the Project to incorporate effective design treatments and construction procedures to avoid adverse impacts to existing utilities and traffic during construction. Nonetheless, the potential exists for construction activities to encounter unexpected utilities. In addition, utility relocations may require short-term, limited interruptions of service. No interference to existing utility services is anticipated during the realignment of the overhead power transmission lines, because PG&E and SMUD would put customer loads on alternate lines until the connections are re-established.



4.6.6. Cumulative Effects

As described above, the Project would not substantially increase net energy consumption demand for public utilities resulting from development in the vicinity of the proposed alignment. The Project would be consistent with the local policies to reduce travel distances and reliance on the automobile, and facilitate increased use of public transit. In addition, the Project is expected to reduce fossil fuel consumption relative to the No Action Alternative, resulting in a beneficial effect. As a result, the Project would not contribute to potential cumulative effects resulting from planned development in the study area, and no adverse effect would occur.



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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4.7. Hazards and Hazardous Materials

4.7.1. Introduction to the Analysis

This section identifies existing areas of known contamination within or close to the Project area, and evaluates the Project's potential effects related to hazards and hazardous materials. For the purposes of this analysis, the study area for hazards and hazardous materials is an approximately 1-mile buffer from the proposed alignment and the MSF location options. The Project area is defined as the Project's proposed physical ground-disturbance footprint (e.g., track, platforms, MSF sites, transit power substations, and temporary construction areas). This section is based on information provided by Environmental Data Resources, Inc. (EDR) (EDR, 2014a).

4.7.2. Regulatory Setting

4.7.2.1. Federal Regulations

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) (42 United States Code [USC], Section 6901 *et seq.*) of 1976 provides the basic framework for federal regulation of nonhazardous and hazardous waste. RCRA establishes State responsibility for regulating nonhazardous waste, and controls the generation, transfer, storage, and disposal of hazardous waste through a comprehensive "cradle to grave" system of hazardous waste management techniques and requirements. The U.S. Environmental Protection Agency (U.S. EPA) is responsible for implementing RCRA. The law allows U.S. EPA to delegate the administration of the RCRA program to the various states, provided that the State programs meet or are more stringent than the federal requirements. In California, the California Environmental Protection Agency's Department of Toxic Substances Control (DTSC) is responsible for administering RCRA.

RCRA was amended and strengthened by Congress with the passing of the Hazardous and Solid Waste Amendments of 1984. These amendments to RCRA required the phasing out of land disposal of hazardous waste. Some of the other mandates of this strict law include increased enforcement authority for U.S. EPA; more stringent hazardous waste management standards; and a comprehensive underground storage tank (UST) program.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC Section 1906 *et seq.*), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes prohibitions and requirements concerning closed and abandoned hazardous waste sites; provides for liability of persons



responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified. The law authorizes two kinds of response actions:

- Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response; and
- Long-term remedial response actions that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on U.S. EPA's National Priorities List.

CERCLA also enabled the revision of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); more commonly called the National Contingency Plan. The Plan is the federal blueprint for responding to oil spills and hazardous substances releases. The National Oil and Hazardous Substances Pollution Contingency Plan specifies the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

4.7.2.2. State Regulations

California Hazardous Waste Control Law

As stated previously, RCRA allows states to develop their own programs to regulate hazardous waste. Prior to RCRA, California developed its own program by passage of the California Hazardous Waste Control Law (HWCL) (California Health and Safety Code, Part 25100 *et seq.*) in 1972. It should be noted that California's HWCL includes non-RCRA (i.e., California-regulated) hazardous waste. The law specifies two hazardous waste criteria (i.e., Soluble Threshold Limit Concentration and Total Threshold Limit Concentration) that are not required under RCRA, but are used in the waste determination process to assess whether a waste is a California-regulated hazardous waste. Primary authority for the Statewide administration and enforcement of California's HWCL rests with DTSC. However, local governments often provide most regulatory functions covering those who generate hazardous waste.

Hazardous Material Release Response Plans and Inventory Law

The Hazardous Material Release Response Plans and Inventory Law (California Health and Safety Code Section 25500 *et seq.*) requires businesses to develop a Hazardous Material Management Plan or a business plan for hazardous materials emergencies if they handle more than 500 pounds, 55 gallons, or 200 cubic feet of hazardous materials. The business plan is a document containing detailed information on the use and/or storage of hazardous materials at a given facility. This law is designed to reduce the occurrence and severity of hazardous materials releases. The Hazardous Materials Management Plan or business plan must be submitted to the Certified Unified Program Agency (CUPA), which for Sacramento County is the Environmental Management Department (SCEMD), and for Yolo County is the Environmental Health Services Division.



California Fire Code

The California Fire Code (Title 24, Part 9, California Code of Regulations) is part of the California Building Standards Code. The California Fire Code incorporates the Uniform Fire Code with necessary California amendments. This code prescribes regulations consistent with nationally recognized good practices for safeguarding life and property to a reasonable degree from the hazards of fire explosion; it also addresses dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; conditions hazardous to life or property in the use or occupancy of buildings or premises; and provisions to assist emergency response personnel.

California Department of Forestry and Fire Protection

The California Department of Forestry and Fire (CAL FIRE) is required by California law to categorize areas based on their potential fire hazard severity. These fire zones, called Fire Hazard Severity Zones, are based on increasing fire hazard: medium, high, and very high. CAL FIRE is also required to classify all lands in the State for the purpose of determining areas in which the financial responsibility of preventing and suppressing fires is primarily the responsibility of the State, of the federal government, or of a local government (Public Resources Code [PRC] Section 4125).

Under California PRC Section 4291, a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, or land that is covered with flammable material, is required to maintain a defensible space of 100 feet from each side and from the front and rear of the structure. Fuels are to be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite a structure (PRC Section 4291[a][1]). Subject to any other applicable provision of law, a State or CAL FIRE official, at his or her discretion, may authorize an owner or agent of the property to construct a firebreak, or implement appropriate vegetation management techniques, to ensure that defensible space is adequate for the protection of, among other things, an aboveground storage tank (AST), hazardous materials facility, or similar facility on the property (PRC Section 4291.3).

4.7.2.3. Local Regulations

Local Regulatory Oversight

SCEMD, on behalf of the City of Sacramento, and the City of West Sacramento, Hazardous Materials Division, are responsible for regulating the operations of businesses and institutions that handle hazardous materials or generate hazardous wastes in Sacramento and West Sacramento. As part of the State-mandated CUPA program, administered by the California Environmental Protection Agency, these entities coordinate regulation and enforcement for the following programs related to hazardous materials and wastes: hazardous materials business plan/emergency response plan, hazardous waste, UST, AST, and spill prevention countermeasures and control.



Sacramento County—Area Plan for Emergency Response to Hazardous Materials Incidents

The Area Plan for Emergency Response to Hazardous Materials Incidents (Area Plan), developed by SCEMD, provides information for agencies involved in hazardous material response in Sacramento County. The local agencies that may be called upon during an emergency are SCEMD, Sacramento County Sheriff's Department, and the Sacramento City Fire Department. Other agencies, such as the California Office of Emergency Services, Sacramento County Health Department, Public Works, and the California Highway Patrol, may be called upon if additional resources are necessary to respond to a hazardous materials incident.

City of Sacramento

The City of Sacramento's 2030 General Plan includes policies established to ensure protection of the public from hazardous materials in the Hazardous Materials section of its Public Health and Safety Element. The goal of the section is to protect and maintain the safety of residents, businesses, and visitors by reducing, and where possible, eliminating exposure to hazardous materials and waste (City of Sacramento, 2009a). Relevant hazardous materials policies are described below.

- **PHS 3.1.1. Investigate Sites for Contamination.** The City shall ensure buildings and sites are investigated for the presence of hazardous materials and/or waste contamination before development for which City discretionary approval is required. The City shall ensure appropriate measures are taken to protect the health and safety of all possible users and adjacent properties.
- **PHS 3.1.2. Hazardous Material Contamination Management Plan.** The City shall require that property owners of known contaminated sites work with Sacramento County, the State, and federal agencies (where required) to develop and implement a plan to investigate and manage sites that contain or have the potential to contain hazardous materials contamination that may present an adverse human health or environmental risk.
- **PHS 3.1.4. Transportation Routes.** The City shall restrict transport of hazardous materials within Sacramento to designated routes.

West Sacramento Standard Multi-Hazard Emergency Plan

The jurisdictions in the Yolo Operational Area, including the cities of Davis, West Sacramento, Winters, and Woodland, have prepared a Standard Multi-Hazard Emergency Plan that addresses each city's planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and nuclear defense operations for areas in each city's jurisdictional boundaries. It provides operational concepts related to various emergency situations, identifies components of the local emergency management organization, and describes each city's overall responsibilities for protecting life and property during an emergency.



4.7.3. Affected Environment

4.7.3.1. Database Searches

Hazardous materials are those that could cause injury or death, or damage or pollute land, air, or water. Hazardous wastes are defined as substances that are ignitable (flammable), corrosive, toxic, explosive, or reactive; that is, they react with air, water, or acids or bases. Federal and State laws generally define hazardous waste as any waste or combination of waste that because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either cause or significantly contribute to an increase in mortality or serious illness, or pose a substantial hazard to human health or the environment when improperly managed.

To assess the potential for the Project to encounter hazardous materials during construction, and as a result, create a significant hazard to the public or the environment, a comprehensive federal, State, and local records review was accomplished through a computer database search of facilities that appear on a series of government lists compiled pursuant to Government Code Section 65962.5. The corridor database search for the study area was performed by EDR (2014a, b).

The following subsections provide a discussion of the number of surrounding facilities that have been identified in the search radius in the various categories. However, only sites where there is evidence of a release to the subsurface (leaking underground storage tank [LUST]) or known potential subsurface (soil or groundwater) contamination that may affect the Project area are discussed in any detail.

U.S. BROWNFIELDS. The U.S. BROWNFIELDS list is U.S. EPA's listing of Brownfields properties addressed by Cooperative Agreement Recipients and Targeted Brownfields Assessments. A review of the U.S. BROWNFIELDS list provided by EDR, dated September 24, 2013, revealed that there are 144 U.S. BROWNFIELDS sites in the area searched. Based on URS' review of the proximity of these sites to the proposed alignment, only 14 sites totaling 34 properties were identified adjacent to or in very close proximity to the proposed alignment. There was no information regarding property condition in any of the U.S. BROWNFIELDS listings.

2020 COR ACTION. U.S. EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 Universe contains a wide variety of sites. Some properties are heavily contaminated, while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations. The 2020 Action database listed two sites within ¼ mile of the proposed alignment. One listing is for the Union Pacific Sacramento Yard (rail yard) at 501 Jibboom Street in Sacramento; this was identified in several databases, including CORRACTS, Voluntary Cleanup Program, and State Response Sites (RESPONSE). The rail yard has a long history of operation in Sacramento and has several areas of documented soil and groundwater contamination. The rail



yard is working with regulatory agencies on the remediation of the property. It is an active cleanup site.

The other listing was for 850 South River Road, San Jose, California. This appears to be a reporting error, as 850 South River Road is also an address in West Sacramento. The listing indicates that the remedy for the site has been constructed.

LUST. California State’s Geotracker Database contains an inventory of reported LUST sites. There were 20 listings for sites in close proximity to the alignment. Of the 20 sites, 19 were listed as “Case Closed” status; and one site, Shell Oil Products at 1601 L Street, Sacramento, was listed as “Eligible for Closure.”

SLIC. The Spills, Leaks, Investigations and Cleanup (SLIC) program is designed to protect and restore water quality from spills, leaks, and similar discharges. There are four sites listed within ¼ mile of the proposed alignment on the SLIC database report. These include 401 T Street (rail yard)—listed as open but inactive. This site is covered under several different cleanup programs. 301 Capitol Mall (Sacrament Union)—listed as Inactive. 801 South River Road (Coast Oil Company) – listed as closed by County. 850 South River Road (Raley Field) – listed as Open in Verification Monitoring.

Sacramento County Contaminated Sites (CS). The CS database lists contaminated sites in Sacramento County. The majority of the listings are redundant to sites that are contained in other database lists. There were 19 sites listed on the CS database list.

CHMIRS. The California Hazardous Material Incident Report System (CHMIRS) database contains information on reported hazardous material incidents (accidental releases or spills). There were 13 sites listed within ¼ mile of the proposed alignment in the CHMIRS database.

4.7.3.2. Downtown Sacramento Railyard

The most prominent hazardous waste site listed in the EDR database report is the Downtown Sacramento Railyard, an approximately 240-acre site in the northern portion of the study area, at 401 I Street. The railyard site was used for heavy industrial activities to maintain and repair trains. Soil contamination has been documented across much of the site. Several areas have been remediated, and others are pending remediation. Groundwater is polluted with chlorinated solvents, volatile organic compounds (VOCs), metals, and petroleum hydrocarbons in a multi-zone plume that is approximately ½ mile long. The lateral extent of the groundwater impact includes the area encompassed by P Street to the south, 4th Street to the west, and 13th Street to the east (Figure 4.7-1). The South Plume is shown in blue on Figure 4.7-1 and is defined by the occurrence of solvents in groundwater ranging in depth between approximately 25 and 180 feet below ground surface. It extends from the Central Shops to downtown Sacramento (to approximately Q Street to the south, 5th Street to the West, and 12th Street to the East).



Since March 1993, approximately 650 gallons of pure liquid phase fuel have been removed by bailing activities from the wells at the site, and approximately 400,000 gallons a day of polluted groundwater is pumped and treated to control migration and reduce concentrations. To date,

approximately 840,000,000 gallons of contaminated groundwater have been pumped and discharged to the local wastewater treatment plant. Since August 1996, soil vapor extraction of the major VOC source areas has effectively removed approximately 12,500 pounds of VOCs. During the period between 1994 and 2000, approximately 500,000 tons of impacted soil were removed from the site, and as much as 230,000 cubic yards of moderately impacted soil have been approved for consolidation in an onsite landfill currently under construction in the northwestern corner of the property. The Central Valley Regional Water Quality Control Board is supporting the DTSC in the oversight of this cleanup.

4.7.4. Environmental Effects

This section includes an analysis to determine whether the Project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Release hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within $\frac{1}{4}$ mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; and as a result, would it create a significant hazard to the public or the environment;
- For a project in an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Based on the physical location of the Project in the cities of Sacramento and West Sacramento, the highly urbanized nature of the Project area, the proximity of the Project area to an airport or existing/proposed school, it was determined that there would be no effect from the following:

- For a project in an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.



- Release hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Therefore, these are not discussed further in the analysis.

4.7.4.1. No Action Alternative

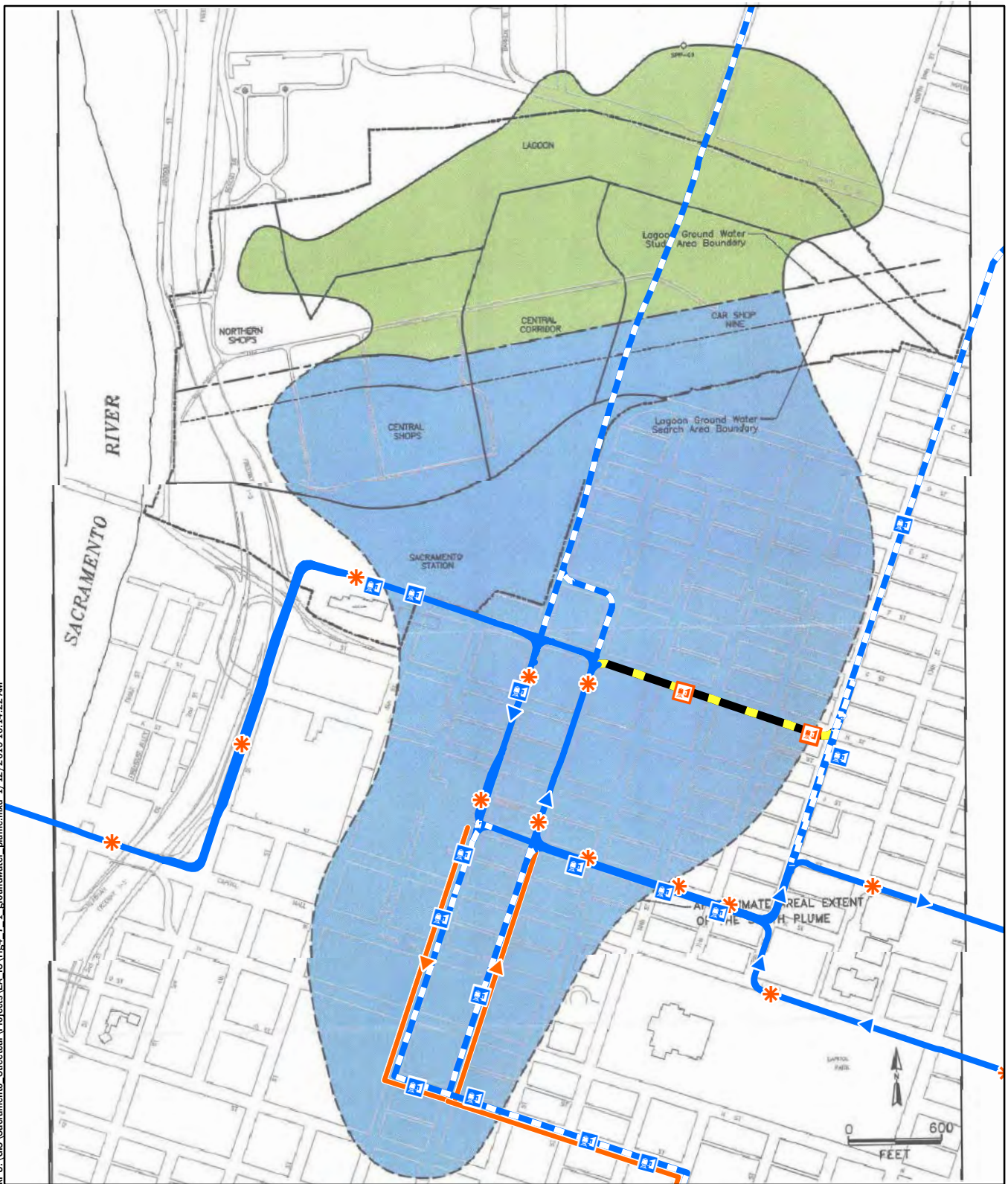
Because the No Action Alternative would not result in project-specific construction activities in the study area, no hazards or hazardous materials effects would occur. The No Action Alternative would retain existing conditions with surrounding development projects following all federal, State, and local requirements for addressing handling and management of hazardous materials and wastes.

4.7.4.2. Action Alternative

Routine Use of Hazardous Materials During Operation

Operation and maintenance of the streetcar would require the use of small quantities of common hazardous materials, which would be stored and used at the MSFs. Although the storage and use of some hazardous materials and the generation of hazardous wastes in the Project area may increase, the use, storage, handling, and disposal of hazardous materials would not change significantly. Similarly, for a new facility, hazardous materials would be stored, handled, and disposed in a similar fashion to that of the existing Academy Way light rail facility. Regardless of the option selected for MSF operation, all hazardous materials would be handled, managed, and disposed of in accordance with all applicable federal, State, and local regulations. Compliance with adopted plans and regulations mentioned above would ensure adverse effects would not occur from the routine transport, use, or disposal of hazardous materials.

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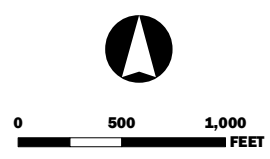
GROUNDWATER PLUME

January 2015 Downtown/Riverfront Streetcar Project
27560885 Sacramento & West Sacramento



FIGURE 4.7-1

- Candidate Stop Location
- Existing Light Rail Station
- New Light Rail Station
- Proposed Streetcar Alignment
- Existing Light Rail Route
- H Street LRT Relocation
- Maintenance Facility Access





Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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Potential Accident Conditions

Project design would comply with the Sacramento County Area Plan for Emergency Response to Hazardous Materials Incidents, the West Sacramento Standard Multi-Hazard Emergency Plan, and the California Fire Code. The streetcars proposed for use are electrically powered. Due to the lack of fossil fuel, there is little chance for release of hazardous materials or wastes into the environment due to an upset or accident condition associated with the streetcars themselves, and no adverse effects would occur.

Potential Contamination from Neighboring Sites

Although the Project is not on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, it may be impacted by the Sacramento Railyard site. As depicted in Figure 4.7-1, the lateral of the groundwater impact includes the area encompassed by P Street to the south, 4th Street to the west, and 13th Street to the east. As stated above, there are a number of database records that indicate additional sites close to the Project area that have confirmed soil and/or groundwater contamination. Unreported hazardous materials may also be encountered in the Project area that could generate conditions that would be a hazard to public health and the environment.

Implementation of the measures described below would ensure that the potential for exposure to contaminated soil and/or groundwater that could create a substantial hazard to the public or the environment from Project operation would not be adverse.

Risk of Wildland Fire

CAL FIRE has designated the Project area as an “LRA Unzoned” zone in the cities of Sacramento and West Sacramento (Figure 4.7-2). The Project area is relatively well developed, and there is little to no potential for wildland fires in the Project area.

4.7.4.3. Construction Effects

Routine Use of Hazardous Materials During Construction

Hazardous materials would be used in varying amounts during construction of the Project. The construction contractor would be responsible for the proper storage and disposal of any hazardous materials or wastes in accordance with all federal, State, and local laws and regulations. This may involve obtaining permits from the local regulatory agency for the storage of hazardous materials, if threshold quantities are exceeded, and a Waste Generator’s Identification Number from the State for the disposal of any hazardous wastes generated during the construction phase of the Project. No adverse effects through the routine use, generation, transport, or disposal of hazardous materials or wastes associated with construction activities would occur.

As with operation of the Project, compliance with the aforementioned regulations would ensure no adverse effects from foreseeable upset and accidental conditions would occur.



Subsurface Disturbance During Construction

Construction activities could involve surface disturbance or limited construction that requires the movement of soil by excavation, backfilling, and grading of hazardous materials (mainly contaminated soil) present in the subsurface. The Project has been designed, to the extent possible, to incorporate the streetcar into the existing built environment by installing the streetcar tracks in the existing roadway and using existing tracks where present along the proposed alignment. It is anticipated that only shallow excavations would be required for construction of new tracks where tracks do not currently exist. However, there may be areas where excavations would be deeper to remove soil with poor strength properties or where deeper holes will be drilled to anchor poles to support overhead power structures.

Based on the environmental database review, there is the potential that contaminated soil and possibly groundwater (if deeper excavations are required for some construction activities) may be encountered during construction of the Project. Therefore, the construction of the proposed alignment could potentially expose people or the environment to contaminants in soil and groundwater. Implementation of the measures described below will provide the information to mitigate the potential to create a significant hazard to the public or the environment during Project construction.

4.7.5. Measures to Minimize Harm

All hazardous materials used and wastes generated during construction and operation will be managed, handled, and disposed of in accordance with all applicable federal, State, and local laws, ordinances, and regulations. To mitigate the potential for exposure to subsurface contamination from neighboring sites, the following measure would be implemented:

Mitigation Measure HZ-1:—Site Investigation. To mitigate the potential for encountering unknown contaminated soil and/or groundwater in the Project area, a Phase I Environmental Site Assessment will be conducted along the proposed alignment and MSFs in areas where excavation or subsurface disturbance will take place close to sites with listed known soil or groundwater contamination. The Phase I investigation will be done during the design phase and completed prior to the completion of final design. The purpose of the Phase I investigation will be to determine whether suspected contamination, as listed in the records search, is actually present on the property, and if additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm. The Phase I investigation may include activities such as geophysical surveys, drilling, trenching, soil sampling, soil gas sampling, ground water sampling, and surface water sampling. If the Phase I investigation finds that additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm, then a Phase II investigation shall be required for areas where soil and/or groundwater contamination are suspected. The Phase II investigation will be conducted to determine the nature and extent of contamination. If the Phase II investigation concludes



there is a potential to encounter contaminated materials (during and post-construction), then a soil and groundwater management plan shall be developed and implemented. The soil and groundwater management plan shall provide detailed procedures to be followed in the event that contaminated materials are encountered (during and post-construction).

The information generated from implementation of the site investigation would be integrated into the operational design of the Project, and would limit the potential for adverse effects attributable to development on previously contaminated land.

4.7.6. Cumulative Effects

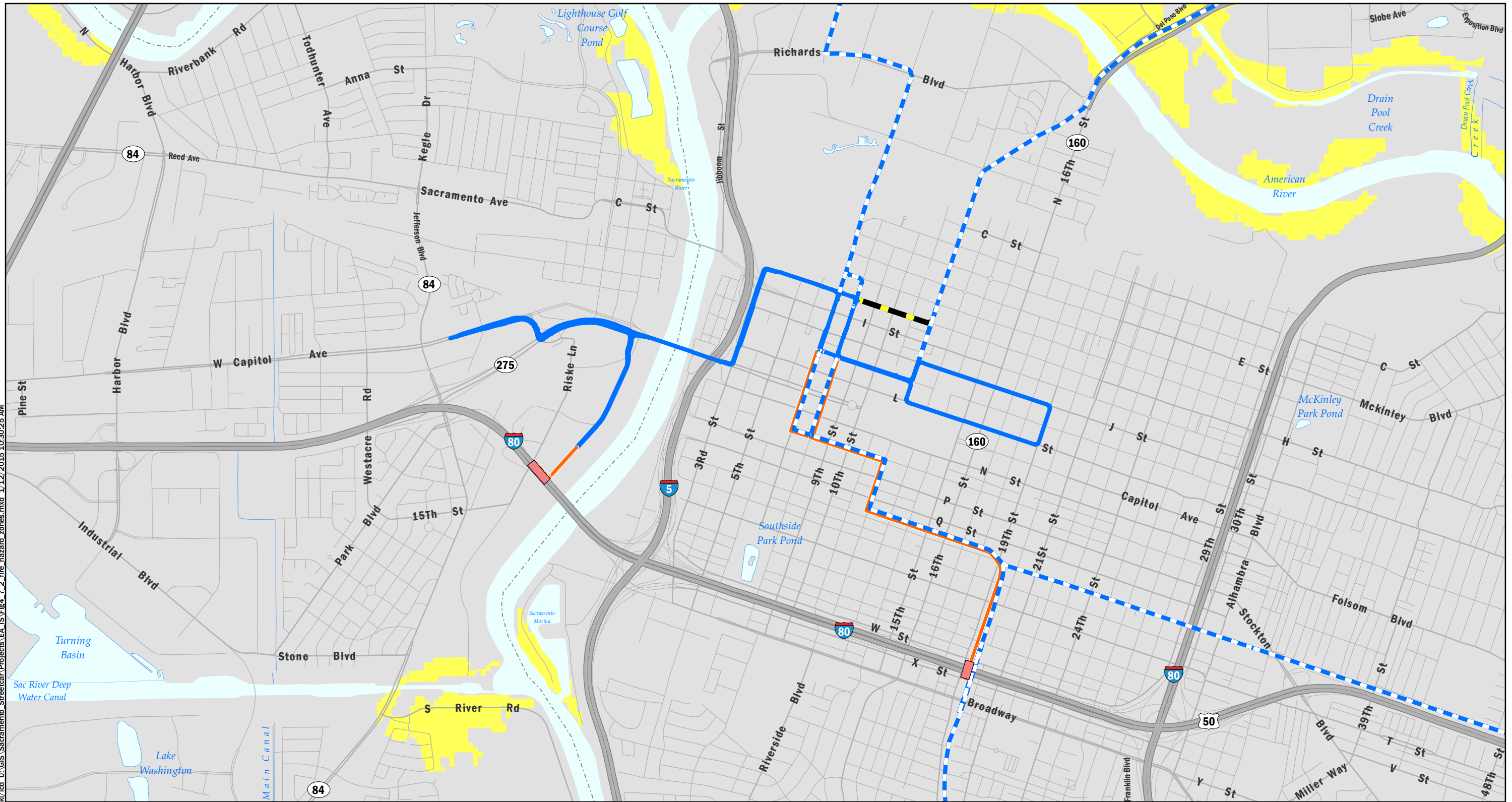
Implementation of planned development projects in the Project area would generally increase the handling and management of hazardous materials and wastes. Although the handling and management of these materials and wastes may increase, cumulative effects from Project operation with respect to how hazardous materials are stored, handled, and disposed would not change substantially. As a result, the Project would not contribute to potential cumulative effects resulting from hazards and hazardous materials in the study area, and no adverse effects would occur.



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

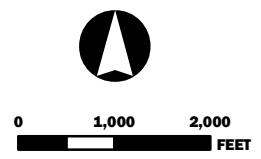
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Source: CalFIRE FRAP data, 2010

- | | |
|--------------------------------|-------------|
| Proposed Streetcar Alignment | Moderate |
| Existing Light Rail Route | High |
| H Street LRT Relocation | Very High |
| Maintenance Facility Access | LRA Unzoned |
| Potential Maintenance Facility | |



FIRE HAZARD SEVERITY ZONES

January 2015
27560885
Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.7-2



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4.8. Hydrology and Water Quality

This section evaluates the Project's potential effects related to hydrology and water quality. For the purposes of this analysis, the study area for hydrology and water resources is in the Sacramento River watershed and includes the cities of Sacramento and West Sacramento. The Project area is defined as the Project's proposed physical ground-disturbance footprint for construction and operation (e.g., track, equipment storage areas, substations, and temporary construction areas). This section also includes a discussion of the federal, State, and local regulatory framework applicable to construction and implementation of the Project. Generally, compliance with all applicable federal, State and local policies would ensure that potential effects related to hydrology and water quality would not be adverse, as discussed below.

4.8.1. Regulatory Setting

4.8.1.1. Federal Regulations

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) and prepares floodplain maps that are the basis for determining whether or not property owners must purchase flood insurance. FEMA's floodplain maps may also provide the basis for local development regulations, including restrictions on building in designated floodplains.

Floodplain Management (Executive Order 11988)

Executive Order 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid development in floodplains where there is a practicable alternative.

Clean Water Act

The CWA is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which established the basic structure for regulating discharges of pollutants to waters of the United States (U.S.). Section 303 of the CWA requires states to adopt water quality standards and identify waters that fail to meet standards for pollutants. Section 303(d) requires states to list these impaired waters and the total maximum daily loads established for the pollutants. The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) regulate activities in "waters of the U.S." through Section 401 of the CWA. A 401 Certification is necessary to obtain a 404 permit for construction of wetlands/where "waters of the U.S." are impacted (SWRCB, 2004). The Corps regulates the placement of fill or dredged materials that affect waters of the U.S., which include stream courses and jurisdictional wetlands. The Corps regulates these activities under the authority of Section 404 of the CWA. The Corps regulates any development that affects jurisdictional wetlands. Obtaining a Nationwide 404 permit requires coordination with the USFWS.



4.8.1.2. State Regulations

The Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act (Porter-Cologne) is the principal law governing water quality regulation in California. This statute established the SWRCB and the nine RWQCBs, which are charged with implementing its provisions. Porter-Cologne establishes a comprehensive program for the protection of water quality and the beneficial uses of water. It applies to surface waters, wetlands, and groundwater, and addresses both point and nonpoint sources. Porter-Cologne also incorporates many provisions of the CWA, such as delegation to the SWRCB and RWQCBs of the NPDES permitting program. Porter-Cologne is found in the California Water Code, beginning with Section 13000.

Title 23 of the California Code of Regulations contains administrative and regulatory elements of water quality and quantity management in California. The SWRCB was formed in 1967 when the State Water Rights Board and the State Water Quality Control Board were merged by the State Legislature, based on the realization that decisions affecting water quality and water rights are inseparable. Under its dual legal authority, the SWRCB allocates rights to the use of surface water, and together with the nine RWQCBs, protects water quality in all waters of the State. Each RWQCB has responsibility for individual permitting, inspection, and enforcement actions in the respective hydrologic regions. The study area is in Region 5, the Central Valley RWQCB.

National Pollutant Discharge Elimination System Permits

Surface water quality is regulated by the NPDES, developed by the U.S. Environmental Protection Agency (U.S. EPA) in accordance with Section 303 of the CWA. In the State of California, the SWRCB administers the NPDES program, with implementation and enforcement by the RWQCBs. The NPDES program, designed to protect surface water quality, is applicable to all discharges to waters of the U.S., including stormwater discharges associated with municipal drainage systems, construction activities, industrial operations, and “point sources” (such as wastewater treatment plant discharges and other direct discharges to water bodies).

Under the NPDES program, stormwater discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule, or the applicable RWQCB Basin Plan. The applicable Basin Plan for the study area and Project area is the Water Quality Control Plan for the Sacramento River and San Joaquin River basins (CVRWQCB, 2011). Different portions of the Project are in different jurisdictions, and would comply with the appropriate permit, as described below.

Projects involving construction activities that disturb an acre or more of land are required to apply for coverage under the SWRCB’s NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, 2009-0009-DWQ, as amended by 2010-0014-DWQ (General Construction Permit). To obtain coverage under the permit, the Project would submit Permit Registration Documents that would include a Notice of Intent (NOI) to comply



with the general construction permit, a risk assessment to address Project sediment risk and receiving water (watercourse such as a stream or ocean into which stormwater is discharged) risk, post-construction hydrology calculations, a site map, and a Project-specific Stormwater Pollution Prevention Plan (SWPPP) for construction activities. BMPs that would be implemented during construction must be identified in the SWPPP. Additionally, post-construction management measures must be prepared, and a long-term maintenance plan must be implemented at the completion of construction (for projects constructed on or after September 2, 2012, this is mandatory). Projects that are in an area covered by other NPDES programs, as described below, do not need separate coverage under the General Construction Permit.

The City and County of Sacramento is part of the NPDES Phase I Municipal Program, and has obtained an NPDES stormwater permit (Order Number R5-2008-0142, NPDES Number CAS082597) to discharge stormwater from municipal separate storm sewer systems (MS4s) in the respective jurisdictions (Central Valley RWQCB [CVRWQCB], 2010). Under this permit, Sacramento County and specified cities in the County, including Sacramento, have developed a Stormwater Quality Improvement Plan that includes measures to reduce the discharge of pollutants in stormwater to the maximum extent practicable, and to prohibit non-stormwater discharges into the MS4 (County of Sacramento et al., 2009). This permit also addresses stormwater discharges during construction activities, and post-construction requirements that supersede requirements in the General Construction Permit for projects in the City's MS4.

In February 2013, the SWRCB adopted the revised NPDES Phase II General Permit for Waste Discharge Requirements for Stormwater Discharges from small MS4s, Order Number 2013-0001-DWQ (SWRCB, 2013) [NPDES NO. CAS000004]. The City of West Sacramento complies with the NPDES Phase II Small MS4 General Permit, and has developed a SWMP Planning Document to address stormwater quality (City of West Sacramento, 2003).

Another required permit is the statewide General Permit for Discharges of Stormwater Associated with Industrial Activities (SWRCB Water Quality Order No. 97-03-DWQ, NPDES No. CAS000001). Qualifying industrial sites, such as transportation facilities that conduct any type of vehicle maintenance (e.g., fueling, cleaning, repairing) are required to prepare SWPPPs describing BMPs that will be employed to protect water quality. Industrial facilities are required to use best conventional pollutant control technology for control of conventional pollutants, and best available technology economically achievable for toxic and nonconventional pollutants. Monitoring of runoff leaving the site is also required. For transportation facilities, this permit applies only to vehicle maintenance shops and equipment-cleaning operations. Because the Project would include preventative maintenance and interior/exterior cleaning, the Project would need to comply with the General Industrial Permit. The State is currently updating this general permit; the final draft was issued in 2013 for public comment, and the final is expected to become effective sometime in 2014. Changes to the permit are expected to include the establishment of numeric action levels that reflect the U.S. EPA benchmark values for selected parameters; a compliance storm event (the 10-year, 24-hour event); minimum BMP requirements; a revised monitoring protocol; and three levels of corrective actions if a numeric action level is exceeded.



Caltrans is responsible for the design, construction, management, and maintenance of the State highway system, including freeways, bridges, tunnels, Caltrans' facilities, and related properties; it is subject to the permitting requirements of CWA Section 402(p). Caltrans' discharges consist of stormwater and nonstormwater discharges from State-owned rights-of-way, maintenance facilities, and construction activities. These discharges are regulated under a Statewide permit (Order Number 2012-0011-DWQ). Caltrans has developed its own SWMP that describes the procedures and practices used to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters. Caltrans' jurisdiction covers the Tower Bridge and easements along Caltrans roads.

Flood Control Regulations

California Water Code, Division 5, Flood Control (Sections 8000 through 8457), sets forth responsibilities of the California Department of Water Resources (DWR), California Central Valley Flood Protection Board (CCVFPB), Flood Control Districts, counties, and cities with respect to regulation and control of floodwaters. Section 8325 establishes the State's cooperation under the NFIP. The Cobey-Alquist Flood Plain Management Act (Sections 8400 through 8415) establishes mandatory floodplain management objectives, prohibiting inappropriate development that may endanger life or significantly restrict the carrying capacity of designated floodways. The Act states that the primary responsibility for planning, adopting, and enforcing land use regulations to accomplish floodplain management rests with local levels of government.

The California Water Plan (DWR, 2009) is the State's strategic plan for managing and developing water resources and is prepared in accordance with Water Code Sections 10004 through 10013. The Water Plan addresses goals and recommendations related to various water management objectives, including those pertaining to flooding and floodplain areas.

CCVFPB maintains jurisdiction over all flood control work constructed with funds from federal/State cost-sharing agreements. In general, CCVFPB's jurisdiction related to river levees extends from a point 10 feet landward of the levee to a point 10 feet landward on the opposite bank. This zone includes the levee and the riverbed. An encroachment permit must be obtained from CCVFPB for any activity along or near federally or CCVFPB-designated flood control project levees and floodways.

The Central Valley Flood Protection Act of 2008 (California Water Code Section 9600-9603) establishes the 200-year flood event as the minimum level of flood protection for urban and urbanizing areas. As part of the State's FloodSafe program, those urban areas protected by flood control project levees must receive protection from the 200-year flood event level by 2025. DWR and CCVFPB have collaborated with local governments and planning agencies to prepare the Central Valley Flood Protection Plan (CVFPP), which was adopted on June 29, 2012 (DWR, 2012). The objective of the CVFPP is to create a system-wide approach to flood management and protection improvements for the Central Valley (which includes the Sacramento Valley), that receives protection from facilities of the State Plan of Flood Control.



Project areas in flood hazard zones must adhere to the requirements set forth by the State of California Building Code, which are consistent with conditions outlined by FEMA for nonresidential development in a 100-year floodplain. According to California Building Code Section 3106, new or replacement mechanical and electrical systems must be protected to prevent water accessibility and accumulation if placed below base flood (100-year event) elevation. The majority of the Project area is in the flood hazard zone designated as being protected by levees from the 100-year flood event. The Sacramento River is a designated 100-year floodplain in the levees. For further details, please see Section 4.8.3.2.

California Department of Fish and Wildlife

According to California Fish and Game Code Division 2, Chapter 6, Section 1602, any construction activity that may substantially affect or deposit material into a river, stream, or lake requires written notification to the Regional office of the CDFW (CDFW, 2014a). The Sacramento River at the location of the Project is in Region 3, the Bay Delta Region, which has jurisdiction in Sacramento County west of I-5 and in Yolo County south of I-80.

4.8.1.3. Local Regulations

City of Sacramento

The City of Sacramento adopted the 2030 General Plan on March 3, 2009. Water resource policies established to ensure protection of surface water and groundwater quality from runoff and pollution are presented under Environmental Resources: Water Resources, Goal ER 1.1, Water Quality Projection. Examples of pertinent water resource policies are described below (City of Sacramento, 2009a).

- **Policy ER 1.1.3 Stormwater Quality.** The City shall control sources of pollutants and improve and maintain urban runoff water quality through stormwater protection measures consistent with the City's National Pollution Discharge Elimination System (NPDES) Permit.
- **Policy ER 1.1.4 New Development.** The City shall require new development to protect the quality of water bodies and natural drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, BMPs and Low Impact Development (LID), and hydromodification strategies consistent with the city's NPDES Permit.
- **Policy ER 1.1.5 No Net Increase.** The City shall require all new development to contribute no net increase in stormwater runoff peak flows over existing conditions associated with a 100-year storm event.
- **Policy ER 1.1.6 Post-Development Runoff.** The City shall impose requirements to control the volume, frequency, duration, and peak flow rates and velocities of runoff from development projects to prevent or reduce downstream erosion and protect stream habitat.
- **Policy ER 1.1.7 Construction Site Impacts.** The City shall minimize disturbances of natural water bodies and natural drainage systems caused by development, implement measures to protect areas from erosion and sediment loss, and continue to require construction contractors



to comply with the City's erosion and sediment control ordinance and stormwater management and discharge control ordinance.

The City of Sacramento has developed policies concerning flooding in its jurisdiction for the 2030 General Plan. These policies are presented under Environmental Constraints: Flooding Hazards, Goal EC 2.1, Flood Protection. Policies that potentially affect the Project are listed below (City of Sacramento, 2009a).

- **Policy EC 2.1.1 Interagency Flood Management.** The City shall work with local, regional, State, and Federal agencies to maintain an adequate information base, prepare risk assessments, and identify strategies to mitigate flooding impacts.
- **Policy EC 2.1.2 Interagency Levee Management.** The City shall work with local, regional, State, and Federal agencies to ensure new and existing levees are adequate in providing flood protection.
- **Policy EC 2.1.3 Funding for 200-year Flood Protection.** The City shall continue to cooperate with local, regional, State, and Federal agencies in securing funding to obtain the maximum level of flood protection that is practical, with a minimum goal of achieving at least 200-year flood protection as quickly as possible.
- **Policy EC 2.1.4 Floodplain Storage Maintenance.** The City shall encourage the preservation of urban creeks and rivers to maintain existing floodplain storage.
- **Policy EC 2.1.5 Floodplain Requirements.** The City shall regulate development within floodplains in accordance with State and Federal requirements and maintain the City's eligibility under the National Flood Insurance Program.
- **Policy EC 2.1.6 New Development.** The City shall require evaluation of potential flood hazards prior to approval of development projects.
- **Policy EC 2.1.7 Levee Setbacks for New Development.** The City shall prohibit new development within a minimum distance of 50 feet of the landside toe of levees. Development may encroach within this 50-foot area provided that "oversized" levee improvements are made to the standard levee section consistent with local, regional, State, and Federal standards.
- **Policy EC 2.1.8 Dedication of Levee Footprint.** The City shall require new development adjacent to a levee to dedicate the levee footprint in fee to the appropriate public flood control agency.
- **Policy EC 2.1.11 Levees Used to Access Developments.** The City shall prohibit new development from using levees for primary access.
- **Policy EC 2.1.13 Unobstructed Access to Levees.** The City shall provide unobstructed access, whenever feasible, on City-owned levees for maintenance and emergencies and require setbacks and easements for access to levees from private property.
- **Policy EC 2.1.14 Comprehensive Flood Management Plan.** The City shall maintain, implement, update, and make available to the public the local Comprehensive Flood Management Plan.



The City of Sacramento has several ordinances related to water quality. The Sacramento City Code includes a chapter covering Stormwater Management and Discharge Control (Chapter 13.16 of the Sacramento City Code), which requires compliance with general stormwater permits issued by U.S. EPA, SWRCB, RWQCB, or the City of Sacramento. In accordance with the Grading, Erosion, and Sediment Control Ordinance (Chapter 15.88 of the Sacramento City Code), construction projects that move 50 cubic yards or more of soil require a grading permit, and must prepare a grading plan and implement erosion and sediment control measures during construction activities.

To comply with the NPDES Phase I Municipal Stormwater permit, the City of Sacramento requires new development and redevelopment projects to incorporate appropriate pollution prevention measures (source and treatment control measures), and encourages projects to incorporate low-impact development features into site planning and design. These pollution prevention measures are identified in the Stormwater Quality Design Manual for the Sacramento and South Placer regions (Sacramento Stormwater Quality Partnership, 2007), and the Stormwater Quality Improvement Plan (Sacramento County et al., 2009). In addition to these documents, the City of Sacramento has developed BMPs for industrial projects (Sacramento Stormwater Management Program, 2004).

The City of Sacramento's Floodplain Management Regulations (Chapter 15.104 of the Sacramento City Code) regulate the following developmental impacts: filling, grading or erosion; alteration of natural flood plains, stream channels or water courses; the imposition of barriers that increase flood hazards; or any other impacts that aggravate or cause flood hazards. The regulations address fill and placement of structures in FEMA-designated 100-year floodplains. Most of the study area is classified as Flood Zone X on FEMA's Flood Insurance Rate Maps (FIRMs), which means that there is moderate or minimal risk of flooding, because the areas are protected by the levees. Further details are provided in Section 4.8.3.2.

City of West Sacramento

The City of West Sacramento General Plan Policy Document addresses goals and guidelines for projects in its jurisdiction. The current General Plan was adopted in 1990, and amended most recently in 2004 (City of West Sacramento, 1990c). The General Plan policies that pertain to storm drainage and flooding are included in Section IV, Public Facilities and Services, under Goal C. Policies that are potentially relevant to the Project are listed below.

Goal C: To maintain an adequate level of service in the City's storm drainage system to accommodate runoff from existing and future development and to prevent property damage due to flooding.

Policy 1. Where practical and economical, the City shall upgrade existing drainage facilities as necessary to correct localized flooding problems.

Policy 2. The City shall continue to expand and develop storm drainage facilities to accommodate the needs of existing and planned development.



Policy 4. The City shall, through a combination of drainage improvement fees and other funding mechanisms, ensure that new development pays its fair share of the costs of drainage system improvements.

Policy 5. The City shall cooperate with other responsible agencies in ensuring that levees surrounding the city are maintained and improved to provide a minimum 200-year flood protection.

Section VI of the West Sacramento General Plan, Natural Resources, identifies policies that pertain to water quality under Goal A. Policies that are potentially relevant to the Project are listed below.

Goal A: To protect water quality in the Sacramento River, Sacramento Deep Water Ship Channel, Lake Washington, and the area's groundwater basin.

Policy 3. The City shall not approve new development that has a significant potential for adversely affecting water quality in the Sacramento River, the Deep Water Ship Channel, Lake Washington, or the area's groundwater basin.

Policy 5. The City shall use the CEQA process to identify and avoid or mitigate potential groundwater pollution problems resulting from new commercial and industrial development.

Policy 7. The City shall implement measures to minimize the discharge of sediment into its watercourses.

The City of West Sacramento also expresses its concern for public safety from flood hazards, as indicated by Goal B in Section VII of the General Plan, Health and Safety. West Sacramento has developed policies in response to its goal of pursuing flood safety, as discussed below.

Goal B: To prevent loss of life, injury, and property damage due to flooding.

Policy 1. The City shall continue to participate in the National Flood Insurance Program. To this end, the City shall ensure that local regulations are in full compliance with standards adopted by the Federal Emergency Management Agency.

Policy 3. Nonresidential development shall be anchored and flood-proofed to prevent damage from the 100-year flood or, alternatively, elevated to at least 12 inches above the localized 100-year flood level.

Policy 5. New development shall be designed to prevent the diversion of floodwaters onto neighboring parcels.

Policy 6. Construction of storm drainage improvements shall be required, as appropriate, to prevent flooding during periods of heavy rainfall.



Policy 10. The City shall discourage uses that promote the erosion or structural deterioration of levees.

Policy 11. The City shall impose appropriate conditions on grading projects performed during the rainy season to ensure that silt is not conveyed to storm drainage systems.

The City of West Sacramento has developed an SWMP in response to the Small MS4 General Permit. The SWMP addresses water quality effects from construction sites, requiring construction site operators to control construction site pollutant sources. New developments must include control measures to protect stormwater quality from new sources of constituents into stormwater, and increased impervious areas that generally increase runoff rates and quantity (City of West Sacramento, 2003). West Sacramento generally requires grading permits per Ordinance 88-20. However, according to Item G of West Sacramento Municipal Code Section 15.08.070, projects exempt from this requirement include construction or maintenance of public facilities in a public right-of-way under city or governmental supervision (City of West Sacramento, 2006).

The West Sacramento Municipal Code requires that uses vulnerable to floods be protected against flood damage at the time of initial construction (Chapter 18.04 of the West Sacramento Municipal Code). It also includes methods and provisions to control filling, grading, dredging, and other development that may increase flood damage. In addition, the City of West Sacramento requires a Flood Development Permit for construction activity in the 100-year floodplain (Chapter 18.16 of the West Sacramento Municipal Code).

West Sacramento Area Flood Control Agency

The West Sacramento Area Flood Control Agency (WSAFCA) includes the City of West Sacramento, Reclamation District 537, and Reclamation District 900. This Joint Powers Authority was established in 1994 to plan, construct, and finance flood control projects within its boundaries. WSAFCA also formed an assessment district in 1995 to coordinate funding for flood protection projects in its jurisdiction (WSAFCA, 2007). WSAFCA coordinates with Corps, DWR, and CCFVPB to improve flood safety in West Sacramento.

4.8.2. Affected Environment

4.8.2.1. Existing Surface Water Conditions

The study area is in the Sacramento River watershed, which is the largest watershed entirely in California. The Sacramento River flows south from near Mount Shasta until it empties into the San Joaquin River in the Sacramento River Delta, and ultimately flows into San Francisco Bay.

The Sacramento River separates Sacramento County and Yolo County. Based on long-term flow measurements at the U.S. Geological Survey (USGS) gaging station on the Sacramento River at Freeport (USGS 11447650), approximately 13 miles downstream of the Project area, the estimated average annual runoff is on the order of 17,000,000 acre-feet (MWH, 2006). Based on 30 years of



data records (1968 through 1998) that include a variety of water-year types, monthly average flows in the Sacramento River have ranged from a low of 4,500 cubic feet per second (cfs) in October 1978, to a maximum of 87,000 cfs in January 1997. Average monthly flows for the 30 years of record range between 13,000 and 40,600 cfs, with the lowest flows occurring in October, and the highest flows in February (MWH, 2006).

The American River is a major tributary to the Sacramento River. The confluence of the two rivers is approximately 0.5 mile north of the Project area. Nimbus Dam and Folsom Dam regulate flows to the lower American River, where mean annual flow is on the order of 3,300 cfs, with a channel capacity of 115,000 cfs (MWH, 2006).

The eastern portion of the Project area is in the City of Sacramento. Most of the runoff from the central area of Sacramento City is collected by a combined storm and sanitary sewer system, referred to as the Combined Sewer System. The combined collection flows are managed by the Combined Wastewater Collection and Treatment System operated by the City of Sacramento. The Combined Wastewater Collection and Treatment System is regulated under a separate NPDES permit (Order Number R5-2010-004), and not by the Stormwater Permit for Sacramento's City urban stormwater. Although there are some areas in the central City that have separate sewer and storm drainage systems, the majority of the Project area in Sacramento is served by the combined system. In particular, the site for the Sacramento MSF option is in the combined system area, and not the area served by the City's MS4.

The western portion of the Project area is in the City of West Sacramento, where stormwater generally drains through surface ditches into a main drain. Water collected in the main drain is discharged via pumping into the Deep Water Ship Channel, which drains into San Francisco Bay, or the Yolo Bypass, which drains into the Sacramento-San Joaquin Delta. These discharges are regulated by the NPDES Phase II General Permit for small MS4s.

4.8.2.2. Flooding and Levees

The most common type of flooding in the Sacramento area—riverine flooding—occurs when streams reach bank-full capacity, often following an extended period of rainfall that saturates soils. As soils become more saturated, the likelihood of flooding increases. High peak flows and volumes are characteristic of both riverine and urban stormwater flooding. Urbanization has increased impervious areas in Sacramento, which explains high peak flows and volumes that increase flood risk after storm events (County of Sacramento, 2005). The Sacramento and Yolo bypasses west of Sacramento accommodate high river flows. Levee safety is constantly being revisited and reassessed, as described in the CVFPP (DWR, 2012), and FEMA's revisions of the FIRMs. Furthermore, as part of the State's FloodSafe program, urban areas protected by flood control project levees must receive protection from the 200-year flood event level by 2025 (DWR, 2014).

According to the current FIRM for County and City of Sacramento (Map Numbers 06067C0160H and 06067C0180H, which have an effective date of August 16, 2012), the Project area in Downtown Sacramento is designated as either Flood Zone X (areas protected by levees from the 100-year



flood) or Other Areas Zone X (areas determined to be outside of the 500-year flood) (Figure 4.8-1) (FEMA, 2012a; 2012b). The Sacramento River is designated as Flood Zone AE, which is the 100-year floodplain with base flood elevations determined. At the Tower Bridge crossing, the base flood elevation for the Sacramento River is approximately Elevation 33.5 feet (North American Vertical Datum of 1988) (FEMA, 2012a).

For Yolo County and the City of West Sacramento, the most recent FIRM (Map Number 0607280005B) from FEMA has an effective date of January 19, 1995, and designates the Project area in West Sacramento to be protected by the existing levee system from 100-year flooding (FEMA, 1995). However, according to a recent study, a preliminary reevaluation by the City of West Sacramento and WSAFCA indicates the levees in West Sacramento do not provide the minimum required flood protection (200-year level), according to the Corps' current criteria (City of West Sacramento, 2009b). The City and the Corps are implementing levee improvements that have not yet been completed. FEMA also is in the process of updating the FIRM for the City of West Sacramento. Until the revised FIRM is issued and becomes effective, the flood zone designation for the Project area in the City of West Sacramento is Flood Zone X, areas protected by levees from the 100-year floods (City of West Sacramento, 2009b). As of the preparation of this Draft EA/IS, no new FIRM has been issued.

Although unlikely, a failure of an upstream dam such as Folsom Dam or Nimbus Dam could inundate both Downtown Sacramento and West Sacramento. For planning purposes, the State Office of Emergency Services, with information from the U.S. Bureau of Reclamation and Department of Public Works, has the responsibility to provide local governments with critical hazard response information, including flooding from dam inundation. Although the occurrence of dam failure inundation is based on extremely remote probabilities, the counties and cities have plans in place for the evacuation of people from areas subject to inundation from a dam failure (City of Sacramento, 2009a).

4.8.2.3. Groundwater

Both Sacramento and West Sacramento lie in the Sacramento Valley groundwater basin as defined by DWR (DWR, 2006), but in separate sub-basins. The Downtown Sacramento portion of the Project area is in the Central Basin, as defined by the Central Sacramento County Groundwater Forum (CSCGF, 2003; MWH, 2006). The Central Basin includes both a shallow and deep aquifer from which Sacramento draws its water supply. In general, the shallow aquifer extends to 100 feet below ground surface (bgs), and the deeper aquifer extends from approximately 200 to 300 feet bgs (MWH, 2006).

The West Sacramento portion of the Project area is in the Yolo groundwater sub-basin. The shallow aquifer occurs at a depth between 0 and 220 feet bgs; an intermediate aquifer occurs between 221 and 600 feet bgs; and the deep aquifer occurs at a depth from approximately 601 to 1,500 feet bgs (YCFWCWD, 2006).

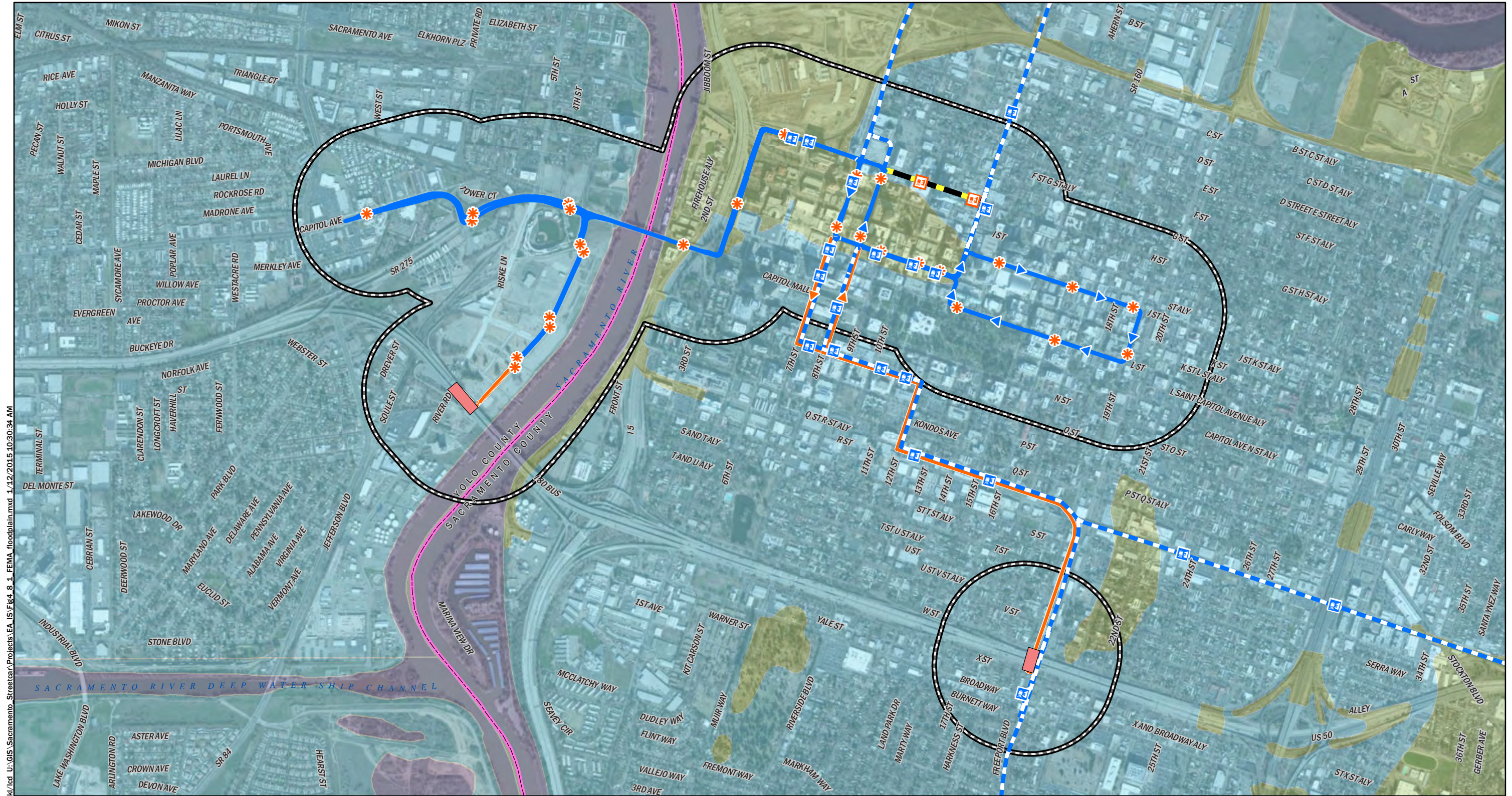


Although groundwater levels fluctuate seasonally, long-term data for groundwater monitoring wells in the vicinity of the Project area show that water levels have remained fairly consistent. In general, groundwater levels in Downtown Sacramento range from elevations of approximately 0 feet mean sea level (msl) to approximately 10 feet msl (CSC, 2006). Surface elevations in Downtown Sacramento range from on the order of 25 feet at the levee to 20 feet at the proposed turnaround at 15th Street (Topozone.com, 1999-2007). Therefore, groundwater in the eastern portion of the Project area would be approximately 10 to 25 feet bgs. The groundwater elevation in West Sacramento near the Project area was approximately 0 feet msl in 1996, representing a period of recovery after an extended dry period (YCFCWCD, 1996), and approximately 10 feet in Spring 2003 and 2004 (YCFCWCD, 2003; 2004), following a relatively wet period; the ground surface elevation is on the order of 15 feet near the route terminus, to 35 feet at the Sacramento River Levee (Topozone.com, 1999-2007). Therefore, groundwater in the western portion of the Project area would be approximately 10 to 35 feet bgs. Groundwater elevations are influenced by relative wetness or dryness at the time pumping for irrigation begins (YCFCWCD, 2003).

4.8.2.4. Water Quality

Water quality for the Sacramento River is generally good (CVRWQCB, 2011). The exceptions to the generally high water quality include the presence of mercury, pesticides, polychlorinated biphenyls (PCBs), and an unknown toxicity in the Sacramento River in the vicinity of the Project area. Therefore, this section of the river is designated as an impaired water body on CVRWQCB's 303(d) list (CVRWQCB, 2010). The sources of these pollutants are historical operations, such as mining and agriculture. In addition, alkalinity and minerals are found in Sacramento River water at moderate levels. Also, turbidity levels generally increase during storm events due to reservoir releases or stormwater runoff (MWH, 2006).

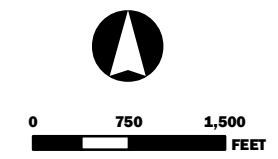
Groundwater in the Downtown Sacramento area is generally good quality, suitable for nearly all uses, with the exception of documented areas of contamination and localized quality issues (e.g., a few locations with elevated levels of total dissolved solids, iron, manganese, arsenic, and nitrate).



U:\GIS\Sacramento_Streetcar\Projects\EA_IS\Fig. 4.8-1_FEMA_floodplain.mxd 1/12/2015 10:30:34 AM
 Source: Basemap Imagery Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Floodplains, FEMA, 2013.

- | | | |
|------------------------------|--------------------------------|---|
| Candidate Stop Location | Potential Maintenance Facility | Flood Zone |
| Existing Light Rail Station | 1/4-Mile Buffer | AE - Special flood hazard areas subject to inundation by the 1% annual chance flood (100-year flood) and base flood elevation determined. |
| New Light Rail Station | County Boundary | X - Areas protected by levees from 1% annual chance flood |
| Proposed Streetcar Alignment | | Other X - Areas determined to be outside the 0.2% annual chance floodplain |
| Existing Light Rail Route | | |
| H Street LRT Relocation | | |
| Maintenance Facility Access | | |

- Notes**
1. City of Sacramento is covered by FIRMs 06067C0160H and 06067C0180H, effective date August 16, 2012.
 2. City of West Sacramento is covered by FIRM 0607280005B, effective date January 19, 1995. Until revised FIRM is finalized, the designation for the City is Flood Zone X (areas protected by levees from 100-year floods) (City of West Sacramento, 2009).





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In general, the concentrations of these constituents, while elevated, are either not detected or below the applicable standard in wells in the Central Basin (SCGA, 2010).

Historical operations unrelated to the Project have adversely impacted groundwater conditions in the vicinity of the Project area. One specific source of groundwater contamination in Downtown Sacramento is the former Union Pacific Railroad (UPRR) yard, north of the proposed streetcar route (Nolte, 2011). The large groundwater plume associated with the UPRR yard contains chlorinated solvents and 1,4-dioxane, and is known to have impacted groundwater beneath the Project area. The approximate lateral extent of the groundwater plume extends from the UPRR yard south to P Street, west to 4th Street, and east to 13th Street. Based on monitoring well data collected in 2009 and 2010 as part of the Railyard groundwater plume investigations, the approximate depth to impacted groundwater is generally on the order of 10 to 30 feet bgs (Nolte, 2011).

Groundwater quality in the Yolo subbasin is generally considered good for agricultural and municipal uses, despite its hardness (DWR, 2004). The deep aquifer tends to be of higher quality than the shallow aquifer, and the intermediate aquifer is of intermediate quality (YCFCWCD, 2006). Deep aquifers in Yolo County have notable levels of naturally occurring arsenic and hexavalent chromium that approach standards protecting human health (YCFCWCD, 2004; YCFCWCD, 2006; YCWRA, 2007). There is also a trend of increasing salinity and nitrates in Yolo County's shallow and intermediate wells (YCFCWCD, 2004; 2006). Boron also is a problem in some areas.

4.8.3. Environmental Effects

This section includes an analysis to determine if the Project would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge so that there would be a net deficit in aquifer volume, or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site;
- Create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing in a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM or other flood hazard delineation map;
- Place in a 100-year flood hazard area structures that would impede or redirect flood flows;



- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

4.8.3.1. No Action Alternative

Because the No Action Alternative would not implement the Streetcar Project Alternative, no effects to water resources would occur. Planned roadway or transit improvements programmed in SACOG's 2035 MTP/SCS would include mitigation measures that would reduce potentially adverse water resources effects. Similarly, planned development in the study area would incorporate BMPs to address run-off and to maintain water quality.

4.8.3.2. Action Alternative

Potential to Reduce Water Quality During Operation

A portion of the Project area drains into the Sacramento River. Currently, the Sacramento River near the Project is considered an impaired water body, with elevated levels of mercury due to abandoned mine operations, elevated pesticides (e.g., chlordane, dichlorodiphenyltrichloroethane [DDT], and dieldrin) due to agriculture, and PCBs and unknown toxicity due to unknown sources (CVRWQCB, 2010). The Project would not use any of these pollutants, and implementation of the Project will not introduce or contribute to these pollutant levels in the Sacramento River. As described above in Section 4.8.1.3, pollution prevention measures included in applicable NPDES programs and SWMPs, as well as the BMPs described below, shall be incorporated into the Project to ensure that the Project will not contribute to any pollutant loadings. Source, treatment, and Low Impact Development measures shall be incorporated as applicable.

As part of the Project, an MSF would be constructed to store and maintain the streetcar vehicles when not in use. Two sites are under consideration for the potential MSF: one in Sacramento and one in West Sacramento. Because the site for the Sacramento MSF option is currently paved, the amount of impervious surface area would remain the same with implementation of the Project. The Sacramento MSF option is also in the City of Sacramento's combined sewer system area, and would not discharge into the City's MS4 (City of Sacramento, 2009). The majority of the West Sacramento MSF option site is currently pervious, with the exception of the highway support columns and a concrete-lined ditch. Implementation of the Project would convert essentially the entire site to impervious surfaces consisting of pavement and structures.

There is a drainage channel at the site of the West Sacramento MSF option that collects stormwater runoff from the surrounding area and conveys it to an existing storm drain. The West Sacramento MSF option would replace the existing ditch with a new storm drain that would be designed to handle stormwater flows. The Project proponents would work with the City of West Sacramento and Caltrans to include appropriate drainage that would comply with the City's and Caltrans' requirements.



The increase in the overall amount of impervious surface as a result of the Project would be negligible if the MSF is constructed in Sacramento; if the MSF is constructed in West Sacramento, approximately 3 acres of pervious surface would be converted to impervious. Because the Sacramento MSF option would be in the combined sewer system portion of the City of Sacramento, and would not discharge to the MS4, the City's post-construction requirements would not be applicable to this portion of the Project development.

Following construction of the Project, stormwater runoff quality along the alignment would be expected to remain the same as pre-construction conditions, because the Project would not introduce new pollutants, and existing roadways would resume current operation. Roadways would continue to serve automobile traffic after Project completion, with the addition of streetcars. The streetcars would not increase the oils and grease expected on impervious areas, because the vehicles would be electrically powered. The pavement removed during construction would be replaced with impervious cover, whether through repaving or conversion to a station platform at Project completion; therefore, erosion and sedimentation would not be increased.

Operations at the MSF would comply with the NPDES Industrial General Permit and Caltrans' Statewide NPDES Permit, requirements of the local sanitation district, as well as County and City stormwater ordinances. The Project would implement BMPs at the maintenance facilities during operations to prevent the discharge of pollutants into stormwater. Potential pollutants could include cleaning agents, fuel, hydraulic fluid, and oil. Examples of BMPs can be found in the County of Sacramento's *Stormwater Quality Design Manual for the Sacramento and South Placer Regions*; in particular, Chapter 4 Source Control Measures, (Sacramento Stormwater Quality Partnership⁹, 2007), The Sacramento Stormwater Management Program's *Best Management Practices for Industrial Storm Water Pollution Control* (2004), and Caltrans' *Statewide Storm Water Management Plan* and related guidance documents (Caltrans, 2003; Caltrans, 2010). Examples of BMPs that the Project would implement at the MSF include the following:

- Keep rainfall from directly contacting working areas by installing roofs, placing structures, or moving industrial operations indoors.
- Prevent run-on stormwater from contacting industrial areas, indoors or out, by using properly designed berms or grading.
- Avoid practices that use water that later enters the storm drains—for instance, washing in outdoor areas. Most of these practices, including many that were acceptable in the past, are now considered to be “illegal dumping” of nonstormwater to the storm drain.
- Prepare a set of well-defined procedures for responding to a spill of any liquids in an area that might be exposed to stormwater. To prevent spills and leaks, maintain a regular inspection and repair schedule, and correct potential spill situations before a spill can occur.
- Clean up spills promptly. Clean up leaks, drips, and other spills without water whenever possible. Do not use a hose to clean up a spill area.

⁹ Sacramento Stormwater Quality Partnership includes the County of Sacramento and the cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, and Sacramento.



- For hazardous materials, develop spill prevention and response procedures in the facility's hazardous materials management plan. Contain and collect the spilled substance, then dispose of the substances and any contaminated soil in compliance with hazardous materials regulations.
- Keep solid materials covered, in appropriate containments, and protected from stormwater. Materials of concern include gravel, sand, lumber, topsoil, compost, concrete, packing materials, metal products, and others.
- Implement a plan and a design to control unexpected leaks and spills so the liquid does not reach storm drains or surfaces that will be exposed to stormwater.
- Keep general shop trash in a dumpster with the lid closed. Put the dumpster in a paved area, not on unpaved soil or your lawn. Keep the area clean by picking up dropped trash and sweeping the area regularly. Do not use a water hose to clean up.
- Install a roof or lean-to that keeps direct rainfall off trash containers; and if needed, place asphalt curbing or berms around the dumpster to contain leaks from the containers.
- Design and operate vehicle fueling areas to minimize spilled fuel and leaked fluids coming into contact with rainwater.
- Inspect equipment in the yard for fluid leaks and the ground for staining.
- Keep the equipment yard clean and clear of debris, using dry-sweeping methods.
- Vehicle and Equipment Cleaning: When vehicle and equipment washing is conducted at a maintenance facility, it is essential that the wash water is not discharged to the drainage system. Alternative disposal methods include recycling or discharge to a sanitary sewer system. Proper vehicle and equipment washing minimizes contact between stormwater runoff and the equipment washing area, and ensures that the wash water is not discharged to drainage systems or watercourses. Washing is to occur in designated areas where runoff will be contained. Water used for cleaning must be controlled to prevent unpermitted nonstormwater discharges.
- Vehicle and equipment maintenance and repairs may include vehicle fluid removal, engine and parts cleaning, body repair, and painting. To prevent spills and leaks, implement good housekeeping practices, keep vehicles and equipment well maintained, and properly store wastes and hazardous materials.
- Areas where stormwater runoff can mix with oils, greases, particulates, and metals should have concrete paving to collect and store all water in the area in an aboveground storage tank. Stormwater may be collected in a weir-style catch basin, routed through an oil/water separator, and then be pumped into a storage tank and stored in the tank for solids removal and treatment. The stormwater from the tank may be re-used or discharged after testing.

In conclusion, the Project would not substantially increase the amount of impervious surface area or introduce new pollutants. By complying with the NPDES permits, complying with the appropriate city ordinance requirements, and implementing BMPs, the Project would not have any adverse effects on water quality during operations.



Potential to Deplete Groundwater Supplies

The MSF sites would require water supplies to serve the Project for cleaning purposes. This water use would be incrementally minor and would not require any new or expanded entitlements; there would be no need for dewatering or groundwater extraction associated with operation of the Project.

Potential to Reduce Groundwater Recharge

The Project would not disturb any existing wells or significantly change the infiltration rate at the Project area. Because land use and the amount of impervious area would not be substantially changed from pre-construction conditions, the amount of water infiltrating into the ground would be approximately the same after Project construction is completed.

Potential to Increase Runoff Rate Downstream of the Site

The installation of streetcar tracks and platforms would not substantially alter drainage patterns, nor would it result in a significant increase in impervious surfaces. The majority of the Project features would be on existing roadways, so the new surfaces would replace existing impervious surfaces at similar slopes. The Sacramento MSF Option would be constructed on a site that is already paved; therefore, there would be no change in runoff rate from the site. The design for the West Sacramento MSF option would include BMPs based on engineering evaluations and consultation with the City that would be adequate to reduce the potential for effects of stormwater runoff on the City's stormwater system, and that would comply with regional and local standards. The final grading after construction would be similar to pre-construction grading; therefore, there would be no change in drainage patterns that could increase runoff to downstream areas. The rate at which water infiltrates over the Project area, and the runoff rate downstream, would be similar to pre-construction conditions after Project completion.

Potential to Increase Runoff Volume Downstream of the Site

The installation of streetcar tracks and platforms would not result in a significant increase in the volume of runoff leaving the Project area, if any. The Project features would be on existing roadways, so the impervious area would remain the same after construction. The pavement removed during construction would be replaced with impervious cover, whether repaved or converted to a platform or maintenance facility at Project completion. The Sacramento MSF Option would be constructed on a site that is already paved; therefore, there would be no change in runoff volume from the site. The design for either the Sacramento MSF option or the West Sacramento MSF option would include BMPs based on engineering evaluations and consultation with the appropriate City that would be adequate to reduce the potential for effects of stormwater runoff on the City's stormwater system; and that would comply with regional and local standards. Therefore, the resulting volume of runoff from the site would be similar to pre-construction conditions after the Project is complete.



Potential to Exceed Drainage Capacity

The Project is not anticipated to substantially alter drainage patterns or runoff volume after completion. Existing roadways will be repaved, regraded, and restored to pre-construction conditions, with the addition of streetcar tracks and platforms. For the Sacramento MSF Option, there would be no change in drainage patterns or runoff volume due to the Project. For the West Sacramento MSF Option, the Project will replace the existing stormwater ditch with a culvert or pipe that would be designed to maintain the same hydraulic conveyance capacity as the existing ditch. Furthermore, the design for the West Sacramento MSF option would include BMPs based on engineering evaluations and consultation with the City that would be adequate to reduce the potential for impacts of stormwater runoff on the City's stormwater system, and that would comply with regional and local standards. No additional sources of runoff would be created. Therefore, existing drainage facilities (e.g., catch basins and gutters) are anticipated to have sufficient capacity after Project completion.

Potential for Placement of Fill or Structures in the 100-Year Floodplain

With the exception of the Sacramento River, which is a FEMA designated 100-year flood zone, the remaining portions of the Project area are either Flood Zone X (areas protected by levees from the 100-year flood) or Other Areas Zone X (areas determined to be outside of the 500-year flood) (FEMA, 2012a; 2012b; City of West Sacramento, 2009b) (Figure 4.8-1). The Project does not include any placement of fill or structures in the Sacramento River 100-year Floodplain.

The Project primarily involves constructing new streetcar track and platforms along existing roadways, constructing new substations near Tower Bridge Gateway in West Sacramento, and constructing an MSF in either Sacramento or West Sacramento. Fill and structures associated with these Project components would not be placed in a FEMA-designated 100-year floodplain.

Potential to Increase Risk to Human and Structural Safety During Flooding

Because the streets along the proposed alignment are protected from the 100-year flood by levees (FEMA, 1995; FEMA, 2012; City of West Sacramento, 2009b), the installation of streetcar tracks and platforms along existing roadways and across the Tower Bridge would not increase the risk to human or structural safety during flooding, in spite of their potential to attract more pedestrian usage of the streets. The FEMA-designated 100-year floodplain would not be altered because of the Project. Although the Project area includes existing levees, the Project would not alter existing levees. As discussed above, failure of the Folsom Dam would result in flooding in the Project area; however, the risk of dam failure is low and unaffected by the Project. Flooding because of dam or levee failure would not be altered after the completion of the Project. Therefore, the risk of human and structural safety due to flooding because of dam or levee failure would not change due to the Project.



Potential to Increase Risk of Inundation Due to Seiche, Tsunami, or Mudflow

The Project is not near a body of water subject to seiches or tsunamis. The Project location has a very low potential for inundation by mudflow. The banks of levees have the potential to landslide; however, the Project would not alter the levees. The Project location would be subject to the same risk to mudflow as pre-construction conditions. No increase in risk of inundation from seiche, tsunami, or mudflow would occur.

4.8.3.3. Construction Effects

Construction activities could temporarily disturb the existing drainage patterns and alter the amount of impervious area, potentially loosening sediment on roadways along the proposed streetcar alignment. Land clearing and/or grading activities would temporarily increase the potential for soil erosion, and could thereby cause an increase in suspended solids in runoff and local receiving waters. Paving, surfacing, resurfacing, grinding, or sawcutting activities could pollute stormwater runoff or discharge to the storm drain system or watercourses. In addition to potential effects from erosion, effects to runoff water quality during construction could potentially result from leaks or spills of fuel or hydraulic fluid used in construction equipment; outdoor storage of construction materials; or spills of paints, solvents, or other potentially hazardous materials commonly used in construction.

A preliminary grading and erosion control plan for the Project would be submitted to the appropriate city for approval prior to issuance of a grading permit in the city. BMPs to be implemented during construction to minimize discharge of sediments offsite would be included in the erosion control plan. In the City of the Sacramento, these plans shall follow the requirements of the “Grading, Erosion and Sediment Control Ordinances” (15.88). Similarly, for the portion of the Project in the City of West Sacramento, the plans shall follow the requirements of the Grading Ordinance (15.08). Sediment generated by demolition, grading, or construction activities for the Project would be contained on the construction site and controlled using BMPs. On completion of the Project, the Project area would be covered with impervious surfaces, resulting in negligible sediment production. BMPs that could be implemented during construction include, but are not limited to, silt fences, sand bags, fiber rolls, and a stabilized construction entrance. Final grading plans would include all proposed grading, drainage improvements, vegetation, and tree removal. Final grading and erosion control plans would be prepared during design in accordance with the provisions of the cities of West Sacramento and Sacramento, and submitted to the appropriate city for approval prior to construction.

Depending on the location, construction activities involving the disturbance of one or more acres must comply with the City of Sacramento’s NPDES Phase I MS4 Permit, the NPDES Phase II Small MS4 General Permit (for the City of West Sacramento), or Caltrans’ Statewide Permit; or coverage under the SWRCB’s NPDES General Permit for Stormwater Discharges Associated with Construction Activities must be applied for. To obtain coverage under the Construction General Permit, the legally responsible person must electronically file the Permit Registration Documents,



which include a NOI, SWPPP, risk assessment, site map(s), and drawings, and the appropriate permit fee to the SWRCB and RWQCB. The SWPPP will include development of site-specific structural and operational BMPs to prevent and control impacts to runoff quality, measures to be implemented before each storm event, inspection, and maintenance of BMPs, and monitoring of runoff quality by visual and/or analytical means. The RWQCB issues waste discharge requirements that set forth conditions, discharge limitations, and monitoring and inspection requirements with which the cities of West Sacramento and Sacramento comply. The contents of the SWPPP are set forth in detail in the permit application package. The California Stormwater BMP Handbook for Construction (CASQA, 2003), Caltrans' BMP Factsheets, the City of Sacramento's Administrative and Technical Procedures for Grading and Erosion and Sediment Control (City of Sacramento, 2013c), and other guidance documents provide examples of BMPs that could be used, including the following that would be incorporated into the Project:

- Scheduling materials deliveries to provide for minimal onsite storage, and/or providing covered storage for materials wherever practical;
- Designating specific areas for overnight construction equipment storage and maintenance, and providing runoff control around those areas to minimize the potential for runoff to contact spilled materials;
- Procedures for daily worksite cleanup and immediate cleanup of spilled materials and contaminated soil;
- A program of site inspections to ensure that BMPs are consistently implemented and effective;
- Visual monitoring of onsite runoff quality;
- Applying hydroseeding or hydromulching to stabilize disturbed areas, as appropriate;
- Placing fiber rolls around drain inlets or providing other storm drain inlet protection measures (for example, gravel bags) to prevent sediment and construction-related debris from entering the inlets;
- Placing fiber rolls along the perimeter of the site to reduce runoff flow velocities and prevent sediment from leaving the site, and placing sandbags around potentially affected offsite inlets to prevent sediments from entering the inlets;
- Constructing sedimentation basins to collect and temporarily detain stormwater runoff to allow sediment to settle prior to discharge;
- Providing stabilized construction access to minimize the tracking of mud and dirt onto public roads;
- Providing equipment tire wash and cleaning area to prevent the tracking of mud and dirt onto public roads;
- Managing stockpiles and materials by stabilizing stockpiles, placing stockpiles away from drainages, and protecting stockpiles with fiber rolls;
- Placing silt fences downgradient of disturbed areas to slow down runoff and retain sediment;



- The wet season for the Project area is generally October to April (October 1 to April 30 per Sacramento County, et al., 2009; October 15 – April 15 per Caltrans [2003]). Sediment control BMPs are required year-round for construction projects, and an effective combination of erosion and sediment control BMPs are required during the wet season and during summer storm events.
- Portable toilets must be 50 feet away from storm drain inlets, and must be located back of walk on a flat surface. Alternative locations may be approved by the inspector.
- Concrete washout areas must be 50 feet away from storm drain inlets, open ditches, or water bodies.
- A vacuum must be used to remove water from the pavement during sawcut operations, and nearby storm drain inlets must also be protected.
- Before pressure washing or hosing down any pavement surface, the surface must be swept clean. Nearby storm drain inlets must be protected to keep sediments out of the storm drain system.
- Prepare and implement a SWPPP that addresses maintenance and inspection of BMPs, including monitoring and reporting, to ensure the effectiveness of the BMPs in protecting water quality.
- Schedule construction activities to reduce the amount and duration of soil exposed to erosion by wind, rain, run-on, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.
- Control water applied during sawcutting operations to prevent unpermitted nonstormwater discharges that may contain concrete, sealant, fuel, hydraulic fluid, and oil.
- Do not allow asphalt concrete grindings, pieces, or chunks to enter any storm drain or watercourses. Collect and remove all broken asphalt and recycle when practical; otherwise, dispose in accordance with appropriate laws and regulations.
- As part of pavement removing and grinding operations, stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses.
- Portland cement concrete or asphalt concrete (also includes slurries containing Portland cement concrete or asphalt concrete that are generated from sawcutting, coring, grinding, grooving, etc.), shall not be allowed to enter storm drains or watercourses.
- For construction activities on a bridge over a watercourse, provide watertight curbs or toe boards to contain spills and prevent materials, tools, and debris from leaving the bridge. Do not allow demolished material to enter waterway. Secure all materials to prevent discharges to receiving waters via wind. Use attachments on construction equipment such as backhoes to catch debris from small demolition operations. Use covers or platforms to collect debris. Inspect and maintain all associated BMPs and perimeter controls to ensure continuous protection of the watercourse.



Contaminated groundwater is known to occur approximately 10 to 30 feet bgs along portions of the proposed alignment. Construction of the track infrastructure could entail removal of asphalt and base material to a depth of approximately 12 inches, and possible removal of underlying soil of approximately 6 inches. Although the catenary poles would be installed to a maximum depth of approximately 20 feet, the method of installation would not require deep excavations, and therefore would not require dewatering. Therefore, the need for dewatering and handling of potentially contaminated groundwater during construction is expected to be unlikely. Nonetheless, the potential exists that contaminated groundwater (if deeper excavations are required for some construction activities) may be encountered during construction of the Project. Please refer to Hazardous Materials Section 4.7.4.3 for additional discussion of proposed measures to mitigate the potential to create a significant hazard to the public or the environment during construction.

By complying with the NPDES General Construction Permit, complying with the appropriate city ordinance requirements, preparing the SWPPP, and implementing BMPs, the Project would not have any construction-related adverse effects on water quality.

4.8.4. Measures to Minimize Harm

By complying with the NPDES Permits, complying with the appropriate city and Caltrans Statewide Permit requirements, and implementing the BMPs described above, the Project would avoid adverse effects on water quality during construction or operations, and no mitigation measures would be required.

4.8.5. Cumulative Effects

Hydrologic effects from the Project overall would not result in substantial adverse effects. Because of the Project's location in existing street rights-of-way, the effects of the Project are not anticipated to contribute to cumulative effects with other development projects in the area, which will be required to use BMPs in addressing runoff and water quality issues.



4.9. Land Use and Planning

4.9.1. Introduction to the Analysis

This section describes existing land uses in the study area, and applicable land use policy documents. It assesses the potential for the Project to conflict with the objectives of federal, regional, State, and local land use plans and policies.

4.9.2. Regulatory Setting

4.9.2.1. State

California State Department of General Services – Capitol Area Plan, Land Use Element (1997)

The purpose of the Land Use Element of the California State Department of General Services – Capitol Area Plan in this plan is to guide development in the Capitol Area of Sacramento. The Capitol Area boundary is from 17th Street to the east, L Street to the north, R Street to the south, and 5th Street to the west. The following policy from the plan is applicable to the Project.

- Consider transit accessibility, protection of the State Capitol’s prominence, and linkage to surrounding neighborhoods in the location, intensity, and design of development.

4.9.2.2. Regional

Sacramento Area Council of Governments Blueprint and Metropolitan Transportation Plan/ Sustainable Communities Strategy (SACOG Blueprint)

SACOG’s MTP/SCS (SACOG, 2008b) is a long-range regional planning effort that focuses on accommodating an increase of nearly 1 million residents in the Sacramento region by 2030. Strategies in the plan include adopting a smart-growth approach to development; curbing urban sprawl; increasing the role of transit; and generating reinvestment in central cities. The Project is included in the MTP/SCS as a strategic expansion of regional and local rail. The following policy and strategy are applicable to the Project:

- **28. Policy.** Prioritize transit investments that result in an effective transit system that serves both transit-dependent and choice riders.
- **28.2. Strategy.** Pursue transit expansion using a wide spectrum of services, each best-suited to particular travel markets; considering, but not limited to light rail, streetcar, express bus, Bus Rapid Transit, local bus, neighborhood shuttle, demand-response service, subscription bus, and jitney.



4.9.2.3. *Local*

City of Sacramento 2030 General Plan (2009a)

The City of Sacramento 2030 General Plan Land Use and Urban Design Element provides policies for strategic growth and change that preserves existing viable neighborhoods, and targets new development to infill areas that are vacant or underused, as well as to “greenfield” areas. The element focuses on enhancing the quality of life through improved connectivity, greater access to amenities, enhanced safety, and greater housing and employment choices. Use of transit—as well as connectivity and development related to transit—is promoted and incorporated throughout Land Use and Urban Design Element. The City of Sacramento 2030 General Plan Mobility Element contains policies that will guide the creation of a well-connected transportation network and support bicycling and transit, while continuing to accommodate auto mobility. The following policies apply to the Project in Sacramento.

- **LU 1.1.1. Regional Leadership.** The City shall be the regional leader in sustainable development and encourage compact, higher-density development that conserves land resources, protects habitat, supports transit, reduces vehicle trips, improves air quality, conserves energy and water, and diversifies Sacramento’s housing stock.
- **LU 1.1.5. Infill Development.** The City shall promote and provide incentives (e.g., focused infill planning, zoning/rezoning, revised regulations, provision of infrastructure) for infill development, redevelopment, mining reuse, and growth in existing urbanized areas to enhance community character, optimize City investments in infrastructure and community facilities, support increased transit use, promote pedestrian- and bicycle-friendly neighborhoods, increase housing diversity, ensure integrity of historic districts, and enhance retail viability.
- **LU 2.6.1. Sustainable Development Patterns.** The City shall promote compact development patterns, mixed use, and higher-development intensities that use land efficiently; reduce pollution and automobile dependence and the expenditure of energy and other resources; and facilitate walking, bicycling, and transit use.
- **M 3.1.1. Variety of Transit Types.** The City shall consider a variety of transit types including high speed rail, inter-city rail, regional rail, LRT, bus rapid transit, trolleys (streetcars), enhanced buses, express buses, local buses, neighborhood shuttles, pedi-cabs, and jitneys to meet the needs of residents, workers, and visitors.
- **M 3.1.14. Streetcar Facilities.** The City shall support the development of streetcar lines in the Central City and other multi-modal districts.

Central City Community Plan (2009a)

The Central City Community Plan (CCCP) is part of the City of Sacramento’s General Plan, and provides a refinement of the goals and objectives of the General Plan to serve as a guideline for development in the CCCP area. The CCCP serves as a development guide for the public- and private-sector when planning physical improvements in the Central City. The CCCP includes the area bounded by the Sacramento River to the west, the American River to the north, Sutter’s Landing



and Alhambra Boulevard to the east, and Broadway to the south. The following policy from the plan is applicable to the Project.

- **CC.M.1.7. Increased Frequency for Transit.** The City shall encourage increased frequency and scheduling reliability of local transit routes within the Central City area, including signal pre-emption in all major transit corridors.

Sacramento Railyards Specific Plan (City of Sacramento, 2007)

Redevelopment of the Railyards area, a 244-acre site in Downtown Sacramento, would create a transit-oriented mixed-use district as an extension of the Central Business District (CBD). The Sacramento Railyards Specific Plan is intended to advance the policies of the City of Sacramento General Plan to create more mixed-use, transit-oriented neighborhoods in the Central City. The Sacramento Railyards Specific Plan states that the streetcar is envisioned as an “urban circulator” and a “pedestrian accelerator,” and is intended to support the pedestrian-oriented downtowns and waterfronts in the West Sacramento and Sacramento that it would connect. The following policy pertains to the Project.

- **Policy C-1.1:** Establish a regional intermodal facility at the Sacramento Intermodal Transit Facility that is easily accessible by walking and bicycling which brings together intercity rail, commuter rail, light rail, and bus services in a manner that facilitates convenient transfer between various modes of transit.

The 2010 Sacramento City/County Bikeway Master Plan (1993 and 1995)

The purpose of the Sacramento Bikeway Plan is to encourage bicycling as an alternative to automobile use. There are a number of bikeways and trails in the Sacramento portion of the study area. The following policies pertain to the Project.

- **Policy 1.a.** To develop bicycle-transit facilities in areas which integrate land use and transit linkages.
- **Policy 1.b.** To provide bicycle-transit facilities in new and existing pedestrian and transit friendly developments.

City of West Sacramento General Plan (1990; Revised and Adopted 2004)

The Land Use Element of the West Sacramento General Plan provides general direction and guidance for the physical development of West Sacramento. The Transportation and Circulation Element provides general direction on guidance for the development and maintenance of West Sacramento’s transportation network. The following policy applies to the Project in West Sacramento.



- **Transportation and Circulation Policy A.4.** Land uses which generate high traffic volumes shall be located near major transportation corridors and public transit facilities to minimize vehicle use, congestion, and delay.
- **Transportation and Circulation Policy B.1.** The City shall cooperate with RT to actively pursue extension of LRT into West Sacramento to serve existing and proposed residential, business, and employment centers.

Bridge District Specific Plan (2009)

The Bridge District Specific Plan is an update to the Triangle Specific Plan, which was originally adopted in 1993 to provide a planning framework for the area in West Sacramento bounded by State Route 275 (now Tower Bridge Gateway) to the north, U.S. Highway 50 (U.S. 50) to the south, the Sacramento River to the east, and the junction of Tower Bridge Gateway and U.S. 50 to the west. The following goal and policies pertain to the Project.

- **Goal 7:** Promote and Implement Alternative Modes of Transportation
- **Circulation Policy 2:** The City will facilitate the extension of streetcar service into the Bridge District while maintaining the option for light rail service in the future
- **Circulation Policy 4:** The City will facilitate creation of effective multi-modal connections between the Bridge District and other communities in West Sacramento and the greater Sacramento area.

Washington Specific Plan

The Washington Specific Plan (City of West Sacramento, 1996) defines a vision for the future of the Washington District, which is a 194-acre area bounded by Tower Bridge Gateway on the south, the Sacramento River on the east, A Street on the north, and portions of 6th and 8th streets on the west. The following goal and policies pertain to the Project.

- **Goal 3.B:** To promote and maintain public and private transit systems that are responsive to the needs of Washington Plan Area residents, employees, and visitors.
- **Policy 3.B.1.** The City shall cooperate with RT to actively pursue extension of light rail into West Sacramento, preferably through the Washington Plan Area.
- **Policy 3.B.5.** Special consideration shall be given to proposed development projects adjacent to transit routes to ensure compatible and supportive relationships.

West Sacramento Bicycle, Pedestrian, and Trails Master Plan (2013)

The purpose of the West Sacramento Bicycle, Pedestrian, and Trails Master Plan (City of West Sacramento, 2013a) is to promote bicycling and walking as practical modes of transportation in the community by laying out a vision of connected bikeways, walkways, and trails that link together the neighborhoods, places of employment, shopping centers, parks, and schools. The following policy pertains to the Project.



- **Policy G 6.** A bicycle system that is well integrated with other forms of transportation, including public transit.

4.9.3. Affected Environment

4.9.3.1. Primary Land Use Designations

A description of primary land use designations in the study area is provided below and illustrated in Figure 4.9-1.

Sacramento

Old Sacramento. The General Plan land use designation for Old Sacramento is Traditional.

Downtown Sacramento. The General Plan Land use designation for the area between 2nd Street and 16th Street in the study area is CBD with scattered Public/Quasi-Public, and Parks and Recreation. From 16th Street to 19th Street between L Street and J Street, the Land Use designation is Urban Corridor High.

West Sacramento

West Capitol Avenue and West Sacramento Civic Center. The General Plan land use designation for this area is CBD.

The Bridge District. The General Plan land use designation for the Bridge District is Riverfront Mixed Use.

Washington District. The General Plan land use designation for the part of the study area within the District is Riverfront Mixed Use, with a Neighborhood Commercial Overlay along 3rd Street.

4.9.3.2. Primary Zoning Designations

A description of primary zoning designations along the proposed alignment is provided below and illustrated on Figure 4.9-2.

Sacramento

The current zoning designation for the majority of the areas adjacent to the proposed alignment is C-3 (CBD), with C-2 (General Commercial), R-5 (Multi-Family), and small parcels of R-4 (Multi-Family) and RMX (Residential Mixed Use). The CBD Zone (Special Planning District) applies to an approximately 70-block portion of the central city. The CBD or C-3 zone is that area so designated on the map in Chapter 17.96. The CBD or C-3 zone is intended for the most intense retail, commercial, and office developments in the city. The General Commercial Zone provides for the sale of commodities, or performance of services, including repair facilities, offices, small wholesale stores or distributors, and limited processing and packaging. Any nonresidential development in the C-2 zone that requires a discretionary entitlement shall also be subject to review for consistency



with the commercial corridor design principles adopted pursuant to Section 17.132.035(C), and as they may be amended from time to time (City of Sacramento, 2009d).

West Sacramento

West Capitol and West Sacramento Civic Center. The zoning designation for these areas is CBD. This designation provides for restaurants, retail, service, professional and administrative offices, hotel and motel uses, multi-family residential units, public and quasi-public uses, and similar and compatible uses (City of West Sacramento, 2009a).

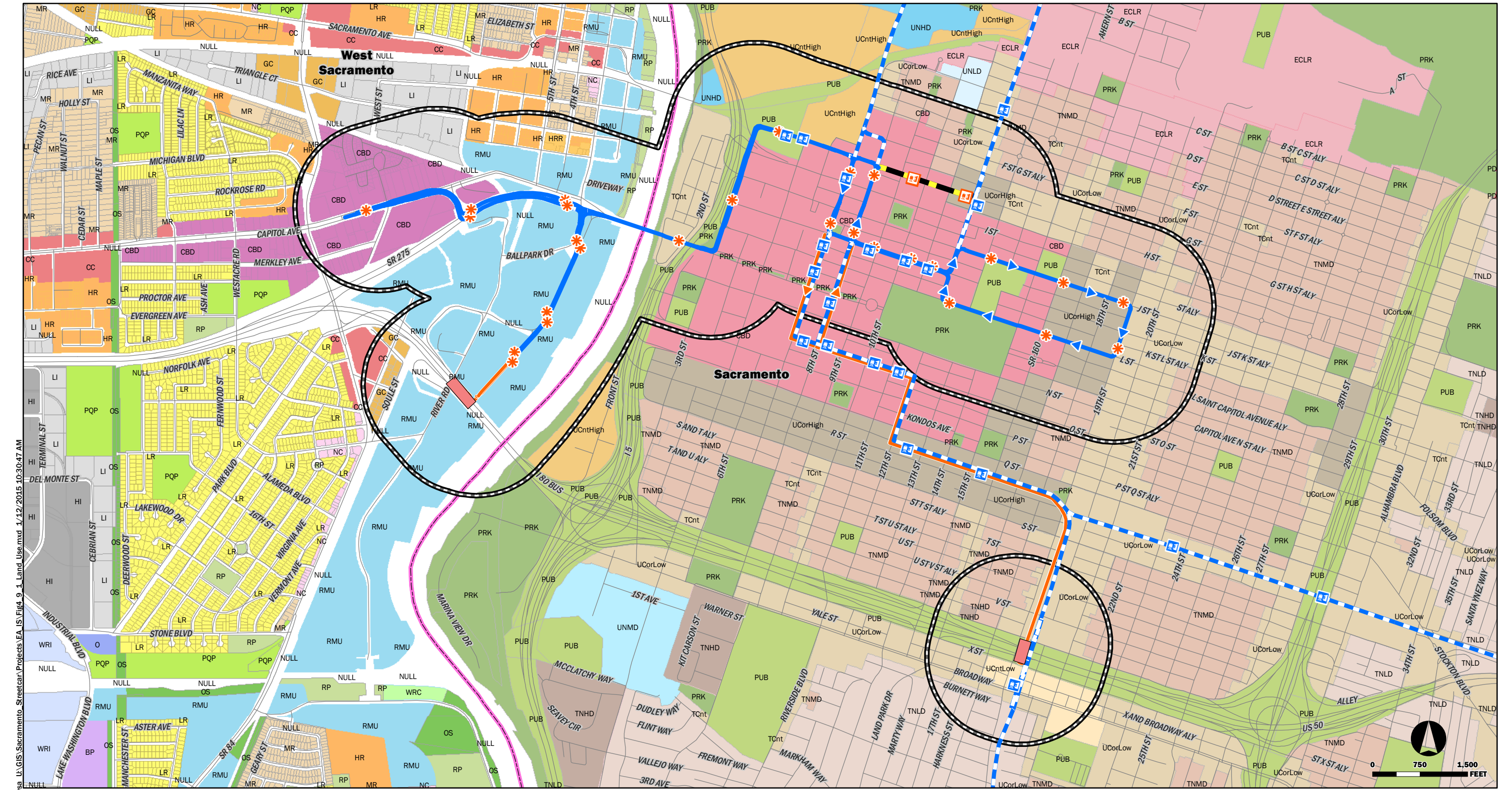
The Bridge District. The zoning designation for this area is Waterfront – Planned Development No. 41. This designation provides for marina, restaurants, retail, amusement, hotel and motel uses, mid-rise and high-rise offices, multi-family residential units oriented principally to the river, public and quasi-public uses, and similar and compatible uses (City of West Sacramento, 2009a).

Washington District. The zoning designation for the part of the study area within the Washington District is Waterfront (WF), with a Neighborhood Commercial (C-1) overlay along 3rd Street.

4.9.4. Environmental Effects

This section includes an analysis to determine if the Project would:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.



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 Source: Basemap Imagery, NAIP, 2012.

<ul style="list-style-type: none"> Candidate Stop Location Existing Light Rail Station New Light Rail Station Proposed Streetcar Alignment Existing Light Rail Route H Street LRT Relocation Maintenance Facility Access 	<ul style="list-style-type: none"> Potential Maintenance Facility 1/4-Mile Buffer County Boundary 	<p>Sacramento Land Use</p> <ul style="list-style-type: none"> Central Business District (CBD) Employment Center Low Rise (ECLR) Parks and Recreation (PRK) Planned Development (PD) Public/Quasi-Public (PUB) Traditional Center (TCnt) Traditional Neighborhood High Density (TNHD)) Traditional Neighborhood Medium Density (TNMD) 	<p>West Sacramento Land Use</p> <ul style="list-style-type: none"> Traditional Neighborhood Low Density (TNLD)) Urban Center High (UCntHigh) Urban Center Low (UCntLow) Urban Corridor High (UCorHigh) Urban Corridor Low (UCorLow) Urban Neighborhood High Density (UNHD) Urban Neighborhood Medium Density (UNMD) Urban Neighborhood Low Density (UNLD) 	<p>West Sacramento Land Use</p> <ul style="list-style-type: none"> Business Park (BP) Central Business District (CBD) Community Commercial (CC) General Commercial (GC) Heavy Industrial (HI) Light Industrial (LI) High Density Residential (HDR) High Rise Residential (HRR) Medium Density Residential (MDR) 	<ul style="list-style-type: none"> Low Density Residential (LDR) Neighborhood Commercial (NC) Office (O) Open Space (OS) Public/Quasi Public (PQP) Recreation and Parks (PR) River Mixed Use (RMI) Water Related Commercial (WRC) Water Related Industrial (WRI)
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**LAND USE DESIGNATIONS:
 CITIES OF SACRAMENTO AND WEST SACRAMENTO**

January 2015
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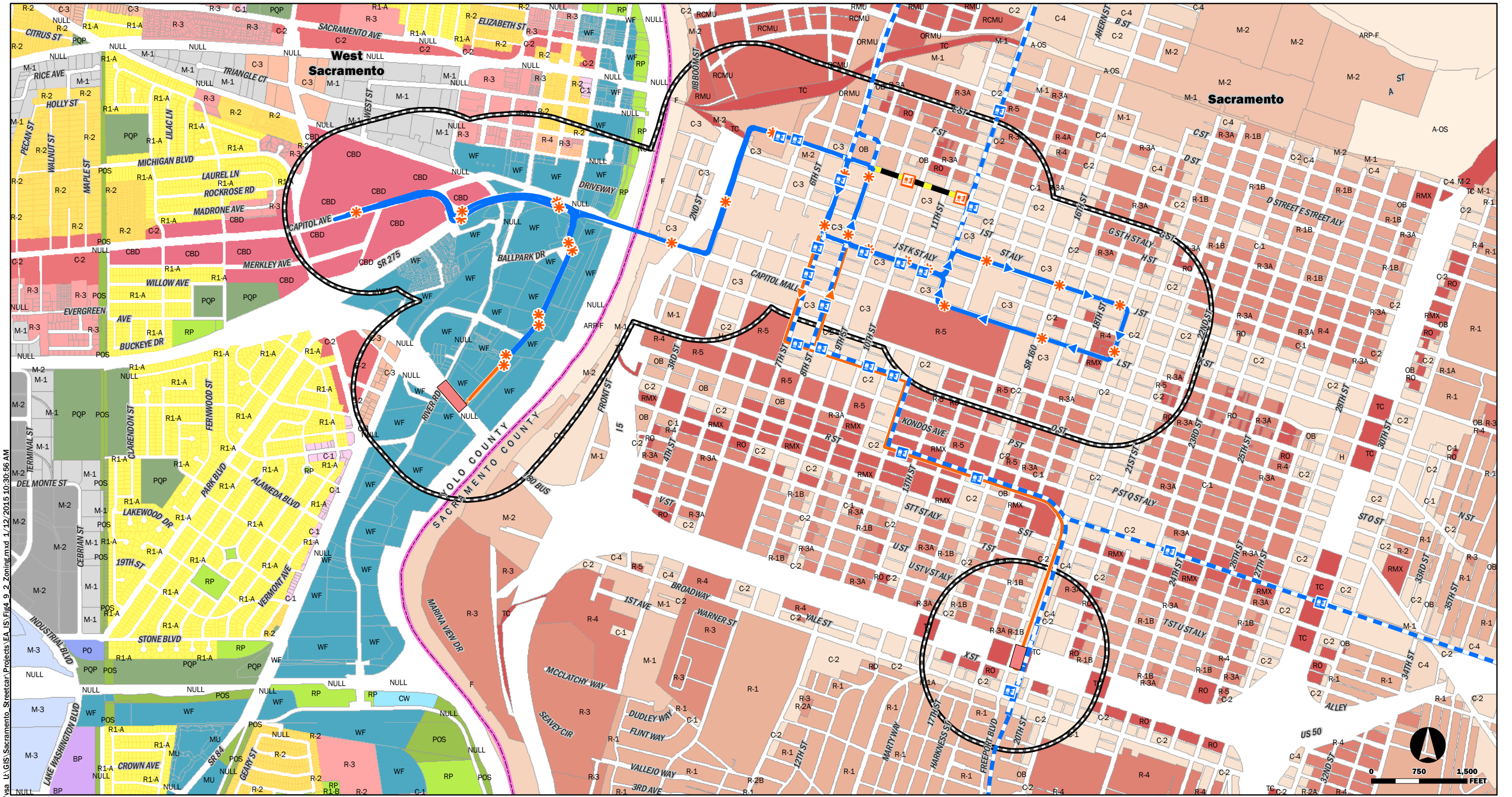
Downtown/Riverfront Streetcar Project
 Sacramento & West Sacramento



FIGURE 4.9-1



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 Source: Basemap Imagery, NAIP, 2012.

<ul style="list-style-type: none"> Candidate Stop Location Existing Light Rail Station New Light Rail Station Proposed Streetcar Alignment Existing Light Rail Route H Street LRT Relocation Maintenance Facility Access 	<ul style="list-style-type: none"> Potential Maintenance Facility 1/4-Mile Buffer County Boundary 	City of West Sacramento Zoning <ul style="list-style-type: none"> Business Park (BP) Central Business District (CBD) Community Commercial (C-3) General Commercial (C-3) Heavy Industrial (M-2) Light Industrial (M-1) 	<ul style="list-style-type: none"> High Density Residential (R-3) High Rise Residential (R-4) Medium Density Residential (R-2) Low Density Residential (R1-A) Public/Quasi Public (PQP) Recreation and Parks (RP) River Mixed Use (WF) Water Related Commercial (CW) Water Related Industrial (M-3) Office (PO) Open Space (POS) 	City of Sacramento Zoning <ul style="list-style-type: none"> A-OS ARP-F C-1 C-2 C-3 C-4 F H M-1 M-2 OB ORMU R-1 R-1A R-1B R-2 R-2A R-2B R-3 R-3A R-4 R-4A R-5 RCMU RMU RMX RO TC
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ZONING DESIGNATIONS:
CITIES OF SACRAMENTO AND WEST SACRAMENTO
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 27560983
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 Sacramento & West Sacramento

FIGURE 4.9-2



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4.9.4.1. No Action Alternative

Implementation of the No Action Alternative would include construction associated with planned roadway and streetscape improvement projects and development plans. Required construction phasing and traffic-handling plans would be implemented to minimize disruption and maintain access to land uses in the study area, which are predominantly commercial and mixed-use (retail or commercial and residential). Therefore, these activities would not be expected to cause substantial changes in land use, physically divide existing neighborhoods, or affect neighborhood character, and would not be considered an adverse effect.

Land use plans for West Sacramento's Washington District, Bridge District, and Downtown Sacramento call for increased residential, commercial, and civic land use development, all of which would generate additional travel demand on local transit and roadways. The City of West Sacramento and City of Sacramento land use plans include goals to improve transit in and between the two cities. The No Action Alternative would not provide for increased transit services in the study area, and therefore would not aid the cities in meeting these goals. The No Action Alternative would not provide the land use benefits as identified under the Action Alternative.

4.9.4.2. Action Alternative

Operation of the Project is not expected to produce substantial changes in land use, physically divide existing neighborhoods, or significantly affect neighborhood character. Changes in land use that would occur under the No Action Alternative would not be affected by the Project because the Project would improve transit in and between areas of the City of West Sacramento and City of Sacramento where future growth is planned. As a result, the Project would complement and support existing and planned development in the study area and would, therefore, result in a beneficial impact. No short- or long-term indirect effects to land use in the study area are anticipated, and no adverse effects would occur.

The Project would be consistent with the City of West Sacramento and City of Sacramento goals of improving transit in and between the planned growth areas in West Sacramento and Downtown Sacramento. Development plans for the Central City, Sacramento Railyards, Bridge District, and Washington District include significant increases in residential, commercial, and civic land uses, all of which would generate additional demand for travel on local transit and roadways. The Project would be consistent with the policies provided above as part of these development plans. In addition, the Project would be consistent with the Land Use Element of the California State Department of General Services – Capitol Area Plan, by providing transit accessibility and linkage to surrounding neighborhoods. The Project is included in the SACOG 2035 MTP/SCS as a strategic expansion of regional and local rail, where it can be cost-effective given surrounding housing and employment densities. The additional capacity of an alternative transit mode provided by the Project would better support projected and planned growth, and would benefit surrounding land uses by improving access to commercial and residential development in the vicinity of streetcar stations, a beneficial effect. As such, no adverse effects would occur.



The streetcar platforms and track would be in the existing public right-of-way between the West Sacramento Civic Center and 19th Street in midtown Sacramento. Additional pedestrian crosswalks would be created along the proposed alignment to accommodate access to station platforms and facilitate pedestrian crossings. The streetcar tracks would be constructed in the existing roadway, which would add another form of alternative transportation (non-auto) and improve transit service and local circulation connecting West Sacramento and Downtown Sacramento. Streetcar platforms, stations, and pedestrian crosswalks would be created along the proposed alignment to improve connectivity and promote ridership. Therefore, the Project would not create new barriers or divide existing neighborhoods in the study area. To the contrary, it would result in a beneficial effect by creating greater connectivity.

Project improvements and operation of the Project would enhance the physical environment, but would not cause substantial changes in land use, physically divide existing neighborhoods, or affect neighborhood character. No conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project would be created with implementation of the Project. The Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan, because there are no such plans in the study area. No short- or long-term indirect effects to land use in the study area are anticipated as a result of the Project. As such, no adverse effects would occur.

4.9.4.3. Construction Effects

Construction of the Project would occur in the existing public right-of-way. Construction activities would occur over a relatively short time because the proposed alignment would be constructed in three-block segments that would take approximately 3 weeks each. Although substantial changes in land use would not occur as a result of Project construction, temporary effects on land uses may occur from construction equipment air emissions, temporary detours, and noise and vibration. These potential direct effects would be minimized through compliance with applicable regulations as indicated in Section 4.2, Air Quality and Greenhouse Gas Emissions; Section 4.13, Transportation; and Section 4.10, Noise and Vibration. Additional construction effects on land use would not be expected. Construction activities would be temporary and would not cause substantial permanent changes in land use, physically divide existing neighborhoods, or significantly affect neighborhood character. No adverse effects on surrounding land uses would occur as a result of construction.

4.9.5. Measures to Minimize Harm

No mitigation measures or measures to minimize harm are required.

4.9.6. Cumulative Effects

As described above, the Project would not contribute to potential land use effects resulting from planned development in the study area. The Project would be consistent with the City of West Sacramento and City of Sacramento goals of improving transit in and between the planned growth areas in West Sacramento's redevelopment area and Downtown Sacramento. The Project would



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
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complement and support existing and planned development in the study area, rather than contribute to potential land use effects resulting from planned development in the study area. As a result, the Project would not contribute to potential cumulative land use effects resulting from planned development in the study area, and no adverse cumulative effects would occur.



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4.10. Noise and Vibration

4.10.1. Introduction to the Analysis

This section includes a description of the existing environment, potential noise and vibration impacts related to the operational aspects of implementing the Project, and potential noise and vibration impacts during the construction phase based on the analysis provided in the April 2014 *Sacramento Downtown/Riverfront Streetcar Noise and Vibration Impact Assessment Draft Technical Report* by Wilson Ihrig & Associates (WIA). This section also includes a discussion of the federal, State, and local regulatory framework applicable to construction and implementation of the Project.

Noise is defined as unwanted sound. Noise can disturb or annoy people, interfere with activities such as sleep or learning, or cause physical effects such as headaches and hearing loss. Sound is typically measured in decibels (dB). Noise attenuates as distance from the source increases. Because the human ear is not equally sensitive to all frequencies of sound, the A-weighted decibel (dBA) scale was developed to better approximate the human response to different sound levels. Typically, the human ear cannot perceive a difference in sound levels of less than 3 dB; an increase of 5 dB is the lowest readily apparent change in noise levels; and a 10 dB increase is perceived as twice as loud.

Groundborne vibrations (GBVs) are produced by construction equipment and large vehicles traveling over roads. GBVs can be a source of annoyance to people; or if amplitudes are high enough, can damage structures or disrupt sensitive scientific equipment. Vibration in buildings is typically perceived as rattling of windows, shaking of loose items, or the motion of building surfaces. Like noise, vibrations attenuate with distance from the source. GBVs attenuate at different rates in different media (water, soil) and soil types. Vibration propagation is measured using vibration decibels (VdB), with a larger value representing a vibration with more potential to cause damage.

4.10.2. Regulatory Setting

4.10.2.1. Federal Regulations

Federal Transit Administration Transit Noise and Vibration Impact Assessment

The noise impact analysis for the construction and operation of this Project is based on criteria defined in the FTA Transit Noise and Vibration Impact Assessment (FTA Guidance Manual). The FTA Guidance Manual provides three levels of assessment, which can be used to evaluate impacts from rail transit projects. These levels are Screening, General Assessment, and Detailed Analysis. Because this is an environmental-level analysis, the General Analysis was used for the impact evaluation of the Project. A Detailed Analysis is generally appropriate once the preliminary engineering phase of a project has been reached, and when most of the project details are known and specified and field testing can be conducted to determine site-specific vibration propagation characteristics, including the effects of specific buildings on vibration transmission. It may also be



appropriate to perform field tests to better define the vibration source characteristics of the planned streetcar, if there is an existing system using this streetcar on a similar track system.

FTA Noise Criteria

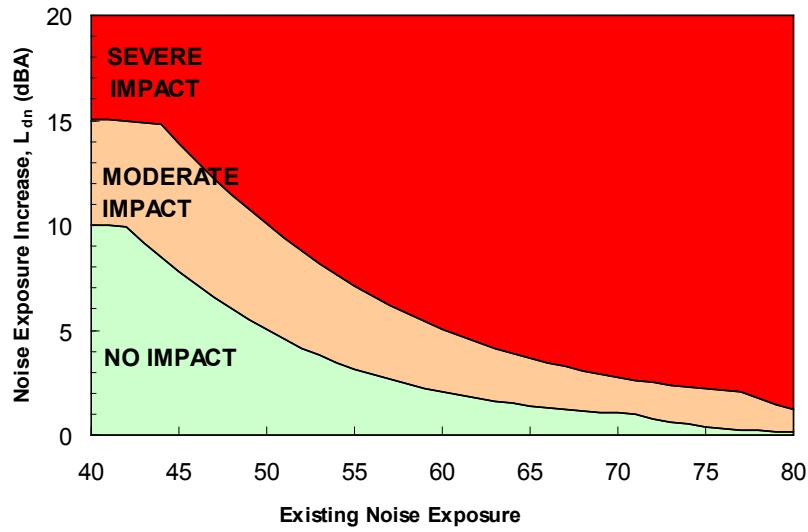
Within the FTA Guidance Manual, noise-sensitive land uses are grouped into three categories: Category 1, Category 2, and Category 3. The FTA Guidance Manual specifies a particular noise metric to be used depending on the specific land use (e.g., residential). The day-night sound level (L_{dn}) is typically used for residential, and the 24-hour equivalent sound level (L_{eq}) is typical for office use. For traffic noise studies, L_{eq} is usually evaluated over a 1-hour time period, and is denoted as $L_{eq}(h)$. Thus, the ambient measurements were conducted to characterize the existing environments accordingly. Table 4.10-1 describes the FTA land-use categories, and specifies the noise metric to be used and the criterion for each category. The FTA noise impact thresholds, as indicated in Figure 4.10-1 and Figure 4.10-2, are based on the increase of the existing ambient noise level associated with operations of the Project, or in combination with other new planned projects (i.e., cumulative impact).

Three levels of noise impact are defined by the FTA Guidance Manual: *No Impact*, *Moderate Impact*, and *Severe Impact*. These levels of impact are shown graphically in Figure 4.10-1 for Category 1 and Category 2 land uses, and in Figure 4.10-2 for Category 3 land use.

Table 4.10-1
FTA Land Use Category and Metric for Transit Noise Impact Criteria

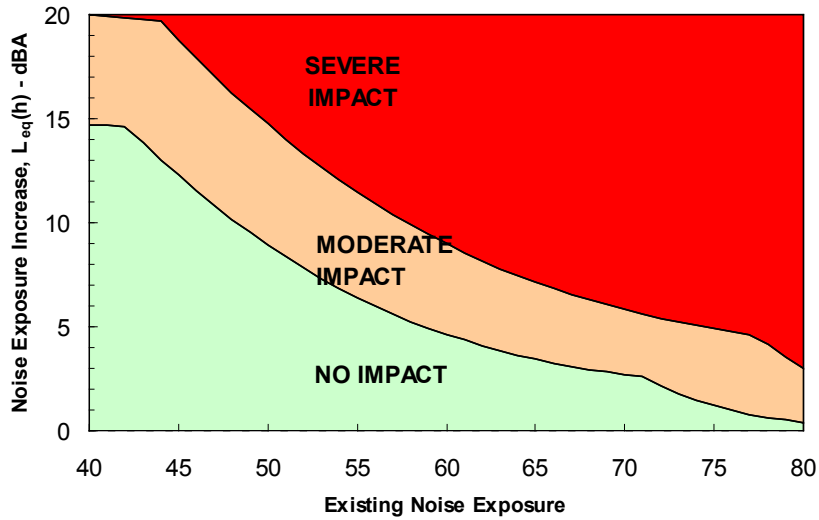
Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(h)$	Tracts of land where quiet is an essential element in the EIS/EIR intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheatres and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Outdoor L_{dn}	Residences and building 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 $L_{eq}(h)$	Institutional land uses, primarily daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios and concert halls fall into this category. Places for meditation or study associated with cemeteries, monuments, museums. Certain historical sites, parks and recreational facilities are also included.

Source: FTA, 2006.



Source: FTA, 2006.

Figure 4.10-1 Allowable Increase in Cumulative Noise Levels for FTA Category 1 and 2



Source: FTA, 2006.

Figure 4.10-2 Allowable Increase in Cumulative Noise Levels for FTA Category 3



FTA guidelines for assessing construction noise impact are presented in Table 4.10-2. Noise levels in the table are presented in terms of 8-hour L_{eq} for residential, commercial, and industrial land uses.

**Table 4.10-2
Guidelines for Assessing Construction Noise Impact by FTA**

Land Use	8-hour L_{eq} (dBA)	
	Day	Night
Residential	80	75
Commercial	85	80
Industrial	90	85
Notes: FTA = Federal Transportation Administration dBA = A-weighted decibel L_{eq} = equivalent sound level		

FTA Vibration Criteria

Similar to the wayside noise analysis, the FTA Guidance Manual provides three levels of assessment that can be used to evaluate impacts from rail transit operations (Screening, General Assessment, and Detailed Analysis). For the analysis presented in this report, the Screening and General Assessment procedures have been used for the impact evaluation of the Project. Criteria for construction activities presented in the FTA Guidance Manual were also evaluated using FTA-proposed criteria: one to assess vibration annoyance, and another to assess potential building damage.

Operations

Within the FTA Guidance Manual, vibration sensitive land uses are grouped into three categories: High Sensitivity, Residential, and Institutional. Table 4.10-3 shows the description of each land use category applied to the analysis.

The distance for the Screening Analysis associated with Streetcar operations was established to be 150 feet for Category 2, and 100 feet for Category 3 land uses. There are no Category 1 sensitive land uses in the vicinity of the Project.

When vibration-sensitive receptors (e.g., Category 2) are identified with a potential for impact, based on the Screening Analysis, then a General Vibration Assessment method is applied. The GBV and ground-borne noise criteria for the FTA General Assessment analysis accounts for the frequency of events, where *Frequent Events* are defined as more than 70 events (trains) per day; *Occasional Events* are between 30 and 70 events per day; and *Infrequent Events* are less than 30 events per day. Additionally, FTA provides separate criteria (not included in any category presented above) for buildings that are especially sensitive to vibration (e.g., research laboratories).



**Table 4.10-3
Category of Land Use for the FTA Vibration Analysis**

Vibration Category	Description of Land Use Category
Category 1 – High Sensitivity	“Included in Category 1 are buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance.” “Typical land uses covered by Category 1 are: vibration-sensitive research and manufacturing, hospital with vibration-sensitive equipment, and university research operations.”
Category 2 – Residential	“This category covers all residential land uses and any buildings where people sleep, such as hotels and hospitals. No differentiation is made between different types of residential areas.”
Category 3 – Institutional	“Vibration Category 3 includes schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference. Although it is generally appropriate to include office buildings in this category, it is not appropriate to include all buildings that have any office space.”
Source: FTA, 2006.	

The criteria for GBV analysis are based on the overall vibration level projected at the location of vibration-sensitive receptors. Table 4.10-4 indicates the FTA GBV for *Frequent*, *Occasional*, and *Infrequent* events. The LOS planned for the Project (118 trains per day) would be classified as a system with *Frequent Events*.

**Table 4.10-4
FTA Groundborne Vibration Impact Criteria for General Assessment**

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch per sec)		
	Frequent Events	Occasional Events	Infrequent Events
Category 1	65 VdB	65 VdB	65 VdB
Category 2	72 VdB	75 VdB	80 VdB
Category 3	75 VdB	78 VdB	83 VdB
Source: FTA, 2006. Notes: GBV = Groundborne Vibration VdB = vibration decibels			



Construction

The criteria for evaluating GBV due to construction activities have been divided into two categories: annoyance, and building damage. For evaluating potential annoyance due to construction vibration activities, the applicable criteria are those levels presented in Table 4.10-4 for the corresponding FTA land use category. Humans are sensitive to GBV at much lower levels than that which may cause structural damage or even cosmetic damage. Consequently, vibration levels associated with potential building damage are higher than those used in assessing annoyance. Several criteria have been presented for evaluating potential building damage, including those proposed by the U.S. Bureau of Mines (USBM, 1980; WIA, 2014; and FTA, 2006).

The FTA criteria relating to potential cosmetic cracking due to building vibration suggest that a ground vibration peak-particle velocity (PPV) of 0.12 inch per second (in/sec) could be used for historical buildings that are more susceptible to damage. However, based on the visual observation during the site visit, there are no such buildings in the proximity of the proposed alignment.

FTA recommends criteria between 0.2 and 0.5 in/sec for buildings Categories 1, 2, and 3. These are fairly conservative criteria to limit cosmetic damage to buildings; plaster in older buildings is more susceptible to cosmetic cracks than stucco or gypsum board treatments on newer buildings. Even though a suitable criteria is dependent on the type of structure (fragile, reinforced concrete, wooden building, etc.), to assess potential vibration damage, including surface cracking, a criterion of 0.2 in/sec has been used throughout the proposed alignment. This criterion provides a conservative threshold to assess construction-induced vibration for the environmental analysis.

4.10.2.2. Local Regulations

City of Sacramento

The Noise Element of the 2030 Sacramento General Plan provides goals and policies with regard to compatibility guidelines for community noise environments and new developments. The goals and policies concerning noise are provided in the Environmental Constraints section (City of Sacramento, 2009a). There are no quantitative noise criteria by which to assess and evaluate transit noise impacts.

Section 8.68.080 of the Ordinance exempts construction noise activities from the City's standards between the hours of 7:00 AM and 6:00 PM on Monday, Tuesday, Wednesday, Thursday, Friday, and Saturdays; and between 9:00 AM and 6:00 PM on Sunday. Construction activities include erection (excavation), demolition, alteration, or repair of any building or structure. However, an internal combustion engines used during construction must be equipped with suitable exhaust and intake silencer, and must be in good working condition; *otherwise, they are not exempt.*



Finally, Section 8.68.200 prohibits the operation of pile drivers, steam shovel, pneumatic hammers, derrick, steam or electric hoist, or other appliance to be classified as loud or unusual noise, between the hours of 10 PM and 7:00 AM. Provision K prohibits the transportation of metal rails, pillars, or columns of iron, steel, or other material, over and along streets and other public places upon carts, drays, cars, and trucks in any manner so as to cause loud noises or to disturb the peace and quiet of persons in the vicinity thereof.

City of West Sacramento

The City of West Sacramento General Plan consists of two documents: *General Plan Background Report* (City of West Sacramento, 2000) and the *General Plan Policy Document* (City of West Sacramento, 2004). The General Plan Policy Document, Section VII, Health and Safety of the Background Report, revised and adopted December 8, 2004, includes some goals and policies to address noise from transportation sources. Specifically:

Goal E: To protect city residents from the harmful effect of excessive noise.

Policy 3: “The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Figure II-1.” (Figure 4.10-4 herein).

Policy 5: “Noise created by new transportation noise sources (other than roadway improvement projects) shall be mitigated so as not to exceed the level specified in Table II-6 at outdoor activity areas or interior spaces of the existing uses specified in Table II-6.”

Table II-6 in the West Sacramento General Plan establishes the maximum outdoor noise levels from transportation noise sources to be 60 L_{dn} for most land uses. However, results of the noise survey indicate that the existing ambient noise levels in the vicinity of the Project are currently exposed to noise levels higher than those recommended in Table II-6; therefore, its applicability would not be feasible. Instead, this analysis will determine whether the Project-related noise would increase the noise environment.

For assessing construction noise, the FTA criteria shown in Table 4.10-4 have been used. The FTA criteria specify maximum noise levels in term of 8-hour L_{eq} . In assessing potential noise impacts due to ancillary facilities, this analysis will determine whether the Project-related ancillary noise would increase the noise environment.

City of Sacramento and City of West Sacramento Vibration Regulations

There are no regulations with respect to vibration from transit sources specified in the City of Sacramento General Plan and Municipal Code. The City of West Sacramento indicates a subjective criterion for vibration based on the concept of “noticeability,” and does not include a quantitative criterion for assessing vibration. The performance standard 17.32.030 section C indicates: “No



operation shall be installed or operated which by its construction or nature habitually or consistently produces noticeable vibration beyond the property line.”

4.10.3. Affected Environment

4.10.3.1. Existing Ambient Noise Environment

The majority of properties bordering the proposed alignment are commercial businesses, office spaces, and recreational facilities. Noise- and vibration-sensitive receptors adjacent to the alignment include hotel, residential, office, and commercial buildings. These buildings are at distances of 15 feet and further from the future centerline of the nearest track of the proposed alignment. Generally, commercial uses are not considered noise-sensitive, because in general, the activities are compatible with higher noise levels.

The existing ambient setting along the alignment of the Project is typical of an urban area with motor vehicle traffic. The existing ambient condition also includes portions of the Blue, Gold, and Green LRT lines. Both motor vehicles and LRT vehicles are the primary sources for ambient noise in most areas along the alignment of the Project. To characterize the existing acoustic environment along the alignment, noise measurements were conducted at the location of representative noise-sensitive receptors along the proposed corridor (e.g., hotel buildings). Ten representative site locations that are primarily residential were chosen to document the ambient levels in 2007. To characterize the existing environments, the noise survey consisted of both short-term recording and long-term noise measurements, performed between November 1 and November 9, 2007 for the Sacramento area; and November 28 to December 5, 2007 in West Sacramento. The L_{dn} (a 24-hour metric) is typically used for residential land uses. One-hour L_{eq} is typically used for office or institutional land uses.

To update and obtain current ambient conditions, new measurements were made at locations where it was deemed possible that current street traffic may have changed, as well as to supplement the 2007 ambient data. Where a different alignment is now being considered, additional long-term measurements were taken. In 2013, measurements were taken at eight locations, two of which were at the same locations as those used in 2007. The data from the other eight locations from 2007 were either considered still relevant, or no longer applied to the proposed alignment. Short-term (i.e., 15-minute) noise measurements were also taken in 2013 at selected locations to supplement the long-term data.

Long-term, continuous noise measurements were obtained using calibrated, precision, logging sound-level meters. In 2007, the sound-level meters were deployed between November 1 and November 8 (Sacramento); and between November 28 and December 5 (West Sacramento). In 2013, the sound-level meters were deployed between December 4 and December 5. The resulting data consisted of statistical noise levels measured over consecutive 1-hour intervals. The measured hourly L_{eq} was used to calculate the L_{dn} over each 24-hour period measured.

The locations for the noise survey performed in 2007 are summarized below in Table 4.10-5. Table 4.10-5 also shows the average L_{dn} obtained during the 7-day period at each long-term



location. The locations for the noise survey performed in 2013 are summarized in Table 4.10-6. All noise-measuring instruments used during the noise survey meet American National Standards Institute S1.4-1993 specifications for Type I Sound Level Meters.

**Table 4.10-5
Summary of the Existing Ambient Noise Levels (2007)**

Measurement Location	Land Use ¹	Date (2007)	Type	Measured Ambient Noise Level (dBA)
SACRAMENTO				
LT-1: 15th Street and L Street	Office	November 1 to November 8	Long-Term	71 L _{dn}
LT-2: 13th Street and L Street	Hotel, Auditorium	November 1 to November 8	Long-Term	68 L _{dn}
LT-3: 13th Street and J Street	Hotel, Convention Center, Office	November 1 to November 8	Long-Term	69 L _{dn}
LT-4: 8th Street	Office, Commercial	November 1 to November 8	Long-Term	75 L _{dn}
ST-1: K Street and 12th Street	Office, Theater, Hotel	November 9	Short-Term	72 L _{eq}
ST-2: 8th Street and Capitol Mall	Office	November 9	Short-Term	68 L _{eq}
WEST SACRAMENTO				
LT-5: West Capitol Avenue	Institutional	November 28 to December 5	Long-Term	69 L _{dn}
LT-6: Garden Street	Hotel	November 28 to December 5	Long-Term	66 L _{dn}
LT-7: Tower Bridge Gateway	Residential	November 28 to December 5	Long-Term	71 L _{dn}
ST-3: West Capitol Avenue	Institutional	December 5	Short-Term	68/65 L _{eq}
Notes: L _{dn} = day-night sound level L _{eq} = equivalent sound level ¹ Land Use based on City of Sacramento and West Sacramento Designations (see Figure 4.9-1) and existing conditions.				



**Table 4.10-6
Summary of the Existing Ambient Noise Levels (2013)**

Measurement Location	Land Use ¹	Date (2013)	Type	Measured Ambient Noise Level (dBA)
SACRAMENTO				
LT-3: 13th Street and J Street	Hotel, Convention Center, Office	December 4 to December 5	Long-Term	74 L _{dn}
LT-9: 100 Capitol Mall	Hotel	December 4 to December 5	Long-Term	73 L _{dn}
LT-10: 5th Street and I Street	Residential, Office, Daycare	December 4 to December 5	Long-Term	71 L _{dn}
LT-11: 8th Street and J Street	Residential, Office, Commercial	December 4 to December 5	Long-Term	74 L _{dn}
LT-12: 19th Street and K Street	Residential, Commercial	December 4 to December 5	Long-Term	69 L _{dn}
LT-13: 18th Street and W Street	Residential,	December 4 to December 5	Long-Term	74 L _{dn}
ST-5: 3rd Street and J Street	Residential, Hotel	December 6	Short-Term	71 L _{eq}
WEST SACRAMENTO				
LT-7: Tower Bridge Gateway and Garden Street	Residential	December 4 to December 5	Long-Term	66 L _{dn}
LT-8: Lincoln Highway and 5th Street	Residential (Future)	December 4 to December 5	Long-Term	67 L _{dn}
ST-4: 1016 5th Street	Residential (Future)	December 3	Short-Term	70 L _{eq}
Notes: L _{dn} = day-night sound level L _{eq} = equivalent sound level ¹ Land Use based on City of Sacramento and West Sacramento Designations (see Figure 4.9-1) and existing conditions.				

4.10.3.2. Existing Vibration Setting

To document the existing vibration environment, vibration measurements along the existing LRT lines near 8th Street and Capitol Mall and at the corner of K Street and 12th Street were performed on November 9, 2007. Two locations were chosen to characterize the levels of ground vibration generated by the light rail vehicle, and to obtain relevant information on the ground vibration propagation characteristic to be used in the vibration propagation model. These data were used in the current analysis. In addition to measuring the ambient vibration, measurements of the groundborne vibration from existing LRT vehicle operations were performed using an array of accelerometers located at distances from the track centerline between 8 and 45 feet. Several train passbys were recorded and analyzed to obtain the frequency distribution and the overall vibration level of each train passby. The results of the vibration measurements are included in the Noise and Vibration Technical Report.



In addition to measuring the ambient vibration, measurements of the GBV from existing transit vehicle operations were performed using an array of accelerometers placed at distances from the track centerline between 8 and 45 feet. Several train passbys were recorded and analyzed to obtain the frequency distribution and the overall vibration level of each train passby. The locations for vibration measurements and results of the vibration survey are presented in the Noise and Vibration Technical Report.

4.10.4. Environmental Effects

A community noise impact associated with operation of the Project would result in a noise impact if:

- The increase in total (cumulative) noise levels from Project operations and the existing ambient noise levels exceeds the threshold for Severe Impact as indicated in the FTA Guidance Manual (see Figure 4.10-1 and Figure 4.10-2) and presented herein.
- The level of impact projected from Project operations is Moderate Impact, and the increase over the existing ambient noise associated to Moderate Impacts is higher than 5 dBA.
- Construction activities exceed the noise standards in Table 4.10-2, Guidelines for Assessing Construction Noise Impact by FTA, during the hours where construction is not exempt from the Noise Ordinance.
- Operations of substations and ancillary facilities exceed the noise criteria (adjusted) levels for the Cities of Sacramento and West Sacramento. Noise levels presented the table shall include a 5 dBA reduction (penalty) to account for simple tones.
- The Project would generate a vibration impact if the levels of projected vibration at vibration-sensitive receptors exceed the criteria presented in Table 4.10-4, FTA Groundborne Vibration Impact Criteria for General Assessment. Otherwise, streetcar operations would generate no vibration impact.
- The Project would generate a vibration impact if construction-induced vibration would exceed the criterion of 0.2 in/sec PPV, or vibration levels presented in Table 4.10-4, FTA Groundborne Vibration Impact Criteria for General Assessment; at the location of sensitive receptors, the Project would generate a vibration impact.

4.10.4.1. No Action Alternative

Under the No Action Alternative, no project-related noise and vibration would occur in the study area. Increased noise levels would be generated through ongoing construction, traffic, and transit operation. Future noise levels associated with the No Action Alternative would be associated with the increases in vehicular traffic volumes. Vehicle traffic in the vicinity of the Project is expected to increase differently at different intersections and the increase in noise levels associated with the No Action Alternative would be generally in the range of 1.5 to 5.0 dBA in Sacramento, as shown in Table 8-2 and Table 8-3 of the Noise and Vibration Technical Report (WIA, 2014). There will be no new sources of transportation-related vibration associated with the proposed project under the No Action Alternative. However, vibration effects would occur from other approved development and construction in the area.



4.10.4.2. Action Alternative

The Project includes a 3.3-mile surface rail alignment on embedded tracks, including shared portions of the existing RT LRT alignment. The Project would connect Downtown Sacramento with the City of West Sacramento. The eastern end of the line includes a loop around the Sacramento Convention Center. The proposed alignment would run on H Street, connecting with the Sacramento Intermodal Transportation Facility, which includes the Amtrak Station. In the downtown area, the streetcars would use the tracks of the existing Gold, Blue, and Green LRT Lines. The western terminus would be just west of Merkley Avenue adjacent to the West Sacramento Civic Center.

The Project includes the operation of 112 single-car train trips during the daytime, and 6 trains at night (including both directions of travel). Total trains are based on 15-minute and 20-minute headways during peak and off-peak operations, respectively. The maximum proposed train speed is between 20 mph and 35 mph, depending on the location along the route.

Modern streetcar vehicles are expected to generate a sound exposure level of 77 dBA or its equivalent maximum level of 72 dBA for a single 50-foot-long vehicle at 50 feet from the track centerline, traveling at 20 mph. Wheel squeal noise on tight curves is another potential noise issue that is addressed in this analysis. Modern streetcars usually have resiliently supported wheels, which reduces the potential for squeal noise (WIA, 2014).

For purposes of this analysis, the effects of the Project are described under two scenarios: Existing Plus Streetcar Scenario; and Existing Plus Streetcar Plus H Street LRT Scenario. This is because the proposed relocation of LRT to H Street will be constructed within 5 years of Streetcar opening day operation and, in the interim, Streetcar and LRT will both use the K Street segment. The Existing Plus Streetcar Scenario (with both streetcar and LRT operations on K Street) represents the worst-case scenario and could reflect interim operation prior to LRT relocation. The analyses for the two scenarios relies on estimates of the future ambient noise conditions (which are based on the traffic analysis performed by Fehr & Peers), and information collected on future operations for RT LRT.

Operational Noise Effects

Potential Increase in Noise Levels from Streetcar Operations and the Existing Ambient Conditions to Exceed the Threshold for Severe Impact as Indicated in the FTA Guidance Manual

The methodology used in assessing noise and vibration effects from operation of the Project is contained in the FTA Guidance Manual. Two levels of analysis were applied to the Project alignment: Screening and General Assessment. Based on the screening distance procedure and assumptions described above, the potential for noise impact has been estimated for sensitive receptors within 260 feet of the proposed alignment.

The FTA noise impact criteria are based on the change (i.e., increase) from the existing ambient noise level to the future noise level, including the effects of the Project and the effects due to other planned future projects unrelated to the Project. The future ambient without the Project was determined by modeling the increase due to changes in local motor vehicle traffic.



To assess the contribution and effect of the Project alone, the streetcar operational noise was modeled and combined with existing ambient conditions. To evaluate the cumulative impact of the future ambient compared to the existing ambient, the streetcar noise was combined with the future predicted ambient due to motor vehicle traffic and LRV operations. In this manner it is possible to identify how much of an impact is due to the streetcar operation and how much due to increases in motor vehicle traffic in combination with the Project.

The amount of noise increase determines whether there is No Impact, Moderate Impact or Severe Impact. Per the FTA Guidance Manual a noise impact occurs for those receptors with a Severe Impact. Where Moderate Impact is indicated and there would be an increase over the existing ambient of greater than 5 dBA, as per the FTA Guidance Manual noise control measures have been evaluated to reduce noise increases to affected receptors.

The analysis for noise is based on the comparison of the increased levels (L_{dn} or L_{eq}) associated with streetcar operations to the impact threshold. Severe Impacts would require measures to minimize harm unless there are no practical means to do so.

Sacramento

Operation of the Project under the Existing Plus Streetcar in the city of Sacramento would exceed the threshold for a Severe Impact at the Cathedral Building Apartments and would create a Moderate Impact at two other apartment buildings, as defined in the FTA Guidance Manual, and shown in Table 4.10-7. This effect is due to the increase of train passbys with potential for wheel squeal at H Street and 8th Street and the addition of curved track with the potential for wheel squeal at L Street and 19th Street. Implementation of Mitigation Measure NV-1 would reduce the Severe Impact at the Cathedral Building Apartments to a Moderate or No Impact level, as defined in the FTA Guidance Manual (see Figures 5.10-1 and 5.10-2). The two other apartment buildings would experience Moderate Impacts, with a noise increase of less than 5 dBA.

Implementation of Mitigation Measure NV-1 would reduce these Moderate Impacts to No Impact. Noise from streetcar operations on tangent tracks would be below the threshold for Moderate Impact, and therefore there would be No Impact. As a result, with implementation of Mitigation Measure NV-1, operation of the Project in the City of Sacramento would not result in long-term adverse noise effects.

West Sacramento

Operation of the Project in the City of West Sacramento would exceed the FTA criterion for Moderate Impact at two hotels—the Old Town Inn, and Rodeway Inn Capitol Motel—in the proximity of the intersection of West Capitol Avenue and Garden Street. Adverse effects would occur due to wheel squeal noise. Implementation of Mitigation Measure NV-1, would reduce the effects to Moderate Impact or No Impact. As a result, with implementation of Mitigation Measure NV-1, operation of the Project in the City of West Sacramento would not result in long-term adverse effects.



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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**Table 4.10-7
 Summary of Total (Existing + Streetcar) Noise Levels for the Downtown/Riverfront Streetcar Project**

Representative Location	Land Use	Side of Track	Speed (mph)	Dist. to Nearest Track cL (feet)	X-over Distance	Existing Ambient Level (L _{dn} /L _{eq})	Total Noise Levels			Total Noise Levels - With Mitigation			
							Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type	Mitigation	Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type
Downtown Sacramento													
Embassy Suites Hotel	Hotel	EB/WB	30	110	430	67	67	0.2	NI	none	67	0.2	NI
Office - 300 Capitol Mall	Office	NB	30	180 curve (180)	340	67	68	0.6	NI	none	67	0.2	NI
Holiday Inn	Hotel	NB	30	115	none	66	67	0.2	NI	none	67	0.2	NI
Office - 1006 4th Street	Office	NB	30	275	none	63	63	0.2	NI	none	63	0.2	NI
Vagabond Inn	Hotel	NB	30	85	none	68	69	0.1	NI	none	69	0.1	NI
Robert T. Matsui United States Courthouse	Office	WB/EB	30	160	none	69	69	0.1	NI	none	69	0.1	NI
County Offices - 813 6th Street	Office	SB	30	25	145	69	70	0.3	NI	none	70	0.3	NI
Sacramento County Main Jail	MF	SB	30	55	185	69	70	0.2	NI	none	70	0.2	NI
631 H Street Apartments	MF	WB	30	25 curve (30)	30	74	76	2.2	MI	1	75	1.1	MI
Sacramento County Administrative Building	Office	SB	30	25	none	70	71	0.2	NI	none	71	0.2	NI
Sacramento Housing and Redevelopment Agency	Office	SB	30	65	none	69	69	0.1	NI	none	69	0.1	NI
Offices - 917 7th Street	Office	SB	30	25	none	69	69	0.3	NI	none	69	0.3	NI
Offices - 923 7th Street	Office	SB	30	25	none	71	71	0.2	NI	none	71	0.2	NI
800 J Street Lofts	MF	NB	30	50	none	71	71	0.1	NI	none	71	0.1	NI
922 8th Street Apartments (2nd floor above commercial)	MF	NB	30	25	none	70	70	0.2	NI	none	70	0.2	NI
Sacramento Public Library	Library	NB	30	50	none	70	70	0.1	NI	none	70	0.1	NI
Gordon D. Schaber Sacramento County Courthouse	Office	EB	30	145 curve (145)	180	67	67	0.4	NI	none	67	0.2	NI
Shasta Hotel	Hotel	WB	20	145	none	69	69	0.0	NI	none	69	0.0	NI
Crest Theater	Movie Theater	WB	20	35	none	72	72	0.1	NI	none	72	0.1	NI
El Cortez Apartments - 1110 11th Street	MF	EB	20	110	none	72	72	0.0	NI	none	72	0.0	NI



**Table 4.10-7
 Summary of Total (Existing + Streetcar) Noise Levels for the Downtown/Riverfront Streetcar Project**

Representative Location	Land Use	Side of Track	Speed (mph)	Dist. to Nearest Track cL (feet)	X-over Distance	Existing Ambient Level (L _{dn} /L _{eq})	Total Noise Levels			Total Noise Levels - With Mitigation			
							Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type	Mitigation	Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type
Cathedral of the Blessed Sacrament	Church	EB	20	40	40	72	73	0.7	NI	none	73	0.7	NI
The Cathedral Building Apartments	MF	EB/WB	20	15 curve (25)	40	73	76	3.1	SI	¹	74	1.0	MI
Sheraton Grand	Hotel	EB	30	50 curve (160)	125	70	70	0.2	NI	none	70	0.2	NI
St. Paul Episcopal Church	Church	EB	30	50	none	70	70	0.1	NI	none	70	0.1	NI
Sacramento Memorial Auditorium	Auditorium	EB	30	110	none	69	69	0.1	NI	none	69	0.1	NI
Maydestone Apartments	MF	EB	30	50	none	70	70	0.1	NI	none	70	0.1	NI
The Elliott Building (18 lofts on 3rd story)	Office/MF	EB	30	50	none	70	70	0.1	NI	none	70	0.1	NI
Sutter Place Condominiums	MF	SB	30	60	none	67	67	0.2	NI	none	67	0.2	NI
1801 L Street Apartments	MF	SB/WB	30	30 curve (30)	none	67	69	1.8	MI	¹	67	0.5	NI
1914 L Street	SF	SB/WB	30	200 curve (200)	none	67	67	0.3	NI	none	67	0.1	NI
1824 L Street (3-plex)	MF	WB	30	45 curve (105)	none	66	67	0.6	NI	none	67	0.3	NI
L Street Lofts - 1818 L Street	MF	WB	30	35 curve (110)	none	69	69	0.4	NI	none	69	0.2	NI
1804 L Street (4-plex)	MF	WB	30	40	none	67	67	0.2	NI	none	67	0.2	NI
St. John's Lutheran Church	Church	WB	30	85	none	64	65	0.2	NI	none	65	0.2	NI
YWCA	Hostel	WB	30	50	none	69	69	0.1	NI	none	69	0.1	NI
Residence Inn by Marriott	Hotel	WB	30	65	none	69	69	0.1	NI	none	69	0.1	NI
Sacramento Community Center	Theater	WB	30	130	none	65	65	0.1	NI	none	65	0.1	NI
Hyatt Regency	Hotel	WB/NB	30	20 curve (115)	250	66	67	1.1	NI	none	67	0.8	NI
H Street between 8th and 12th (LRT not Streetcars)													
Gordon D. Schaber Sacramento County Courthouse	Court/Office	EB	30	45 curve (145)	180	68	69	1.6	NI	none	69	0.6	NI



**Table 4.10-7
 Summary of Total (Existing + Streetcar) Noise Levels for the Downtown/Riverfront Streetcar Project**

Representative Location	Land Use	Side of Track	Speed (mph)	Dist. to Nearest Track cL (feet)	X-over Distance	Existing Ambient Level (L _{dn} /L _{eq})	Total Noise Levels			Total Noise Levels - With Mitigation			
							Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type	Mitigation	Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type
Sacramento City Hall	Institutional	WB	30	35	none	68	68	0.4	NI	none	68	0.4	NI
Hostel (HI Sacramento) - 925 H Street	Hostel	EB	30	45	none	67	68	0.8	NI	none	68	0.8	NI
1019 H Street Apartments 3-Story	MF	EB	30	30	none	68	69	0.8	NI	none	69	0.8	NI
1023 H Street Apartments 2-Story	MF	EB	30	30	none	68	69	0.8	NI	none	69	0.8	NI
Best Western	Hotel	WB	30	25 curve (55)	none	69	71	2.1	MI	¹	70	1.0	NI
West Sacramento													
Economy Inn	Hotel	WB/EB	35	80	160	67	68	0.4	NI	none	68	0.4	NI
West Sacramento City Hall	Institutional	WB	35	60	none	67	68	0.4	NI	none	68	0.4	NI
Sacramento City College: West Sacramento Center	School	EB	35	70	none	67	67	0.3	NI	none	67	0.3	NI
West Sacramento Community Center	Auditorium	EB	35	70	none	67	67	0.3	NI	none	67	0.3	NI
Casa Mobile Park	SF	WB	35	280	none	60	60	0.5	NI	none	60	0.5	NI
Silvey's Motel	Motel	WB	35	75	none	67	67	0.3	NI	none	67	0.3	NI
City of Dharma Realm	Church	EB	35	45	none	68	68	0.4	NI	none	68	0.4	NI
Budget Inn	Motel	WB	35	70	none	67	67	0.3	NI	none	67	0.3	NI
Crest Motel	Motel	WB	35	55	none	68	68	0.3	NI	none	68	0.3	NI
Town House Motel	Motel	WB	35	60	none	68	68	0.3	NI	none	68	0.3	NI
Flamingo Motel	Motel	WB	35	55	none	68	68	0.3	NI	none	68	0.3	NI
Old Town Inn	Motel	WB	35	80 curve (80)	none	66	68	1.4	MI	¹	67	0.5	NI
Rodeway Inn Capitol	Hotel	EB	35	50 curve (50)	none	65	67	2.6	MI	¹	66	1.0	NI
(Future) Tribeca West Res. Project	SF	EB	35	150 curve (150)	none	65	66	1.1	NI	none	65	0.4	NI
Ironworks Lofts and Homes	MF/SF	EB	35	190 curve (190)	none	67	67	0.5	NI	none	67	0.2	NI
(Future) Riverview Project – three towers on SR 275	MF	EB	35	100 curve (200)	none	66	67	0.6	NI	none	66	0.3	NI



**Table 4.10-7
 Summary of Total (Existing + Streetcar) Noise Levels for the Downtown/Riverfront Streetcar Project**

Representative Location	Land Use	Side of Track	Speed (mph)	Dist. to Nearest Track cL (feet)	X-over Distance	Existing Ambient Level (L _{dn} /L _{eq})	Total Noise Levels			Total Noise Levels - With Mitigation			
							Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type	Mitigation	Combined L _{dn} - Streetcar and Existing Ambient (dBA)	Increase (dBA)	Imp. Type
Welcome Grove Motel & RV Park	Motel	WB	35	350 curve (450)	none	63	64	0.9	NI	none	64	0.2	NI
(Future) Washington Neighborhood Res. Project	MF	WB	35	125 curve (240)	175	68	68	0.5	NI	none	68	0.3	NI
West Sacramento Maintenance Facility													
(Future) Rivermark Apartments	MF	WB	5	350	none	64	64	0.0	NI	none	64	0.0	NI
(Future) Park Moderns Townhomes	SF	WB	5	100	none	66	66	0.0	NI	none	66	0.0	NI
Sacramento Maintenance Facility													
1825 W Street	SF	-	5	220	none	72	72	0.0	NI	none	72	0.0	NI
2220 19th Street	SF	-	5	200	none	71	71	0.0	NI	none	71	0.0	NI
2406 19th Street	SF	-	5	170	none	72	72	0.0	NI	none	72	0.0	NI
Bayside Church	Church	-	5	130	none	70	70	0.0	NI	none	70	0.0	NI
1826 X Street	SF	-	5	165	none	73	73	0.0	NI	none	73	0.0	NI
2000 X Street	SF	-	5	270	none	73	73	0.0	NI	none	73	0.0	NI

Notes:
¹ Rail Lubrication at Curve
 cL = Center Line
 EB = eastbound
 MF = Multi-Family Building
 MI = Moderate Impact
 NB = northbound
 NI = No Impact
 SB = southbound
 SF = Single-Family Building
 SI = Severe Impact
 WB = westbound



Ancillary Facilities and Streetcar Storage

Potential for Operations of Ancillary Facilities to Exceed Noise Criteria

Noise levels generated by traction power substations are expected to exceed criteria (55 dBA daytime and 50 dBA nighttime with tonal component) for the City of Sacramento at schools, hospitals, and churches at a distance of 130 feet or closer from the traction power substations during daytime (7 AM to 10 PM) operations; and at 230 feet during nighttime operations (10 PM to 7 AM). Similarly, in the portion of the proposed alignment along the City of West Sacramento, traction power substations would exceed the daytime criterion (55 dBA tonal) within 130 feet and the nighttime criterion (50 dBA tonal) within 230 feet without noise control measures.

There are two proposed locations for traction power substations. The traction power substations would be in the publicly owned right-of-way. Substations would convert electrical current to the proper voltage for streetcars, and occupy approximately 800 square feet of space). The streetcar line will be powered by two substations in West Sacramento. Two potential substation locations would be on existing publicly owned property: one on the southern side of Tower Bridge Gateway, between the Union Pacific Railroad Bridge and Garden Street; and the other on the northern side of Tower Bridge Gateway, also between the Union Pacific Railroad Bridge and Garden Street. There would also need to be a traction power substation incorporated into the future MSF in West Sacramento to support operation of the future Riverfront Street alignment. The proposed locations for traction power substations are in areas that are non-sensitive to noise (i.e., not in residential or other of areas noise-sensitive land use). Therefore, no noise impacts are projected for the traction power substations.

Projected wayside noise levels from the MSF proposed in Sacramento and West Sacramento have been included in the analysis. These projected levels do not take into account future traffic conditions. Future traffic would add to the ambient noise from general traffic; however, the traffic associated with MSF would be insignificant. In Sacramento, noise levels are projected to increase by less than 2 dBA, which results in No Impact or Moderate Impacts at nearby receptors. In West Sacramento, noise levels are projected to increase by approximately 4 dBA, primarily due to the low existing ambient level. This would result in Severe Impacts for the future residential projects near the MSF, as defined by FTA. Therefore, Mitigation Measure NV-3, is required at the West Sacramento MSF. With implementation of Mitigation Measure NV-3, operation of the traction power substations and MSF in the City of West Sacramento would not result in long-term adverse effects.

Operational Vibration Impacts

Potential for Projected Operational Vibration Levels at Sensitive Receptors to Exceed the FTA Groundborne Vibration Impact Criteria

The Project would generate a vibration impact if the levels of projected vibration at vibration-sensitive receptors exceed the criteria presented in Table 4.10-4, FTA Groundborne Vibration Impact Criteria for General Assessment. The Screening Level analysis for vibration, as with noise, is



based on distances from the rail alignment to determine whether there is likelihood that GBV from the Project could affect receptors in the screened area.

The FTA vibration criteria are applied to the vibration generated by a single train passby, and depend on the sensitivity of the land use of the receptor and the number of train passbys per day. The level of service proposed for the Project (118 trains per day, including both directions of travel) would be classified as a transit system with *Frequent Events* (i.e., more than 70 trains per day).

Because train speed has a significant effect on vibration, two analyses were conducted. The first analysis evaluated trains traveling at maximum speeds of 30 and 35 mph, depending on location. The second analysis evaluated trains traveling at more typical speeds for a shared right-of-way in a congested urban area (no more than 20 mph).

The vibration analysis model was based on a “generalized vibration attenuation” curve for light rail vehicles, as provided in the FTA *Guidance Manual*, and on general assumptions on the soil propagation characteristic based on preliminary data collected in the field. Limited vibration measurements were obtained, as appropriate for an environmental analysis. It is recommended that additional measurements, including soil vibration propagation testing, be made during the engineering design phase to evaluate the potential for efficient soil propagation at distances beyond 50 feet, site-specific vibration propagation, and the effects on vibration transmission into those buildings identified as being impacted in the current analysis.

Where Project streetcars would share a right-of-way with the existing LRV, the FTA *Guidance Manual* provides an alternative method for evaluating train vibration if there is already existing vibration from rail vehicles. The existing Sacramento LRT alignments (Gold, Green, and Blue Lines) are considered “heavily traveled rail corridors,” according to the FTA *Guidance Manual*, because there are more than 12 trains per day.

In this situation, where there is already groundborne vibration from trains, new trains using the existing rail alignment would only cause additional impact if their number significantly increases the number of vibration events; which, as stated in the FTA *Guidance Manual*, is if the new trains “approximately doubled the number of events.” If the number of new train is fewer than the existing trains, then additional impact would occur only if the vibration from the new rail vehicles is expected “to be higher than the existing vibrations by 3 VdB or more.”

The number of trains per day along the existing LRT alignment will not double with the addition of Project streetcars, and the Project streetcars are expected to produce vibration levels similar to those of the existing LRV. Consequently, no additional impact from the Project would occur along the existing LRT alignment, and it is only necessary to evaluate those segments of the Project alignment where new tracks will be constructed.

Along the segments of the Project alignment with new tracks, the analysis for streetcar speeds of 30/35 mph indicates that projected vibration levels are above the FTA criteria at eighteen



receptors. At streetcar speeds of 20 mph or less, projected vibration levels exceed FTA criteria at only three receptors.

During the detailed engineering phase of the project, it is anticipated that site-specific testing at the locations of impacted receptors indicated by the current analysis will result in the elimination or reduction to less-than-significant of impacts resulting from vibration. As noted, the analysis, with slower streetcar speeds of 20 mph or less, results in all but three impacts being eliminated. Further refinement of the operational speed profile would further reduce impacts. For example, if the speed adjacent to the Rodeway Inn Capitol were 13 mph instead of 20 mph, there would not be a vibration impact.

If refinement of the speed profile and/or site-specific vibration testing during engineering does not eliminate all vibration impacts, then vibration mitigation measures typically used for transit systems, appropriately designed and incorporated into the track design, would eliminate all impacts. Commonly used track vibration mitigation measures include ballast mats, high compliance rail fasteners, and floating slab track systems, in order of their effectiveness at reducing vibration. Selection and design of the appropriate mitigation measure for each situation should be determined during the engineering phase of the Project after additional field testing.

Sacramento

For the portion of the alignment in the City of Sacramento, if streetcar speeds are between 30 to 35 mph, then vibration levels would be as much as 13 VdB above FTA criteria at the Cathedral Building apartments, due to special trackwork. At other sensitive receptors, vibration levels would exceed FTA criteria by 2 to 6 VdB. However, if streetcar speeds are 20 mph or less, vibration levels would be substantially lower for standard trackwork, and vibration impacts would only occur at special trackwork in Sacramento. Projected vibration along tangent track would be at or below the FTA criterion. Near special track work, vibration levels at receptors would be as high as 85+ VdB, due to the increase in GBV level associated with the gap at the point of frog in the switch. Higher vibration levels due to special track work would be expected at the Cathedral of the Blessed Sacramento and the Cathedral Building Apartments on K Street, where a crossover is to be located. The majority of vibration impacts due to streetcar operations would be eliminated if the streetcar speeds were reduced to 20 mph or less. If speeds are not reduced and where remaining vibration impacts occur, Mitigation Measure NV-4, would call for the investigation of vibration control measures during the engineering phase, to determine the best method of vibration reduction for the reduction of adverse effects to sensitive receptors.

West Sacramento

In the City of West Sacramento, the projected GBV levels are expected to range from 56 to 74 VdB at sensitive receptors. The highest vibration levels would be generated along West Capitol Avenue, where receptors would be between 45 and 80 feet from the alignment tracks. Projected vibration levels at these receptors are 72 to 74 VdB, which would be at the FTA criterion, or above by 1 VdB.



Therefore, vibration effects due to streetcar operation would be incremental and would not result in substantial long-term adverse effects to sensitive receptors.¹⁰

Ancillary Facilities and Streetcar Storage

Potential for Operations of Ancillary Facilities to Exceed FTA Vibration Criteria

Vehicle storage is proposed at the MSF in Sacramento and West Sacramento. The facility was modeled in the Noise and Vibration Technical Report using a streetcar at a lower speed (10 mph) in the facility areas. Vibration levels would be below the FTA criteria by 5 to 20 VdB. A No Vibration Impact finding would be expected. No adverse vibration effects are projected due to either the Sacramento or West Sacramento storage facilities. Additionally, vibration due to traction power substations would be below the FTA criterion for Vibration Impact. No adverse effects would occur as a result of traction power substations.

Construction Noise Effects

Potential for Construction Activities to Exceed FTA Noise Standards during the Hours Where Construction is Not Exempt from the Noise Ordinance

Noise levels experienced at sensitive receptors, specifically residences, would vary according to distance from the noise source and conditions affecting noise transmission such as whether there is an unbroken line of sight between the source and the receptor. Buildings with an unbroken line of sight to the streetcar track, adjacent to the staging and loading areas, and along truck routes would experience the greatest increase in noise levels. Buildings shielded by houses or vegetation, or located farther from construction equipment, would experience lesser or no increase in noise levels. Specific locations would only be affected while equipment was working in that area, which would be a fraction of the total Project duration.

For purposes of this analysis, construction activities were assumed to occur only between 7:00 AM and 6:00 PM, in accordance with local ordinances. The criteria for construction noise used in the analysis correspond to those suggested by the FTA. The City of Sacramento exempts noise from construction-related activities from the local noise ordinance between the hours of 7:00 AM and 6:00 PM. The applicable noise limits in the West Sacramento local ordinance are lower than the existing ambient noise in the area of the Project. Therefore, it would not be feasible to use the local ordinance for compliance of construction noise.

For assessing impact, the analysis considered equipment types based on separate construction phases:

- Phase 1 (Excavation): During excavation, the Project would use backhoes, mounted impact hammer (hoe ram), excavators, dozers, compactors, vibratory rollers, pneumatic tools, and dump trucks to haul spoils.

¹⁰ Incremental increase in vibration is only applicable where there is existing train vibration; otherwise, the vibration criteria are absolute levels. The sensitive receptors are residential, which makes them Category 2 by definition.



- Phase 2 (Track installation): During track installation, the Project would use vibratory concrete mixers and concrete pump trucks.

The Project is planned to be at-grade with embedded tracks. Therefore, pile driving is not expected to occur and is not included in this analysis. The greatest source of noise during excavation would be a mounted impact hammer; and during track installation, the concrete pump trucks.

Sacramento

In the City of Sacramento, construction noise is exempt from the local noise ordinance between 7:00 AM and 6:00 PM, assuming that internal combustion engines are equipped with suitable exhaust and intake silencers and are in good working condition. The hours assumed for construction activities in this analysis were encompassed in the hours of exemption from local ordinance. Therefore, no adverse noise effects are expected during construction activities.

West Sacramento

The greatest expected levels of noise during construction at the location of noise-sensitive receptors in West Sacramento would be between 71 and 89 dBA L_{eq} . As required per the West Sacramento Noise Ordinance, internal combustion engines are to be equipped with suitable exhaust and intake silencers, and are to be in good working condition. Although West Sacramento does not have any provisions regarding construction noise, impacts associated with construction activities would occur during short periods of time. Normally, construction activities are carried out by segments, and for a short duration at each segment, even though the construction would last for years. Therefore, construction of the Project would generate short-term, temporary adverse noise impacts. Implementation of Mitigation Measure NV-5, would adhere to criteria defined in the FTA Guidance Manual for assessing construction noise impacts, and control the potential impacts to the nearby community during construction of the Project, avoiding adverse effects.

Construction Vibration Effects

Potential for Construction-Induced Vibration to Exceed the Criterion of 0.2 In/Sec PPV or Groundborne Vibration Impact Criteria

The assessment of potential adverse effects due to construction-induced vibration on the Project is based on the standard procedures described in the FTA Guidance Manual. FTA vibration impact criteria do not depend on existing vibration levels, but instead focus on the vibration anticipated to be generated by new transit source. Therefore, measurements of existing vibration levels along the alignment were not necessary. Neither the City of Sacramento nor West Sacramento has vibration limits for construction-related activities in their local ordinance. Construction vibration varies depending on the construction procedure, type of equipment involved, and the location of the construction site with respect to sensitive receptors. Buildings in the vicinity of the construction activities respond to vibration in different manners, depending primarily on their structural characteristics.



As stated above, for the purposes of assessing effects, the analysis considered equipment types based on two separate construction phases. Table 4.10-8 shows the noise emission levels and the percentage of usage assumed for calculation of significant noise and vibration impact.

**Table 4.10-8
 Construction Equipment Noise and Vibration Levels**

Equipment	Acoustical Use Factor for Noise (percentage)	Typical Maximum Noise Level (L_{max}) at 50 feet from Source, dBA
Backhoe	40	78
Dump Truck	40	77
Compactor	20	83
Excavator	40	81
Dozer	40	82
Mounted Impact Hammer (hoe ram)	20	90
Pneumatic Tool	50	85
Concrete Pump Truck	20	81
Vibratory Concrete Mixer	20	80
Source: FTA, 2006 and WIA archives Notes: PPV = peak particle velocity VdB = vibration decibels in/sec = inch per second		

The highest vibration would occur during Phase 1 (i.e., excavation). If a pavement breaker is used during this phase, this activity would generate the highest construction vibration. Such activity would generate a potential for building damage at receptors closer than 40 feet from the pavement breaker. However, if a different technique is used for braking pavement such as using a hoe ram with hydraulic chisel, the highest construction vibration levels would be generated during soil preparation and compaction. During compaction, the threshold for potential building damage is expected to be exceeded only at 25 feet from the vibratory roller. The use of hydraulic chisels during excavation instead of pavement breakers would maintain a PPV at amplitude below the criteria for building cosmetic cracking. Therefore, Mitigation Measure NV-6 (described below) includes restrictions on the use of pavement breakers during construction.

During Phase 2 of construction (i.e., tracks installation), expected vibration would be below the 0.2 in/sec criterion for cosmetic building damage; therefore, construction during track installation would not result in adverse effects due to vibration.



Most sensitive receptors are at a distance of 30 feet or further from the proposed track centerline. To avoid vibration-induced annoyance impacts due to construction activities, Mitigation Measure NV-6, would be implemented. In addition, vibration from construction activities would be below the threshold for building damage, and therefore no adverse effects would occur.

Vibration-induced impacts caused by construction activities would be temporary. Depending on the schedule expected to complete each task, the amplitude of vibration would change over time, and move throughout the proposed alignment as construction activities progress. Therefore, no adverse vibration effects on buildings resulting from construction activities are anticipated.

4.10.5. Measures to Minimize Harm

4.10.5.1. Streetcar Operation

The following mitigation measures were developed to reduce the potential noise and vibration impacts from streetcar operations:

Mitigation Measure NV-1: Implement Wheel Noise Control Measures. Resilient wheels or suitable equivalent noise control measures shall be implemented that achieves a reduction of wheel squeal to Moderate or No Impact level, as defined by the FTA noise criteria.

Mitigation Measure NV-2: Substation Design. To alleviate noise impacts from substation operation, noise impacts from substation operation will be mitigated in one of the following ways:

- Locate traction power substations at a distance farther from noise-sensitive receptors than the screening distance determined in this analysis.
- Re-evaluate the inside buffer during engineering design, and if necessary, install efficient enclosures to meet local noise threshold criteria.
- Place traction power substations in underground utility vaults.

With implementation of Mitigation Measure NV-2, substation noise impacts would not exceed City of Sacramento Exterior Noise Standard for Fixed Sources for the cities of Sacramento and West Sacramento.

Mitigation Measure NV-3: MSF Facilities. To avoid noise impacts from the MSF facilities in West Sacramento:

- Install sound walls around the MSF in West Sacramento. A perimeter wall that is 6 to 8 feet high would minimize noise from the MSF at this location.

With implementation of Mitigation Measure NV-3, the potential noise impacts from MSF facilities would not exceed FTA criterion.



Mitigation Measure NV-4: Vibration Control. To avoid vibration-related impacts from streetcar operations:

- Additional measurements, including soil vibration propagation testing, shall be made during the engineering design phase to evaluate the potential for efficient soil propagation at distances beyond 50 feet, site-specific vibration propagation, and the effects on vibration transmission into those buildings identified as being impacted in the current analysis.
- If streetcar operational speeds are 30 to 35 mph, then various forms of vibration control will need to be investigated during the engineering phase of the Project. There are different measures available depending on the level of vibration reduction required. For the highest level of reduction indicated for the Project (e.g., 13 VdB), a floating slab track may be implemented. Where lower levels of vibration reduction are required (e.g., 5 VdB or less), it may be possible to use a resilient ballast mat if the track design permits this approach, similar to that implemented at SFMTA.

At special trackwork (i.e., crossover), it should be possible to implement “flange-bearing frogs,” as has been accomplished elsewhere (e.g., SFMTA). The majority of vibration impacts due to streetcar operations would be eliminated if the streetcar speeds were reduced to 20 mph or less. In the City of Sacramento, the remaining vibration impacts at 20 mph or less would occur at the Cathedral of the Blessed Sacrament and the Cathedral Building Apartments where a crossover is to be located. As with the case where speeds are 30 to 35 mph, a flange-bearing frog would control vibration from such special trackwork. Assuming mitigation of flange bearing frog is implemented, then for the remaining receptors impacted at a vehicle speed of 20 mph the vibration level would be reduced if operating speeds were lower. The predicted level for 20 mph with flange bearing frog are 1 dB over criterion. Speed reduction would be minimal (e.g., 18 mph instead of 20mph).

In West Sacramento, the highest vibration levels generated along West Capitol Avenue are due to standard trackwork. The only impact along West Capitol Avenue is 1 dB above the FTA criterion, so use of a resilient ballast mat would mitigate the impact, if the track design permits it.

By implementing the mitigation strategies of Mitigation Measure NV-4—Vibration Control, the potential noise impacts from MSF facilities would not exceed FTA criterion.

Construction

To eliminate construction noise impacts, construction activities will be performed in accordance with local ordinances and local allowable hours. If night construction activities are mandated, the contractor will adhere to local noise restrictions for nighttime activities. In addition, to reduce impacts from long-term construction activities (longer than 2 weeks), construction activities will be conducted in compliance with the criteria presented in this report.



Mitigation Measure NV-5: Noise-Limiting Construction Practices. To control the potential impacts to the nearby community during construction of the Project, the following array of mitigation strategies would be employed:

- Locate noisy equipment as far as possible from noise-sensitive receptors. In addition, temporary barriers should be employed around the equipment.
- Use temporary noise barriers along the Project right-of-way. Barriers/curtains must achieve a Sound Transmission Class of 30 or greater in accordance with American Society for Testing and Materials International (ASTM) Test Method E90, and be constructed from material having a surface density of at least 2 pounds per square foot to ensure adequate transmission loss.
- Use sound absorption for temporary barriers in the area of Downtown Sacramento. In this area, a reverberant environment is produced due to the narrow distance between buildings and hard pavement surfaces. Line the inner face of the temporary barrier or use a curtain with an absorptive face. The absorptive liner or absorptive face should have a Noise Reduction Coefficient rating of 0.70 or greater, in accordance to ASTM Test Method C423.
- Require ambient-sensitive (“smart”) backup alarms, SAE Class D, or limit to SAE Class C (97 dB).
- Fit silencers to combustion engines. Ensure that equipment has quality mufflers installed, in good working condition.
- Switch off engines or reduce to idle when not in use.
- Lubricate and maintain equipment regularly. Equipment is normally quieter when well maintained.
- Construction-related truck traffic should be re-routed along roadways that would produce the least disturbance to sensitive receptors.

By implementing a combination of mitigation strategies of Mitigation Measure NV-5—Noise Limiting Construction Practices, the potential noise impacts from construction activities would adhere to criteria defined in the FTA Guidance Manual for assessing construction noise impacts.

Mitigation Measure NV-6: Vibration Monitoring. To avoid vibration-induced annoyance impacts due to construction activities, the activities should be kept below the FTA impact criteria for each land use category. Equipment and methods selected by the contractor to reduce the potential for annoyance will be reviewed and approved by the Project proponent. Possible mitigation strategies that will be implemented to ensure vibration-induced annoyance does not exceed the impact criteria include:

- Avoid the use of pavement breakers. Instead, use a hoe ram with hydraulic chisel.
- Avoid the use of dynamic compaction at a distance closer than 25 feet from any sensitive receptors, or use alternative methods of compaction in areas of construction that would be closer than 25 feet from sensitive receptors.



- Monitor vibration during construction to ensure compliance with criteria for building damage for buildings within 40 feet of construction activities. Conduct a preconstruction crack survey of these buildings.
- Plan routes for hauling material out of the Project site that would cause the least impact (annoyance). Propose truck routes along roads where the sensitive receptors are at least 75 feet from the street centerline.

By employing Mitigation Measure NV-6—Vibration Monitoring, the vibration annoyance impacts created by construction activities would be reduced to below the impact criteria.

4.10.6. Cumulative Noise and Vibration Effects

4.10.6.1.

The cumulative increase in noise levels for the Action Alternative with both the LRT and Streetcar on K Street is shown in Table 8-2 of the Noise and Vibration Technical Report. The cumulative increase in noise levels for the Action Alternative with the LRT moved to H Street is shown in Table 8-3 of the Noise and Vibration Technical Report. The cumulative increase in noise levels for both the LRT and Streetcar on K Street and LRT moved to H Street scenarios would range from approximately 1 to 8 dBA. Due to the increase in noise levels, either Action Alternative could result in a Cumulative Noise Impact.

However, the cumulative noise increase is primarily due to increased traffic rather than the addition of the Project. The cumulative noise levels for the majority of the receptors in the Action Alternative with both the LRT and Streetcar on K Street are the same as or lower than the No Action Alternative. For the Action Alternative with the LRT moved to H Street, the cumulative noise levels are 0 to 2 dBA higher than the No Action Alternative. Overall, beneficial cumulative effects to noise and vibration are anticipated because the project's operation would be relatively silent and there would be an incremental reduction in noise by the number of passenger vehicles removed from the roadway with the project in combination with other local and region-wide programs.



4.11. Parks and Recreation

4.11.1. Introduction to the Analysis

This section describes the existing parks and recreation environment, including recreational resources in the study area, which is defined as a ¼-mile buffer along the proposed alignment; discusses applicable regulations; and evaluates the potential adverse effects related to implementation of the No Action Alternative and the Action Alternative.

4.11.2. Regulatory Setting

4.11.2.1. Local

City of Sacramento General Plan

The City of Sacramento 2030 General Plan includes policies concerning maintenance of existing facilities, and for the development of new parklands, facilities, and programs throughout the city in its Education, Recreation and Culture (ERC) Element (City of Sacramento, 2009a). This element includes policies that apply to the study area, such as:

- **ERC 2.1.2 Connected Network.** The City shall connect all parts of Sacramento through integration of recreation and community facilities with other public spaces and rights-of-way (e.g., buffers, medians, bikeways, sidewalks, trails, bridges, and transit routes) that are easily accessible by alternative modes of transportation.
- **ERC 2.4.1. Service Levels.** The City shall provide 0.5 linear mile of parks/parkways and trails/bikeways per 1,000 population.
- **ERC 2.4.2. River Recreation.** The City shall work with regional partners, State agencies, private land owners, and developers to manage, preserve, and enhance the Sacramento and American River Parkways to increase public access for active and passive recreation.

City of Sacramento Parks and Recreation Master Plan

The 2005-2010 Parks and Recreation Master Plan was developed by the city to demonstrate the many essential personal, social, environmental, and economic benefits provided by parklands and recreational facilities; to establish policies to guide decision-making regarding the City of Sacramento Department of Parks and Recreation; and to chart the growth, direction, priorities, and agenda for the Department (City of Sacramento, 2009e). The following policies from the plan are applicable to the Project:

- **Policy 15.5.** Promote public transportation and bicycle and pedestrian routes connecting major park sites and recreation facilities to other public facilities throughout the region.
- **Safety and Access.** Expand nonmotorized transportation access/routes to parks and recreation facilities.



City of West Sacramento General Plan

The City of West Sacramento General Plan's Recreational and Cultural Resources Element provides general direction and guidance for the development and preservation of recreational and cultural resources in West Sacramento (City of West Sacramento, 2004). The following policy is applicable to the Project.

- The City shall ensure continuous public access to the Sacramento River for its full length within West Sacramento.

City of West Sacramento Parks Master Plan

The City of West Sacramento adopted the Parks Master Plan in September 2003. The Plan describes goals and objectives for the physical distribution, location, and amount of parks and recreational facilities in the West Sacramento. Goals and objectives include, "developing recreation corridors located along watercourses and railroad right-of-ways to link the park system and provide additional recreation opportunities" (Smith Group JJR, 2003).

4.11.3. Affected Environment

This section describes existing parklands and recreational facilities in the study area for the Project, as depicted in Figure 4.11-1.

4.11.3.1. Sacramento

Cesar E. Chavez Plaza

Cesar E. Chavez Plaza is a 3.05-acre park at 910 I Street which is owned and operated by the City of Sacramento. The park is located approximately 420 feet east, 420 feet north, 420 feet south, and 800 feet west of the proposed alignment. Park amenities include two picnic areas with tables and a shaded grass area, a fountain, and a café.

Crocker Park

Crocker Park is a 6.10-acre park at 211 O Street which is owned and operated by the City of Sacramento. The park is located approximately 375 feet south of the proposed alignment. Park amenities include four picnic areas with tables, and the Crocker Museum.

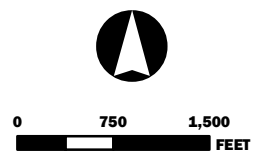
Capitol Park

Developed in 1870, Capitol Park is a 40-acre California State Park adjacent to the State Capitol Building between 12th and 15th Streets, and N and L Streets. Capitol Park is owned and operated by the California Department of Parks and Recreation. The northeast boundary of the park is adjacent to the proposed alignment. Park amenities include a decorative landscape with more than 450 varieties of trees and flowering shrubs, a Civil War Memorial, a Statute of Junípero Serra, a Vietnam Veterans Memorial, and a California Veterans Memorial.



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- Candidate Stop Location
- Existing Light Rail Station
- New Light Rail Station
- Proposed Streetcar Alignment
- Existing Light Rail Route
- H Street LRT Relocation
- Maintenance Facility Access
- Potential Maintenance Facility
- 1/4-Mile Radius
- County Boundary
- Park or Recreation Facility



**PARKS & RECREATION AREAS
WITHIN THE STUDY AREA**

January 2015 Downtown/Riverfront Streetcar Project
27560885 Sacramento & West Sacramento



FIGURE 4.11-1



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Saint Rose of Lima Park

Saint Rose of Lima Park is a 0.51-acre park at 705 K Street which is owned and operated by the City of Sacramento. The eastern and southern boundaries of the park are adjacent to the proposed alignment. Park amenities include a stage and a seasonal ice skating rink.

4.11.3.2. West Sacramento

Garden Park

Garden Park is a 0.6-acre park at the intersection of Central Street and Garden Street which is owned and operated by the City of West Sacramento. The park is located approximately 120 feet west of the proposed alignment. Park amenities include decorative landscaping, seating walls, a 16-foot-long community table, and bicycle parking. A public art feature is planned to be incorporated in the park.

River Walk Park

River Walk Park is a 4-acre park at 651 2nd Street between Tower Bridge Gateway and E Street; it is owned and operated by the City of West Sacramento. The proposed alignment crosses the park near its middle section using the existing Tower Bridge Gateway. Park amenities include a picnic area, barbecue pits, a promenade, a grand staircase, Veterans' Plaza, Union Square, and a walking path.

Rotary Centennial Mini Park

Rotary Centennial Mini Park is a 0.1-acre park at 580 Jefferson Boulevard, at Michigan Boulevard and Rockrose Road; it is owned and operated by the City of West Sacramento. The park is located approximately 700 feet north of the proposed alignment. Park amenities include decorative landscaping, park benches, and trash and recycling receptacles.

4.11.4. Environmental Effects

This section identifies and discusses the Project's potential to directly and indirectly affect parklands, open space, and other recreational facilities. It includes an analysis to determine if the Project would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities to the extent that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment;
- Result in adverse effects on recreational resources; or
- Conflict with applicable recreational and public access plans and policies.



4.11.4.1. No Action Alternative

The No Action Alternative would not implement the Project, and changes to the roadway rights-of-way in the study area would occur primarily because of planned development and roadway improvements unrelated to the Project. The No Action Alternative would maintain existing transit service and includes the planned transportation projects enumerated in local and regional plans. The impacts of planned development would be analyzed separately for each planned development; therefore, they are not analyzed under the No Action Alternative. The No Action Alternative would not increase the use of existing neighborhood and regional parks or other recreational facilities to the extent that substantial physical deterioration would occur or be accelerated at the facility; it would also not require construction or expansion of parklands and recreational resources that might then have a physical impact on the environment. Therefore, no adverse impacts are expected. The No Action Alternative would not have the beneficial impact of increasing non-auto access to recreational and community facilities around the downtown area.

4.11.4.2. Action Alternative

As described in Section 4.12, Population and Housing, the Project would not result in a direct or indirect increase in population in the study area. Access to existing parks and recreational facilities along the proposed streetcar alignment may be improved, particularly in those areas closest to streetcar stations, due to the increase in transit options. However, this would not result in a substantial increase in the number of park users. Therefore, the Project would not result in the need for new or expanded recreational facilities or parklands.

The proposed alignment would use existing public rights-of-way; the acquisition of right-of-way from existing or planned parks and recreational facilities along the proposed alignment would not be required. Streetcars would operate along existing roadways, some of which already have LRT operations. Access to parks along the proposed alignment would not be altered by the Project. Therefore, operation of the Project would have no direct or indirect adverse effect on existing or planned parks and recreational facilities.

The Project is not expected to produce adverse short- or long-term effects on the physical condition of existing recreational facilities and parklands along the proposed alignment. Operation of the streetcar may increase periodic noise for users of Saint Rose of Lima Park and Capitol Park due to the proximity of these parks to the proposed alignment. These two parks are located in an urban setting, where noise from existing traffic and LRT operations is typical. In addition, noise increases associated with the Project in the vicinity of the two parks would be well below the threshold of the allowable increase in cumulative noise levels as defined by the FTA and described in detail in Section 5.4.1. Therefore, no adverse effects on recreational resources would occur.



4.11.4.3. Construction Impacts

As described above, construction of the Project would occur within the existing public right-of-way. Recreational facilities and parklands exist directly along the proposed alignment at River Walk Park, Saint Rose of Lima Park, and Capitol Park. Access to River Walk Park would not be interrupted during construction because it is along the western bank of the Sacramento River and is accessed from E Street and 2nd Street. Saint Rose of Lima Park could be affected by noise, dust, and vibration during construction of the new platform and track along 7th Street. However, these effects would be temporary, and avoidance and minimization measures described in Section 4.2, Air Quality/Greenhouse Gas, and Section 4.10, Noise and Vibration, would ensure that these effects would not be adverse.

The streetcar alignment would be constructed along the northern side of Capitol Park in the left (southern) lane of one-way L Street between 12th Street and 15th Street. Construction could temporarily affect traffic, parking, and pedestrian circulation near Capitol Park. However, because construction activities would be limited to a three-block section at any one time, park access would not be substantially restricted during construction.

Construction activities for the Project would not encroach into the boundaries of any park or recreational properties. In addition, avoidance and minimization measures would be included in the Project to ensure that adverse effects would not occur. Therefore, no adverse construction effects associated with the Project would occur.

4.11.5. Measures to Minimize Harm

Compliance with the avoidance and minimization measures described in Section 4.2, Air Quality/Greenhouse Gas, and Section 4.10, Noise and Vibration, would ensure the Project would not result in adverse effects to parklands and recreational facilities.

4.11.6. Cumulative Effects

Implementation of planned development projects in the Project area would increase demand for neighborhood or regional parks or other recreational facilities because the number of dwelling units and commercial developments would increase in the Project area. However, because the Project would not result in an increase in population or demand for parks and recreational facilities in the Project area, implementation of the Project is not expected to contribute to this increased demand.



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4.12. Socioeconomics and Regional Growth

4.12.1. Introduction to the Analysis

Socioeconomic issues relevant to the evaluation of environmental effects include population and housing, labor force and employment, regional growth, and poverty status. This section describes existing population, economic, and housing conditions at varying geographic levels, including the City and County of Sacramento, Yolo County, and West Sacramento. The Project would not affect population, housing, or employment because it neither constructs any new housing units nor removes any existing units, and because it is likely that Project-related construction jobs would be filled by workers who already reside in the area. Overall, compliance with the California Housing Element Law and local policies would ensure that all impacts related to population and housing would not be adverse. An analysis of potential effects to environmental justice and poverty status from the Project is addressed in Section 4.14, Environmental Justice.

4.12.2. Regulatory Setting

4.12.2.1. Federal

CEQ guidelines for the implementation of NEPA require evaluation of the potential environmental consequences of all proposed federal activities and programs. This includes the examination of indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 CFR Section 1508.8) refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

4.12.2.2. State

CEQA requires the analysis of a project's potential to induce growth. The CEQA guidelines (Section 15126.2[d]) require that environmental documents "...discuss the ways in which the proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment..."

4.12.2.3. Local

SACOG has the responsibility to prepare regional housing needs assessments that specifically enumerate each city's and county's fair share of the regional housing need by economic segment. Each city or county in the SACOG region must ensure its housing element accommodates that fair share.

City of Sacramento General Plan

The City of Sacramento General Plan's Housing Element of 2013-2021 includes citywide objectives, policies, and actions that relate to the city's population, housing, and employment. The following Housing Element policy specifically deals with population and housing issues that relate to the Project (City of Sacramento, 2013b).



- **Policy H-1.2.4 Mix of Uses.** The City shall actively support and encourage mixed-use retail, employment, and residential development around existing and future transit stations, centers and corridors.

City of West Sacramento General Plan

The City of West Sacramento is in the process of updating its Housing Element. The Public Review Draft Housing Element of 2013-2021 was released in August 2013, and includes citywide objectives, policies, and actions that relate to the city’s population, housing, and employment. The following Housing Element policies specifically deal with population, housing, and employment issues that relate to the Project (City of West Sacramento, 2013c).

- **Policy HE-P-4.1:** Higher-density housing shall be located in proximity to, and be accessible to, commercial services, public transit routes, employment centers, and nonautomotive routes (e.g., pedestrian, bicycle).
- **Policy HE-P-4.2:** The City shall promote mixed-use and/or higher-density residential/commercial development along West Capitol Avenue, on infill properties in the Waterfront Zone, and in other appropriate commercial and mixed-use zones.

4.12.3. Affected Environment

This section discusses the existing and projected population, housing, and employment conditions of the cities of Sacramento and West Sacramento.

Population

The populations of the local jurisdictions in the region of influence are presented in Table 4.12-1. Between 2000 and 2010, Sacramento County, Yolo County, the City of Sacramento, and the City of West Sacramento all experienced small to moderate amounts of growth (Sacramento County, 2013; Yolo County, 2013). Table 4.12-2 shows projected population growth in Sacramento and Yolo counties, which are expected to increase by 40 percent and 39 percent, respectively, from 2010 to 2035.

**Table 4.12-1
 Population Statistics**

Area	2000	2010	Percentage change from 2000 to 2010
Sacramento County	1,223,499	1,418,788	16%
Yolo County	168,660	200,849	19%
City of Sacramento	407,018	466,488	15%
City of West Sacramento	31,615	48,744	54%

Sources:

- ¹ U.S. Census Bureau, 2000.
- ² U.S. Census Bureau, 2010.



**Table 4.12-2
Existing and Projected Population**

Area	2010 ¹	2035 ²	Projected Growth 2010-2035 (Percent)
Sacramento County	1,418,788	1,986,543	40%
Yolo County	200,849	278,786	39%
Sources:			
¹ U.S. Census Bureau, 2010			
² SACOG, 2008b			

Housing

The distribution of housing types in the region of influence and the cities of Sacramento and West Sacramento is shown in Table 4.12-3. Between 2000 and 2010, nearly 32,000 housing units were constructed in the City of Sacramento and nearly 7,000 were constructed in West Sacramento. In 2010, the vacancy rates in the cities of Sacramento and West Sacramento were estimated to be 8.5 percent and 7.0 percent, respectively (City of Sacramento, 2013b; City of West Sacramento, 2013c).

**Table 4.12-3
Housing Types 2000-2010**

Type of Structure	Single Family ¹	Multifamily 2-4 Units	Multifamily 5+ Units	Mobile Homes/ Other	Total
City of Sacramento					
2000	107,229	15,859	37,156	3,670	163,914
2010	127,660	16,227	47,823	3,686	195,446
City of West Sacramento					
2000	7,585	926	2,091	1,531	12,133
2010	13,474	1,261	3,156	1,257	19,148
Source: City of Sacramento, 2013b; City of West Sacramento, 2013c					
¹ Single-family includes attached and detached units					

Employment

The primary employment centers in the Downtown Sacramento area are offices for federal, State, and local government departments and related organizations. The study area encompasses a wide variety of stores and services in the City of Sacramento, including the Westfield downtown plaza. In addition, Old Sacramento contains a variety of museums, shops, hotels, restaurants, and other services that are popular among tourists and locals (City of Sacramento 2013). In West Sacramento, major employers represent a mix of government, manufacturing, wholesale, utilities, financial services, and food services (City of West Sacramento 2013).



Employment rates at the county level are presented in Table 4.12-4. According to the 2010 projections by the California Employment Development Department, more than 92,000 jobs are forecast to be added to the Sacramento region between 2008 and 2018 (City of Sacramento 2013).

**Table 4.12-4
 2010 Employment Rates**

Area	Employment Rate (Percent)	Unemployment Rate (Percent)
Sacramento County	64.8	11.7
Yolo County	64	9.7
Source: U.S. Census Bureau, 2010.		

4.12.4. Environmental Effects

This section identifies and discusses the impacts to population and housing from the Project, and includes an analysis to determine if the Project would:

- Induce substantial population growth in an area beyond that already projected, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.
- Contribute to substantial changes in employment due to Project construction.
- Contribute to long-term changes in employment in local jurisdictions encompassing the study area.

4.12.4.1. No Action Alternative

The No Action Alternative, which includes existing transporting system and planned transportation projects in the local and regional plans, would not result in new homes or businesses and, therefore, would not directly induce growth. Current development trends in the project area indicate that development would occur without the proposed project. As such, the No Build Alternative would not indirectly induce growth. Since the No Build Alternative would not directly or indirectly cause growth-inducing impacts, this alternative would not contribute to cumulative growth-inducing impacts.



4.12.4.2. Action Alternative

Population and Housing

The Project would generally be constructed in existing roadway rights-of-way, and would not require the acquisition of new rights-of-way, the exception being that the Project would require the acquisition of either an easement or fee title to property owned by the State of California to allow the streetcar to travel north from 3rd Street into the Railyards, however, the Project would not displace existing residents. Therefore, the Project would not have an adverse effect on population and housing. The operation of a new streetcar line in the study area could accommodate population growth near the proposed transit stations by enhancing the attractiveness of the corridor for residents and workers, because the Project would provide increased accessibility to transit and improved mobility by providing an alternative for trips between West Sacramento and Downtown Sacramento. However, these changes would largely represent a redistribution of projected growth rather than an increase, and therefore a potential increase in population would not be considered an adverse effect.

Employment

Project operation would provide new employment opportunities, such as streetcar operators and maintenance facility workers. Additionally the streetcar would lead to increased foot traffic around the stations, supporting economic development opportunities at and around the transit stations and indirectly increasing employment opportunities in the area, a beneficial impact. Given the large labor force available within Sacramento and Yolo counties, it is anticipated that the majority of the jobs would be filled by residents of Sacramento and Yolo counties, so most of these workers would not need to relocate. Therefore, the Project would not cause an immigration of new workers to the Sacramento area to fill new jobs.

Regional Growth

The extensions of urban services or transportation facilities into previously unserved areas, or the removal of obstacles to growth and development, are considered factors that may contribute to growth inducement. However, rather than induce growth, the Project would accommodate growth that has been planned by both the cities in the study area, and which has been projected in SACOG's regional transportation plan. The Project would be constructed in areas of Sacramento and West Sacramento that are currently urbanized or planned for future development. Therefore, the Project would not have an adverse effect on growth.



4.12.4.3. Construction Impacts

The Project would incorporate a new streetcar into the existing built environment in the cities of Sacramento and West Sacramento, while minimizing adverse construction impacts.

Project implementation would bring some economic benefits to the region as a result of expenditures for construction materials purchasing and construction payroll. Construction employment would result in payroll income for some households in the region, as well as indirect and induced economic benefits associated with material purchasing and construction worker spending. Although the construction workforce would be relatively small, and the amount of construction planned would be modest, these would be beneficial impacts to the businesses in the Project areas as well as to other businesses in the region.

Because this increase in construction employment would be temporary, it would not result in an increase in area population or demand for new housing. Thus, this impact is considered positive for Yolo and Sacramento counties, because the Project could provide jobs to existing residents of Yolo and Sacramento counties.

4.12.5. Measures to Minimize Harm

The Project would not result in adverse effects to regional growth, or to population, housing, or employment. Therefore, no measures to minimize harm are required.

4.12.6. Cumulative Effects

As stated above, operation of the Project would not directly or indirectly induce substantial population growth, displace a substantial number of residents, or contribute to long-term changes to employment. Growth in the area would be the result of approved planned developments that would occur regardless of the Project. The Project would improve access and mobility to the proposed developments near the transit stations, and help alleviate traffic in the study area that is related to such growth. As a result, the Project is expected to accommodate growth, rather than contribute to area growth.



4.13. Transportation

4.13.1. Introduction to the Analysis

This section describes the methods that were used to evaluate existing transportation and circulation conditions in the Project area, and potential transit, traffic, parking, railroad, bicycle, and pedestrian circulation effects related to the Project. This section also addresses measures to minimize harm and cumulative effects. This analysis is based on the *Downtown/Riverfront Streetcar Transportation Assessment* prepared for the Project (Fehr & Peers, 2014).

4.13.2. Regulatory Setting

4.13.2.1. Regional

Sacramento Area Council of Governments

The purpose of the SACOG MTP/SCS is to develop an integrated transportation system that advances the six guiding principles adopted by the SACOG Board in the fall of 2013:

- **Principle 1 — Smart Land Use.** Design a transportation system to support good growth patterns, including increased housing and transportation options, focusing more growth inward and improving the economic viability of rural areas.
- **Principle 2 — Environmental Quality and Sustainability.** Minimize direct and indirect transportation impacts on the environment for cleaner air and natural resource protection.
- **Principle 3 — Financial Stewardship.** Manage resources for a transportation system that delivers results that are both cost-effective and feasible to construct and maintain.
- **Principle 4 — Economic Vitality.** Efficiently connect people to jobs and get goods to market.
- **Principle 5 — Access and Mobility.** Improve opportunities for businesses and citizens to easily access goods, jobs, services, and housing.
- **Principle 6 — Equity and Choice.** Provide real, viable travel choices for all people throughout our diverse region.

4.13.2.2. Local

City of Sacramento 2030 General Plan–Mobility Element

- **Goal M 1.2 Multimodal System.** Provide expanded transportation choices to improve the ability to travel efficiently and safely to destinations throughout the city and region.
- **Policy M 1.2.1 Multimodal Choices.** The City shall promote development of an integrated, multi-modal transportation system that offers attractive choices among modes including pedestrianways, public transportation, roadways, bikeways, rail, waterways, and aviation and reduces air pollution and greenhouse gas emissions.
- **Policy M 1.2.2 LOS Standard.** The City shall allow for flexible LOS standards, which will permit increased densities and mix of uses to increase transit ridership, biking, and walking, which



decreases auto travel, thereby reducing air pollution, energy consumption, and greenhouse gas emissions.

1. **Core Area LOS Exemption** – LOS F conditions are acceptable during peak hours in the Core Area bounded by C Street, the Sacramento River, 30th Street, and X Street. If a Traffic Study is prepared and identifies a LOS impact that would otherwise be considered significant to a roadway or intersection that is in the Core Area as described above, the Project would not be required in that particular instance to widen roadways in order for the City to find Project conformance with the General Plan. Instead, General Plan conformance could still be found if the Project provides improvements to other parts of the citywide transportation system in order to improve transportation-system-wide roadway capacity, to make intersection improvements, or to enhance non-auto travel modes in furtherance of the General Plan goals. The improvements would be required within the Project site vicinity or within the area affected by the Project's vehicular traffic impacts. With the provision of such other transportation infrastructure improvements, the Project would not be required to provide any mitigation for vehicular traffic impacts to road segments in order to conform to the General Plan. This exemption does not affect the implementation of previously approved roadway and intersection improvements identified for the Railyards or River District planning areas.
2. **LOS Standards for Multi-Modal Districts** – The City shall seek to maintain the following standards in multi-modal districts including the Central Business District, areas within ½ mile walking distance of light rail stations, and in areas designated for urban scale development (Urban Centers, Urban Corridors, and Urban Neighborhoods as designated in the Land Use and Urban Form Diagram). These areas are characterized by frequent transit service, enhanced pedestrian and bicycle systems, a mix of uses, and higher-density development.
 - Maintain operations on all roadways and intersections at LOS A-E at all times, including peak travel times, unless maintaining this LOS would, in the City's judgment, be infeasible and/or conflict with the achievement of other goals. LOS F conditions may be acceptable, provided that provisions are made to improve the overall system and/or promote non-vehicular transportation and transit as part of a development project or a City-initiated project.
3. **Base LOS Standard** – The City shall seek to maintain the following standards for all areas outside of multi-modal districts:
 - Maintain operations on all roadways and intersections at LOS A-D at all times, including peak travel times, unless maintaining this LOS would, in the City's judgment, be infeasible and/or conflict with the achievement of other goals. LOS E or F conditions may be accepted, provided that provisions are made to improve the overall system and/or promote non-vehicular transportation as part of a development project or City-initiated project.



General Plan Policy M 1.2.2 applies to the study area roadway facilities as follows:

- The City of Sacramento operates and maintains all study intersections east of the Sacramento River (all locations except study intersection 18). All 19 of these intersections are in the Core Area (bounded by the Sacramento River, X Street, C Street, and 30th Street). Accordingly, Policy M 1.2.2(a) is applicable to these study intersections. LOS F is acceptable at these locations during peak hours only if the Project provides improvements to other parts of the citywide transportation system in the Project vicinity (or in the area affected by the Project's vehicular traffic impacts) to improve transportation-system-wide roadway capacity, to make intersection improvements, or to enhance non-auto travel modes in furtherance of the General Plan goals. Road widening or other improvements to road segments are not required.
- Study intersection 18 is west of the Sacramento River in the City of West Sacramento. Accordingly, it is subject to the applicable LOS policies of the City of West Sacramento (described later in this section).

The Mobility Element of the City of Sacramento's 2030 General Plan also includes the following policies related to connectivity, walking, biking, transit, and parking that are relevant to this study:

Policies:

- **M 1.3.1.** The City shall require all new residential, commercial, or mixed-use development that proposes or is required to construct or extend streets to develop a transportation network that provides for a well-connected, walkable community, preferably in a grid or modified grid.
- **M 1.3.2.** The City shall require large private developments to provide internal complete streets that connect to the existing roadway system.
- **M 2.1.1.** All new development shall be consistent with the applicable provisions of the Pedestrian Master Plan.
- **M 2.1.5.** The City shall provide a continuous pedestrian network in existing and new neighborhoods that facilitates convenient pedestrian travel free of major impediments and obstacles.
- **M 3.1.1.** The City shall support a well-designed transit system that meets the transportation needs of Sacramento residents and visitors.
- **M 3.1.16.** The City shall require developer contributions for bus facilities and improvements.
- **M 4.1.5.** The City shall continue to work with adjacent jurisdictions to establish the appropriate responsibilities to fund, evaluate, plan, design, construct, and maintain new river crossings.
- **M 4.3.1.** The City shall continue wherever possible to design streets and improve development applications in such a manner as to reduce high traffic flows and parking problems within residential neighborhoods.
- **M 5.1.1.** All proposed bikeway facilities shall be consistent with the applicable provisions of the Bikeway Master Plan.
- **M 5.1.2.** All proposed bikeway facilities are appropriate to the street classifications and types, traffic volume, and speed on applicable rights-of-way.



- **M 5.1.4.** The Proposed Project shall not result in conflicts between bicyclists and motor vehicles on streets, and bicyclists and pedestrians on multi-use trails and sidewalks.
- **M 5.1.7.** The Proposed Project shall include Class II bike lanes on all new arterial and collector streets.
- **M 6.1.1.** The City shall ensure that appropriate parking is provided considering access to existing and funded transit, shared parking opportunities for mixed-use development, and implementation of Transportation Demand Management plans.

City of West Sacramento General Plan–Transportation and Circulation Element

The City of West Sacramento General Plan (1990, updated in 2004) outlines the following key goals that relate to the City’s transportation system:

- To create and maintain a roadway network which will ensure the safe and efficient movement of people and goods throughout the city.
- To promote and maintain public and private transit systems that are responsive to the needs of all West Sacramento residents.
- To promote pedestrian and bicycle travel as alternatives to automobile use.

To achieve the goals above, these key policies are outlined in the General Plan, which relate to the Project:

- The City shall endeavor to maintain LOS C on all streets within the city, except at intersections and on roadway segments within ¼ mile of a freeway interchange or bridge crossing of the Deep Water Ship Channel, barge canal, or Sacramento River, where LOS D shall be deemed acceptable.¹¹
- The City shall cooperate with RT to actively pursue extension of light rail into West Sacramento to serve existing and proposed residential, business, and employment centers. Particular consideration shall be given to use of railroad rights-of-way, including the Yolo Short Line Railroad right-of-way in the Southport area. Transit station sites shall be identified along potential routes for extension of the light rail system.
- The City shall consider the establishment of a multi-modal transportation center.
- The City shall create and maintain a safe and convenient system of pedestrian and bicycle pathways which encourages walking or bicycling as an alternative to driving. New development shall be required to pay its fair share of the costs for development of this pathway system.
- The City shall establish a safe and convenient network of identified bicycle routes connecting residential areas with recreation, shopping, and employment areas within the city. The City shall cooperate with surrounding jurisdictions in designing and implementing an area-wide bikeway system.

¹¹ In 2011, the West Sacramento City Council adopted revised LOS policy language stating that in pedestrian-oriented, high-density, mixed-use areas, such as the Bridge District Specific Plan area, the Washington Specific Plan area, and West Capitol Avenue from Harbor Boulevard east, LOS E shall be deemed acceptable.



A number of planning documents outline the intended vision for the bicycle and/or pedestrian infrastructure in the study area.

- The *City of Sacramento's Pedestrian Master Plan* (City of Sacramento, 2006) sets forth three levels of pedestrian improvement (basic, upgraded, and enhanced).
- The *2010 Sacramento City/County Bikeway Master Plan* that identifies current and proposed bicycle facilities in the City of Sacramento portion of the study area.
- The *City of West Sacramento Bicycle, Pedestrian, and Trails Path Master Plan* (2013a) identifies current and proposed bicycle facilities in the City of West Sacramento portion of the study area.
- The *Regional Bicycle, Pedestrian and Trails Master Plan* (2013) is a comprehensive list of planned projects prepared by SACOG. This is the first plan shaped by the goals and strategies of the MTP/SCS adopted in 2012.

4.13.3. Affected Environment

This section describes existing transit, bicycle, and pedestrian, and roadway facilities in the study area. This section also describes existing operational conditions for the 19 existing study intersections analyzed in the transportation study.

Existing Transit

Local transit service is provided by both the RT and the YCTD. Regional rail service in the study area is provided by Amtrak. Figure 4.13-1 shows existing rail transit service in the study area; Figure 4.13-2 shows existing bus transit service in the study area. These services are further described below.

RT operates 67 bus routes and 38.6 miles of LRT service (on three lines: the Blue Line, Gold Line, and Green Line) throughout a 418-square-mile service area. All three LRT lines serve the study area and operate 7 days a week on 15-minute headways during the day, and 30-minute headways in the evening and on weekends and holidays. The study area is also served by 13 RT local bus lines and three RT express bus lines. All these bus lines either connect the downtown area with various neighborhoods in Sacramento or provide service in the downtown Capitol area. Fixed-route bus service operates on headways ranging from 15 to 75 minutes, depending upon the route. RT's annual ridership has steadily increased on both its bus and light rail systems from 14 million passengers in 1987, to more than 45 million passengers in Fiscal Year 2010. Weekday light rail ridership averages about 46,000, and the weekday bus ridership has increased to approximately 50,000 passengers per day.

YCTD service operates fixed-route bus service between downtown areas of Sacramento, West Sacramento, Davis, and Woodland, and also provides the only fixed-route transit service linking these areas to the Sacramento International Airport. The study area, which encompasses the City of West Sacramento in Yolo County, is served by 15 YCTD bus routes. Ten commuter routes and five local or intercity routes also serve the study area, with intercity routes operating through West



Sacramento to other destinations. All these routes use the Tower Bridge to travel between Sacramento and West Sacramento.

YCTD also serves Winters, Cache Creek Casino, Esparto, Madison, and Knights Landing; and operates non-fixed-route shuttle service between the Southport area and Raley Field for River Cats baseball games. Yolobus provides local city, intercity, and rural county service paratransit service through Yolobus Special. These services provide on-demand, door-to-door transportation, primarily for elderly and disabled passengers.

In addition to RT and YCTD, multiple other transit agencies offer commuter service into Downtown Sacramento, including Elk Grove Transit (e-tran), Roseville Transit, El Dorado Transit, Yuba-Sutter Transit, Folsom Stage Lines, the San Joaquin Regional Transit District, and Amador Regional Transit System.

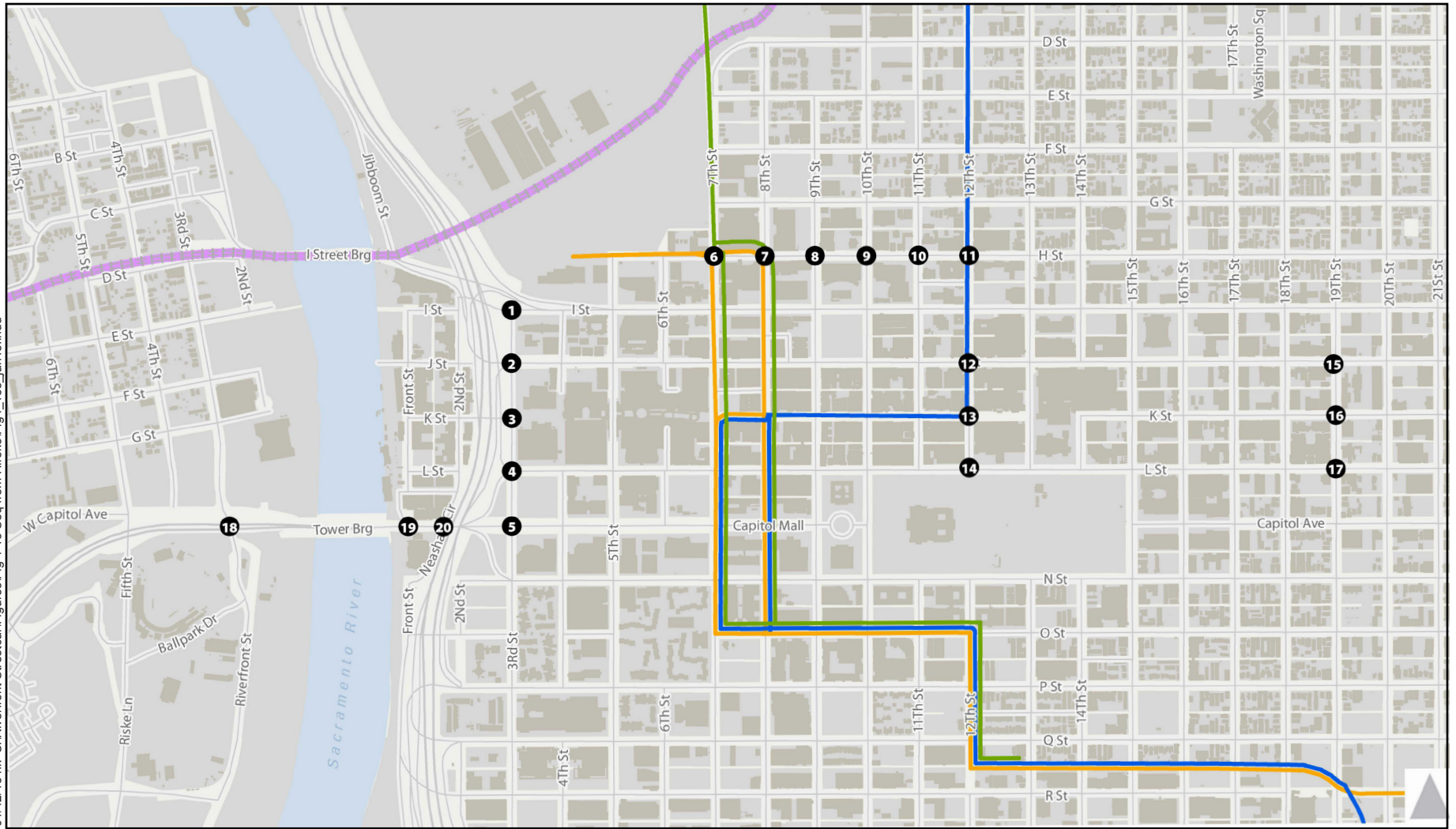
The Sacramento Valley Station is also in the study area, just north of I Street between 3rd Street and 5th Street. This station is served by two long-distance Amtrak routes: the Coast Starlight (Seattle-Portland-Sacramento-Los Angeles), and the California Zephyr (Emeryville-Sacramento-Denver-Chicago). Additionally, the station is served by two Amtrak California regional routes: the Capitol Corridor (San Jose-Sacramento-Auburn), and the San Joaquin (Sacramento-Bakersfield). Amtrak's Fiscal Year 2013 National Fact Sheet lists the Sacramento Valley Station as 7th in the nation in total Amtrak ridership, with more than 1.1 million passengers annually. The RT Gold Line connects the Amtrak station to the Sacramento region's LRT network, and the station is also served by Amtrak intercity buses and local RT buses.

Existing Pedestrian and Bicycle Facilities

Enhanced sidewalks and crosswalks exist on all roadways in the study area, with the following exceptions.

- Tower Bridge Gateway: northern side between Garden Street and Fifth Street
- Third Street: western side, adjacent to I-5, between Capitol Mall and I Street
- New segment of streetcar alignment through Sacramento Valley Station area
- I Street: southern side, between 2nd Street and 3rd Street

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Source: Fehr & Peers, April 2014

- 1** Study Intersection
- Capital Corridor
- Light Rail**
 - Blue
 - Gold
 - Green



Not to scale

EXISTING RAIL TRANSIT

May 2014
27560893

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



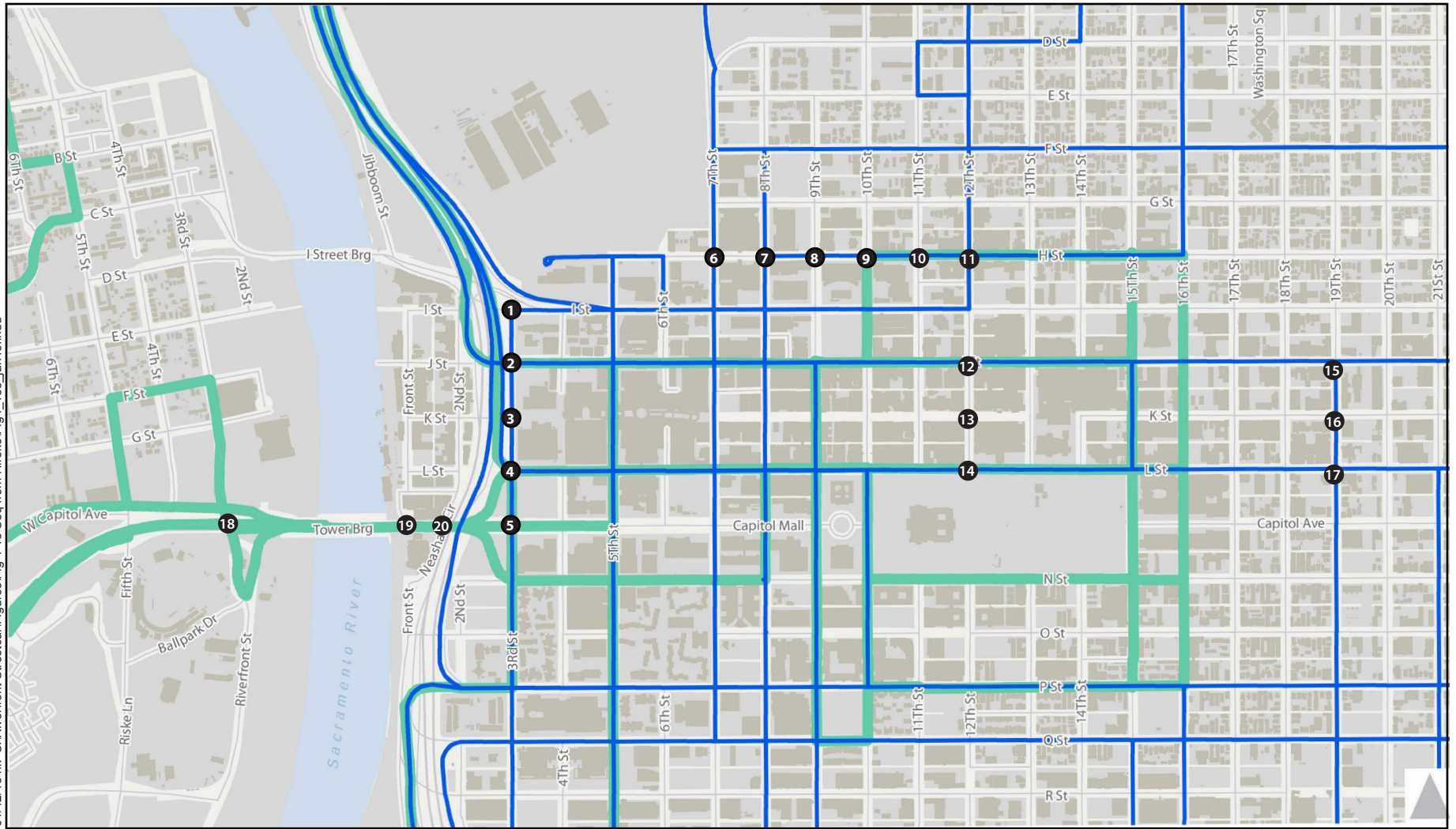
FIGURE 4.13-1



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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Source: Fehr & Peers, April 2014

1 Study Intersection	YoloBus Routes				SacRT Routes			
— SacRT Routes	230AM	240	40	43M	002	015	038	109
— YoloBus Routes	230PM	241AM	41	44AM	003	029	051	170
	231PM	241PM	42A	44PM	006	030	062	171
	232AM	39AM	42B	340	007	033	086	172
	232PM	39PM	43AM		011	034	088	173

EXISTING BUS TRANSIT

May 2014
27560893

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.13-2

Not to scale



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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The following is a summary of existing pedestrian facilities around the planned streetcar stations.

- **West Sacramento Civic Center Station (West Capitol Avenue at Merkley Avenue)** – Significant pedestrian enhancements, including wider sidewalks and enhanced crossing treatments of West Capitol Avenue, were constructed as part of the West Capitol Avenue Streetscape Project (Phase 1) and the West Sacramento Transit Center.
- **Garden Street Station (Tower Bridge Gateway at Garden Street)** – New sidewalks were constructed as part of the Tower Bridge Gateway Project (Phase 1). Additional pedestrian facilities will be constructed based on the planning framework identified in the Grand Gateway Master Plan and the West Capitol Avenue Connections Study.
- **Raley Field Station (Tower Bridge Gateway at Third Street/Riverfront Street)** – New sidewalks on Tower Bridge Gateway and Riverfront Street were constructed as part of the Tower Bridge Gateway Project (Phase 1) and the Bridge District Infrastructure Project (Phase 1).
- **Old Sacramento Station (Capitol Mall at 2nd Street)** – Pedestrian enhancements, including wider sidewalks and a new traffic signal at the Capitol Mall/2nd Street intersection, will be constructed as part of the Reconnect Project (Phase 1). The Phase 1 Project will create a new at-grade intersection on Capitol Mall that connects directly to Old Sacramento via 2nd Street.
- **Sacramento Valley Station Stop (northern side of Depot Building)** – New pedestrian facilities were constructed as part of the Railyards Track Relocation Project, including a pedestrian walkway and access tunnel that connect pedestrians from the existing depot to the new rail platforms.
- Existing 7th & I Street/County Center LRT Station (southbound 7th Street at K Street) – Enhanced sidewalks were constructed on 7th Street at the existing LRT stop.
- **Existing 8th Street & H Street/County Center LRT Station (northbound 8th Street at H Street)** – Enhanced sidewalks were constructed on 8th Street at the existing LRT stop. The stop is on the eastern side of the Sacramento County Administration Building.
- **Existing 8th Street & K Street LRT Station (northbound 8th Street at K Street)** – Enhanced sidewalks were constructed on 8th Street at the existing LRT stop.
- **K Street West End Station (eastbound K Street at 9th Street)** – This new streetcar stop will be at approximately the same location as the existing LRT stop. Enhanced sidewalks exist on K Street and adjacent cross-streets.
- **Cathedral Square Eastbound Station (eastbound K Street at 11th Street)** – This new streetcar stop will be at approximately the same location as the existing LRT stop. Enhanced sidewalks exist on K Street and adjacent cross-streets.
- **Cathedral Square Westbound Station (westbound K Street at 10th Street)** – This new streetcar stop will be at approximately the same location as the existing LRT stop. Enhanced sidewalks exist on K Street and adjacent cross-streets.
- **Sacramento Convention Center Station (eastbound J Street at 13th Street)** – This new streetcar stop will be on the northern side of J Street, east of 13th Street, across from the Convention Center. Enhanced sidewalks exist on both sides of J Street and adjacent cross-streets.



- **Memorial Auditorium Station (eastbound J Street at 16th Street)** – This new streetcar stop will be on the northern side of J Street just east of 16th Street and the Memorial Auditorium. Separated sidewalks exist on both sides of J Street and adjacent cross-streets.
- **Midtown Station (southbound 19th Street at L Street)** – This new streetcar stop will be on the eastern side of 19th Street just north of L Street. Separated sidewalks are on both sides of 19th Street and adjacent cross-streets.
- **State East End Complex Station (westbound L Street at 16th Street)** – This new streetcar stop will be on the southern side of L Street just east of 16th Street. Separated sidewalks are on both sides of L Street and adjacent cross-streets.
- **State Capitol Station (westbound L Street at 12th Street)** – This new streetcar stop will be on the southern side of L Street east of 12th Street adjacent to the California State Capitol. Enhanced sidewalks exist on both sides of L Street and adjacent cross-streets.

The following types of bicycle facilities are present in the study area:

- Multi-use paths (Class I): paved trails that are separated from roadways, and allow for shared use by both cyclists and pedestrians.
- On-street bike lanes (Class II): designated for use by bicycles by striping, pavement legends, and signs.
- On-street bike routes (Class III): designated by signage for shared bicycle use with vehicles, but do not necessarily include any additional pavement width.

City of Sacramento Bicycle Facilities

The Sacramento River Parkway Trail (Class I path), on the eastern levee of the Sacramento River, extends from Old Sacramento north to the confluence of the American River, where the trail continues along the southern side of the American River as the American River Bike Trail to its terminus at the State Route 160 bridge. Cyclists can access Discovery Park and the American River Bike Trail system by crossing the Jibboom Street Bridge. The American River Bike Trail continues along the American River east to the City of Folsom. A Class I path also extends to the south along the Sacramento River from Capitol Mall to Broadway. The path is adjacent to a rail right-of-way used by the Heritage Sacramento Southern Railroad excursion train. K Street is a Class I path between Front Street in Old Sacramento and 4th Street.

Class II bike lanes are present on a variety of roadways in the study area. The following is a list of streets with Class II lanes on the proposed streetcar alignment and/or H Street LRT alignment.

- H Street: 5th Street to 7th Street (southern side) and 8th Street to 12th Street (both sides)
- L Street: 15th Street to 19th Street (both sides)
- 19th Street: J Street to L Street (both sides)



City of West Sacramento Bicycle Facilities

The River Walk Trail (a Class I path) runs along the Sacramento River Levee in West Sacramento from the I Street bridge south to the Tower Bridge, and continues from the Tower Bridge to its current terminus at an access path to Mill Street just north of the Pioneer Bridge (U.S. 50). The following is a list of streets with Class II lanes on the proposed streetcar alignment in West Sacramento.

- Tower Bridge Gateway: Garden Street to the Tower Bridge
- Garden Street: Tower Bridge Gateway to West Capitol Avenue
- West Capitol Avenue: Garden Street to streetcar terminus

The Tower Bridge, which is owned and operated by Caltrans, has Class II bike lanes and a 15-foot path on each side that can be used by bicycle riders.

Existing bicycle facilities are depicted in Figure 4.13-3.

Existing Roadway System

Figure 4.13-4 shows the roadway network and study intersections in the study area. This roadway network is described below.

City of Sacramento Roadways

- **Capitol Mall** extends from the Tower Bridge easterly toward the State Capitol and terminates at 10th Street. Capitol Mall varies between two and three lanes in each direction. A grass median, approximately 40 feet wide, separates eastbound and westbound traffic. Capitol Mall is flanked by high-rise office buildings with no intermediate access points between blocks. Bike lanes were recently added to Capitol Mall between 3rd Street and 9th Street.
- **Front Street** is a north-south two-lane roadway providing access between Capitol Mall and Old Sacramento. Front Street is the first signalized intersection east of the Tower Bridge.
- **3rd Street** is a two-lane street, between I Street and L Street, with two southbound lanes and one northbound lane. South of L Street, 3rd Street is a one-way southbound roadway with three lanes, and terminates at Broadway. I-5 is accessible from 3rd Street at I Street, J Street, L Street, P Street, and Q Street.
- **5th Street** is a one-way northbound roadway with four travel lanes where it intersects Capitol Mall. As it passes under the Downtown Plaza Mall, 5th Street is a two-way street between J Street and L Street. Between I Street and J Street, 5th Street is a one-way street with four travel lanes.
- **7th Street** is a one-way southbound, three-lane roadway from H Street to T Street in Downtown Sacramento. In 2004, 7th Street was extended north to Richards Boulevard under the Union Pacific Railroad tracks. From Richards Boulevard to G Street, 7th Street is a bi-directional two-lane roadway with Class II bicycle lanes. In 2006, construction of the light rail extension to the Amtrak station was completed, which included installing LRT tracks in the easternmost lane between K Street and Capitol Mall, and a new LRT platform station on 7th Street north of



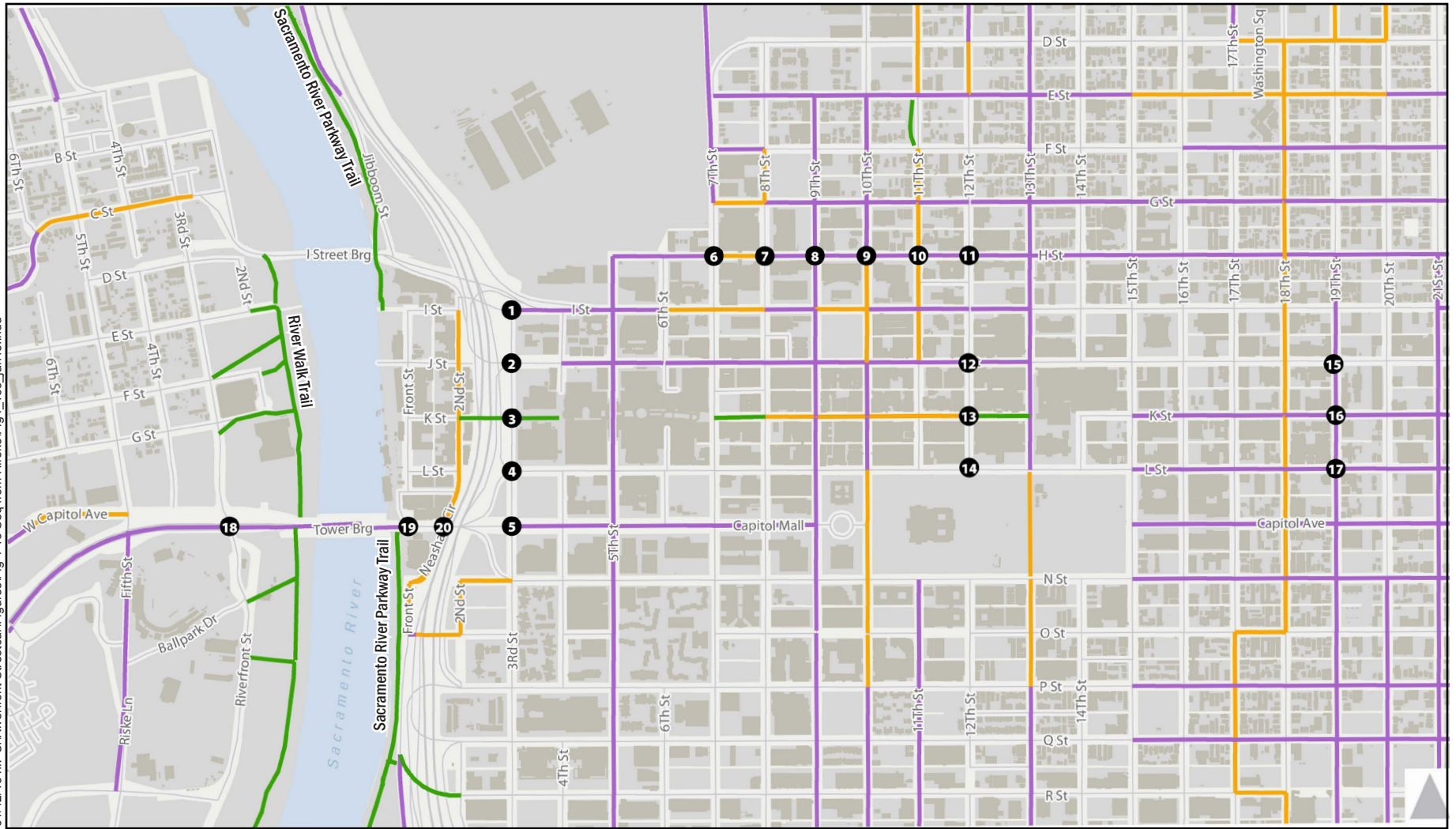
I Street. In 2013, construction was completed on a light rail extension along 7th Street to the Township 9 station at 7th Street and Richards Boulevard.

- **8th Street** is a one-way northbound three-lane roadway from E Street to Broadway. In 2006, construction of the light rail extension to the Amtrak station was completed, which included installing LRT tracks in the westernmost lane between K Street and H Street, with new LRT stations on 8th Street in the blocks north of both K Street and I Street.
- **12th Street** is a one-way southbound roadway extending from the American River to J Street. Between J Street and L Street, 12th Street is a two-way roadway with two southbound lanes and one northbound lane. The Blue Line light rail tracks are in the easternmost two lanes of 12th Street between K Street and the American River. In the study area, a light rail station is on the block of 12th Street north of I Street.
- **15th Street** is a one-way southbound roadway extending from C Street to Broadway. In the study area, 15th Street is adjacent to the eastern end of the Sacramento Convention Center. 15th Street is three lanes with on-street parking in the study area.
- **19th Street** is a one-way southbound roadway from H Street to Broadway. In the study area, 19th Street has two travel lanes with bike lanes on both sides of the one-way street.
- **H Street** is a one-way eastbound roadway from 5th Street to 16th Street. East of 16th Street, through Midtown, H Street is a two-way street. Between 8th Street and 12th Street in the study area, H Street has two travel lanes with bike lanes on both sides of the one-way street.
- **J Street** is a primary east-west roadway extending from I-5 through downtown and midtown Sacramento. In the study area, J Street is an eastbound-only street with three lanes and curbside parking, loading, or additional turn lanes at key intersections.
- **K Street** is a two-way roadway with two travel lanes and light rail in shared lanes. This section of K Street was re-opened to auto traffic in 2011. East of 15th Street, K Street is a two-way street with one travel lane, a bike lane, and parking in each direction.
- **L Street** is a primary east-west roadway extending from midtown Sacramento through downtown, terminating at I-5. In the study area, L Street is a westbound-only street with three lanes and curbside parking, loading zones, or turn lanes.

City of West Sacramento Roadways

- **3rd Street/Riverfront Street** is a north-south collector roadway running west of and parallel to the Sacramento River. Between G Street and Tower Bridge Gateway, 3rd Street has two lanes southbound and one lane northbound. North of G Street to B Street, 3rd Street is two lanes. At Tower Bridge Gateway, 3rd Street changes names, and continues as Riverfront Street south toward U.S. 50.
- **Tower Bridge Gateway** is an east-west arterial beginning at Ironworks Avenue to the west near Jefferson Boulevard, and provides direct access to Downtown Sacramento via the Tower Bridge. Between Garden Street and the Sacramento River, Tower Bridge Gateway is a four-lane roadway with Class II bicycle lanes.

01/12/15 hk S:\Riverfront Streetcar\Figures\Fig 4-13 Seq from Hiroko\Fig4_13s_jan15.indd



Source: Fehr & Peers, April 2014

1 Study Intersection

- Existing Bike Facilities
- Class 1 Bike Path
 - Class 2 Bike Lane
 - Class 3 Bike Route



Not to scale

EXISTING BICYCLE FACILITIES

October 2014
27560893

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



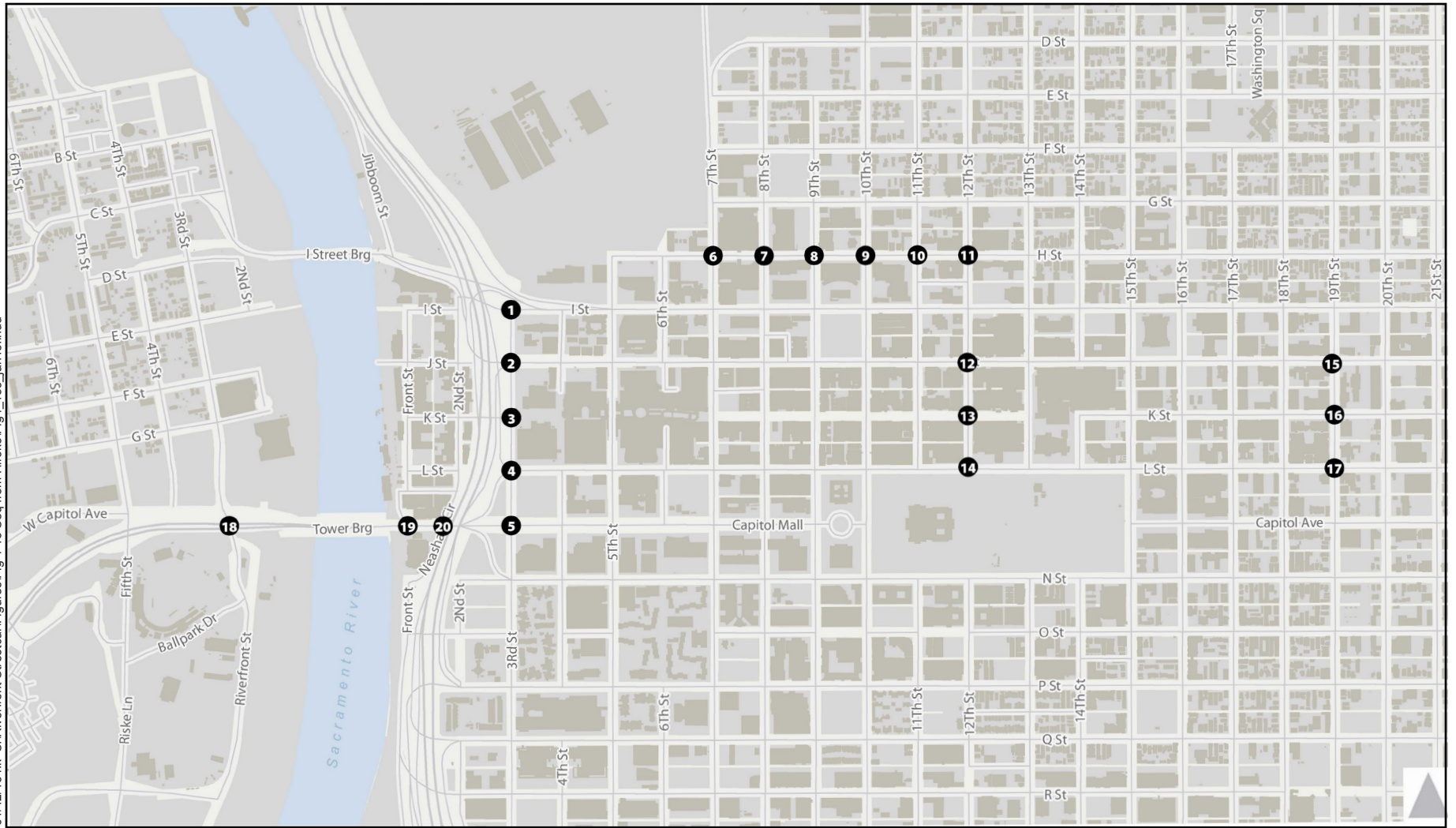
FIGURE 4.13-3



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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01/12/15 hk S:\Riverfront Streetcar\Figures\Fig 4-13 Seq from Hiroko\Fig4_13s_jan15.indd



Source: Fehr & Peers, April 2014

1 Study Intersection



Not to scale

STUDY INTERSECTIONS

May 2014
27560893

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.13-4



Downtown/Riverfront Streetcar Project
Affected Environment, Environmental Consequences,
and Avoidance, Minimization, and/or Mitigation Measures

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Caltrans Roadways

- **The Tower Bridge** is one of three Sacramento River bridge crossings near the study area. The Tower Bridge is a historic lift-span bridge operated and maintained by Caltrans that connects the cities of Sacramento and West Sacramento. The lift span is manually controlled to provide passage to watercraft. An improvement project that widened sidewalks on the bridge and added Class II bicycle lanes was completed in 2008.

Existing Intersection Operations

Operating conditions of transportation facilities are frequently described in terms of their relative LOS. The concept of levels of service uses qualitative measures that characterize quantitative operational conditions and their perception by motorists. Six levels of service are used to characterize operating conditions with letter designations ranging from A to F. LOS A represents the best operating conditions and LOS F the worst.

The LOS criteria and methods of calculation used for the traffic study are based on the Highway Capacity Manual (2010 version) developed by the Transportation Research Board (TRB). Table 4-13-1 displays the average control delay per vehicle for each LOS threshold for signalized and unsignalized intersections. The LOS for signalized and all-way stop-controlled intersections is based on the average control delay of all vehicles traveling through the intersection. The LOS for side-street stop-controlled intersections is determined by the movement with the greatest average delay.

**Table 4.13-1
 Level of Service Definitions for Study Intersections**

Level of Service	Control Delay (seconds/vehicle)	
	Signalized	Unsignalized
A	≤ 10.0	≤ 10.0
B	10.1 – 20.0	10.1 – 15.0
C	20.1 – 35.0	15.1 – 25.0
D	35.1 – 55.0	25.1 – 35.0
E	55.1 – 80.0	35.1 – 50.0
F	> 80.0	> 50.0

Source: Highway Capacity Manual (TRB, 2010).

Given the interaction between the study intersections and the presence of multiple rail lines, VISSIM simulation software was used to evaluate operating conditions for all study intersections under all scenarios. This software exceeds state-of-the-practice techniques, and more accurately assesses the impact of queuing between closely spaced intersections. The software also accounts for delay associated with the interaction between transportation modes, and incorporates pedestrians, bicyclists, rail vehicles (light rail and streetcar as appropriate), and motor vehicles into the evaluation of intersection operations. VISSIM simulation software applies the methodologies presented in the *Highway Capacity Manual* (TRB, 2010).



Table 4.13-2 summarizes the AM and PM peak hour LOS at each of the 19 existing study intersections. As shown, all of the study intersections operate acceptably at LOS D or better during both the AM and PM peak hours. Overall, the existing roadway system in the area can be characterized as operating efficiently. Motorists typically incur modest delays, do not experience substantial vehicle queues, and benefit from the coordinated traffic signal system along the primary commute corridors that connect downtown to the regional freeway system. The intersection of J Street/3rd Street is the most congested of all study locations, due primarily to competing traffic flows entering downtown from the northbound and southbound I-5 off-ramps.

**Table 4.13-2
Peak Hour Intersection Operations – Existing Conditions¹**

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay ²	LOS ³	Delay ²	LOS ³
1. 3rd Street/I Street	All-way stop	9	A	18	C
2. 3rd Street/J Street/I-5 off-ramps	Signal	42	D	40	D
3. 3rd Street/K Street	Signal	8	A	4	A
4. 3rd Street/L Street	Signal	11	B	12	B
5. 3rd Street/Capitol Mall	Signal	34	C	27	C
6. 7th Street/H Street	Signal	16	B	12	B
7. 8th Street/H Street	Signal	15	B	10	B
8. 9th Street/H Street	Signal	15	B	15	B
9. 10th Street/H Street	Signal	8	A	11	B
10. 11th Street/H Street	Signal	7	A	8	A
11. 12th Street/H Street	Signal	31	C	24	C
12. 12th Street/J Street	Signal	12	B	14	B
13. 12th Street/K Street	Signal	14	B	15	B
14. 12th Street/L Street	Signal	9	A	10	A
15. 19th Street/J Street	Signal	10	B	15	B
16. 19th Street/K Street	Signal	17	B	17	B
17. 19th Street/L Street	Signal	11	B	14	B
18. Tower Bridge Gateway/3rd Street/ Riverfront Street	Signal	23	C	18	B
19. Capitol Mall/Front Street	Signal	15	B	13	B

Source: Fehr & Peers, 2014

Notes:

¹ 2013

² For signalized and all-way-stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.

³ Level of Service based on *Highway Capacity Manual* (Transportation Research Board, 2010)

Intersection 20 is an unconstructed intersection.



Caltrans Facilities

Study intersections 1 and 2 along 3rd Street are junctions of I-5 on-ramps or off-ramps with the local street network in the City of Sacramento. The focus of the following assessment of Caltrans facilities is on the I-5 northbound off-ramp queues at the 3rd Street/J Street/I-5 off-ramp intersection, which is the most congested of all study locations, due primarily to competing traffic flows entering downtown from the northbound and southbound I-5 off-ramps.

During the AM peak hour, the I-5 off-ramp approaches to this intersection experience lengthy queues as commuters using I-5 exit to access jobs in the central business district. As shown in Table 4.13-3, the I-5 northbound off-ramp queue extends beyond the available storage during the AM peak hour. Queues on both off-ramps remain in the available storage during the PM peak hour.

**Table 4.13-3
 Off-Ramp Queues – Existing Conditions¹**

Off-Ramp	Storage Length	Peak Hour	Queue ²
1. I-5 Northbound – Off-ramp to J Street	1,025 feet	AM PM	1,550 feet 250 feet
2. I-5 Southbound – Off-ramp to J Street	1,475 feet	AM PM	1,070 feet 600 feet
Source: Fehr & Peers, 2014. Note: ¹ 2013 ² Maximum queue length as reported in VISSIM microsimulation software rounded to nearest 25 feet.			

4.13.4. Environmental Effects

This section includes an analysis to determine if the Project would:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.



For the purposes of this analysis, the following describes the criteria used to identify Project-specific and cumulative adverse effects to the roadway system in the Project area.

Intersections in City of Sacramento

An adverse effect would occur if:

- The traffic generated by the Project degrades LOS from acceptable (without the Project) to unacceptable (with the Project).
- The LOS (without the Project) is already (or projected to be) unacceptable, and Project-generated traffic increases the average vehicle delay by 5 seconds or more.

All of the study intersections in the City of Sacramento are in the Core Area described in Policy M 1.2.2(a). In accordance with this policy, LOS F is acceptable during peak hours, provided that the Project provides multi-modal improvements to the transportation system in the Project vicinity.

Intersections in City of West Sacramento

The *City of West Sacramento General Plan, 2004* defines the City's LOS standard as LOS C, except at intersections and on roadway segments within ¼ mile of a freeway interchange or bridge crossing the Deep Water Ship Channel, barge canal, or Sacramento River, where LOS D is acceptable.

In 2011, the West Sacramento City Council adopted the following revised LOS policy language.

"The City shall endeavor to maintain a Level of Service "C" on all streets within the City, except at intersections and on roadway segments within ¼ mile of a freeway interchange or bridge crossing of the Deep Water Ship Channel, barge canal, or Sacramento River, where a Level of Service "D" shall be deemed acceptable, and within pedestrian oriented, high density, mixed use areas, such as the Bridge District Specific Plan area, the Washington Specific Plan area, and West Capitol Avenue from Harbor Boulevard east, where a Level of Service "E" shall be deemed acceptable."

For all facility types, an impact is considered adverse if implementing the Project would:

- Deteriorate an acceptable LOS to an unacceptable LOS.
- Increase average driver delay by more than 5 seconds at an intersection that already operates at an unacceptable LOS without the Project.

The Tower Bridge Gateway/3rd Street/Riverfront Street intersection is "within a pedestrian oriented, high density, mixed use area." Therefore, LOS E is the applicable threshold at this location.



Freeway Ramp Intersections

An adverse effect would occur to the ramp intersections that are studied if:

- The traffic generated by the Project degrades LOS from acceptable (without the Project) to unacceptable (with the Project);
- The LOS (without the Project) is already (or projected to be) unacceptable and Project-generated traffic leads to a perceptible worsening of the applicable performance measure for freeway operations; or
- The traffic generated by the Project causes off-ramp traffic to queue back to the freeway gore point or mainline, or worsens an existing/projected queuing problem.

4.13.4.1. No Action Alternative

Under the No Action Alternative, existing transportation conditions in the study area would remain in their current state with no changes other than planned roadway and transit improvements, as seen in the MTP/SCS. Implementation of these projects would be subject to individual environmental analyses and mitigation measures that would reduce potential adverse effects. The No Action Alternative would not provide the transit benefits as under the Action Alternative.

The effects of the No Action Alternative on roadway operations under existing and cumulative conditions are discussed below under the Action Alternative to provide a side-by-side comparison of the alternatives.

4.13.4.2. Action Alternative

This section includes a description of the effects of the Project on transportation facilities in the study area. For the purposes of this analysis, the effects of the Project are described under two scenarios: Existing Plus Streetcar Scenario, and Existing Plus Streetcar Plus H Street LRT Scenario. This is because the proposed relocation of LRT to H Street will be constructed within 5 years of opening day of Streetcar operation and, in the interim, Streetcar and LRT will both use the K Street segment. Under the Existing Plus Streetcar Plus H Street LRT Scenario, only potential effects that would differ from those discussed under the Existing Plus Streetcar Scenario are described. The following improvements are assumed to be in place under both scenarios:

- **Streetcar Service** – Initial operating hours are expected to be 7 a.m. to 11 p.m. daily. Service frequencies are expected to be 15-minute headways during the peak and 20 minutes in the evenings after 6 p.m., Monday – Friday. Saturday and Sunday headways are expected to be 20 minutes all day. In the horizon year, weekday peak service is expected to be 10 minutes with 15-minute service in the evenings and weekends.
- **The Tower Bridge Reconfiguration** – The number of lanes on the Tower Bridge would be reduced from four to two vehicle travel lanes to allow for median-running streetcar service. The lane reduction would begin on Tower Bridge Gateway just east of 3rd Street/Riverfront Street



in West Sacramento, and would extend to just west of the Capital Mall overcrossing of I-5 in Sacramento. The reconfiguration will also allow for wider bicycle lanes on the Tower Bridge.

- **3rd Street Two-Way Conversion** –3rd Street in Sacramento would be converted from one-way to two-way travel on the one-block segment between L Street and Capital Mall to allow for northbound streetcar service. The current configuration would be modified from three southbound travel lanes to also include one northbound travel lane (maintaining the same number of southbound through-lanes). The conversion of 3rd Street to two-way operation is part of the City’s previously approved Two-Way Conversion Plan for the Central City, and is planned to occur with or without the Project.
- **Phase 1 of the I-5 Riverfront Reconnection Project** –Phase 1 of the City of Sacramento’s I-5 Riverfront Reconnection Project is scheduled to begin construction in late 2014, and is assumed to be in place under Existing Plus Project conditions. Improvements associated with this phase of the I-5 Riverfront Reconnection Project include the reconfiguration of the Capital Mall/ 2nd Street intersection from a grade-separated intersection to an at-grade intersection. The first phase of the I-5 Riverfront Reconnection Project will include only the northern leg of the intersection connecting Capital Mall to Old Sacramento via 2nd Street (a second phase, not assumed in place under Existing Plus Project conditions but included in both cumulative scenarios, will provide a southern connection from this point to Front Street). Additionally, Capitol Mall will be reconfigured to include Class II on-street bicycle lanes alongside two travel lanes in each direction between Neasham Circle and 3rd Street.
- **Phase 1 Railyards Roadway Infrastructure** – Construction of the first phase of roadway infrastructure projects associated with the development of the former Railyards site. These improvements include the extension of 5th Street and 6th Street northward from their current termini at H Street. These two north/south roadways will extend to Railyards Boulevard, the primary east/west arterial planned to serve the development, which is also included in the first phase of improvements.
- **Signalization of 3rd Street/I Street Intersection** – Installation of a traffic signal at the 3rd Street/I Street intersection to assist in controlling vehicle movements is included with implementation of the Project. The proposed streetcar alignment would continue north from this location on a dedicated alignment.
- **Sacramento Intermodal Terminal Facility Light Rail Platform Relocation** – Construction of a new north/south-oriented platform for light rail trains immediately northwest of the 5th Street/H Street intersection and a new track connection to 7th Street, which is part of RT’s Green Line LRT Extension project, is assumed to occur prior to or concurrent with implementation of the Project, including the relocation of LRT from K Street to H Street. This new platform and LRT track would facilitate both the provision of LRT access to the Sacramento Valley Station by the Gold and Green LRT lines, as well as allow the current east-west LRT track envelope to be used by the streetcar Project. Construction of the new platform would also include new track connecting the north/south-oriented LRT platform north and east to the 7th Street/F Street intersection via an extension of F Street (crossing beneath the recently constructed 5th Street and 6th Street overcrossings).



Travel Forecasts

The SACMET regional travel demand model (TDM) developed and maintained by SACOG was used to forecast traffic volumes at the 20 study intersections under Existing Plus Project Conditions. A modified version of the base-year model was used for this effort. The model was modified to enhance the model's ability to accurately forecast changes to travel patterns resulting from the implementation of the Project. Modifications to the model are described in the *Downtown/Riverfront Streetcar Transportation Assessment*.

Impact Assessment – Existing Plus Streetcar Scenario

Transit Facilities

Implementation of the Existing Plus Streetcar Scenario would result in improved transit service and access in the study area, and would provide additional transit capacity to the cities of Sacramento and West Sacramento. The Project would provide an additional mode of transportation that does not currently exist in this area, and would serve as a critical transportation link across the Sacramento River. This service would result in increased transit ridership, and would increase mobility for short-range trips in the study area, especially pedestrian trips augmented by transit. Streetcar service would complement existing bus and rail transit services in the study area.

To complement streetcar service and to make transit operation more efficient following the start of streetcar operation, YCTD may truncate eastbound service for Lines 40/41 and 240 at the West Sacramento Civic Center station during midday. Truncation of Lines 40/41, focusing on the West Sacramento Transit Center, will minimize duplication of service, particularly in downtown Sacramento, while closely coordinating with streetcar service. This feeder local service would be an important element in maximizing streetcar ridership and connectivity to and from the entire City of West Sacramento, provide sufficient recovery time for buses to stay on schedule, and would offer riders efficient transfer opportunities at the Transit Center to and from streetcars. In addition to weekday daytime synchronization, bus service hours of operation will also be modified to synchronize with streetcars during weekday mornings and on weekends. Once high-density development occurs in West Sacramento, and pending the availability of new revenue sources, YCTD may increase bus frequency.

The Project would connect the Sacramento Intermodal Transportation Facility (SITF), the region's inter-city rail hub, with numerous residential and commercial districts in the cities of Sacramento and West Sacramento. The West Sacramento Civic Center station, the western streetcar alignment terminus, is approximately 1.7 miles from the SITF. The Midtown station, the eastern streetcar line terminus, is approximately 1.6 miles from the SITF. The Project increases the accessibility of the SITF to areas that are not currently served by the three existing RT LRT lines, and substantially increases the level of transit service to areas currently served by RT and YCTD bus routes.



The three LRT lines (i.e., Blue, Gold, and Green lines) that currently serve Downtown Sacramento are primarily in north-south alignments along 7th Street, 8th Street, and/or 12th Street. The streetcar alignment is predominantly along an east-west alignment, sharing a common central segment of track along 7th Street and 8th Street with the three LRT lines. The Project increases the accessibility of the three LRT lines by providing a connection to adjacent residential and commercial districts.

Implementation of the Existing Plus Streetcar Scenario would not have an adverse effect on transit facilities for the following reasons:

- The Project would not generate ridership that exceeds available or planned system capacity. The Project would increase the existing transit system capacity, creating a beneficial effect for the area served. According to the Transportation Assessment, the projected streetcar daily ridership for opening year is 2,500 to 6,000, depending upon headway (low end of range represents 15-minute headways, and high end of range represents 10-minute headways).
- The Project would not adversely affect transit system operations or facilities in a way that discourages ridership. The Project would increase ridership on other existing and planned transit lines by improving connectivity from those lines to residential and commercial districts not currently served by rail transit.
- The Project improves access to transit for the area served.

Pedestrian Facilities

The Existing Plus Streetcar Scenario would extend the range of pedestrians by allowing for pedestrian travel augmented by streetcar. Based upon the average walk distance, sometimes referred to as the “20-minute neighborhood,” the range of pedestrians would increase from approximately 1 mile to between 3 and 4 miles with the addition of streetcar service.

The streetcar alignment would be constructed exclusively in existing or future roadway rights-of-way outside of existing or planned pedestrian facilities. The Project would therefore not adversely affect existing or planned pedestrian facilities.

Bicycle Facilities

The Existing Plus Streetcar Scenario would provide a travel option for cyclists who commute or travel to the region’s urban core for other purposes. The following is a summary of changes to existing bicycle facilities around the planned streetcar line.

- **West Capitol Avenue** – Class II on-street bicycle lanes exist on West Capitol Avenue. The streetcar tracks on West Capitol Avenue will be in the lane closest to the median. The Project will not result in any change to the existing bicycle lanes.
- **Tower Bridge Gateway** – Class II on-street bicycle lanes exist on Tower Bridge Gateway. The streetcar tracks on Tower Bridge Gateway will be in the travel lane closest to the curb. The



Class II on-street bicycle lanes will be modified at the planned Raley Field streetcar stops, where they will be realigned around the raised streetcar stop platforms.

- **The Tower Bridge** – Class II on-street bicycle lanes exist on the Tower Bridge. Cyclists can also use the 15-foot-wide shared paths on either side of the bridge. The streetcar track will be in the center of the Tower Bridge in a dedicated transit lane. Reconfiguration of the Tower Bridge that will occur with the Project will result in a widening of the existing on-street bicycle lanes on the bridge.
- **Capitol Mall** – The Reconnect Project scheduled to begin construction in late 2014 will provide Class II on-street bicycle lanes between the Tower Bridge and 3rd Street. The streetcar tracks on this segment of Capitol Mall will be in the median in a dedicated transit lane. The Project will not result in any change to the planned bicycle lanes.
- **3rd Street** – There are no existing or planned bicycle facilities along 3rd Street. The streetcar tracks on 3rd Street will be in the lane closest to the median.
- **H Street** – Class II on-street bicycle lanes exist on the southern side of H Street from 5th Street to 8th Street. The streetcar on this segment of H Street will use existing light rail tracks. The Project will not result in any change to the existing bicycle lanes. The relocation of light rail from K Street to H Street will add new light rail tracks on H Street between 8th Street and 12th Street. H Street would be converted from a one-way configuration to two-way travel. Class II on-street bicycle lanes exist on both sides of H Street from 8th Street to 12th Street. The Class II on-street bicycle lanes will be modified at the planned Sacramento City Hall light rail station, where they will be realigned around the raised light rail station platforms.
- **7th & 8th Streets** – The streetcar will use existing light rail tracks on 7th Street and 8th Street, between H Street and K Street.
- **K Street** – The streetcar will use existing light rail tracks on K Street from 7th Street to 12th Street.
- **12th Street** – The streetcar will use existing light rail tracks on 12th Street between J Street and K Street. A new streetcar track will be constructed between K Street and L Street. There are no bicycle facilities on this two-block segment of 12th Street.
- **J Street** – There are no existing or planned bicycle facilities along J Street. The streetcar tracks on J Street will be in the northernmost (i.e., far left) travel lane.
- **19th Street** – Class II on-street bicycle lanes exist on both sides of 19th Street between J and L streets. The streetcar tracks on 19th Street will be in the easternmost (i.e., far left) travel lane. The Class II on-street bicycle lanes on this portion of 19th Street will be modified at the planned Midtown streetcar stop, where the easternmost bicycle lane will be realigned around the raised streetcar stop platforms. An alternate design option would involve widening the westernmost bicycle lane on 19th Street, and eliminating the easternmost bicycle lane.
- **L Street** – Class II on-street bicycle lanes exist on both sides of L Street between 15th Street and 19th Street. The streetcar tracks on L Street will be in the southernmost (i.e., far left) travel lane. The Class II on-street bicycle lanes on this portion of 19th Street will be modified at the planned State East End Complex (westbound L Street at 16th Street) streetcar stop, where the southernmost bicycle lane will be realigned around the raised streetcar stop platforms. An



alternate design option would involve widening the northernmost bicycle lane on L Street, and eliminating the southernmost bicycle lane. An uninterrupted bike lane would remain on the north side of this one-way street.

Based on the above, implementation of the Existing Plus Streetcar Scenario would not result in adverse effects to bicycle facilities.

Parking Facilities

Implementation of the Project would result in the removal of a number of on-street parking spaces in both West Sacramento and Sacramento due to the placement of streetcar tracks and station platforms. In West Sacramento, the Project would result in the loss of approximately 18 on-street parking spaces along Riverfront Street. In Sacramento; five on 7th Street between J Street and K Street; 12 on J Street; four on 19th Street; and eight on L Street for a total of 29 on-street parking spaces. In addition, up to 20 parking spaces could be removed at the Sacramento Valley Station to accommodate streetcar tracks from 3rd Street into the Station.

The loss of approximately 18 on-street parking spaces in West Sacramento in an area with a supply of readily available off-street parking would not be considered substantial and the parking impact would not be considered adverse. Similarly, the loss of 67 parking spaces in the context of downtown Sacramento where a supply of off-street parking is readily available and where there are multiple options for alternative transportation would not be considered substantial and the parking impact would not be considered adverse.

Roadway Facilities

The proposed streetcar alignment would run entirely in existing transportation right-of-way, primarily in mixed-flow lanes shared with other vehicles. The following segments of the alignment would operate on exclusive track:

- **Sacramento Valley Station** – From the intersection of 3rd Street/I Street to the intersection of 5th Street/H Street, where the streetcar would operate either on an exclusive streetcar-only track, or in the mixed-flow lanes of an extension of H Street between 3rd and 5th streets.
- **Tower Bridge Gateway/Capital Mall** – From just east of the Tower Bridge Gateway/ 3rd Street/Riverfront Street intersection in West Sacramento to the 3rd Street/Capital Mall intersection in Sacramento, where the streetcar would operate in the median of the roadway.
- **K Street** – Between 7th Street and 8th Street, which is currently closed to motor vehicle traffic, and will remain so after the implementation of streetcar service.

In all other locations, the streetcar would operate in the traffic lanes with other vehicles, including segments of 3rd Street, 7th Street, 8th Street, K Street, 12th Street, J Street, 19th Street, and L Street.

The assessment of roadway operations assumes that the streetcars would be given priority over vehicles at intersections where a streetcar would require an exclusive signal phase to make a turn.



For example, at the 19th Street/J Street intersection, the streetcar would turn from the far left lane of J Street to the far left lane of 19th Street. Because this movement would conflict with normal traffic flow, the streetcar is given an exclusive signal phase and preemption in the simulation model. The cycle lengths of traffic signals were increased along the corridor to accommodate the additional phases. At all other intersections, the streetcar moves with the other vehicles and is not given preemption.

The streetcar would travel through an existing at-grade intersection with the I Street Bridge/I-5 southbound on-ramp. According to Section 7.08 of California Public Utilities Commission (PUC) General Order 143-B, this location would require a gate for the westbound through-traffic. The streetcar would be given priority, and westbound through-traffic must be stopped for at least 20 seconds prior to the streetcar entering the intersection.

On the Tower Bridge, the streetcar alignment would have a single track for both directions of travel. When a streetcar vehicle is on this single-track segment, streetcars traveling in the opposite direction would have to wait until the track is clear before crossing the Tower Bridge. An eastbound streetcar would wait either at the Raley Field stop on Tower Bridge Gateway, or in the channelized northbound right-turn area from Riverfront Street. A westbound streetcar would wait in the median just west of the 3rd Street/Capitol Mall intersection.

At the Tower Bridge Gateway/Riverfront Street/3rd Street intersection, the westbound streetcar would either proceed straight through the intersection or turn left onto Riverfront Street. To facilitate these movements, westbound vehicle traffic on Tower Bridge Gateway would be stopped by a gate approximately 400 feet east of the intersection. Streetcars would have priority through the intersection.

Under Existing Plus Streetcar Scenario conditions, the reconfiguration of the Tower Bridge that is included as part of the proposed streetcar build alternative will result in a shift in traffic to other adjacent roadway facilities. This includes an approximately 1.5 percent increase in daily traffic volume on the Pioneer Bridge, and a 9.8 percent increase on the I Street Bridge, when compared to existing conditions.

Intersections

Under the Existing Plus Streetcar Scenario, most study intersections would operate with levels of delay similar to those under Existing Conditions. The Existing Plus Streetcar Scenario would result in moderate increases in average vehicle delay at the intersections of 3rd Street/J Street/I-5 off-ramps, and 3rd Street/L Street. This is due to additional vehicle phases required with the addition of the streetcar. At 3rd Street/J Street/I-5 off-ramps, the signal timings would be altered to accommodate a northbound through-phase (that does not exist today) for the proposed streetcar. At the 3rd Street/L Street intersection, a northbound through/left phase would be added for left-turn vehicle movements onto northbound I-5 (e.g., as part of the planned 3rd Street two-way conversion project). The additional phases would increase the average delay at these intersections; however, both intersections would continue to operate at LOS E or better during both peak hours.



Table 4.13-4 summarizes intersection LOS results associated with the Project under the Existing Plus Streetcar Scenario. As shown, the study intersections in the City of Sacramento would operate at LOS E or better during the AM and PM peak hours. All of the study intersections in the City of Sacramento are in the Central City area, where roadways and intersections are exempt from LOS requirements. Therefore, the Project would not result in any adverse effects to study intersections in the City of Sacramento under the Existing Plus Streetcar Scenario. The study intersection in the City of West Sacramento would operate at LOS C conditions during the AM and PM peak hours. The threshold for the study intersection is LOS E; therefore, the Project would not result in adverse effects to study intersections in the City of West Sacramento under the Existing Plus Streetcar Scenario.

The MSF for the Downtown/Riverfront Streetcar Project will house both operations and maintenance staff. The MSF Preliminary Design Report estimates that operations staff for an eight-vehicle streetcar fleet will include 12 operators, three dispatchers, one operations supervisor, one administrative assistant, one wayside manager/systems engineer, and a custodian. With streetcar operations beginning at 7:00 a.m. each morning, all but a few of these staff will arrive at the MSF before the morning commute peak period (7:00 a.m. through 9:00 a.m.), and depart either before or after the evening commute period (4:00 p.m. through 6:00 p.m.). Vehicle maintenance staff will include eight technicians, four cleaners, three wayside staff, one maintenance supervisor, one facility maintenance staff, and one storeroom clerk. Maintenance staff will work three shifts each



**Table 4.13-4
Peak Hour Intersection Operations – Existing Plus Streetcar Scenario**

Intersection	Traffic Control	Existing				Existing Plus Streetcar				
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
		Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	
1. 3rd Street/I Street	All-way stop	9	A	18	C	Signal	5	A	10	B
2. 3rd Street/J Street/I-5 off-ramps	Signal	42	D	40	D	Signal	76	E	50	D
3. 3rd Street/K Street	Signal	8	A	4	A	Signal	8	A	5	A
4. 3rd Street/L Street	Signal	11	B	12	B	Signal	33	C	41	D
5. 3rd Street/Capitol Mall	Signal	34	C	27	C	Signal	33	C	26	C
12. 12th Street/J Street	Signal	12	B	14	B	Signal	15	B	13	B
13. 12th Street/K Street	Signal	14	B	15	B	Signal	12	B	15	B
14. 12th Street/L Street	Signal	9	A	10	A	Signal	9	A	10	A
15. 19th Street/J Street	Signal	10	B	15	B	Signal	11	B	13	B
16. 19th Street/K Street	Signal	17	B	17	B	Signal	11	B	21	C
17. 19th Street/L Street	Signal	11	B	14	B	Signal	13	B	14	B
18. Tower Bridge Gateway/ 3rd Street/Riverfront Street	Signal	23	C	18	B	Signal	23	C	24	C
19. Capitol Mall/Front Street	Signal	15	B	13	B	Signal	13	B	17	B
20. Capital Mall/2nd Street	—	—	—	—	—	Signal	7	A	11	B

Source: Fehr & Peers, 2014
Notes: ¹ For signalized and all-way stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.
² Level of Service based on *Highway Capacity Manual* (Transportation Research Board, 2010)

day, 7 days per week. The eight technicians will work all three shifts, the four cleaning staff will work the night shift, and the three wayside staff will work the day and night shifts. It is estimated that six to eight maintenance employees will work during the day shift. In total, the MSF is estimated to generate fewer than 10 vehicle trips during weekday morning or evening peak hours. Therefore, the MSF would not have a substantial impact on peak weekday traffic operations. The number of employees and vehicle trips associated with either MSF would be minimal and were not considered an adverse effect of the project.

Caltrans Facilities

The Project would result in a small decrease in volumes at study intersections 1 and 2 due to the shift from auto to transit modes resulting from the new transit service provided by the Project, as well as a small increase due to the reconfiguration of the Tower Bridge to two lanes. The small



increase in volumes would result from a shift in existing volumes from the Tower Bridge to the I Street Bridge due to the reconfiguration of the Tower Bridge, which would increase traffic at the 3rd Street/J Street/I-5 off-ramp intersection and the 3rd Street/I Street intersection. The focus of the following assessment of Caltrans facilities is on the I-5 northbound off-ramp queues at the 3rd Street/J Street/I-5 off-ramp intersection.

Implementation of the Existing Plus Streetcar Scenario would result in the following changes to freeway off-ramp volumes:

- I-5 Northbound off-ramp to J Street – Volumes on the ramp would decrease by 83 vehicles during the AM peak hour (4.3 percent decrease), and 4 vehicles during the PM peak hour (0.8 percent increase).
- I-5 Southbound off-ramp to J Street – Volumes on the ramp would increase by 25 vehicles during the AM peak hour (1.3 percent increase), and 90 vehicles during the PM peak hour (6.0 percent decrease).

As shown in Table 4.13-5, queues on the northbound off-ramp from I-5 would continue to exceed the available storage during the AM peak hour with the addition of Project, but would be shorter than under existing conditions. Queues on the southbound off-ramp from I-5 would also experience a reduction during the AM peak hour, and would remain within the available storage with implementation of the Project. This reduction in queue length at the off-ramps would be a beneficial effect of the Project. Queuing on both ramps would remain within the available storage during the PM peak hour. Implementation of the Existing Plus Streetcar Scenario would also result in traffic signal phasing modifications at the 3rd Street/J Street/I-5 off-ramp intersection to allow for northbound through-travel (not currently permitted).

**Table 4.13-5
Off-Ramp Queues – Existing Plus Streetcar Scenario**

Off-Ramp	Storage Length	Peak Hour	Queue ¹	
			Existing	Existing Plus Streetcar
1. I-5 Northbound – Off-ramp to J Street	1,025 feet	AM PM	1,550 feet 250 feet	1,400 feet 225 feet
2. I-5 Southbound – Off-ramp to J Street	1,475 feet	AM PM	1,070 feet 600 feet	725 feet 675 feet
Source: Fehr & Peers, 2014.				
Note:				
¹ Maximum queue length as reported in VISSIM microsimulation software rounded to the nearest 25 feet.				

The Existing Plus Streetcar Scenario analysis assumes that installation of a rail gate will be required, rather than a traffic signal at the crossing of a segment of I Street that feeds into the I-5 southbound on-ramp. Under PUC regulations, the rail gate must be down for 20 seconds prior to the streetcar crossing of this single lane of I Street, resulting in delays. However, these delays are not anticipated to result in additional platooning of vehicles onto the southbound I-5 on-ramp. During



both the AM and PM peak hours, the average westbound delay at the rail gate is projected to be substantially lower than the average westbound delay at the adjacent 4th Street/I Street intersection, 400 feet to the east of the gate. Therefore, the existing traffic signal at the 4th Street/I Street intersection has a greater influence upon the platooning of vehicles entering the freeway than would the Project.

The SACOG MTP/SCS and several other local planning documents, adopted by the City of Sacramento and City of West Sacramento, call for the construction of new bridges across the Sacramento River in the immediate vicinity of the Tower Bridge. This includes a replacement of the I Street Bridge and a new Broadway Bridge. Future plans for these Sacramento River crossings also call for implementation of significant new transit service on these bridges, including the Downtown/Riverfront Streetcar line. The Highway 50 Corridor System Management Plan (Caltrans, 2011) specifies a 20-year “Concept LOS,” which is the performance metric used by Caltrans to reflect the minimum level or quality of operations acceptable for an individual highway segment within the 20-year planning period; of LOS F in the case of the Pioneer Bridge. The Pioneer Bridge has a Concept LOS “F” because the improvements required to bring the LOS to “E” are not feasible due to environmental, right-of-way, financial, and other constraints. The application of multi-modal corridor management strategies are called for to reduce the severity and duration of congestion, and to provide viable travel options and information that will enable a traveler to avoid severe freeway congestion. The Downtown/Riverfront Streetcar Project, other related transit service across the Tower Bridge, and other new facilities are part of the long-term plan to provide multi-modal service across the Sacramento River. Therefore, the Project would not have a substantial impact on the Pioneer Bridge or other parallel bridges.

Impact Assessment – Existing Plus Streetcar Plus H Street LRT Scenario

This scenario evaluates the relocation of an eight-block segment of the Blue Line LRT track in Downtown Sacramento. The LRT track that would be relocated includes three blocks of Blue Line track on 12th Street (between H Street and K Street), and five blocks of track on K Street (between 7th Street and 12th Street). The portion of the Blue Line that currently serves K Street would be shifted to H Street, and the Blue Line would share existing tracks and stations along 7th Street and 8th Streets (between H Street and K Street) that are currently used by the Gold and Green Lines.

H Street, between 8th Street and 12th Street, would be reconfigured from its current one-way alignment to two-way travel flows, and the new LRT tracks on this segment would share a travel lane with vehicular traffic. A new LRT station would be constructed on H Street, between 9th and 10th streets, immediately north of the City of Sacramento New City Hall, and in very close proximity to the California Environmental Protection Agency (Cal/EPA) headquarters building and several Sacramento County court facilities. The Project would provide transit service on the five blocks of K Street that are currently served by the Blue Line.



Transit Facilities

The relocation of LRT service from K Street and three blocks of 12th Street, to H Street and existing tracks along 7th Street and 8th Street, would allow for separated east/west operations between streetcar and light rail. Once relocated, the RT Blue Line would operate on new track on the segment of H Street between 8th Street and 12th Street. The proposed streetcar would use the Blue Line's current alignment on K Street between 8th Street and 12th Street, three blocks to the south. The separation of the Blue Line light rail and the proposed streetcar on these four blocks would improve transit operations for each of these rail services by preventing the need for these two services to share track on this segment. The three-block separation of the lines, coupled with a new light rail station on H Street, would also expand the service area of rail transit services in Downtown Sacramento.

Pedestrian and Bicycle Facilities

H Street features bifurcated sidewalks with a planter strip along both sides of the roadway between 8th Street and 12th Street. Select segments, including those adjacent to City Hall and Cal/EPA feature enhanced sidewalks that provide additional width for pedestrian comfort. Intersections on this segment of the roadway feature marked crosswalks on all approaches. None of the aforementioned facilities would be adversely affected by the relocation of light rail service to H Street.

Class II on-street bicycle lanes exist on both sides of H Street from 8th Street to 12th Street. The Class II on-street bicycle lanes will be modified at the planned Sacramento City Hall light rail station, where they will be realigned around the raised light rail station platforms. The two-way conversion of H Street will also allow for bi-directional travel by bicycles. None of the aforementioned facilities would be adversely affected by the addition of new light rail track on H Street.

Parking Facilities

In addition to the parking impacts described above, the relocation of LRT from K Street to H Street would result in the loss of 22 on-street parking spaces on H Street. The loss of these 22 additional parking spaces in the context of Downtown Sacramento where a supply of off-street parking is readily available and where there are multiple options for alternative transportation would not be considered substantial and the parking impact would not be considered adverse.

Roadway Facilities

Evaluation of In-Street Rail Operations

Along H Street, the streetcar would share track with RT light rail trains. The segment between 6th Street and 7th Street has a single track for both directions of rail travel. When a light rail or streetcar is using this section of track, rail vehicles traveling in the opposite direction have to wait



until the single-track segment is clear before proceeding. In this area, priority is given to the transit vehicle that arrives first.

Intersections

Under this scenario, the average vehicle delay would increase at most of the study intersections along H Street. The average delay increases at the 7th Street and 8th Street intersections because of the relocation of light rail and the addition of the streetcar. Both intersections would experience frequent signal preemptions, which results in increased vehicle and rail delay.

It is important to note that the delay and LOS reported are the average of multiple simulation runs. Because the western end of the H Street corridor experiences a combination of multiple rail preemptions and vehicle activity levels that vary during the peak hours, the delay and LOS will vary more than other study locations, resulting in a range in peak-hour operations that are at times better and other times worse than the reported values.

Table 4.13-6 summarizes intersection LOS results associated with the Existing Plus Streetcar Plus H Street LRT Scenario. As shown, all of the study intersections are projected to operate at LOS E or better during the AM or PM peak hours. All of the study intersections along H Street are in the City of Sacramento Central City area, where roadways and intersections are exempt from LOS requirements. The H Street LRT Relocation Scenario would not result in any adverse effects to these study intersections under the Existing plus Streetcar plus H Street LRT scenario.

**Table 4.13-6
 Peak-Hour Intersection Operations – Existing Plus Streetcar Plus H Street LRT Scenario**

Intersection	Traffic Control	Existing				Existing Plus Streetcar Plus H Street LRT				
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
		Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	
6. 7th Street/H Street	Signal	16	B	12	B	Signal	30	C	25	C
7. 8th Street/H Street	Signal	15	B	10	B	Signal	20	C	66	E
8. 9th Street/H Street	Signal	15	B	15	B	Signal	20	C	35	C
9. 10th Street/H Street	Signal	8	A	11	B	Signal	24	C	45	D
10. 11th Street/H Street	Signal	7	A	8	A	Signal	14	B	50	D
11. 12th Street/H Street	Signal	31	C	24	C	Signal	33	C	19	B

Source: Fehr & Peers, 2014

Notes:

¹ For signalized and all-way-stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.

² Level of Service based on *Highway Capacity Manual* (TRB, 2010)



4.13.4.3. Construction Effects

The proposed streetcar tracks would be installed on multi-lane streets where there are typically two travel lanes available in each direction. Construction activities would require the temporary closure of one or more travel lanes, particularly if equipment and building materials were temporarily stored in the street as sections of old roadway were removed. Lane closures may require temporary rerouting of transit services and bicycle facilities and the temporary removal of on-street parking spaces. The temporary loss of parking spaces in the context of Downtown Sacramento, where a supply of off-street parking is readily available and where there are multiple options for alternative transportation, would not be considered substantial and the parking impact would not be considered adverse.

A segment of the existing rail of the Sacramento Southern Railroad would be altered by installing a crossing diamond where the streetcar alignment crosses the railroad. The construction activities would be coordinated with the Sacramento Southern Railroad so that operation of the excursion service, primarily in the summer, is not disrupted. Construction coordination would ensure that no significant railroad construction impacts would occur under the Project Alternative.

Construction of streetcar track, structural underpinning, and the catenary system on the Tower Bridge could temporarily restrict use of the lift mechanism to raise and lower the bridge. However, restrictions on use of the lift mechanism would be closely coordinated with USCG to minimize impacts. Construction would occur during times of the year when chances of an impact are minimal to avoid adverse effects to navigation.

4.13.5. Measures to Minimize Harm

4.13.5.1. Pedestrian Facilities

There would be no substantial adverse effects along the streetcar alignment as a result of the Project. Therefore, no mitigation measures are required. However, the following measure may be useful addition to the Project to enhance pedestrian access to and from streetcar stops and light rail stations:

- Include state-of-the-practice pedestrian safety and design treatments in the vicinity of new streetcar stops and LRT stations, as needed.

4.13.5.2. Roadway Facilities

There would be no substantial adverse effects to roadway facilities along the streetcar alignment as a result of the Project. Therefore, no mitigation measures are required. However, although not required, the following may be useful improvement measures to reduce vehicle congestion levels, and thereby improve streetcar service reliability:

- Collaborate with PUC staff to facilitate installation of a traffic signal on 3rd Street at the planned streetcar crossing of I Street. The analysis assumes installation of a rail gate will be required,



rather than a traffic signal at the crossing of segment of I Street that feeds into the I-5 southbound on-ramp. Under PUC regulations, the rail gate must be down for 20 seconds prior to the streetcar crossing of this single lane of I Street, resulting in delays. Installation of a traffic signal, which may be allowed under PUC regulations, would allow the streetcar to continue through the intersection without a 20-second pre-emption prior to the crossing.

- The ESC EIR includes a Transportation Management Plan that addresses event traffic management, as well as mitigation measures for the 3rd Street/J Street/I-5 off-ramp intersection, the most congested location along the study corridor in the future. The “plus Project” scenarios in this report assume both a morning event at the ESC that would add traffic during the weekday AM peak hour, and an afternoon event at the ESC that would add traffic during the weekday PM peak hour. Daytime events at the ESC facility will be smaller than the peak evening events, and neither will occur every weekday of the year. When they do occur, the Transportation Management Plan traffic management measures will be implemented to reduce congestion levels, particularly at the 3rd Street/J Street/I-5 off-ramp intersection.

Implementation of these improvement measures, while not required as a result of the Project, will be determined at a later date.

4.13.5.3. Construction Effects

Mitigation Measure TRA-1: Implement temporary bicycle detours during construction.

Bicycle detours will be devised and publicized in advance of streetcar construction. Alternatively, it may be possible to route bicycles along short sidewalk segments, depending on the pedestrian volumes along the sidewalk.

Mitigation Measure TRA-2: Develop Construction Traffic and Parking Management Plan. The Project sponsor will develop a Construction Traffic and Parking Management Plan that will be subject to review and approval by the City of West Sacramento Traffic Engineer, the City of Sacramento Department of Transportation, Caltrans, and local emergency service providers, including the fire and police departments. The plan will ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. At a minimum, the plan will include:

- The number of truck trips, time, and day of street closures;
- Time of day of arrival and departure of trucks;
- Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting;
- Provision of a truck circulation pattern;
- Provision of driveway access plan so that safe vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas);
- Maintain safe and efficient access routes for emergency vehicles;



- Manual traffic control when necessary;
- Proper advance warning and posted signage concerning street closures; and
- Provisions for pedestrian safety.

A copy of the construction traffic management plan will be submitted to local emergency response agencies, and these agencies will be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.

Mitigation TRA-3: Coordinate construction activities with the USCG. If construction activities limit or impede use of the lift mechanism of the Tower Bridge during intermittent or extended periods, the USCG will be informed of these occurrences a minimum of 30 days in advance of the interruption to navigational traffic. The USCG will post notice of the temporary closure in the Federal Register, and businesses and boat owners that would be most affected by the obstruction of navigation will be notified individually. The Project sponsor will coordinate with Caltrans, the owner of the Tower Bridge, the USCG, and affected businesses/boat owners to minimize or alleviate the potential impact by providing proper notification of the bridge closures; by scheduling closures in the non-peak excursion season (October through April); or by raising the bridge for an extended time to allow continuous river navigation, while temporarily rerouting vehicular and non-motorized traffic.

4.13.6. Cumulative Effects

The following section provides a description of cumulative transportation conditions with the implementation of the Project.

Travel Forecast Methodology

To develop forecasts for the Cumulative Plus Project scenario, the previously discussed Cumulative No Project SACMET travel demand model was modified to include the addition of the proposed streetcar. Similar to Existing Plus Project conditions, the addition of streetcar service also includes the modification of the Tower Bridge to include two vehicle travel lanes (one in either direction) and the signalization of the 3rd Street/I Street intersection. However, all other previously discussed transportation network modifications would remain the same under cumulative conditions with or without the proposed streetcar (e.g., 3rd Street two-way conversion, Phase 2 of I-5 Riverfront Reconnection Project, Railyards roadway infrastructure, etc.), and were also included in the Cumulative No Project scenario.

Transit Facilities

The effect of the Project on future transit operations would be similar to that under the Existing plus Project scenario. The most substantial change in background transit service that would occur under the cumulative baseline scenario, particularly as it relates to the Project, is the extension of Green Line LRT service from its present terminus at the Township 9 station to the Sacramento International Airport. This extension is included in both the SACOG MTP/SCS and the RT Transit Action Plan.



Implementation of the Project would result in improved cumulative transit service and access in the region's core, an essential element required to support planned development. As an urban circulator, the proposed streetcar would also result in increased overall transit ridership by serving a first/last mile function for inter-city rail, planned regional rail, and light rail service to the core.

The Project would not have a negative effect on cumulative transit operations, as described below.

- The Project would not generate ridership that exceeds available or planned system capacity. The Project would increase transit system capacity, creating a beneficial effect for the area served. The projected streetcar ridership for the 2035 build year is 13,000 daily trips. Based on planned service levels (10-minute headways and 18-hour daily service duration) and an assumed peak-hour demand that is 7 to 8 percent of the daily ridership levels, the Project would have a peak-hour capacity use of 0.76 to 0.87. The model ridership numbers account for trips from associated with the planned development of the ESC project (1.5 million square feet of mixed land uses), but do not account for special event ridership.
- The Project would not adversely affect transit system operations or facilities in a way that discourages ridership. The Project would increase ridership on other existing and planned transit lines by improving connectivity from those lines to residential and commercial districts.
- The Project would not fail to adequately provide access to transit. The Project improves access to transit for the area served.

The Project would not preclude any planned transit improvements and/or reduce ridership on any existing or planned transit facilities. Therefore, the Project would not result in adverse effects to cumulative transit facilities.

Pedestrian and Bicycle Facilities

The effect of the Project on future pedestrian facilities would be similar to that under the Existing Plus Project Scenario because no substantial changes in pedestrian facilities are planned under the cumulative baseline scenario. Some additional sidewalk, street lighting and pedestrian crossing enhancements will likely be implemented along the study corridor under cumulative baseline conditions. The Project would not preclude any of these planned improvements. Therefore, the Project would not result in any adverse effects to cumulative pedestrian facilities.

The effect of the Project on future bicycle facilities would be similar to that under the Existing Plus Project Scenario. No new bicycle facilities are planned on the streetcar alignment under the cumulative baseline scenario. Therefore, the Project would not result in adverse effects to cumulative bicycle facilities.

Parking Facilities

The effect of the Project on future parking facilities would be similar to that under the Existing Plus Project Scenario. Projected growth in the study area may result in an increase in demand for parking.



However, such growth would be subject to local requirement for the provision of parking. Therefore, the Project would not result in any adverse cumulative effects related to parking facilities.

Roadway Facilities

The effect of the Project on future roadway facilities would be similar to that under the Existing Plus Project Scenario. The primary difference is that congestion levels at the study intersections would be substantially higher under both the Cumulative No Project and Cumulative Plus Project Scenarios. This is due to the increase in development that is forecast to occur in the region's core rather than as a result of the Project.

Intersections

Similar to Cumulative No Project, several corridors experience heavy travel demands, which result in LOS F conditions for many study intersections. However, many intersections would have lower delays and better LOS with the Project. At the 3rd Street/J Street intersection, the average vehicle delay decreases with the Project, because the total travel demand decreases (i.e., more people are making trips using the streetcar, instead of their personal vehicles). The 19th Street/J Street intersection experiences the same pattern in the PM peak hour. The decrease in travel demand offsets the increase in vehicle delay due to the streetcar preemptions.

The LOS along the Tower Bridge Gateway/Capitol Mall corridor improves with implementation of the Project, because the two-lane Tower Bridge would result in lower travel demands.

Table 4.13-9 summarizes intersection LOS results associated with the Project. As shown in Table 4.13-9:

- All of the study intersections in the City of Sacramento are in the Core Area described in Policy M 1.2.2(a). In accordance with this policy, LOS F is acceptable during peak hours, provided that the Project provides multi-modal improvements to the transportation system in the Project vicinity. As such, the Project would not result in any adverse effects to study intersections in the City of Sacramento under the Cumulative Plus Project Scenario.
- The study intersection in the City of West Sacramento would operate at LOS E conditions during the AM peak hour, and LOS F during the PM peak hour. The threshold for the study intersection is LOS E. Although Tower Bridge Gateway/3rd Street/Riverfront Street would operate at LOS F during the PM peak hour under the Cumulative Plus Project Scenario, the implementation of the Project does not increase overall intersection delay by 5 or more seconds from Cumulative No Project conditions. Therefore, according to the City of West Sacramento's significance criteria, this would not constitute an adverse effect.

Based on the above, the Project would not result in adverse effects to the study intersections under the Cumulative Plus Streetcar Scenario.



Caltrans Facilities

Three study intersections along 3rd Street (at I Street, J Street, and L Street) that are evaluated above are junctions of I-5 on-ramps or off-ramps with the local street network in the City of Sacramento. The focus of the following assessment of Caltrans facilities is on the I-5 northbound off-ramp queues at the 3rd Street/J Street/I-5 off-ramp intersection.

**Table 4.13-9
Peak-Hour Intersection Operations – Cumulative Scenarios**

Intersection	Traffic Control	Cumulative No Project				Cumulative Plus Streetcar Scenario					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²		
1. 3rd Street/I Street	All-Way-Stop Control	12	B	60	F	Signal	10	A	89	F	
2. 3rd Street/J Street/I-5 off-ramps	Signal	277	F	103	F	Signal	233	F	99	F	
3. 3rd Street/K Street	Signal	6	A	4	A	Signal	6	A	6	A	
4. 3rd Street/L Street	Signal	23	C	71	E	Signal	36	D	131	F	
5. 3rd Street/Capitol Mall	Signal	26	C	42	D	Signal	33	C	38	D	
12. 12th Street/J Street	Signal	11	B	16	B	Signal	14	B	22	C	
13. 12th Street/K Street	Signal	12	B	17	B	Signal	19	B	18	B	
14. 12th Street/L Street	Signal	11	B	11	B	Signal	10	A	11	B	
15. 19th Street/J Street	Signal	22	C	185	F	Signal	35	D	133	F	
16. 19th Street/K Street	Signal	10	A	20	B	Signal	26	C	30	C	
17. 19th Street/L Street	Signal	8	A	12	B	Signal	22	C	24	C	
18. Tower Bridge Gateway/3rd Street/Riverfront Street	Signal	58	E	229	F	Signal	65	E	201	F	
19. Capitol Mall/Front Street	Signal	67	E	93	F	Signal	48	D	53	D	
20. Capital Mall/2nd Street	Signal	47	D	71	E	Signal	29	C	51	D	

Source: Fehr & Peers, 2014

Notes: ¹For signalized and all-way-stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle. ²Level of Service based on *Highway Capacity Manual* (TRB, 2000)

The Project would result in a small decrease in volumes at the three study intersections along 3rd Street that are junctions of I-5 on-ramps or off-ramps with the local street network in the City of Sacramento, due to the shift from auto to transit modes resulting from the new transit service provided by the Project. Note that the small increase in traffic volumes that would occur under Existing plus Project conditions as a result of the Tower Bridge reconfiguration does not occur under



Cumulative Plus Project conditions, because the I Street Bridge Replacement Project will realign the bridge to connect into the Railyards Specific Plan area north of the existing Central Shops complex.

Implementation of the Project would result in the following changes to freeway off-ramp volumes:

- I-5 Northbound off-ramp to J Street – volumes on the ramp would decrease by 80 vehicles during the AM peak hour (3.0 percent decrease), and would remain unchanged during the PM peak hour.
- I-5 Southbound off-ramp to J Street – volumes on the ramp would decrease by 70 vehicles during the AM peak hour (3.4 percent decrease), and would remain unchanged during the PM peak hour.

As shown in Table 4.13-10, during the AM peak hour, the addition of the Project would not result in changes to queuing on either ramp. During the PM peak hour, queues on the southbound off-ramp from I-5 would experience a reduction with the Project in place, but would still extend beyond the available storage. Queuing on the northbound off-ramp would remain within the available storage during the PM peak hour with the Project.

Table 4.13-10
Off-Ramp Queues – Cumulative Plus Project Conditions

Off-Ramp	Storage Length	Peak Hour	Queue ¹	
			Cumulative No Project	Cumulative Plus Project
1. I-5 Northbound – Off-ramp to J Street	1,025 feet	AM PM	1,400 feet 475 feet	1,400 feet 850 feet
2. I-5 Southbound – Off-ramp to J Street	1,475 feet	AM PM	3,275 feet 3,225 feet	3,275 feet 1,775 feet
Source: Fehr & Peers, 2014.				
Note:				
¹ Maximum queue length as reported in VISSIM microsimulation software rounded to nearest 25 feet.				

The Cumulative Plus Project analysis assumes installation of a rail gate will be required, rather than a traffic signal at the crossing of segment of I Street that feeds into the I-5 southbound on-ramp. Under PUC regulations, the rail gate must be down for 20 seconds prior to the streetcar crossing of this single lane of I Street, resulting in delays. However, these delays are not anticipated to result in additional platooning of vehicles onto the southbound I-5 on-ramp. During both the AM and PM peak hours, the average westbound delay at the rail gate is projected to be substantially lower than the average westbound delay at the adjacent 4th Street/I Street intersection, 400 feet to the east of the gate. Therefore, the existing traffic signal at the 4th Street/I Street intersection will have greater influence upon the platooning of vehicles entering the freeway than would the Project.



Cumulative Plus Streetcar Plus H Street LRT Scenario

Transit Facilities

Similar to effects described above for the Existing Plus Project scenarios, the relocation of LRT service from K Street and three blocks of 12th Street, to H Street and existing tracks along 7th Street and 8th Street, would allow for separated east/west operations between streetcar and light rail. Separated operations of light rail and streetcar are particularly beneficial to transit operations under cumulative-year conditions, and no adverse effects would occur.

Pedestrian and Bicycle Facilities

Similar to effects described above for the Existing Plus Project scenarios, the relocation of light rail service to H Street would not adversely impact any existing or planned pedestrian or bicycle facilities.

Roadway Facilities

Table 4.13-11 summarizes cumulative intersection LOS results associated with the Cumulative Plus Streetcar Plus H Street LRT Scenario. Under this Cumulative Plus Streetcar Plus H Street LRT

Scenario, five of the six study intersections would experience increases in vehicle delay. As discussed previously, the 7th Street and 8th Street intersections would experience frequent preemptions by LRT and streetcar vehicles, resulting in LOS F conditions in the PM peak hour. Additionally, it is important to note that the delay and LOS reported are the average of multiple simulation runs. Because the H Street corridor experiences multiple random preemptions per hour, the delay and LOS could vary, resulting in operations that are much better or much worse than the reported values.



**Table 4.13-11
 Peak-Hour Intersection Operations – Cumulative Plus Streetcar Plus H Street LRT Scenario**

Intersection	Traffic Control	Cumulative No Project				Traffic Control	Cumulative Plus Streetcar Plus H Street LRT			
		AM Peak Hour Delay ¹	LOS ²	PM Peak Hour Delay ¹	LOS ²		AM Peak Hour Delay ¹	LOS ²	PM Peak Hour Delay ¹	LOS ²
7. 7th Street/H Street	Signal	23	C	24	C	Signal	40	D	94	F
8. 8th Street/H Street	Signal	16	B	17	B	Signal	28	C	202	F
9. 9th Street/H Street	Signal	11	B	15	B	Signal	27	C	57	E
10. 10th Street/H Street	Signal	15	B	21	C	Signal	54	D	77	E
11. 11th Street/H Street	Signal	15	B	11	B	Signal	18	B	102	F
12. 12th Street/H Street	Signal	12	B	14	B	Signal	23	C	23	C

Source: Fehr & Peers, 2014

Notes:

¹ For signalized and all-way-stop-controlled intersections, the overall average intersection control delay is reported in seconds per vehicle. For side-street stop control, the average control delay for the worst movement is reported in seconds per vehicle.

² Level of Service based on *Highway Capacity Manual* (TRB, 2010)



4.14. Environmental Justice

4.14.1. Introduction to the Analysis

This section discusses environmental justice impacts that could result from the Project alternatives. The information in this section is based on the Environmental Justice Technical Memorandum prepared for the Project (URS, 2014c).

4.14.2. Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the U.S. Department of Health and Human Services (HHS) poverty guidelines. For 2014, this was \$23,850 for a family of four. All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this Project. The FTA follows the Federal Highway Administration's (FHWA's) order for environmental justice matters related to transit projects. In this order, FHWA defines low-income and minority populations as follows:

- A *minority* is any person belonging to any of the following groups: Black, Hispanic, Asian (including Native Hawaiian or other Pacific Islander), or American Indian or Alaskan Native.
- A *low-income population* is any persons having a household or median income at or below the poverty thresholds defined by HHS.

Additional, laws, statutes, guidelines, and regulation that relate to environmental justice issues include the U.S. Department of Transportation Order 5610.2(a) Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (USDOT, 2012)¹² and FTA Circular 4703.1 Environmental Justice Policy Guidance for FTA Recipients (FTA, 2012).¹³

4.14.3. Affected Environment

The Project study area for the environmental justice analysis included a ¼-mile buffer around the proposed alignment and MSF sites. Minority and low-income populations in the Project study area were identified using data from the 2010 U.S. Census and the 2008-2012 American Community Survey 5-Year Estimates. Census data were collected at the census-tract level for race and ethnicity and income, and compared to data for the cities of West Sacramento and Sacramento as a reference.

¹² U.S. Department of Transportation (USDOT), 2012. *Department of Transportation Updated Environmental Justice Order 5610.2(a)*. May 2, 2012. Accessed October 23, 2014.

¹³ Federal Transit Administration (FTA), 2012. *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*. FTA Circular 4703.1. August 15, 2012. Accessed October 23, 2014.



Based on the data collected, the Project study area has a total population of 51,895 residents, with a total minority population of 45.5 percent (compared to a total minority population of 52 percent for the City of West Sacramento, and 65 percent for the City of Sacramento). In the Project study area, there are six census tracts with total minority populations above 50% (census tracts 6, 7, 20, 21, 53.01 and 101.01), as depicted in Figure 4.14-1 Minority Population by Census Tract. Median household incomes in the 18 census tracts that intersect the Project study area range from \$12,222 to \$77,973. Low-income populations are identified when the median household income in a census tracts that intersects the Project study area is at or below \$35,775, or 150 percent of HHS 2014 poverty guideline for a family of four.¹⁴ In the Project study area, there are seven census tracts with median household incomes below the low-income level (census tracts 6, 7, 11.01, 14, 20, 53.01 and 101.01), as depicted in Figure 4.14-2 Median Household Income by Census Tract.

There are five census tracts defined as low-income populations and defined as communities with total minority populations above 50% (Census Tract 6, 7, 20, 53.01 and 101.01), within these census tracts there are specific communities, described below, that are considered Environmental Justice communities. Census Tracts 6, 7 and 53.01 are comprised of the communities of Old Sacramento, Alkali Flat and Mission Flats located in the northwest portion of Downtown Sacramento, along the industrial corridor of the Southern Pacific Railyard. Census Tract 20 contains the community of Richmond Grove located between the downtown and I-80.¹⁵ Census Tract 101.1 contains the City of West Sacramento's community of Broderick, located on the northeast portion of the city along the Southern Pacific railway.

4.14.4. Environmental Effects

This section includes an analysis to determine if the Project would:

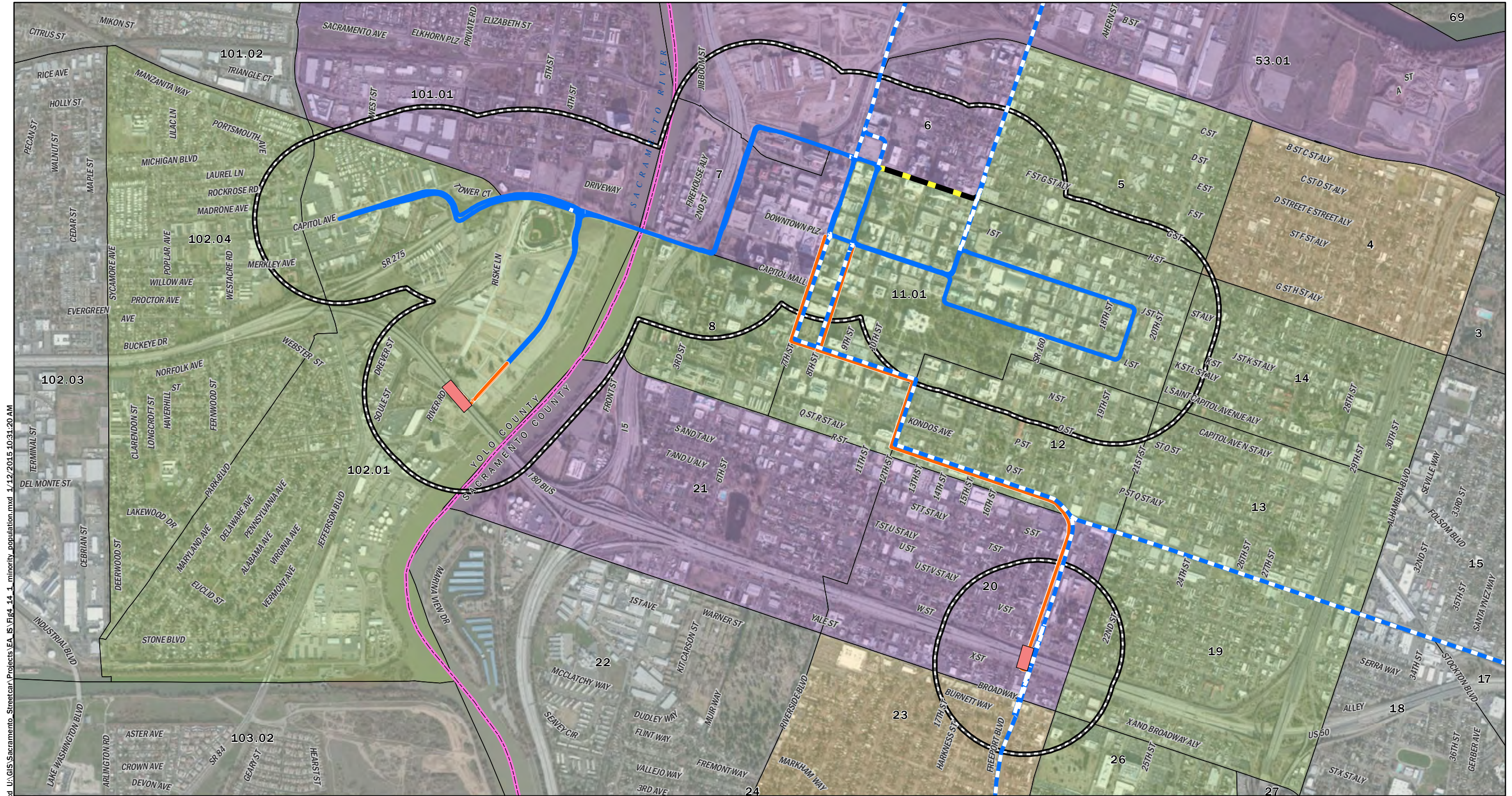
- Cause disproportionately high or adverse effects on any minority or low-income populations.

4.14.4.1. No Action Alternative

The No Action Alternative would not change the existing condition of the Project study area, and would therefore have no adverse effect on environmental justice populations.

¹⁴ FTA Circular 4703.1 suggests the use of a locally developed poverty threshold, such as that used for FTA's grant program, to identify a low-income person. The grant program defines a low-income person as an individual whose family income is at or below 150 percent of the HHS poverty guideline. The HHS "poverty guidelines" are issued each year and are a simplification of the "poverty thresholds" published by the U.S. Census Bureau. The HHS "poverty guidelines" are used for administrative purposes by federal agencies to determine, for example, financial eligibility for certain federal programs (HHS, 2014).

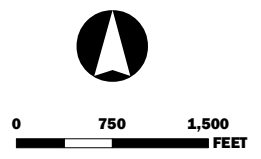
¹⁵ City of Sacramento, 2009. 2030 General Plan: Part 3 - Community Plan Areas and Special Study Areas. March 3, 2009. Accessed October 23, 2014.



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Source: United States Census Bureau American Fact Finder, 2012 American Community Survey (U.S. Census Bureau, 2012); Basemap Imagery, NAIP, 2012.

- Proposed Streetcar Alignment
 - Existing Light Rail Route
 - H Street LRT Relocation
 - Maintenance Facility Access
 - 1/4-Mile Buffer
 - Potential Maintenance Facility
- | Total Minority Population By Census Tract | |
|---|---------|
| | 10%-30% |
| | 30%-50% |
| | 50%-70% |



TOTAL MINORITY POPULATION BY CENSUS TRACT

January 2015
27560983

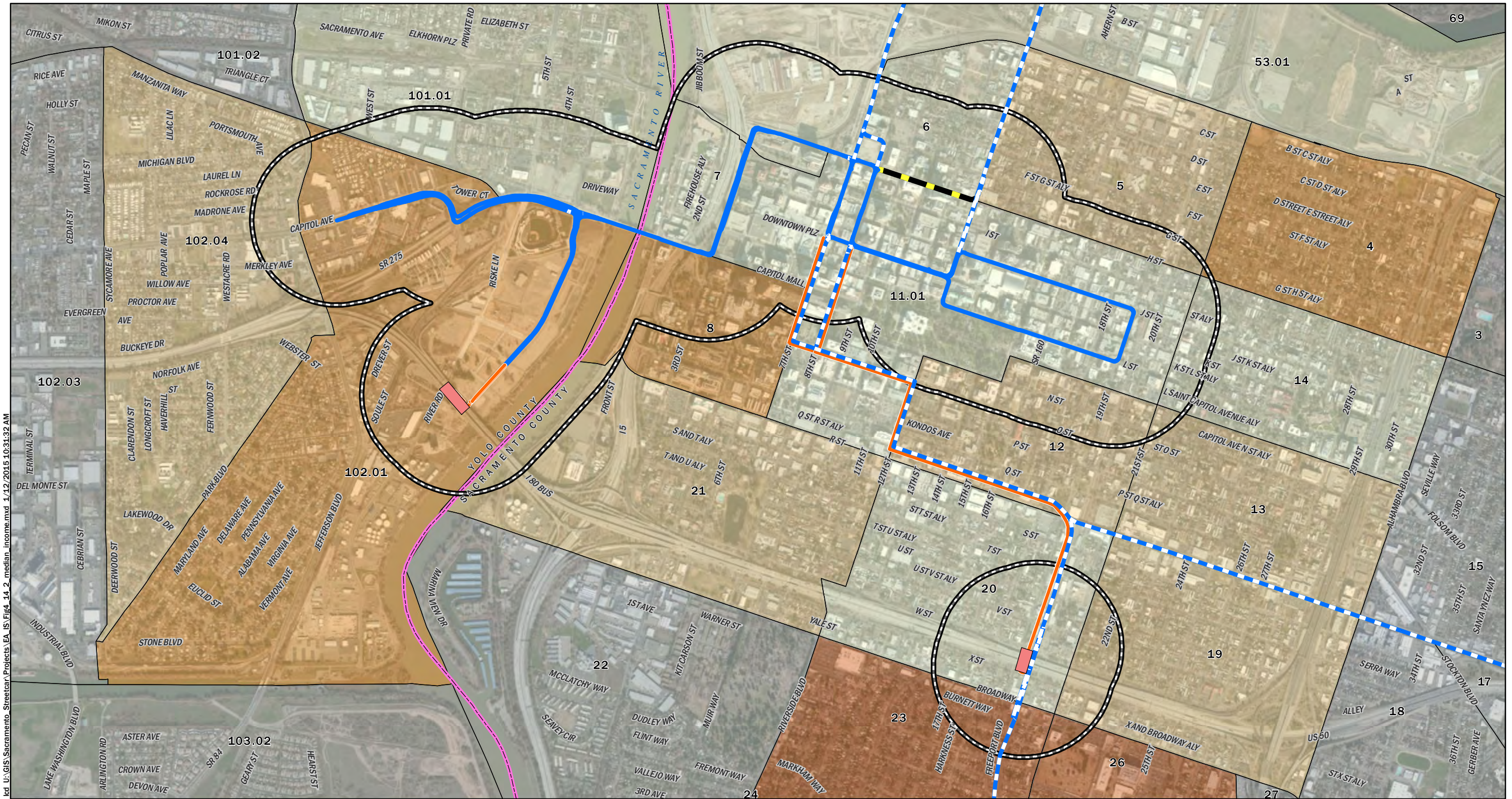
Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.14-1



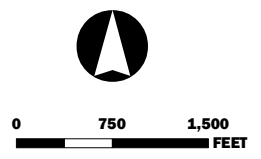
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Source: United States Census Bureau American Fact Finder, 2012 American Community Survey (U.S. Census Bureau, 2012); Basemap Imagery, NAIP, 2012.

Proposed Streetcar Alignment	1/4-Mile Buffer	Median Household Income By Census Tract
Existing Light Rail Route	Potential Maintenance Facility	0-\$35,775 (150% of HSS 2014 poverty guidelines for a family of four)
H Street LRT Relocation		\$35,775-\$45,000
Maintenance Facility Access		\$45,000-\$60,000
		\$60,000 and above



MEDIAN HOUSEHOLD INCOME BY CENSUS TRACT

January 2015
27560983
Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



FIGURE 4.14-2



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4.14.4.2. Action Alternative

Project improvements and operation of the Project would enhance the physical environment and would not cause substantial changes in aesthetics and visual quality, air quality, traffic, safety, physically divide existing neighborhoods, or affect neighborhood character (see Section 4.1, Aesthetics and Visual Quality; Section 4.2, Air Quality and Greenhouse Gas Emissions; Section 4.9, Land Use and Planning; and Section 4.13, Transportation, respectively).

Operational-related effects and benefits associated with the Project would affect all populations equally along the proposed alignment. Project benefits include enhanced mobility due to the new transit service, a potential reduction of traffic congestion, and a potential improvement in air quality. The effects on all of the identified environmental justice populations would not exceed those borne by non-environmental justice populations in the Project study area. Furthermore, measures to minimize harm incorporated into the Project (as described in Section 4.3, Biological Resources; Section 4.4, Historic Architectural, Archaeological, and Paleontological Resources; Section 4.7, Hazards and Hazardous Materials; and Section 4.10 Noise and Vibration) would lessen the potential adverse effects of the Project. Therefore, the Project would not cause disproportionately high or adverse effects on any minority or low-income populations. No adverse effects on environmental justice communities would occur as a result of the streetcar alignment.

Operational-related effects and benefits associated with either of the MSF options would similarly affect populations in the Project study area. The area surrounding the Sacramento MSF option contains census tracts with a median household income ranging from \$31,604 to more than \$60,000; and the area surrounding the West Sacramento MSF option contains census tracts with a median household income ranging from \$37,178 to more than \$50,000. Although the Sacramento MSF projects area is situated in proximity to the Environmental Justice community of Richmond Grove, it also within or in close proximity to the non-Environmental Justice communities of Poverty Ridge and Land Park. The area surrounding the Sacramento MSF option area contains census tracts with minority populations of 60.9 percent, 42.2 percent, 34.9 percent, and 23.5 percent for census tracts 20 (Richmond Grove), 29, 23 and 26, respectively; and the area surrounding the West Sacramento MSF option contains census tracts with minority populations of 38.5 percent for census tract 102.1 and 64.6 percent for census tract 21 (URS, 2014c). The effects on all of the identified environmental justice populations from the MSF options would not exceed those borne by non-environmental justice populations in the Project study area. Furthermore, as described above, measures to minimize harm incorporated into the Project would lessen the potentially adverse effects of the MSFs. Therefore, the Project would not cause disproportionately high or adverse effects on any minority or low-income populations. No adverse effects on environmental justice communities would occur as a result of the MSFs.

No minority or low-income populations have been identified that would be disproportionately adversely affected by the Project as determined above. Therefore, this Project is not subject to the provisions of Executive Order 12898.



4.14.5. Construction Effects

Construction of the alignment, stations, street improvements/repairs, and traction power facilities would occur in the existing public right-of-way. Construction activities would occur over a relatively short time because the Project would be constructed in three-block segments that would take approximately 3 weeks each. Temporary effects may occur from construction equipment air emissions, temporary detours, and noise and vibration. However, these temporary effects would be minimized due to compliance with all construction-related regulations.

Short-term/temporary impacts associated with construction of the alignment, stations, street improvements/repairs, and traction power facilities for the Project would affect all populations equally in the Project area. The majority of construction will occur with the public rights-of-way; however construction will require the temporary loss of parking spaces and the use temporary construction easements or encroachments for work on the MSF, construction of track/facilities on or across State highway infrastructure or right-of-way and for traction power substation(s). The construction-related effects on all of the identified environmental justice populations would not exceed those borne by non-environmental justice populations in the Project area. Therefore, the construction of the Project would not cause disproportionately high or adverse effects on any minority or low-income populations. No disproportionately adverse effect on environmental justice communities would occur as a result of construction the alignment, stations, street improvements/repairs, and traction power facilities.

Construction of the Sacramento MSF Option or West Sacramento MSF option would both occur beneath the Business 80/Highway 50 elevated freeway, an existing transportation corridor. Construction activities would occur over a relatively short time, and temporary effects may occur from construction equipment air emissions, temporary detours, and noise and vibration. However, these temporary effects would be minimized due to compliance with all construction-related regulations. The construction-related effects on all of the identified environmental justice populations would not exceed those borne by non-environmental justice populations in the Project area of the MSFs. Therefore, the construction of either MSF option would not cause disproportionately high or adverse effects on any minority or low-income populations. No disproportionately adverse effect on environmental justice communities would occur as a result of construction the MSFs.

4.14.6. Measures to Minimize Harm

Avoidance, minimization, and/or mitigation measures are described in the appropriate sections of the EA. No additional measures are required.

4.14.7. Cumulative Effects

The Project would not result in physical changes in development or development patterns in the Project area. The Project, in conjunction with future projects in Downtown Sacramento and West Sacramento's redevelopment area, would result in improvements in community character and cohesion through improvements in community access along the proposed alignment. No disproportionately adverse cumulative effect on environmental justice communities would occur.



CHAPTER 5. SECTION 4(F) EVALUATION

5.1. Introduction

This chapter provides the analysis to support the FTA's determinations necessary to comply with the provisions of 49 United States Code (USC) 303 (hereinafter referred to as "Section 4[f]") with respect to the Downtown/Riverfront Streetcar Project (Project).

Under Section 4(f), an operating administration of the USDOT may not approve a project that uses protected properties unless there are no prudent or feasible alternatives to such use, and the project includes all possible planning to minimize harm to such properties; or FTA makes a finding that the project has a *de minimis* impact on the Section 4(f) property. Section 4(f)-protected properties are publicly owned lands of a park, recreation area, or wildlife and waterfowl refuge; or lands of a historical site of national, state, or local significance as determined by the federal, state, regional, or local officials having jurisdiction over the resource. To demonstrate the FTA's compliance with Section 4(f), this chapter will:

- Describe the statutory requirements associated with Section 4(f).
- Identify the properties protected by Section 4(f) in the study area.
- Determine whether the Project would result in the use of those properties.

5.2. Regulatory Setting

5.2.1. U.S. Department of Transportation Act 49 USC 303(c) (Section 4[f])

Projects undertaken by an operating administration of the USDOT, or that may receive federal funding and/or discretionary approvals from such operating administration of USDOT, must demonstrate compliance with Section 4(f). Section 4(f) protects publicly owned land of parks, recreational areas, and wildlife refuges. Section 4(f) also protects historic sites of national, state, or local significance on public or private land that are potentially eligible for listing or are listed on the NRHP, and are protected under Section 106 of the National Historic Preservation Act of 1966 (NHPA).

The Federal Highway Administration (FHWA) has developed administrative procedures for the preparation, circulation, and coordination of Section 4(f) documents, which are described in FHWA's Section 4(f) Policy Paper. FTA recommends that the July 12, 2012, Section 4(f) Policy Paper be used as FTA guidance on Section 4(f) matters. The policies and procedures described in the paper are also recommended to be followed by FTA Regional Offices and grant applicants to the extent they apply to projects proposed for FTA funding, per the November 9, 2012, Memorandum from FTA Headquarters office of Planning and Environment to all FTA Regional Administrators.



FTA may not approve the use of a Section 4(f) property, as described in 49 USC 303(c), unless it determines that there is no feasible and prudent alternative to avoid the use of the property, and the action includes all possible planning to minimize harm resulting from such use, or the project has a *de minimis* impact consistent with the requirements of 49 USC 303(d) (see Section 5.2.2).

5.2.2. Section 4(f) Use Definition

5.2.2.1. Direct Use

A direct use of a Section 4(f) resource occurs when property is permanently incorporated into a proposed transportation facility (23 CFR 774.17). This might occur as a result of partial or full acquisition, permanent easements, or temporary easements that exceed limits for temporary occupancy, as noted below.

5.2.2.2. Temporary Occupancy

A temporary occupancy of a Section 4(f) resource occurs when there is a temporary occupancy of property that is considered adverse in terms of the preservationist purposes of the Section 4(f) statute (23 CFR 774.17). A temporary occupancy of property does not constitute a use of a Section 4(f) resource when the following conditions are satisfied (23 CFR 774.13(d)):

- The occupancy must be of temporary duration (e.g., shorter than the period of construction) and must not involve a change in ownership of the property.
- The scope of work must be minor, with only minimal changes to the protected resource.
- There must be no permanent adverse physical impacts on the protected resource or temporary or permanent interference with activities or purpose of the resource.
- The property being used must be fully restored to a condition that is at least as good as existed before project construction.
- There must be documented agreement of the appropriate officials having jurisdiction over the resource regarding the foregoing requirements.

5.2.2.3. Constructive Use

A constructive use of a Section 4(f) resource occurs when a transportation project does not permanently incorporate the property of a protected resource, but the proximity of the project results in impacts (e.g., noise, vibration, visual, access, ecological) that are so severe that the protected activities, features, or attributes that qualify the resource for protection under Section 4(f) are substantially impaired (23 CFR 774.15). Substantial impairment occurs only if the protected activities, features, or attributes of the resource are substantially diminished. This determination is made after taking the following steps:

- Identifying the current activities, features, or attributes of the resource that may be sensitive to proximity impacts.



- Analyzing the potential proximity impacts on the resource.
- Consulting with the appropriate officials having jurisdiction over the resource.

It is important to note that erecting a structure over a Section 4(f) property, and thus requiring air rights, does not, by itself, constitute a use, unless the effect constitutes a constructive use.

Furthermore, an indirect adverse effect under Section 106 of the NHPA to a historic property does not in and of itself result in a constructive use.

5.2.2.4. *De minimis Impact*

FHWA defines a *de minimis* impact as one that involves the use of Section 4(f) property that is generally minor in nature. A *de minimis* impact is one that, after taking into account avoidance, minimization, mitigation and enhancement measures, results in no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). For historic properties, a *de minimis* impact is one that results in a Section 106 determination of "no adverse effect" or "no historic properties affected." According to 49 USC 303(d), the following criteria must be met to reach a *de minimis* impact determination:

- For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact determination may be made if the FTA concludes the transportation project would not adversely affect the activities, features, and attributes qualifying the property for protection under Section 4(f) after mitigation. In addition, to make a *de minimis* impact determination there must be:
 - Public notice and opportunity for public review and comment.
 - Concurrence on the effect finding is received from the official(s) with jurisdiction over the property.
 - For a historic site, a *de minimis* impact determination may be made if, in accordance with the Section 106 process of the NHPA, FTA determines that the transportation program or project would have no effect or no adverse effect on historic properties, FTA has received written concurrence from the official(s) with jurisdiction over the property, (e.g., the State Historic Preservation Officer [SHPO]) and has taken into account the views of consulting parties to the Section 106 process as required by 36 CFR Part 800.

If the official with jurisdiction does not agree with a *de minimis* use determination, an analysis of avoidance alternatives must be conducted.

5.3. Section 4(f) Applicability Analysis

Sections 5.5.1 and 5.5.2 discuss the methodology used to determine which properties qualify for protection under Section 4(f) in the vicinity of the Project. Section 5.5.3 identifies those park, recreation, open space, and wildlife and waterfowl refuge properties that meet the criteria for



protection as Section 4(f) resources. Section 5.5.4 identifies cultural resources that meet the criteria for protection as Section 4(f) resources.

Section 5.5.4 also provides a Section 4(f) use analysis. In general, a Section 4(f) "use" occurs with a Department of Transportation-approved project or program when 1) Section 4(f) land is permanently incorporated into a transportation facility; 2) when there is a temporary occupancy of Section 4(f) land that is adverse in terms of the Section 4(f) preservationist purposes as determined by specified criteria (23 CFR §771.135[p][7]); and 3) when Section 4(f) land is not incorporated into the transportation project, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (constructive use).

5.3.1. Study Area

The study area as defined below determines which properties are considered for Section 4(f) evaluation.

5.3.1.1. Parks, Recreational Facilities, and Open Space

The study area for parks, recreational facilities, and open space is defined as a quarter-mile buffer along the proposed alignment, as well as both of the proposed MSF site alternatives.

5.3.1.2. Historic Properties

Because this Project is a federal undertaking, it must also comply with the NHPA. The NHPA implementing regulations at 36 CFR 800.4(a)(1) require the establishment of an Area of Potential Effects (APE). The APE is the geographic area or areas in which an undertaking may directly or indirectly alter the character or use of historic properties, if any such properties exist. Therefore, the APE serves as the study area for Section 4(f) historic properties that are potentially eligible for listing or are listed on the NRHP.

The APE for historic architectural properties includes all properties that contain buildings, structures, objects, sites, landscapes, and districts more than 45¹⁶ years of age at the time the cultural resources survey was conducted. The APE is further defined in the EA in Section 4.4, Historic Architectural, Archaeological, and Paleontological Resources, as well as in the following two reports: *Archaeological Resources Assessment for the Downtown/Riverfront Streetcar Project* (URS, 2015), and *Built Environment Resource Report* (JRP 2015). The APE includes the following:

- Properties in the proposed right-of-way.
- Properties where historic materials or associated landscape features would be demolished, moved, or altered by construction.

¹⁶ Although resources must be 50 years or older to be eligible for the NRHP, it is common practice to include evaluations of all cultural resources that will become 50 years old by the time a project is scheduled to be completed. As a result, an age of 45 years old, or pre-1968, was the selected cut-off for resource evaluation for the Project.



- Properties near the undertaking where streetcar materials, features, and activities have not been part of their historic setting and where the introduction of visual or audible elements may affect the use or characteristics of those properties that would be the basis for their eligibility for listing in the NRHP.
- Properties near the undertaking that were either used by a streetcar or served by a streetcar, or where streetcar materials, features, and activities have long been part of their historic setting, but only in such cases where the undertaking would result in a substantial change from the historic use, access, or noise and vibration levels that were present 50 years ago or during the period of significance of a property, if different.

5.3.2. Section 4(f) Applicability Criteria

A park or recreation area qualifies for protection under Section 4(f) if it meets the following criteria: (1) is publicly owned at the time at which the “use” occurs; (2) is open to the general public for use as a park or recreational facility; and (3) is considered a significant resource by the authority with jurisdiction over the area.

A wildlife or waterfowl refuge qualifies for protection under Section 4(f) if it meets the following criteria: (1) is publicly owned at the time at which the “use” occurs; (2) is being used as a refuge; or (3) is considered a significant resource by the authority with jurisdiction.

A historic site eligible for, or listed in, the NRHP is protected under Section 4(f), with the exception of some archaeological sites as described below. Although the statutory requirements of Section 106 and Section 4(f) are similar, if a proposed action results in an “adverse effect” under Section 106, there would not automatically be a Section 4(f) “use.” Therefore, the FTA completes a separate Section 4(f) analysis and determination, in addition to those completed in compliance with the Section 106 process of the NHPA.

For a property to be eligible for the NRHP, it must meet at least one of the four NRHP criteria (i.e., Criteria A–D) described below. The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following criteria:

- Criterion A: properties that are associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion B: properties that are associated with the lives of persons significant in our past;
- Criterion C: properties that embody distinctive characteristics of a type, period, or method of construction; or that represent the work of a master; or that possess high artistic values; or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D: properties that have yielded, or may be likely to yield, information important in prehistory or history.



Archaeological resources that are on or eligible for the National Register do not qualify for protection under Section 4(f) if the archaeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place, and if the official(s) with jurisdiction over the section 4(f) resource, such as the SHPO, ACHP, and federally recognized Indian tribes, have been consulted and have not objected to this determination (23 CFR 774.13(b)).

5.3.3. Parks, Recreation, Open Space, and Wildlife and Waterfowl Refuges

Section 4.11, Parks and Recreation, provides a description of each park, recreation, and open space area in the study area; however, not all of these facilities are close enough to the Project to be impacted (see Figure 4.11-1). Due to the pre-existing urban environment, it was determined that only those facilities closer than one city block to the proposed alignment would potentially be affected by the Project. Crocker Park, Cesar Chavez Plaza, and Rotary Centennial Minipark were not considered in the Section 4(f) analysis because they were a block or more from the proposed alignment. The Project would not permanently acquire land or temporarily occupy any of the above-mentioned parks; it would be a block or further away from them. Furthermore, in the dense urban environment of Sacramento and West Sacramento, the amount of physical structures present in a typical city block constitute a physical barrier to any potential impacts from noise, dust, or visual impacts. Therefore, no constructive use can be expected, and no further discussion of the three above-mentioned parks is merited.

5.3.3.1. Saint Rose of Lima Park

Size and Location

Saint Rose of Lima Park is a 0.51-acre park at 705 K Street at the intersection of K Street and 7th Street in the City of Sacramento. The proposed streetcar alignment runs along the entirety of the southern and western park borders.

Ownership

Saint Rose of Lima Park is owned and operated by the City of Sacramento.

Usage of Park (Intended; Actual/Current; Planned)

The park amenities include a stage and a seasonal ice skating rink. The park is in the heart of Downtown Sacramento and has excellent pedestrian access, as well as transit connections from existing light rail. The park consists of a small, paved plaza with trees planted around the perimeter. Due to its very small size, urban location, and lack of vegetation, the park is primarily intended to be used for public gatherings and events; serenity and quiet are not considered to be among its attributes.



5.3.3.2. Garden Park

Size and Location

Garden Park is a 0.6-acre park at the intersection of Central Street and Garden Street in West Sacramento. The park is long from west to east, and narrow from north to south. Its narrow eastern border is not immediately adjacent—but is in close proximity to—the proposed alignment.

Ownership

Garden Park is owned and operated by the City of West Sacramento.

Usage of Park (Intended; Actual/Current; Planned)

Garden Park is a new neighborhood park in the initial phase of the Bridge District. Park amenities include decorative landscaping, raised garden planting beds with edible and flowering plants, sierra granite seating walls, a 16-foot-long community table, and bicycle parking.

5.3.3.3. River Walk Park

Size and Location

River Walk Park is a narrow, 7.5-acre park and paved trail that runs along the western bank of the Sacramento River between I-80 and E Street for approximately 1 mile in the City of West Sacramento. The section from I-80 to Tower Bridge Gateway is a simple walking trail; the section from Tower Bridge Gateway to E Street features many amenities, such as picnic areas. Tower Bridge Gateway crosses the park in the middle and bisects it into the two above-mentioned sections. The easiest access point to the park is 2nd Street in West Sacramento, which also has a parking garage nearby.

The proposed alignment crosses the park near its middle section using the existing Tower Bridge Gateway.

Ownership

River Walk Park is owned and operated by the City of West Sacramento.

Usage of Park (Intended; Actual/Current; Planned)

The park features a unique view of the Downtown Sacramento skyline and Old Sacramento. Amenities include a picnic area, barbecue pits, a promenade, a grand staircase, Veterans' Plaza, Union Square, and a walking path. Along the path are many educational signs that talk about the settlement of Sacramento and the natural habitat of the river. There is boat access at Raley's Landing and a fishing access dock nearby. Many public events, such as the summer concert series, "Harmony on the River," and the Riverbank Music Festival, are held at the park.



5.3.3.4. Capitol Park

Size and Location

Developed in 1870, Capitol Park is a 40-acre California State Park adjacent to the State Capitol Building, between 12th and 15th Streets, and L and N Streets in the City of Sacramento.

Ownership

Capitol Park is owned and operated by the California Department of Parks and Recreation.

Use of Park (Intended; Actual/Current; Planned)

Park amenities include a decorative landscape with more than 450 varieties of trees and flowering shrubs, including trees from around the world. There are more than 155 memorials to significant California historical figures and events, such as a Civil War Memorial Grove planted in 1897 with saplings from Civil War battlefields; a statue of Junípero Serra; a Vietnam Veterans' Memorial, and a California Veterans' Memorial. The California State Capitol building is in the park, and is home to both the California State Legislature as and the California State Capitol Museum.

The park is accessible from Downtown Sacramento at 10th and L Streets, and ADA accessible from 11th and L Streets.

5.3.4. Historic and Cultural Resources

The five properties in the study area that are listed, or have been determined eligible for listing, in the NRHP; and are therefore protected under Section 4(f), are described in detail in Section 4.4. The State Capitol Building and Grounds, the Tower Bridge, and the Southern Pacific Depot are all listed in the NRHP; and the Raised Streets Hollow Sidewalks (RSHS) Historic District was surveyed and evaluated in 2010 and determined eligible for the NRHP. The Llewellyn Williams Mansion (923 H Street) was listed in the SRHCR in 1977, but had not been formally evaluated using the criteria for the NRHP or CRHR. The mansion was evaluated for the Project in accordance with Section 106 of the NHPA and Section 15064.5(a)(1)-(4) of the CEQA Guidelines and found eligible for the SRHCR, the NRHP, and the CRHR.



5.4. Section 4(f) Use Analysis

**Table 5-1
Summary Table**

Resource	Use Determination
Parks, Recreation, Open Space, and Wildlife and Waterfowl Refuges	
Saint Rose of Lima Park	No use
Garden Park	No use
River Walk Park	No use
Capitol Park	No use
Historic Resources	
State Capitol Building and Grounds	No use
Tower Bridge	<i>De minimis</i> impact
Southern Pacific Depot	No use
Raised Streets Hollow Sidewalks (RSHS) Historic District	<i>De minimis</i> impact
Llewellyn Williams Mansion (923 H Street)	No use

5.4.1. Parks, Recreation, Open Space, and Wildlife and Waterfowl Refuges

5.4.1.1. *Saint Rose of Lima Park*

The Project would not permanently acquire land from Saint Rose of Lima Park or change access to the park, and therefore would not result in a direct use of this park. Similarly, the Project would not require temporary physical occupation of Saint Rose of Lima Park, so there would be no temporary occupancy.

Constructive Use

Although the proposed alignment would be adjacent to the park boundaries, there would be no proximity impacts to Saint Rose of Lima Park. Along 7th Street just north of J Street, the streetcar alignment would diverge from the existing RT LRT tracks along the eastern side of 7th Street to a new alignment along the western side of 7th Street south of J Street. This new alignment would provide a large-radius curve to enable southbound streetcars to transition to eastbound K Street without impacting Saint Rose of Lima Park. A new station platform would be built at 7th Street and K Street opposite the park. However, there are existing LRT tracks and overhead catenary along 7th Street and K Street. The additional Project elements would blend in with the existing visual clutter of street signs, existing overhead utility and LRT overhead catenary, traffic signals, bus shelters, and utility poles that currently line the proposed alignment. No existing trees would be removed or impacted within the park. The Project would maintain visual and aesthetic compatibility with the existing environment, generating no visual impacts on the park.



Noise impacts were not assessed specifically for the park; however, they were assessed for the 800 J Street Lofts, which would experience similar levels of impact because they are only 250 feet east of the northeastern corner of the park, and are also adjacent to an existing LRT line. It was found that the noise levels at 800 J Street would increase only 0.1 A-weighted decibel (dBA) from the existing 71 dBA; therefore, the increased noise at Saint Rose of Lima Park is expected to be barely perceptible over existing levels. Additionally, Saint Rose of Lima Park does not qualify as “an urban park where serenity and quiet are significant attributes” (23 CFR 774.15 [e][1][iv]), and thus would not be considered a noise-sensitive facility.

Temporary impacts may be generated due to noise, dust, and vibration during construction of the new platform and track along 7th Street. However, these effects would be temporary, and avoidance and minimization measures described in Section 4.2, Air Quality/Greenhouse Gas, and Section 4.10, Noise and Vibration, would ensure that these effects would not be adverse.

Therefore, because no park property would be acquired (and therefore would not result in a direct use of this park), access to the park would not be altered, and the proximity effects from the Project would not substantially impair the recreational activities, features, or attributes of the park, there would be no Section 4(f) use.

5.4.1.2. Garden Park

The Project would not permanently acquire land from Garden Park, and therefore would not result in a direct use of this park. Similarly, the Project would not require temporary physical occupation of Garden Park, so there would be no temporary occupancy.

Constructive Use

Because the park is long and narrow, and only its narrow eastern border is in close proximity to the streetcar line, there will be no adverse noise effects to the park. In addition, the eastern border is screened with shade trees, which will provide a buffer from any potential visual impacts. No existing trees would be removed or impacted within the park. Therefore, because no park property would be acquired and no proximity impacts from the streetcar line are expected, there would be no Section 4(f) constructive use.

5.4.1.3. River Walk Park

The Project would not temporarily occupy, change the access to, or permanently acquire land from River Walk Park.

Constructive Use

Access to River Walk Park would not be interrupted during construction because it is along the western bank of the Sacramento River and is accessed from E Street and 2nd Street—neither of which would be affected by the Project. The Project would have no adverse effect on noise, vibration, and visual impacts; therefore, no constructive use can be expected. Project elements with



the potential to permanently change the urban landscape in the vicinity of River Walk Park are limited to Tower Bridge Gateway and the Tower Bridge. These changes would blend in with the existing visual clutter of street signs, existing overhead utility and LRT overhead catenary, traffic signals, bus shelters, and utility poles that currently line the proposed alignment near River Walk Park; therefore, no adverse visual effects upon the park would occur. No existing trees would be removed or impacted within the park. Because the proximity effects from the Project would not substantially impair the recreational activities, features, or attributes of the park, there would be no Section 4(f) constructive use.

5.4.1.4. Capitol Park

The Project would not temporarily occupy or permanently acquire land from Capitol Park.

Constructive Use

The proposed alignment would be constructed along the northern side of Capitol Park in the left (southern) lane of one-way westbound L Street between 12th Street and 15th Street. Construction could temporarily affect traffic, parking, and pedestrian circulation near Capitol Park. However, because construction activities would be limited to a three-block section at any one time, park access would not be substantially restricted during construction.

Because Capitol Park is quite large and the proposed streetcar line would only travel along its boundary for 0.24 mile, the majority of the park would lie outside of the noise analysis screening distance of 260 feet, which is based upon the comparison of the increased sound levels (day/night sound levels [L_{dn}] or equivalent sound levels [L_{eq}]) associated with streetcar operations with the impact thresholds presented in Section 4.10, Noise and Vibration. Operation of the streetcar may increase periodic noise for users of Capitol Park within 260 feet of the 0.24-mile-long streetcar route.

Noise analysis was done for two sensitive receptors along the park boundary: Sacramento Community Center (1301 L Street) and Hyatt Regency (1209 L Street). The expected noise increase was 0.1 dBA from the existing ambient level of 65 dBA for the Sacramento Community Center, and 1.1 dBA from the existing ambient level of 66 dBA for the Hyatt Regency. Both increases are well below the threshold of the allowable increase in cumulative noise levels as defined by the FTA.

No visual impacts are expected because the perimeter of the park is surrounded by shade trees, and there is already substantial automobile traffic along L Street. Project elements that would permanently change the urban landscape are expected to blend in with the existing visual clutter of street signs, existing overhead utility and LRT overhead catenary, traffic signals, bus shelters, and utility poles that currently line the proposed alignment. No existing trees would be removed or impacted within the park. The Project would maintain visual and aesthetic compatibility with the existing environment. Because the proximity effects from the Project would not substantially impair the recreational activities, features, or attributes of the park, no Section 4(f) constructive use would occur.



5.4.2. Historic and Cultural Resources

Section 4(f) historic properties were evaluated by (1) identifying if the Project would permanently incorporate land from the property, and (2) reviewing the effects on the property as documented during the Section 106 of the NHPA process. The Project would not permanently incorporate land from the Southern Pacific Depot, the State Capitol Building and Grounds, or the Llewellyn Williams Mansion; would not result in an adverse temporary occupancy; and would have “no effect” or “no adverse effect” on these historic properties. Therefore, no use under Section 4(f) would occur and the properties are not discussed in this section.

The determinations of use in this section are preliminary; final determination of use and *de minimis* impacts shall be made after FTA considers the views of consulting parties, and receives the written concurrence of the SHPO and Advisory Council on Historic Preservation (ACHP).

5.4.2.1. *The Tower Bridge*

The Project does not include large-scale demolition, destruction, or major alteration of the bridge or its components. The installation of the streetcar tracks and overhead catenary system (OCS) on the bridge would restore one of its original historic uses: as a bridge carrying a streetcar line. This would not represent an adverse change to the historic integrity of design, setting, materials, workmanship, feeling, or association of the Tower Bridge property. The Project does not introduce new incompatible elements, but instead reintroduces elements related to its historic use. The Project would not compromise the historic integrity of the Tower Bridge, nor its ability to convey its historical significance. Therefore, no treatment measures are required or proposed.

The Project would include some changes to the bridge deck, which has already undergone several modifications, including removal of most of the original rails and replacement of most of the roadway surface. The proposed alterations to the substructure would be minimal and do not have the potential to alter primary character-defining elements of the bridge. The lightweight deck is considered one of the character-defining features of the bridge, and the Project would require the removal of a strip from the center of the deck of the lift span. The strip to be removed would not constitute an adverse effect/substantial adverse change because the deck has been previously modified and the deck originally carried a rail line in this location. This may somewhat diminish the integrity of a previously altered feature, but the action would not cause an overall adverse effect or substantial adverse change that would cause this feature to no longer contribute to the significance of the bridge.

The Project would install the OCS in a manner that would require minimal alteration to the original fabric and character-defining features of the bridge. The specifications for the OCS fasteners would call for clamp-on attachments that would avoid direct physical alteration to the bridge trusses, which are a character-defining feature of the bridge. Bolting into the structure would be considered on a case-by-case basis, and welding will be generally prohibited. Installation of OCS equipment would ensure that as much of the original material of the bridge structure is protected during construction as possible.



The new OCS may be designed to use the concrete pylons as support for OCS wires, in keeping with the historic use and design of the bridge, which originally included overhead wires attached to these pylons. New OCS poles would be installed along the streetcar route in general, and along the streets leading to the bridge; and bridge pylons may be used to support the OCS. The use of the existing concrete pylons would be consistent with their historic use, and would not constitute an adverse effect or significant adverse change to these character-defining elements of the bridge.

The installation of streetcar tracks and OCS equipment on the Tower Bridge can, therefore, be accomplished with minimal alteration of the original fabric and character-defining features of the bridge. The Project would not compromise the historic integrity of the bridge, nor its ability to convey its historical significance. The Project would not cause an adverse effect or substantial adverse change to the Tower Bridge historic property; therefore, no treatment measures are required or proposed.

With the implementation of the measures discussed above, the Project will not adversely affect the activities, features, or attributes of the Tower Bridge that qualify it for listing on the NRHP. Therefore, the use of the Tower Bridge is expected to have *de minimis* impacts.

5.4.2.2. Raised Streets Hollow Sidewalks Historic District

The proposed alignment would traverse multiple sections of roadway that are within the boundaries of the RSHS Historic District, including 3rd Street from I Street to L Street, 7th Street from H Street to K Street, 8th Street from H Street to K Street, and K Street from 7th Street to 12th Street. The hollow sidewalks element of the RSHS Historic District exists below the existing sidewalks and access is often restricted by private land owners, so many stretches of the hollow sidewalks have not been verified or thoroughly recorded. Given these circumstances, it is possible that hollow sidewalks may be encountered during construction of the Project, with the greatest potential being associated with installation of OCS poles. These poles require cast-in-drilled-hole foundations of several feet, which could penetrate into the hollow sidewalks, and would constitute a use under Section 4(f).

In addition to the hollow sidewalks, the RSHS Historic District includes numerous features and sites of an archaeological nature. These include resources that date to the late 1800s, when the streets were originally raised, stacked streets and rail from the original streetcar in the early 1900s, and two prehistoric sites and one Gold Rush-era camp that are also contributors to the district (Tremaine, 2008). These features and sites, which are largely buried 3 or more feet below the present ground surface, are further described in Section 4.4. Only the permanent incorporation of contributing elements of the district itself would be considered a use.

Because most of the features and attributes that qualify the resource for Section 4(f) protection are buried underground and are generally hidden from public view, no adverse visual effects would occur due to the operation of the streetcar. The defining aboveground features of the District are the raised streets, dipping alleyways, and visual changes in street elevation; because their elevation



would not be altered by the operation of the streetcar, these topographic features would not be adversely affected by the Project.

To avoid, minimize, and mitigate the potential effects of the Project minimization measures are proposed and included above, in Section 4.4, Historic Architectural, Archaeological and Paleontological Resources.

The Project would not substantially impair the aboveground features and attributes of the RSHS Historic District that qualify it for listing on the NRHP, and it would not substantially impair the underground features and attributes of the District that qualify it for listing on the NRHP after the above minimization features are incorporated into the Project. With the implementation of the measures discussed above, the Project will not adversely impair affect the activities, features, or attributes of the RSHS Historic District that qualify it for listing on the NRHP. Therefore, the use of the RSHS Historic District is expected to have *de minimis* impacts. FTA will seek concurrence with the SHPO and other consulting parties of the intent to proceed with a *de minimis* impact determination and will provide public notice of this decision in the EA.



CHAPTER 6. COORDINATION AND CONSULTATION

Coordination and consultation with regulatory agencies and stakeholders has been ongoing since 2006, when the cities of Sacramento and West Sacramento, in cooperation with RT and YCTD, formed a partnership to study the reintroduction of the streetcar to connect the cities of Sacramento and West Sacramento, and their shared riverfront. This section summarizes coordination and consultation activities to date.

6.1. Public Involvement

6.1.1. 2009 Environmental Impact Report

The Downtown/Riverfront Streetcar Project was presented to various agencies at the federal, State, and regional/local levels as part of the EIR for the Downtown/Riverfront Streetcar Study, which was certified by the City of West Sacramento in 2009. As part of this process, a Notice of Preparation was circulated to the public, and two public scoping meetings were held in September 2007. A Draft EIR was circulated to the public, and two public hearings on the Draft EIR were held in September 2008. All public concerns were addressed in the Final EIR, which was certified as complete.

6.1.2. Public Meetings

Subsequent to the completion of the 2009 EIR, presentations, community meetings, and information-gathering sessions were conducted to further define the Project. Information was shared on the progress of the conceptual engineering, how the streetcar would operate, the general construction process and how construction effects could be minimized, and the environmental review process. Notice was provided via press releases, websites, emails, and direct contact with the public through the Business Advisory Committee and the Citizen's Advisory Committee. The outreach provided information on the transit modes and alignments under review, and gathered feedback that was used to gain input on financing options, and to discuss related community issues and concerns, as well as to inform the selection of a revised LPA in 2012. As part of this process, all information was presented in reader-friendly formats, using simple text and clear graphics to illustrate concepts and Project details. Meetings were held in public buildings that are all ADA compliant. Table 6-1 provides a summary of public meetings held for the Project since 2009. Information about the Project has also been available on the Project website at www.riverfrontstreetcar.com.

In addition, according to CalEnviroScreen 2.0 (State Office of Environmental Health Hazard Assessment), 81% of the population of Census Tract 6067000600 is living below two times the federal poverty level (5-year estimate, 2008-2012). This census tract is coterminous with the Alkali Flat neighborhood (see Section 4.14.3, above), to the north of the project. City staff presented the streetcar project to the Alkali and Mansion Flats Historic Neighborhood Association (AMFHNA) on July 14, 2011 and again on October 10, 2013.



**Table 6-1
Project Meetings**

Group	Date	Objective
Business Advisory Committee	April 25, 2011	<ul style="list-style-type: none"> • Review preliminary study goals • Review draft purpose and need statement
Citizen's Advisory Committee	May 2, 2011	<ul style="list-style-type: none"> • Review preliminary study goals • Review draft purpose and need statement
Business Advisory Committee	June 6, 2011	<ul style="list-style-type: none"> • Review Streetcar Route Analysis
Citizen's Advisory Committee	June 20, 2011	<ul style="list-style-type: none"> • Review Streetcar Route Analysis
Business Advisory Committee	September 19, 2011	<ul style="list-style-type: none"> • Review proposed draft Streetcar Network
Citizen's Advisory Committee	September 19, 2011	<ul style="list-style-type: none"> • Review proposed draft Streetcar Network • Review proposed initial Streetcar Route
Business Advisory Committee	November 7, 2011	<ul style="list-style-type: none"> • Review proposed initial Streetcar Route
Business Advisory Committee	December 5, 2011	<ul style="list-style-type: none"> • Review of Draft Streetcar Plan
Citizen's Advisory Committee	December 5, 2011	<ul style="list-style-type: none"> • Review Draft Streetcar Plan
Public Meeting	September 18, 2013	<ul style="list-style-type: none"> • Receive Input on Proposed Streetcar Route
Public Meeting	September 19, 2013	<ul style="list-style-type: none"> • Receive Input on Proposed Streetcar Route

6.2. Agency Involvement

Table 6-2 provides a list of agencies who have been invited to comment on the Project.

Coordination efforts with the California Public Utilities Commission (CPUC) for the Project began in October 2007. Meetings have been held with the CPUC to discuss variances or waivers that might be required for the Project. Follow-up meetings were held in February 2008 including a tour of the alignment.

The Sacramento Southern Railroad is owned by the California State Railroad Museum. Meetings were held with staff of the California State Railroad Museum in July 2008 to discuss the Project and its potential to affect the operation of the excursion trains weekends between April and September in Old Sacramento. Any connection of the streetcar tracks to the Sacramento Southern Railroad would also require reviews/approvals from the Federal Railroad Administration (FRA). Coordination with FRA was initiated in 2008.



As part of the National Environmental Policy Act compliance process, the Native American Heritage Committee (NAHC) was contacted in October 2013 to request a Sacred Lands File search of the Project area. The NAHC responded in November 2013 and stated that the Sacred Lands File search failed to identify Native American cultural resources in the Project area. The NAHC did,

Table 6-2
List of Agencies Consulted

Federal Agencies
U.S. Coast Guard (USCG)
U.S. Army Corps of Engineers (Corps)
U.S. Environmental Protection Agency (U.S. EPA)
U.S. Fish and Wildlife Service
National Oceanic and Atmospheric Administration (NOAA) Fisheries
State Agencies
California Fish and Wildlife (CDFW)
California Department of Parks
California Department of Transportation (Caltrans)
California Public Utilities Commission
California State Historic Preservation Office
Central Valley Regional Water Quality Control Board
Department of General Services
Native American Heritage Commission
Local Agencies
City of Sacramento
City of West Sacramento
City of Sacramento Economic Development
Sacramento Transportation Management Association
Sacramento Metropolitan Air Quality Management District
Yolo-Solano Air Quality Management District
Sacramento Municipal Utility District
Environmental Council of Sacramento
Capitol Area Development Authority
Port of West Sacramento
North Natomas Transportation Management Association
Sacramento Housing and Redevelopment Agency
Sacramento Regional Transit
Yolo County Transportation District



however, provide the names of 16 individuals who might have knowledge about the Project area. Letters requesting input about significant Native American resources were sent on November 19, 2013 to those individuals named by the NAHC.

Replies to the November 19, 2013 letter were received from the Shingle Springs Rancheria and Yocha Dehe Wintun Nation (both of which are federally-recognized tribes) in December 2013. The letter from the Shingle Springs Rancheria formally requested that the Tribe be consulted pursuant to the implementing regulations of the National Historic Preservation Act. They also requested copies of all environmental, archaeological, and cultural reports generated for the Project, as well as all record search materials. The Yocha Dehe Wintun Nation expressed concern about the potential for disturbing cultural sites during construction, and requested the presence of cultural monitors during any ground disturbance related to the Project. Copies of the letters were forwarded to the Project's lead State and federal agencies. Tribal consultation is ongoing as the Project develops.

6.2.1. Agency Informational Meeting

An agency informational meeting was held on January 23, 2014, to present an overview of the Project and to obtain agency input. Below is a list of agencies that were represented:

- Corps
- USCG
- U.S. EPA
- NOAA Fisheries
- CDFW
- California Department of Parks
- Caltrans
- Central Valley Regional Water Quality Control Board
- SACOG
- RT
- City of Sacramento
- City of West Sacramento

All comments were considered and incorporated into this EA as warranted. Comments provided at this meeting included the following, as summarized in meeting notes:

- David Sulouff (USCG) expressed concern about potential impacts to the operation of the Tower Bridge; namely, that water traffic would have the right-of-way over roadway traffic. The current proposed system is in compliance, as it allows water traffic to pass through unhindered. The planning/design team confirmed that this would continue with the project. Regarding the NEPA process, Mr. Sulouff stated that since there will be no change to navigational clearances or to the appearance of the Tower Bridge, USCG will have no input.



- Susan Clark (Corps) stated that if a Corps permit was necessary, the Corps would want to review the entire NEPA document for compliance with all federal regulations (e.g., Section 106). The project planning/design team stated that the project would not encroach into waters of the U.S. and therefore, no Corps permit would be required. However, the IE/EA would include an evaluation of all topics and would comply with all federal, state, and local environmental requirements.
- Josh Black (NOAA) stated that the Sacramento River is critical habitat for listed fish species managed by NOAA Fisheries. NOAA would coordinate with the Corps regarding the evaluation of impacts, but no project-related concerns are apparent from a habitat point of view or to listed fish species from the information presented at this meeting. However, if or when the Corps initiates Endangered Species Act consultation with NOAA Fisheries for this project, this standpoint might be different depending on the final iteration of the project description, supporting documents, and EA presented to the Corps from the applicant for the permit.
- Zac Appleton (EPA) stated EPA typically does not comment on NEPA EAs. He offered that it appears all issues are covered but added that flood control and climate resiliency issues should be discussed.

No additional formal or written comments have been received from these agencies.



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CHAPTER 7. LIST OF PREPARERS

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Downtown/Riverfront Streetcar Project References

Appendix A

California Environmental Quality Act (CEQA) Initial Study, Checklist, and Proposed Mitigated Negative Declaration



**APPENDIX A
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
INITIAL STUDY CHECKLIST AND PROPOSED MITIGATED NEGATIVE DECLARATION**

1. Project title:

Downtown/Riverfront Streetcar Project

2. Lead agency name and address:

Sacramento Area Council of Governments
1415 L Street
Sacramento, California 95814

3. Contact person and phone number:

Kirk Trost, Chief Operating Officer and General Counsel, (916) 340-6210

4. Project location:

Sacramento, West Sacramento, California

5. Project sponsor's name and address:

Sacramento Area Council of Governments
1415 L Street
Sacramento, California 95814

6. General plan designation:

Sacramento: Traditional Center with Public use, and Parks and Recreation; Central Business District Central Business District with scattered Public use, and Parks and Recreation; Urban Corridor High

West Sacramento: Central Business District; Riverfront Mixed Use

7. Zoning:

Sacramento: C-3 (Central Business District); C-2 (General Commercial); R-5 (Multi-Family); and R-4 (Multi-Family); RMX (Residential Mixed Use)

West Sacramento: Central Business District; Waterfront – Planned Development No. 41

8. Description of project:

Refer to Section 3 of the Environmental Assessment/Initial Study (EA/IS).



9. Surrounding land uses and setting:

Commercial, Residential, Governmental, Recreation, Transportation

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

Federal Transit Administration (FTA); Cities of West Sacramento and Sacramento; Sacramento Regional Transit (RT); the Yolo County Transportation District; the California Department of Transportation (Caltrans); Central Valley Regional Water Quality Control Board; Federal Railroad Administration; California Public Utilities Commission; U.S. Coast Guard



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INITIAL STUDY CHECKLIST - ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by the Project. The following pages present a more detailed checklist and brief discussion of each environmental factor. Reference to the more extensive analysis and mitigation measures presented in the preceding EA/IS sections is provided for those environmental factors potentially affected by the Project.

- | | | |
|--|---|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input checked="" type="checkbox"/> Hazards and Hazardous Materials | <input checked="" type="checkbox"/> Hydrology/Water Quality |
| <input type="checkbox"/> Land Use/Planning | <input type="checkbox"/> Mineral Resources | <input checked="" type="checkbox"/> Noise |
| <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input checked="" type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Mandatory Findings of Significance |

DETERMINATION:

On the basis of this initial evaluation:

- I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the Project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the Project could have a significant effect on the environment, because all potentially significant effects 1) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and 2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Project, nothing further is required.

Signature

Date

Signature

Date



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The existing aesthetics conditions in the project area are described in the EA/IS in Section 4.1, Aesthetics/Visual Quality.

a-d) Scenic Vista, Scenic Resources, Visual Character, Light or Glare

See the discussion in Section 4.1, Aesthetics/Visual Quality. Construction of the Project would not obstruct, alter, or degrade existing views along the proposed alignment or degrade the existing visual character of the study area. No designated State scenic highways are present in the study area. Although the Project would include additional lighting at station platforms and at the Sacramento Maintenance and Storage Facility (MSF), this lighting would comply with applicable standards for wattage, shielding, and security and would not create a new source of glare. Therefore, all potential visual impacts resulting from the Project would be less than significant.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AGRICULTURE AND FORESTRY RESOURCES				
<p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:</p>				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g])?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The Project would be located in an urbanized area; it does not contain any agricultural or forest land.

a-e) Agriculture and Forestry Resources

The Project would be in an urbanized area; it does not contain any agricultural or forest land and is not adjacent to any. Therefore, no impacts on agricultural or forest lands would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The existing air quality conditions in the project area are described in the EA/IS in Section 4.2, Air Quality and Greenhouse Gas Emissions.

a-e) Air Quality

An analysis of potential impact to air quality associated with construction and operation of the Project is included in the EA/IS in Section 4.2, Air Quality and Greenhouse Gas Emissions. The results of this analysis determined that the Project would comply with the applicable air quality plan and emissions of all criteria air pollutants would be below regulatory thresholds. There would not be a cumulatively considerable net increase of ozone or ozone precursors, or particulate matter. Potential impacts related to the Project would be less than significant.

In general, odors are usually associated with sources such as wastewater treatment plants, composting facilities, and chemical plants. Such inherently odorous sources are not part of the Project. Furthermore, the Project is an electric streetcar with no operational emissions and no direct odorous emissions. Therefore, impacts related to the generation of odors would be less than significant.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
BIOLOGICAL RESOURCES				
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or United States Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or United States Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The vegetation community in the study area is mostly urban landscaped or ornamental vegetation, with a mixture of native and nonnative ornamental trees and shrubs along sidewalks and medians. Undeveloped areas are generally poorly vegetated, with some weedy, ruderal vegetation. Along the Sacramento River near the Tower Bridge, a narrow band of large-stature riparian woodland occurs, dominated by Fremont cottonwood and valley oak. The study area supports a relatively low diversity of wildlife because it is in an urbanized area subjected to frequent human activity. Most



wildlife species observed or expected in the study area are adapted to urban environments, and several are nonnative species.

a) Effects to Special-Status Species

As described in the EA/IS in Section 4.3, Biological Resources, several special-status wildlife species have the potential to occur in or along the edge of the proposed alignment. Implementation of the mitigation measures described in Section 4.3.4 would reduce potentially-significant impacts to special-status wildlife species to a less-than-significant level.

B, c) Effects to Riparian or other Sensitive Natural Communities; Wetlands and other Waters

No construction would take place directly in riparian habitats, as the Project alignment across the Sacramento River would occur above the riparian area on the Tower Bridge. All Project activities would take place in developed and paved urban areas that also do not support wetland habitat. Therefore, impacts to riparian habitat and waters of the U.S. would be less than significant.

d) Interference with Wildlife or Fisheries Migratory Corridors

As discussed in the EA/IS in Section 4.3.4, Biological Resources, construction of the Project may affect nesting birds, and implementation of mitigation measures would reduce potential impacts related to interference with wildlife or fisheries migratory corridors to less-than-significant levels.

e) Conflicts with Local Policies

The City of West Sacramento and the City of Sacramento both have tree preservation regulations, which are further described in the EA/IS in Chapter 4.3, Biological Resources. Numerous large ornamental trees are planted in and along the edge of the proposed alignment. Some trees and other mature vegetation may need to be trimmed or removed during construction activities. Implementation of mitigation measures identified in Section 4.3.4 would minimize environmental impacts associated with the removal of trees and other mature vegetation during Project construction and operation to a less-than-significant level.

f) Conflicts with Adopted Habitat Conservation Plan or Natural Community Conservation Plan

There are no proposed or adopted Habitat Conservation Plans, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan that encompasses the project area. Therefore, the Project would not conflict with any such plan, and there would be no impact.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The existing cultural resource conditions in the project area are described in the EA/IS in Section 4.4, Historic, Archaeological, and Paleontological Resources. Information in this section is based on the Archaeological Resources Assessment for the Downtown/Riverfront Streetcar Project (URS, 2015b) and the Built Environment Resource Report Downtown/Riverfront Streetcar Project (JRP, 2015).

a-d) Historical and Archaeological Resources

As described in Section 4.4, Historic Architectural, Archaeological, and Paleontological Resources, the Project has been designed to avoid adverse effects to historic properties and buried cultural resources. Operation of the Project would result in less-than-significant impacts on historic, archaeological or paleontological resources. The Project would result in no significant effects to historic architectural resources. However, ground disturbance activities could inadvertently result in impacts to buried elements of the RSHS Historic District, and historic and prehistoric archaeological resources listed and eligible for listing in the NRHP, CRHR, and SRHCR. Construction activities could also disturb paleontological resources. Implementation of mitigation measures identified in Section 4.4.4 would avoid and minimize the potential impacts related to inadvertent discovery during construction and potential impacts would, therefore, be reduced to less-than-significant.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS				
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The existing geologic conditions in the project area are described in the EA/IS in Section 4.6, Geology, Soils, and Seismicity.

a-i, ii, iii) Alquist-Priolo Earthquake Fault Zone, Seismic Ground Shaking, Seismic-Related Ground Failure

The proposed alignment is in a seismically quiescent area, and no active faults are known to exist in its vicinity. Accordingly, the potential for ground displacement due to surface faulting is considered



negligible. All Project facilities would be designed and constructed in compliance with applicable seismic standards. Therefore, the Project would not result in an increased exposure to potential adverse effects associated with seismicity, and no impact would occur.

a-iv) Landslides

The Project would be constructed in an area that is essentially flat terrain, where landslides and debris flows do not occur. Therefore, the Project would have no impacts related to landslides.

b) Substantial Erosion

Project construction could result in the loss of topsoil and make soils more susceptible to erosion. Minimal portions of the project site would be cleared and graded in preparation for construction of the West Sacramento MSF option and the nonrevenue track to the MSF site. As part of the clearing and grading, an unknown but likely small amount of topsoil would need to be removed. This soil would likely be reused or disposed of on site. As described in Section 4.8, Hydrology and Water Quality, compliance with applicable regulations and proper implementation of general construction best management practices would ensure that impacts associated with loss of soil would be less than significant.

c) Unstable Geologic Unit

As described in the EA/IS in Section 4.6, Geology, Soils, and Seismicity, final design of the Project would comply with all regulations (including Table 18-1-B of the Uniform Building Code) adopted to ensure the Project would not present a risk to life or property associated with unstable geologic conditions or soils. Therefore, impacts would be less than significant.

d) Expansive Soils

Expansive soils do not occur in the project area. Therefore, no impact would occur.

e) Septic Tanks and Wastewater

Installation of septic tanks or alternative wastewater disposal systems is not included in the Project; soil capable of adequately supporting such improvements is not required. No impact would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
GREENHOUSE GAS EMISSIONS				
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The environmental and regulatory setting for Greenhouse Gas emissions is included in the EA/IS in Section 4.2, Air Quality and Greenhouse Gas Emissions.

a, b) Greenhouse Gas Emissions and Applicable Plans, Policies, and Regulations

Construction of the Project would result in minor temporary increases in GHG emissions, as described in the EA/IS in Section 4.2. These increases would be associated with the operation of construction equipment, material-hauling vehicles, and construction employee vehicles.

Operation of the streetcar vehicles would require electricity consumption, which would indirectly generate GHGs. Operation of the MSF would also result in emissions of GHGs from energy use, vehicle use by employees, generation and disposition of waste, and use of water. However, increased streetcar ridership would result in direct reductions in the use of light trucks and automobiles that otherwise would be used. The air quality management districts in the project area do not have quantitative thresholds for GHGs, but the level of emissions expected to be generated by the Project is well below published thresholds in other air districts. Therefore, impacts related to GHGs would be less than significant.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
HAZARDS AND HAZARDOUS MATERIALS				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The existing hazards and hazardous materials conditions in the project area are described in the EA/IS in Section 4.7, Hazards and Hazardous Materials.



a, b) Transport, Use, and Disposal of Hazardous Materials, and Accidental Spills

All hazardous materials would be handled, managed, and disposed of in accordance with all applicable federal, State, and local regulations. The streetcars proposed for use would be electrically powered. Due to the lack of fossil fuel, there is little chance for release of hazardous materials or wastes into the environment due to an upset or accident condition associated with the streetcars themselves, and no impacts would occur.

c, e, g) Within One-Quarter Mile of Schools, Public Airport, Interference with Emergency Plans

The Project would not place project features within $\frac{1}{4}$ mile of a public school or in close proximity to an airport. Project design would comply with the Sacramento County Area Plan for Emergency Response to Hazardous Materials Incidents, the West Sacramento Standard Multi-Hazard Emergency Plan, and the California Fire Code. Therefore, no impact would occur.

d) Hazardous Materials Sites Pursuant to Government Code Section 65962.5

The Project could be on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. A large number of database records indicate sites in close proximity to the project area that have confirmed soil and/or groundwater contamination. Unreported hazardous materials may also be encountered in the project area that could generate conditions that would be a hazard to public health and the environment. Implementation of mitigation, as identified in Section 4.7.5, would reduce this potentially significant impact to a less-than-significant level.

f) Private Airstrip

The project is not in the vicinity of a private airstrip; therefore, no impacts would result.

h) Wildfires

CAL FIRE has designated the project area as an "LRA Unzoned" zone in the cities of Sacramento and West Sacramento (Figure 4.7-3). The project area is relatively well developed, and there is little to no potential for wildland fires in the project area. Therefore, no impact would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY				
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Environmental Setting

The existing hydrology and water quality conditions in the project area are described in the EA/IS in Section 4.8, Hydrology and Water Quality.

a – f) Water Quality Standards and Waste Discharge Requirements, Groundwater Supply and Recharge, Erosion or Siltation On/Off Site, Flooding from Surface Runoff, Polluted Surface Runoff, Other Sources Affecting Water Quality

As described in the EA/IS in Section 4.8, Hydrology and Water Quality, construction and operation of the Project would comply with all regulatory and permit requirements regarding impacts to water quality. Therefore, by complying with the NPDES Permits, complying with the appropriate city and Caltrans Statewide Permit requirements, and implementing standard BMPs described in Section 4.8.3.2, the Project would avoid adverse impacts on water quality during construction or operations, and no mitigation measures would be required. Potential impacts related to these issues would be less than significant.

g, h) Housing and Structures within 100-Year Flood Hazard Area

The project area in Downtown Sacramento is designated as either Flood Zone X (areas protected by levees from the 100-year flood), or Other Areas Zone X (areas determined to be outside of the 500-year flood). The designation for the project area in the City of West Sacramento is Flood Zone X, (areas protected by levees from the 100-year floods). No housing or structures would be placed in a FEMA-designated 100-year floodplain and no impact would occur.

i) Risk from Levee or Dam Failure

Although unlikely, a failure of an upstream dam such as Folsom Dam or Nimbus Dam could inundate both Downtown Sacramento and West Sacramento. Although the occurrence of dam failure inundation is based on extremely remote probabilities, the counties and cities have plans in place for the evacuation of people from areas subject to inundation from a dam failure. These evacuation plans ensure that the risk related to levee or dam failure would be less than significant.

j) Seiches, Tsunami, or Mudflow

The Project is not near a body of water subject to seiches or tsunamis. The project location has a very low potential for inundation by mudflow. The banks of levees have the potential to landslide; however, the Project would not alter the levees. Therefore, no impact would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
LAND USE AND PLANNING				
Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The existing land use conditions in the project area are described the EA/IS in Section 4.9, Land Use and Planning.

a, b) Established Communities and Land Use Plans, Policies, and Regulations

As described in the EA/IS in Section 4.9, Land Use and Planning, the streetcar platforms and tracks would be constructed in existing public right-of-way; no additional right-of-way would be acquired for the Project. The Project would not create new barriers or divide existing neighborhoods in the study area; rather, it would result in a beneficial effect by creating greater connectivity along the proposed alignment.

The Project would be consistent with the City of Sacramento and City of West Sacramento General Plan Land Use goals of improving transit in and between the planned growth areas in Downtown Sacramento and West Sacramento. Therefore, no impacts would occur.

c) Conservation Plans

No habitat conservation plans or natural community conservation plans have been adopted for the project area in the vicinity of the Project. Therefore, no impacts would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
MINERAL RESOURCES				
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The potential for the presence of mineral resources in the study area was determined using California Geologic Survey report information. The study area is in Mineral Resource Zone 1, an area where the information indicates that no significant mineral deposits exist, or little likelihood exists for their presence.

a, b) Available Known Mineral Resource, Locally Important Mineral Resource Recovery Site

There are no known important mineral deposits or mining activities for oil, coal, natural gas, sand, gravel, or crushed stone in the project area. No mineral resource recovery sites exist; therefore, no impact would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
NOISE				
Would the project:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The existing noise conditions in the project area are described in the EA/IS in Section 4.10, Noise and Vibration.

a,c,d) Noise Levels

As described in the EA/IS in Section 4.10, Noise and Vibration, ambient noise levels are expected to exceed criteria at several different sensitive receptors; however, the incorporation of the proposed mitigation measures identified in Section 4.10.5 would reduce the impacts less-than-significant levels.

b) Vibration

As described in the EA/IS in Section 4.10, Noise and Vibration, operation of the streetcar at maximum speeds (30-35 mph) may cause vibration levels to be above FTA criteria at some receptors, potentially causing a significant impact. However, it is anticipated that during the



detailed engineering phase of the Project, site-specific testing at the locations of impacted receptors indicated by the current analysis will result in the elimination of most and possibly all of the impacts from vibration. Where vibration impacts remain, they would be minimized to a less-than-significant level with the implementation measures identified in Section 4.10.5.

e, f) Proximity to Airports

The project is not located within an airport land use plan, within 2 miles of a public airport, or in the vicinity of a private airstrip. Therefore, no impact would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
POPULATION AND HOUSING				
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The existing population and housing conditions in the project area are described in the EA/IS in Section 4.12, Socioeconomics and Regional Growth.

a) Population Growth

As described in the EA/IS in Section 4.12, Socioeconomics and Regional Growth, rather than induce growth, the Project would accommodate growth that has been projected in the Sacramento Area Council of Governments’ (SACOGs’) regional transportation plan and planned by both the cities in the study area. The operation of a new streetcar line in the study area could accommodate population growth near the proposed transit stations by enhancing the attractiveness of the corridor for residents and workers. The Project would provide increased accessibility to transit and improved mobility by providing an alternative for trips between West Sacramento and Downtown Sacramento. However, these changes would largely represent a redistribution of projected growth rather than an increase, and therefore a potential increase in population would be considered less than significant.

b, c) Displace Housing or People

The Project would be constructed in existing public right-of-way; no additional right-of-way would be acquired. The Project would not displace existing housing or require the construction of replacement housing elsewhere. Therefore, no displacement impacts on housing or people would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

As described in the introduction to Chapter 4, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures of the EA/IS, the Project would not induce a substantial increase in population in the study area beyond that projected in regional plans. Therefore, the Project would not require an increase in public services such as schools or fire/police protection.

a) Impacts to Public Services

The Project does not include new land uses or intensification of existing land uses that would lead to substantial population growth. Therefore, the Project would not generate new population that would require additional public services. Alteration of existing facilities or the construction of new facilities would not be required and no impact would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The existing recreational conditions in the project area are described in the EA/IS in Section 4.11, Parks and Recreation.

a) Physical Deterioration of Recreational Resources

The Project would not result in a direct or indirect increase in population in the study area. Access to existing parks and recreational facilities along the proposed alignment may be improved—particularly in those areas closest to streetcar stations—due to the increase in transit options. However, this would not result in a substantial increase in the number of park users.

The Project is not expected to produce adverse short- or long-term effects on the physical condition of existing recreational facilities and parklands along the proposed alignment. Operation of the streetcar may increase periodic noise for users of Saint Rose of Lima Park and Capitol Park due to the proximity of these parks to the proposed alignment. These two parks are located in an urban setting, where noise from existing traffic and LRT operations is typical. In addition, noise increases associated with the Project in the vicinity of the two parks would be well below the threshold of the allowable increase in cumulative noise levels as defined by the FTA and described in detail in Section 5.4.1. Therefore, impacts on recreational resources would be less than significant.

b) Construction or Expansion of Recreational Resources

The Project does not include new recreational facilities. In addition, the Project does not include features that would result in the need for new or expanded recreational facilities or parklands. Therefore, no impact would occur.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION/TRAFFIC				
Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The existing transportation conditions in the project area are described in the EA/IS in Section 4.13, Transportation.

a, b) Conflict with Applicable Plans, Ordinances, Policies, and Programs

As described in the EA/IS in Section 4.13, Transportation, the operation of the Project would have a less-than-significant impact on congestion levels, levels of service, and other policies establishing measures of effectiveness for the performance of the circulation system.

Construction activities would require the temporary closure of one or more travel lanes on multi-lane streets where there are typically two travel lanes available in each direction. This could result



in potentially-significant impacts; however, the implementation of the mitigation measures identified in Section 4.13.5 would reduce the impacts to less-than-significant.

c) Air Traffic Patterns

As described in the EA in Section 4.13, Transportation, no change in air traffic patterns would occur due to the construction or operation of the Project. Therefore, no impact is expected.

d) Hazards

The Project will be designed to comply with all applicable safety standards and regulations; therefore, the Project would not substantially increase hazards and no impact is expected.

e) Emergency Access

As described in the EA/IS in Section 4.13, Transportation, the proposed streetcar tracks would be installed on multi-lane streets where there are typically two travel lanes available in each direction. Construction activities would require the temporary closure of one or more travel lanes, particularly if equipment and building materials were temporarily stored in the street as sections of old roadway were removed. Lane closures may require temporary rerouting of transit services and bicycle facilities and the temporary removal of on-street parking spaces.

Construction of streetcar track, structural underpinning, and the catenary system on the Tower Bridge could also temporarily restrict use of the lift mechanism to raise and lower the bridge. However, restrictions on use of the lift mechanism would be closely coordinated with USCG the Coast Guard to minimize impacts. Construction would occur during times of the year when chances of an impact are minimal to avoid adverse effects to navigation.

Temporary lane and bridge closures could result in short-term impacts to emergency access; however, the implementation of the mitigation measures identified in Section 4.13.5 would reduce the impacts to less than significant.

f) Public Transit, Bicycles, and Pedestrians

The Project would improve access to transit for the area served, extend the range of pedestrians by allowing for pedestrian travel augmented by streetcar, and provide a travel option for cyclists who commute or travel to the region's urban core for other purposes. Therefore, the operation of the Project would have no impact. However, construction activities would require the temporary closure of one or more travel lanes on multi-lane streets where there are typically two travel lanes available in each direction. Lane closures may require temporary rerouting of bicycle facilities. This construction impact would be reduced to a less-than-significant level with mitigation identified in Section 4.13.5.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
UTILITIES AND SERVICE SYSTEMS				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Environmental Setting

The existing utilities and service systems conditions in the project area are described in the EA/IS in Section 4.6, Energy and Utilities.

a) Wastewater Treatment

Additional wastewater generated by the propose project would be limited to project activities at the MSF. This would not lead to an exceedance of the wastewater treatment requirements of the Central Valley Regional Water Quality Control Board. Therefore, no impact is expected.

b, c) Construction of New Water, Wastewater Treatment, and Stormwater Drainage Facilities

The operation of the streetcar would not require or result in the construction of new water facilities, wastewater treatment facilities, stormwater drainage facilities, or expansion of existing



facilities because the Project would be constructed in existing right-of-way in paved roads already served by existing infrastructure. As part of the Project, an MSF would be constructed to store and maintain the streetcar vehicles when not in use. The MSF would need water and wastewater treatment, but the increase in demand and use of these utilities would be minimal. Therefore, no impact is expected.

d) Water Supplies

The Project would be served by existing infrastructure. As part of the Project, an MSF would be constructed to store and maintain the streetcar vehicles when not in use. The MSF site would require water supplies to serve the project for cleaning purposes from existing entitlements and resources, but use would be incremental and would not require any new or expanded entitlements. Therefore, no impact on water supply would occur as a result of the Project.

e) Wastewater Treatment

The Project would not result in increased wastewater discharges or introduce additional sources of pollutants to the wastewater treatment system. Therefore, there would be no impact on the capacity of the wastewater treatment system to serve the Project.

f, g) Landfill Capacity and Compliance with Solid Waste Regulations

Construction and operation of the Project, including the MSF, would comply with federal, State, and local statutes and regulations related to construction and solid waste. Therefore, solid waste generated from the Project's construction and operation would not substantially affect the projected life of the landfill, and impacts from solid waste generation or impacts on solid waste facilities would be less than significant.



	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

a) Degrade the Quality of the Environment

As discussed in this Initial Study Checklist and the more detailed EA/IS analysis, the Project has the potential for impacts to biological resources, cultural resources, hazards and hazardous materials, noise and vibration, and transportation. Mitigation measures identified in the EA/IS would reduce these potentially significant impacts to less-than-significant levels. Therefore the Project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

b) Cumulative Impacts

As discussed in this Initial Study Checklist and the more detailed EA/IS analysis, compliance with existing regulatory regulations and required permits would ensure that the Project would have less-than-significant impacts on aesthetics, air quality, geology and soils, greenhouse gas emissions, hydrology and water quality, and utilities and service systems. In addition, while the Project could result in significant impact to biological resources, cultural resources, hazards and hazardous materials, noise and vibration, and transportation, these impacts would be reduced to less-than-significant levels with the incorporation of mitigation measures. These less-than-significant impacts could combine with impacts from other projects in proximity to the Project. However, most of the less-than-significant impacts associated with the Project are site-specific and project-specific and there is little, if any, cumulative relationship between implementation of the Project



and other projects throughout the study area. In addition, because of the Project's location in existing roadway rights-of-way, the effects of the Project are not anticipated to contribute to cumulative effects with other development projects in the area. Therefore, the incremental impacts related to the Project would not combine with the incremental impacts of other projects proposed for the study area and potential cumulative impacts would be less than significant.

c) Direct or Indirect Adverse Effects on Human Beings

As discussed in this Initial Study Checklist and the more detailed EA/IS analysis, the Project has the potential for impacts to resources that could cause adverse effects on humans. However, compliance with existing regulatory regulations and required permits, as well as the implementation of mitigation measures identified in the EA/IS, would ensure that these impacts would remain less than significant.



PROPOSED MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

The Federal Transit Administration (FTA) and the Sacramento Area Council of Governments (SACOG) have prepared a joint Environmental Assessment (EA)/Initial Study (IS) to address the environmental effects of the proposed Downtown/Riverfront Streetcar Project (Project) in compliance with the National Environmental Policy Act (NEPA) of 1969, and the California Environmental Quality Act (CEQA) of 1970. FTA is serving as the lead agency for NEPA, and SACOG is the lead agency for CEQA. Other public agencies that have discretionary approval over the Project—and are, therefore, responsible agencies under CEQA—are the cities of West Sacramento and Sacramento, Sacramento Regional Transit District (RT), Yolo County Transportation District (YCTD), and the California Department of Transportation (Caltrans).

PROJECT DESCRIPTION

SACOG, the City of Sacramento, the City of West Sacramento, YCTD, and RT, have undertaken advanced planning, environmental, and engineering activities for the reintroduction of the streetcar to connect the cities of West Sacramento and Sacramento and their shared riverfront. It is anticipated that the development plans and growth projections for West Sacramento's redevelopment areas and Downtown Sacramento will generate greater travel demand for local mobility and roadway capacity than is currently available. The purpose of the Project is to improve transit service and local circulation by connecting West Sacramento and Downtown Sacramento with an alternative (non-auto) mode, and supporting existing and future development in the City of West Sacramento and Downtown Sacramento.

The 3.3-mile streetcar alignment would extend from the West Sacramento Civic Center to the Midtown entertainment and retail district in Sacramento. Mixed-use neighborhoods in the Washington Neighborhood and the Railyards Specific Plan area have been planned around a future high-quality transit system intended to serve these new and emerging employment and residential districts. Several key destinations in these neighborhoods would be connected by the Project, including: Raley Field; Old Sacramento; the Sacramento Valley Station in the Railyards Specific Plan area; Downtown Plaza Mall; the historic Memorial Auditorium; the Sacramento Community Center Theater; the California State Capitol building; the Sacramento Entertainment and Sports Center (ESC); and the Sacramento Convention Center. The alignment also includes service to the Bridge District in West Sacramento along Riverfront Street and the relocation of existing light rail service from K Street to H Street between 7th and 12th streets in Downtown Sacramento, both to be constructed in later phases of the project.

The alignment for the proposed streetcar is primarily along existing city streets. New track would be laid for the entire alignment within West Sacramento and across Tower Bridge. East of Tower Bridge, new track would be installed in the road bed on Capitol Mall to 3rd Street and north on 3rd Street to the Sacramento Intermodal Transportation Facility where it would connect with existing LRT tracks that run east onto H Street. Short sections of new track would also be necessary on 7th Street from just north of J Street to K Street, and on 12th Street between K and L streets. The full



lengths of J, L, and 19th streets would require new track. New track would also be placed on H Street between 8th and 12th streets to accommodate the relocation of LRT from K Street.

The proposed project includes the installation of 12 westbound and 13 eastbound stations. New station platforms would be concrete slabs constructed within the sidewalk and/or roadbed and would not require removal of any existing granite curbs or street trees. Station elements may include such amenities as a canopy mounted on structural supports, supplemental lighting, fare machines, schedule and patron information rack, bench, lean rail, trash receptacle, sign with stop name, and an ADA pedestrian warning strip running the length of the boarding area.

The traction power facilities (support poles, catenary poles, and substations) would also be located within the public right-of-way. Substations would convert electrical current to the proper voltage for streetcars and be approximately 375 square feet in size. Support and catenary poles of the Overhead Contact System (OCS) will be spaced along the streetcar alignment and will be similar to the system that is currently in place today for the light rail system in Downtown Sacramento. The maximum span between OCS poles is typically 120 feet; existing utility and LRT poles, and suitable buildings (i.e., not historic properties) will be used whenever possible to attach wires.

There are two potential sites considered for a maintenance and storage facility (MSF), one in Sacramento and the other in West Sacramento. The MSF will accommodate daily and routine vehicle inspections, interior/exterior cleaning of the streetcars, preventive (scheduled) maintenance, unscheduled maintenance, and component change-out. The potential MSF in Sacramento would be constructed beneath the Business 80/50 elevated freeway viaduct in the area bounded by X Street, W Street, 19th Street, and RT's South Line LRT tracks, on land currently owned by Caltrans and leased to the City of Sacramento for parking. The potential MSF in West Sacramento would be constructed beneath the Business 80/50 freeway (Pioneer Bridge) near South River Road and Mill Street/Riverfront Street in Caltrans right-of-way.

DETERMINATION

This proposed Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that SACOG intends to adopt an MND for the Downtown/Riverfront Streetcar Project (Project). This does not mean that SACOG's decision regarding the Project is final. This MND is subject to modification based on comments received by interested agencies and the public.

SACOG has prepared an Initial Study (IS) for this Project; and pending public review, expects to determine from this IS that the Project would not have a significant effect on the environment for the following reasons:

- The Project would result in no effects on agriculture and forest resources, mineral resources, population and housing, seismicity, risk of wildland fire, or generate the need for new public services.
- Compliance with existing plans, regulations and required permits would ensure that the Project would have less-than-significant impacts on aesthetics, air quality, geology and soils,



greenhouse gas emissions, hydrology and water quality, land use and planning, recreation, and utilities and service systems.

- Although the Project could result in significant impacts to biological resources, cultural resources, hazards and hazardous materials, noise and vibration, and transportation, these impacts would be reduced to less-than-significant levels with the incorporation of the following avoidance, minimization, and mitigation measures:

Mitigation Measure Bio-1: Nesting Birds

To avoid direct impacts to nesting birds during construction, including raptors such as Swainson's hawk and migratory birds, the following impact avoidance and minimization measures shall be implemented.

Conduct site preparation, such as vegetation removal, and initiate construction, during the non-nesting season (generally September 1 through February 15). If work is initiated during the nesting season (generally February 15 through August 31), then a qualified biologist shall conduct a pre-construction survey within 2 weeks prior to construction to determine if active nests occur in the project area or could be affected in the vicinity. If at any time during construction there is a delay of activities of at least 2 weeks during nesting season, then surveys shall be conducted again. The surveys must cover the construction area footprint, and out a distance of at least 250 feet for passerines and 500 feet for raptors. Surveys for Swainson's hawk shall follow the methods described in the Swainson's hawk Technical Advisory Committee Guidelines. If no active nests are identified, then no impacts would be expected, and no further measures are required.

If active bird nests are identified, one or more of the following additional measures are required:

- Construction in the vicinity of the nest must be delayed until a qualified biologist has determined that the nest is no longer active, or has been abandoned, or young have fledged.
- If construction cannot be delayed, then a qualified biologist with stop work authority shall establish a non-disturbance buffer with either modified or no ground-disturbing work, and monitor the nest site to determine if nesting behavior is being disrupted. CDFW and USFWS shall be consulted to reach concurrence on the suitability of the non-disturbance buffer, considering line of site, distance, species, and type of activities proposed near the nest. If nesting behavior is disrupted, then work activities shall be redirected to other areas and/or modified in such a way that no further disruption is observed. Monitoring, if needed, shall occur at least twice per week during construction until the nest is no longer active.

Mitigation Measure Bio-2: Bird Nests on Structures

Swallow nests and nests of other species, such as martins, that could be affected by construction shall be removed prior to new ground disturbance during the non-nesting season. Swallows are



persistent, and continued monitoring and maintenance is required to ensure that nests that are initiated are removed. Nest removal is commonly accomplished mechanically with a jet of high pressure water, such as with a fire hose. As the birds attempt to build new nests, they shall be removed as needed, typically weekly or even daily, before they are completed. Alternatively, exclusion devices could be installed on structures to prevent new nests from being established during construction. Pre-emptive nest removal, prevention of new nesting, and ongoing monitoring and maintenance during nesting season, would avoid disruption of active nests on structures during construction.

Mitigation Measure BIO-3: Roosting Bats

The most suitable habitat for pallid bat in the study area is around and inside man-made structures. Preconstruction bat surveys would be conducted to inspect the undersides of the Tower Bridge and the Business Interstate 80 (I 80) overpass for roosting bats. A qualified biologist shall inspect structures and trees prior to removal or construction to determine if bats are roosting. If no roosting bats are found, no further mitigation would be necessary. If bats are present, the biologist shall direct the installation of one-way exclusion devices to allow bats to vacate the structure or tree prior to construction. Exclusionary devices, such as plastic sheeting, or plastic or wire mesh, can be used to allow bats to exit but not reenter any occupied roosts. Expanding foam and plywood sheets can be used to prevent bats from re-entering unoccupied roosts during construction. Exclusion devices shall be inspected, monitored, and maintained on structures during construction. Excluding bats from project trees and structures would avoid construction related impacts to this species.

Mitigation Measure BIO-4: Replace Any Removed Tree per City of Sacramento and City of West Sacramento Requirements.

At this time, there are no tree removals anticipated within the City of Sacramento. In West Sacramento, 15 recently planted London plane trees in the median of West Capitol Ave in front of West Sacramento City Hall will likely be removed. There is also one landmark-sized liquid amber tree in front of City Hall that also may be affected. Should trees need to be removed for construction, the Project sponsor will follow the applicable conditions of the City of Sacramento or City of West Sacramento requirements for replacing removed trees. The ordinances require a permit for tree removal or impacts to street trees, and either, replanting and maintaining replacement trees at an appropriate ratio specified by the cities under the ordinance; or, the payment of an in-lieu fee to the cities. The in-lieu fees fund the planting and maintaining of street trees in the cities, and therefore compensate each jurisdiction for in-kind replacement.

Mitigation Measure CR-1: Pre-Construction Resource Identification.

Additional identification efforts will consist of further archival research and subsurface exploration to avoid impacts to historic properties. As the Project design is advanced, additional archival research will be conducted to help identify specific locations in the APE where contributing elements of the RSHS District may exist. This research will target those areas of the design that coincide with known or likely below-grade hollow sidewalks or raised street structures. Preconstruction subsurface explorations will be conducted where construction is



anticipated to approach the vertical limits of the APE in areas sensitive for cultural resources (both pre-historic and historic). The Project proponent will also coordinate with the City of Sacramento and property owners to obtain permission to access any remaining hollow sidewalk segments that are identified or suspected to exist in areas that could be affected by construction, particularly installation of OCS poles. If access is obtained and hollow sidewalks are present, the potentially affected hollow sidewalk segment(s) will be field recorded and the data collected will be added to the existing RSHS District Department of Parks and Recreation (DPR) 523 recordation forms (Downey, 2010), following the protocol described in the Unanticipated Discovery Plan (UDP) for the Project described below. This recordation will capture data about the hollow sidewalks/raised streets that are not readily available, and will improve access to information about these historic resources. If access cannot be obtained, the Project proponent will use ground-penetrating radar or other means to confirm the presence or absence of hollow sidewalk segments in the construction footprint. Should hollow sidewalks be identified in areas of potential OCS pole location, avoidance options will be executed. These options include modifying the proposed OCS pole locations, modifying track and system elements that are causing a conflict, modifying the pole foundation type, using a building attachment, or attaching span or pull-off wires to a backbone wire between two other poles or structures. The attachment of wires to adjacent buildings may require modification of the APE to accommodate those buildings, which would also necessitate re-consultation with the SHPO. No structures that are historic properties would be selected for wire attachment.

Furthermore, if research or field investigation confirms the presence of historic or prehistoric archaeological resources that are eligible for the NRHP, and that would be in conflict with Project construction, the Project proponent will revisit the design to avoid adverse effects to historic properties.

Mitigation Measure CR-2: Monitoring.

All ground-disturbing activities in Downtown Sacramento (not including the Sacramento MSF option) will be monitored by a qualified archaeologist and, when appropriate, a Native American representative of any tribe that has been determined a consulting party to the Project. If any prehistoric or historic-era features, or human remains, are exposed during construction, work will stop or be redirected to allow for recordation, including photography, measurements, and Global Positioning System/Geological Information System (GPS/GIS) data. Field recordation data will be added to the existing P-34-2358/RSHS District DPR 523 recordation form (Downey, 2010; Tremaine, 2008).

Mitigation Measure CR-3: Discovery.

Inadvertent discovery of cultural resources. If cultural resources are encountered at a location beyond the Downtown Sacramento area, or in locations not identified by research or other investigations during the pre-construction period, work will stop or be redirected within 50 feet of the finds to allow for recordation, including photography, measurements, and GPS/GIS data in accordance with the UDP.



Inadvertent discovery of hollow sidewalk. If hollow sidewalk features or raised street structures are encountered in locations not identified by research or other investigations during the pre-construction period, work will stop in order to allow recordation. The field recordation data collected (e.g., photography, field measurements, and GPS/GIS data) will be added to the existing RSHS District DPR 523 (Downey, 2010) recordation form. This recordation will follow the protocol for treating cultural resources identified as inadvertent discoveries described in the UDP for the Project. The UDP will describe treatment for both prehistoric and below-grade historic-era resources, including all elements that contribute to the RSHS District.

Inadvertent discovery of human remains. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. If human remains are encountered, work should halt within 100 feet of the remains and, as required by law, the Sacramento or Yolo County Coroner should be notified immediately. If human remains are of Native American origin, the Coroner must notify the NAHC within 24 hours of that determination. Pursuant to California Public Resources Code 5097.98, the NAHC, in turn, will immediately contact an individual who is most likely descended from the remains (aka: a Most Likely Descendent [MLD]). The MLD has 48 hours to inspect the site and recommend treatment of the remains. The landowner is obligated to work with the MLD in good faith to find a respectful resolution to the situation and entertain all reasonable options regarding the descendants' preferences for treatment.

Mitigation Measure CR-4: Prepare an UDP.

An UDP will be developed prior to the initiation of construction. The UDP will provide detailed descriptions of protection and mitigation measures for archaeological resources in the APE. The UDP will include guidelines for avoidance of historic properties and establishment of environmentally sensitive areas; data recovery guidelines for those known historic properties/historical resources that cannot be avoided by Project design; protocols for treating cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as inadvertent discoveries, including human remains; monitoring during construction; responsibilities and coordination with Native American tribes and individuals; and curation of recovered materials. The UDP will address treatment for both prehistoric resources, including human remains, and historic-era resources, including all elements that contribute to P-34-2358/RSHS District. All activities outlined in the UDP will be conducted under the direction of individuals who meet the professional qualification standards in Archaeology and Historic Preservation, Secretary of Interior's Standards and Guideline (Federal Register, Volume 48, No. 190, September 29, 1983).

As Project design progresses, all effort will be made to avoid known historic properties in the APE. Resources avoided by Project design will be identified as environmentally sensitive areas to ensure that these locations are not inadvertently encroached upon during construction. Newly identified cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as inadvertent discoveries during construction will require testing to assess their research potential and eligibility for the listing in the NRHP and the CRHR.



Archaeological testing will proceed with guidance from the National Park Service Guidelines for Evaluating and Registering Archeological Properties (National Park Service, 2000). Evaluation efforts will involve archival research and archaeological fieldwork. Fieldwork methodologies will be tailored to the location, circumstance, and nature of the find. It therefore may be appropriate to use mechanical trenching techniques, controlled excavation units, or block exposures, shovel sampling explorations, or any combination of the above. All newly identified resources will be thoroughly mapped, photographed, located through Global Positioning System (GPS), and recorded on DPR 523 forms. If resources are found to be eligible to the NRHP or the CRHR, and they cannot be avoided by construction, data recovery will be required. Data recovery will conform to the principles in Parts I and II of Treatment of Archaeological Properties: A Handbook (Advisory Council on Historic Preservation, 1980), the “Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation” (Federal Register, Vol. 48, September 29, 1983, pp. 44716–44742), and appropriate SHPO guidelines. Data recovery may involve archaeological excavation, or for resources such as hollow sidewalks, detailed recordation on DPR 523 forms.

All construction will immediately cease within 100 feet in all directions of the discovery of human remains, which will then be treated in accordance with the requirements of Section 7050.5 of the California State Health and Human Safety Code. If the County Coroner determines that the remains are of Native American origin, the coroner will notify the California NAHC, and the provisions of Section 5097.98 of the California Public Resources Code will be followed.

All subsurface construction related to the Project will be monitored by a professional archaeologist, and as appropriate, by a Native American representative. Monitors will be responsible for working with construction personnel and identifying cultural resources that may be uncovered during ground disturbance. If cultural materials are unearthed, the monitor will have the authority to immediately halt work to allow the onsite archaeological monitor to inspect and assess the materials, determine whether additional analysis of the find is warranted, or whether construction can proceed without further analysis. Should additional analysis be required, testing protocols will be developed.

The FTA and the Project proponent will continually consult with Native American tribes about the treatment of resources of ancestral significance throughout Project development and construction. The UDP will define the responsibilities of the Native American tribes or individuals who are consulting parties to the Project. Native American monitors will have the opportunity to be present during testing and data recovery excavations on prehistoric and multicomponent sites, and during all construction activities in areas determined sensitive for the presence of subsurface prehistoric or ethnographic resources. It is recommended that Native American monitors meet the minimum qualifications in the guidelines provided by the NAHC (2012). Participating tribes will ultimately be responsible for identifying the individuals who will represent their tribe as monitors. The Native American monitors are expected to report to their tribal government or designee to keep them informed of Project activities. The Native American monitors and archaeological monitors will work together as a team to observe ground-disturbing activities.



All cultural materials and associated records resulting from identification, evaluation, and treatment of historic properties conducted under the UDP shall be properly maintained in accordance with 36 CFR Part 79, and the provisions under 43 CFR Part 10 if the archaeological materials are determined to be of Native American origin, and the State of California's Guidelines for the Curation of Archeological Collections (State Historical Resources Commission, Department of Parks and Recreation, 1993). The Project proponent will consult with Native American tribes and individuals affiliated with the cultural materials on repatriation, as appropriate. If the Project proponent and consulting tribes cannot agree, the FTA will ensure that all cultural materials discovered on State lands are curated.

Mitigation Measure CR-5: Train construction personnel on paleontological resources, and cease work in event of paleontological discovery.

The Project applicant shall retain a qualified paleontologist to carry out all actions related to paleontological resources. Prior to the start of any ground-disturbing activities, the qualified paleontologist shall train all construction personnel working on the Project. The training shall include an overview of potential paleontological resources that could be encountered during ground-disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the qualified paleontologist for further evaluation and action, as appropriate. The training should also include an overview of penalties for unauthorized artifact collecting or intentional disturbance of paleontological resources.

If any items of paleontological interest are discovered, the contractor shall be required to immediately suspend all work activities within 100 feet of the discovery site and immediately contact the lead agency. Work shall not be resumed until authorization is received from the lead agency and any recommendations received from a qualified paleontologist are implemented. Any accidental discovery of paleontological resources during construction shall be evaluated by the qualified paleontologist. If it is determined that the Project could damage a unique paleontological resource, as defined per the CEQA Guidelines, mitigation shall be implemented in accordance with PRC Section 21083.2, and Section 15126.4 of the CEQA Guidelines. If avoidance is not feasible, the paleontologist shall develop a treatment plan in consultation with the lead agency.

The treatment plan shall be a site-specific plan in report format that shall:

1. Detail strategies for the management of the affected paleontological sites;
2. Include standards for further testing, sampling, documentation, data recovery, preservation and protection, analysis, and report preparation;
3. Outline an effective preservation plan or data recovery and documentation plan for those resources that the paleontologist has determined to have significant research or other value;
4. Provide a schedule for the implementation of the treatment plan; and



5. Provide a cost estimate for mitigation strategies, including testing, data recovery, curation, and report preparation.

Mitigation Measure HZ-1: Site Investigation.

To mitigate the potential for encountering unknown contaminated soil and/or groundwater in the Project area, a Phase I Environmental Site Assessment will be conducted along the proposed alignment and MSFs in areas where excavation or subsurface disturbance will take place close to sites with listed known soil or groundwater contamination. The Phase I investigation will be done during the design phase and completed prior to the completion of final design. The purpose of the Phase I investigation will be to determine whether suspected contamination, as listed in the records search, is actually present on the property, and if additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm. The Phase I investigation may include activities such as geophysical surveys, drilling, trenching, soil sampling, soil gas sampling, ground water sampling, and surface water sampling. If the Phase I investigation finds that additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm, then a Phase II investigation shall be required for areas where soil and/or groundwater contamination are suspected. The Phase II investigation will be conducted to determine the nature and extent of contamination. If the Phase II investigation concludes there is a potential to encounter contaminated materials (during and post-construction), then a soil and groundwater management plan shall be developed and implemented. The soil and groundwater management plan shall provide detailed procedures to be followed in the event that contaminated materials are encountered (during and post-construction).

Mitigation Measure NV-1: Implement Wheel Noise Control Measures.

Resilient wheels or suitable equivalent noise control measures shall be implemented that achieves a reduction of wheel squeal to Moderate or No Impact level, as defined by the FTA noise criteria.

Mitigation Measure NV-2: Substation Design.

To alleviate noise impacts from substation operation, noise impacts from substation operation will be mitigated in one of the following ways:

- Locate traction power substations at a distance farther from noise-sensitive receptors than the screening distance determined in this analysis.
- Re-evaluate the inside buffer during engineering design, and if necessary, install efficient enclosures to meet local noise threshold criteria.
- Place traction power substations in underground utility vaults.

Mitigation Measure NV-3: MSF Facilities.



To avoid noise impacts from the MSF facilities in West Sacramento, install sound walls around the MSF in West Sacramento. A perimeter wall that is 6 to 8 feet high would minimize noise from the MSF at this location.

Mitigation Measure NV-4: Vibration Control.

To avoid vibration-related impacts from streetcar operations:

- Additional measurements, including soil vibration propagation testing, shall be made during the engineering design phase to evaluate the potential for efficient soil propagation at distances beyond 50 feet, site-specific vibration propagation, and the effects on vibration transmission into those buildings identified as being impacted in the current analysis.
- If streetcar operational speeds are 30 to 35 mph, then various forms of vibration control will need to be investigated during the engineering phase of the Project. There are different measures available depending on the level of vibration reduction required. For the highest level of reduction indicated for the Project (e.g., 13 VdB), a floating slab track may be implemented. Where lower levels of vibration reduction are required (e.g., 5 VdB or less), it may be possible to use a resilient ballast mat if the track design permits this approach, similar to that implemented at SFMTA. At special trackwork (i.e., crossover), it should be possible to implement “flange-bearing frogs,” as has been accomplished elsewhere (e.g., SFMTA). The majority of vibration impacts due to streetcar operations would be eliminated if the streetcar speeds were reduced to 20 mph or less. In the City of Sacramento, the remaining vibration impacts at 20 mph or less would occur at the Cathedral of the Blessed Sacrament and the Cathedral Building Apartments where a crossover is to be located. As with the case where speeds are 30 to 35 mph, a flange-bearing frog would control vibration from such special trackwork. Assuming mitigation of flange bearing frog is implemented, then for the remaining receptors impacted at a vehicle speed of 20 mph the vibration level would be reduced if operating speeds were lower. The predicted level for 20 mph with flange bearing frog are 1 dB over criterion. Speed reduction would be minimal (e.g., 18 mph instead of 20mph).

Mitigation Measure NV-5: Noise-Limiting Construction Practices.

To control the potential impacts to the nearby community during construction of the Project, the following array of mitigation strategies would be employed:

- Locate noisy equipment as far as possible from noise-sensitive receptors. In addition, temporary barriers should be employed around the equipment.
- Use temporary noise barriers along the Project right-of-way. Barriers/curtains must achieve a Sound Transmission Class of 30 or greater in accordance with American Society for Testing and Materials International (ASTM) Test Method E90, and be constructed from material having a surface density of at least 2 pounds per square foot to ensure adequate transmission loss.
- Use sound absorption for temporary barriers in the area of Downtown Sacramento. In this area, a reverberant environment is produced due to the narrow distance between buildings



and hard pavement surfaces. Line the inner face of the temporary barrier or use a curtain with an absorptive face. The absorptive liner or absorptive face should have a Noise Reduction Coefficient rating of 0.70 or greater, in accordance to ASTM Test Method C423.

- Require ambient-sensitive (“smart”) backup alarms, SAE Class D, or limit to SAE Class C (97 dB).
- Fit silencers to combustion engines. Ensure that equipment has quality mufflers installed, in good working condition.
- Switch off engines or reduce to idle when not in use.
- Lubricate and maintain equipment regularly. Equipment is normally quieter when well maintained.
- Construction-related truck traffic should be re-routed along roadways that would produce the least disturbance to sensitive receptors.

Mitigation Measure NV-6: Vibration Monitoring.

To avoid vibration-induced annoyance impacts due to construction activities, the activities should be kept below the FTA impact criteria for each land use category. Equipment and methods selected by the contractor to reduce the potential for annoyance will be reviewed and approved by the Project proponent. Possible mitigation strategies that will be implemented to ensure vibration-induced annoyance does not exceed the impact criteria include:

- Avoid the use of pavement breakers. Instead, use a hoe ram with hydraulic chisel.
- Avoid the use of dynamic compaction at a distance closer than 25 feet from any sensitive receptors, or use alternative methods of compaction in areas of construction that would be closer than 25 feet from sensitive receptors.
- Monitor vibration during construction to ensure compliance with criteria for building damage for buildings within 40 feet of construction activities. Conduct a preconstruction crack survey of these buildings.
- Plan routes for hauling material out of the Project site that would cause the least impact (annoyance). Propose truck routes along roads where the sensitive receptors are at least 75 feet from the street centerline.

Mitigation Measure TRA-1: Implement temporary bicycle detours during construction.

Bicycle detours will be devised and publicized in advance of streetcar construction. Alternatively, it may be possible to route bicycles along short sidewalk segments, depending on the pedestrian volumes along the sidewalk.

Mitigation Measure TRA-2: Develop Construction Traffic and Parking Management Plan.

The Project sponsor will develop a Construction Traffic and Parking Management Plan that will be subject to review and approval by the City of West Sacramento Traffic Engineer, the City of Sacramento Department of Transportation, Caltrans, and local emergency service providers, including the fire and police departments. The plan will ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. At a minimum, the plan will include:



- The number of truck trips, time, and day of street closures;
- Time of day of arrival and departure of trucks;
- Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting;
- Provision of a truck circulation pattern;
- Provision of driveway access plan so that safe vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas);
- Maintain safe and efficient access routes for emergency vehicles;
- Manual traffic control when necessary;
- Proper advance warning and posted signage concerning street closures; and
- Provisions for pedestrian safety.

A copy of the construction traffic management plan will be submitted to local emergency response agencies, and these agencies will be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.

Mitigation TRA-3: Coordinate construction activities with the U.S. Coast Guard.

If construction activities limit or impede use of the lift mechanism of the Tower Bridge during intermittent or extended periods, the U.S. Coast Guard will be informed of these occurrences a minimum of 30 days in advance of the interruption to navigational traffic. The U.S. Coast Guard will post notice of the temporary closure in the Federal Register, and businesses and boat owners that would be most affected by the obstruction of navigation will be notified individually. The Project sponsor will coordinate with Caltrans, the owner of the Tower Bridge, the U.S. Coast Guard, and affected businesses/boat owners to minimize or alleviate the potential impact by providing proper notification of the bridge closures; by scheduling closures in the non-peak excursion season (October through April); or by raising the bridge for an extended time to allow continuous river navigation, while temporarily rerouting vehicular and non-motorized traffic.

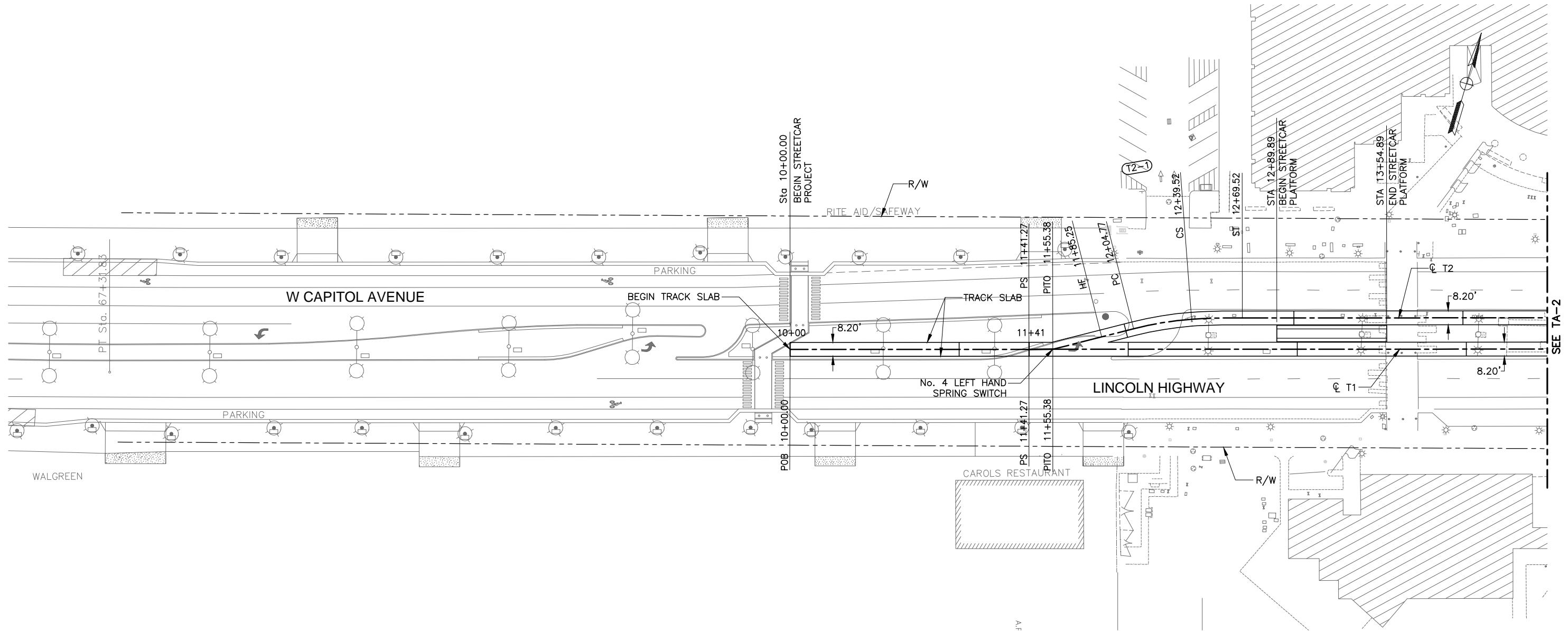
Kirk Trost
Chief Operating Officer and General Counsel
Sacramento Area Council of Governments

Date

Appendix B

Preliminary Alignment and Typical Station Platform Plans

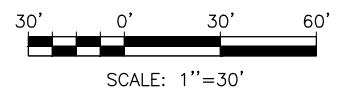
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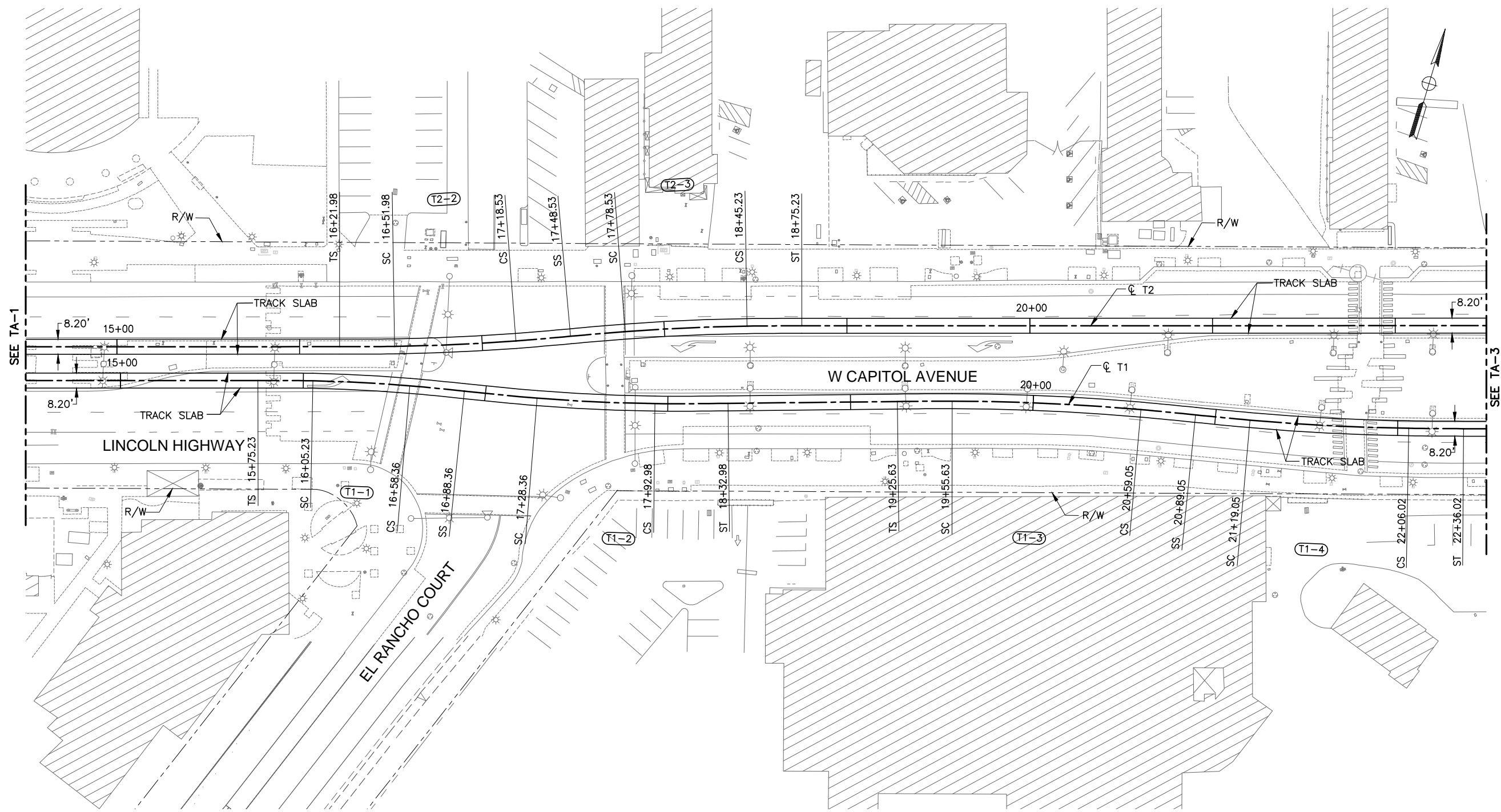
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CURVE DATA TABLE

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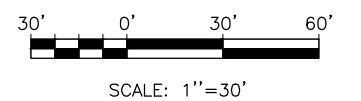


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16+31	(T1-1)	800	3°48'17"	53.12	26.57	1°04'27"	1°04'27"	30	30	0.75	1.23	20
17+60	(T1-2)	915	4°02'49"	64.63	32.33	1°15'09"	1°15'09"	40	40	1.25	1.45	25
20+07	(T1-3)	1200	4°56'15"	103.41	51.74	0°42'58"	0°42'58"	30	30	1.00	1.06	25
21+63	(T1-4)	1200	4°09'10"	86.98	43.51	0°42'58"	0°42'58"	30	30	1.00	1.06	25
16+85	(T2-2)	1080	3°31'51"	66.55	33.29	0°47'45"	0°47'45"	30	30	1.00	0.94	23
18+12	(T2-3)	1080	3°32'18"	66.70	33.36	0°47'45"	0°47'45"	30	30	1.00	0.94	23



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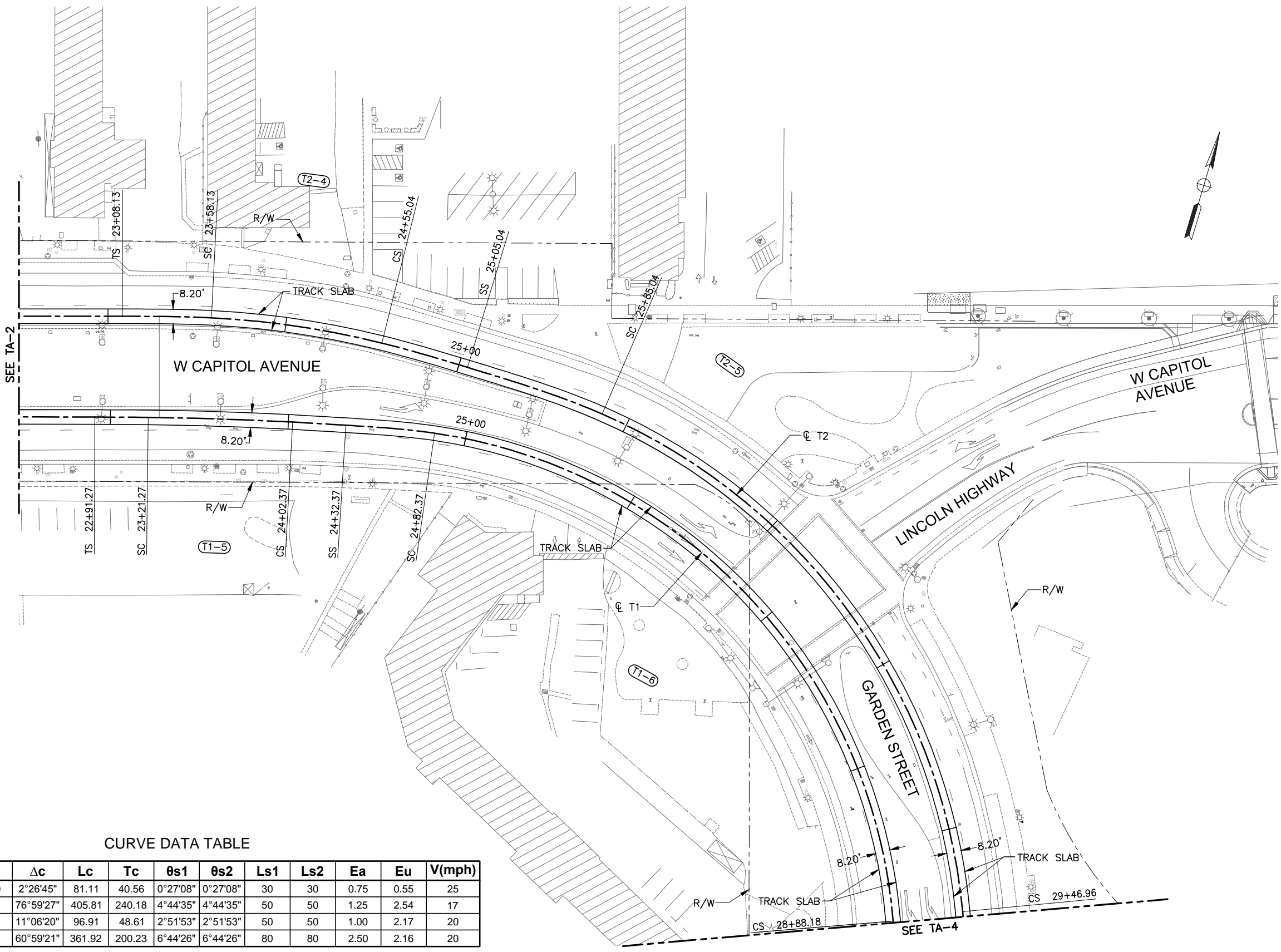
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27+22	(T1-6)	302	76°59'27"	405.81	240.18	4°44'35"	4°44'35"	50	50	1.25	2.54	17
24+06	(T2-4)	500	11°06'20"	96.91	48.61	2°51'53"	2°51'53"	50	50	1.00	2.17	20
27+85	(T2-5)	340	60°59'21"	361.92	200.23	6°44'26"	6°44'26"	80	80	2.50	2.16	20



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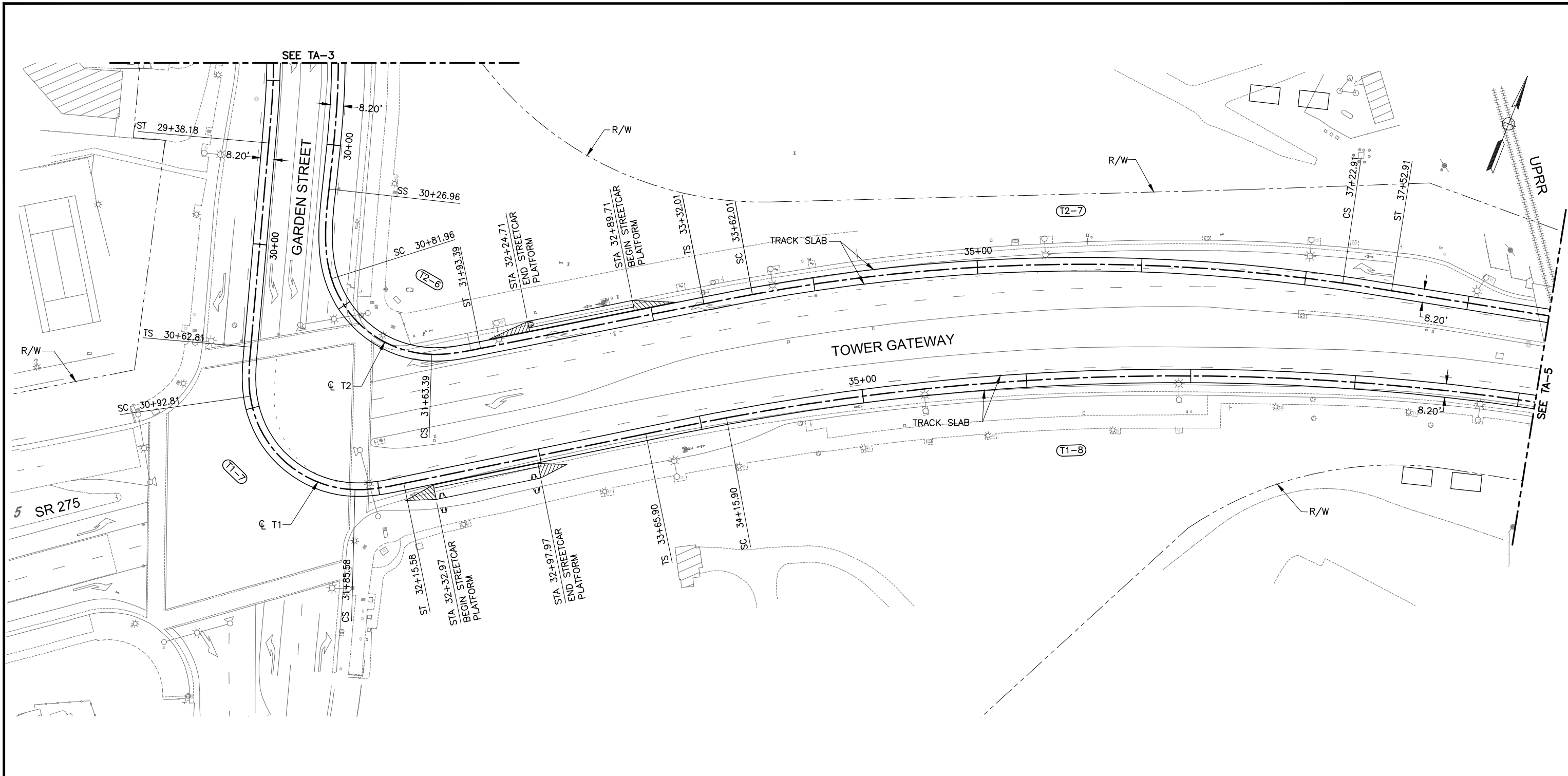


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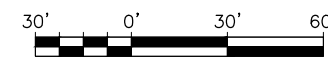
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38+99	(T1-8)	1490	35°56'43"	934.77	483.34	0°57'41"	2°17'44"	50	30	1.25	1.30	31
31+28	(T2-6)	66	70°41'08"	81.42	46.80	23°52'24"	13°01'18"	55	30	0.50	2.44	7
35+44	(T2-7)	1100	18°47'54"	360.90	182.09	0°46'53"	0°46'53"	30	30	1.00	1.07	24



SCALE: 1"=30'

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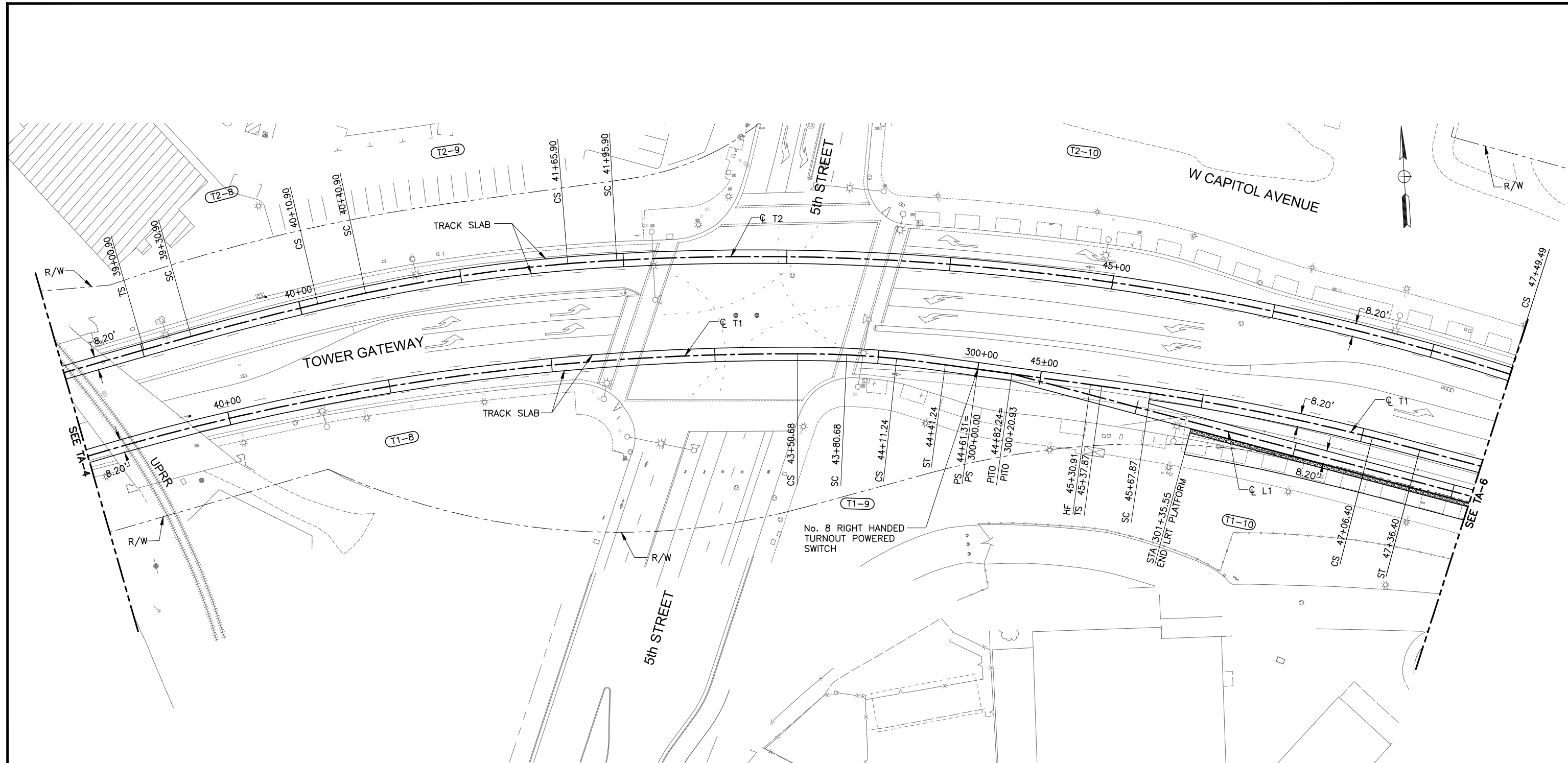


DOWNTOWN/RIVERFRONT STREETCAR PROJECT

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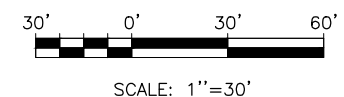
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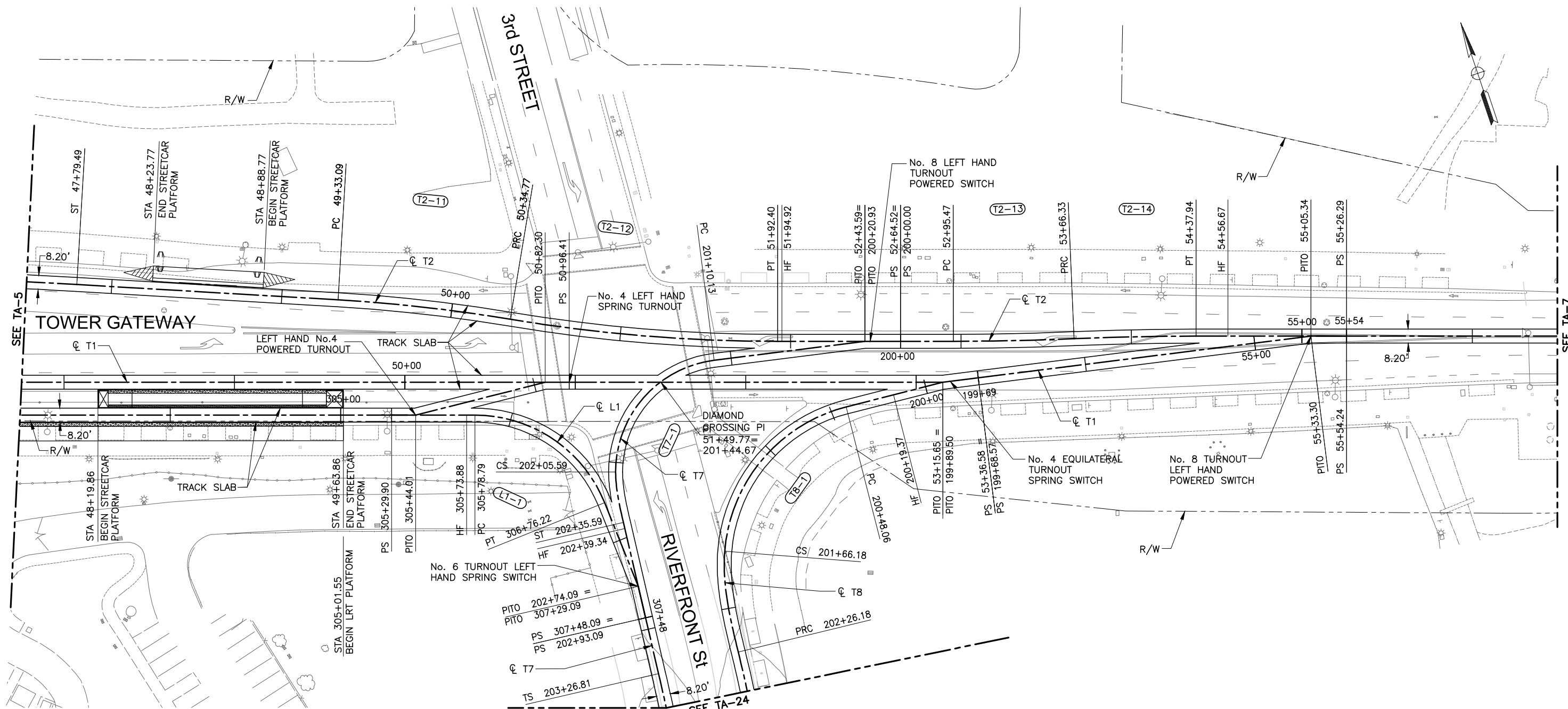
CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	θs1	θs2	Ls1	Ls2	Ea	Eu	V(mph)
38+99	(T1-8)	1490	35°56'43"	934.77	483.34	0°57'41"	2°17'44"	50	30	1.25	1.30	31
43+96	(T1-9)	500	3°30'11"	30.57	15.29	2°17'44"	1°43'08"	30	30	0.75	1.54	17
46+37	(T1-10)	1350	5°52'46"	138.53	69.33	0°38'12"	0°38'12"	30	30	0.50	1.05	23
39+70	(T2-8)	2000	2°17'31"	80.00	40.01	0°25'47"	1°18'24"	30	30	0.75	0.91	29
41+03	(T2-9)	980	7°18'29"	125.00	62.58	1°18'24"	1°26'38"	30	30	1.00	1.14	23
44+76	(T2-10)	1516	20°55'22"	553.60	279.92	1°26'38"	0°34'01"	30	30	0.75	1.02	26



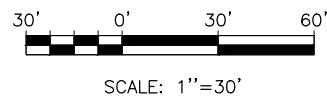
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NO.	REVISION	BY	DATE	DESIGNED: JS	RECORD DRAWING DATE: 09/26/2014	PRELIMINARY ENGINEERING NOT FOR CONSTRUCTION	Downtown/Riverfront STREETCAR PROJECT		DOWNTOWN/RIVERFRONT STREETCAR PROJECT	XX OF TOT
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				CHECKED: EH	PROJECT NO. CAD FILE: STCAR_TA05.DWG					



CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	θs1	θs2	Ls1	Ls2	Ea	Eu	V(mph)
49+84	(T2-11)	948	6°08'43"	101.68	50.89	-	-	-	-	0.00	0.94	15
51+14	(T2-12)	948	9°31'38"	157.63	79.00	-	-	-	-	0.00	0.94	15
53+30	(T2-13)	1684	2°24'39"	70.86	35.43	-	-	-	-	0.00	0.94	20
54+02	(T2-14)	1684	2°26'11"	71.61	35.81	-	-	-	-	0.00	0.94	20
201+68	(T7-1)	66	82°52'12"	95.46	58.26	-	13°01'18"	-	30	0.00	2.94	7
201+16	(T8-1)	95	71°14'22"	118.12	68.06	-	18°05'36"	-	60	1.75	2.42	10
306+31	(L1-1)	82	68°04'56"	97.44	55.40	-	-	-	-	1.00	2.91	9

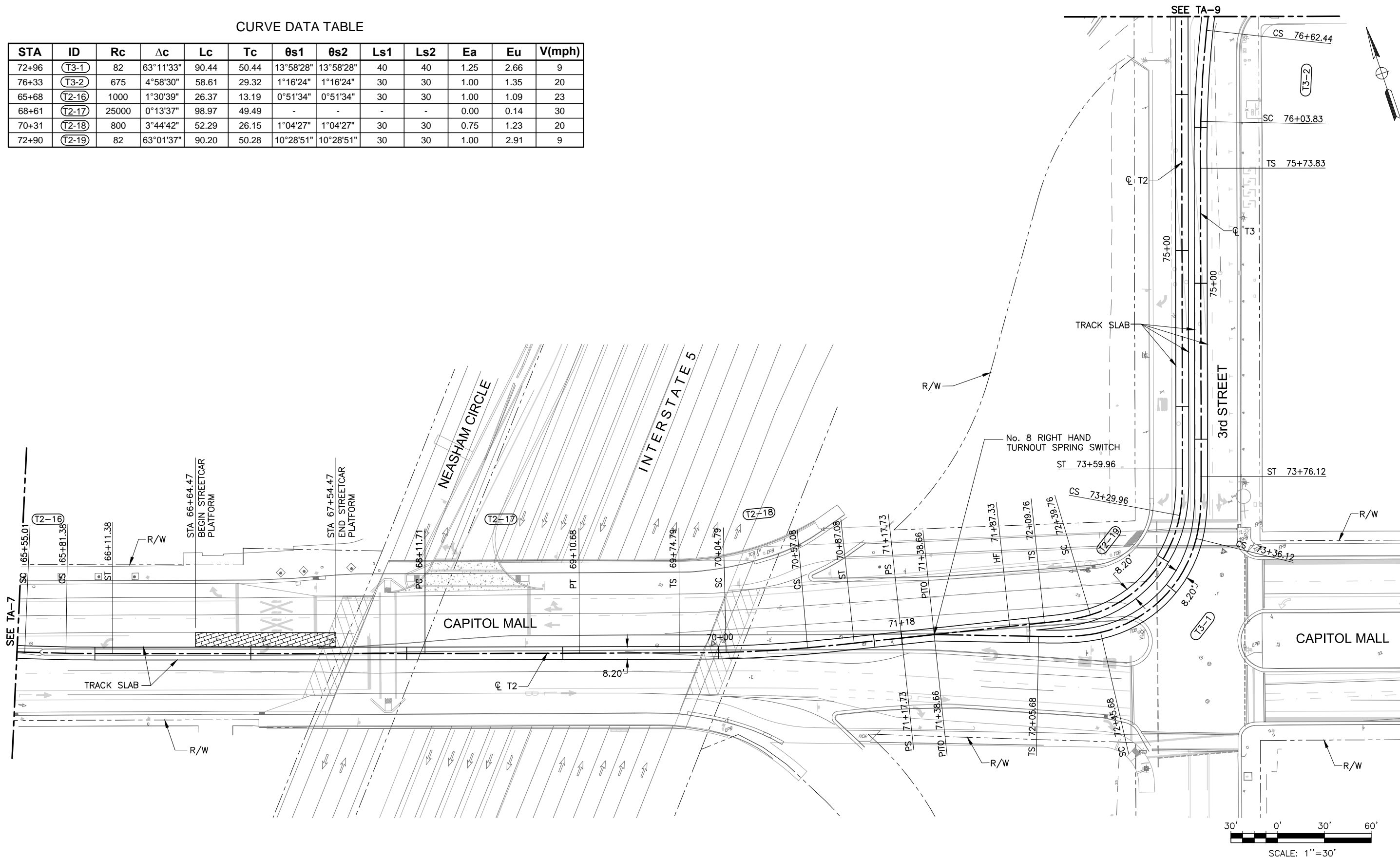


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NO.	REVISION	BY	DATE	DESIGNED: JS	RECORD DRAWING DATE: 09/26/2014	PRELIMINARY ENGINEERING NOT FOR CONSTRUCTION			DOWNTOWN/RIVERFRONT STREETCAR PROJECT	XX OF TOT
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				CHECKED: EH	PROJECT NO. CAD FILE: STCAR_TA06.DWG					

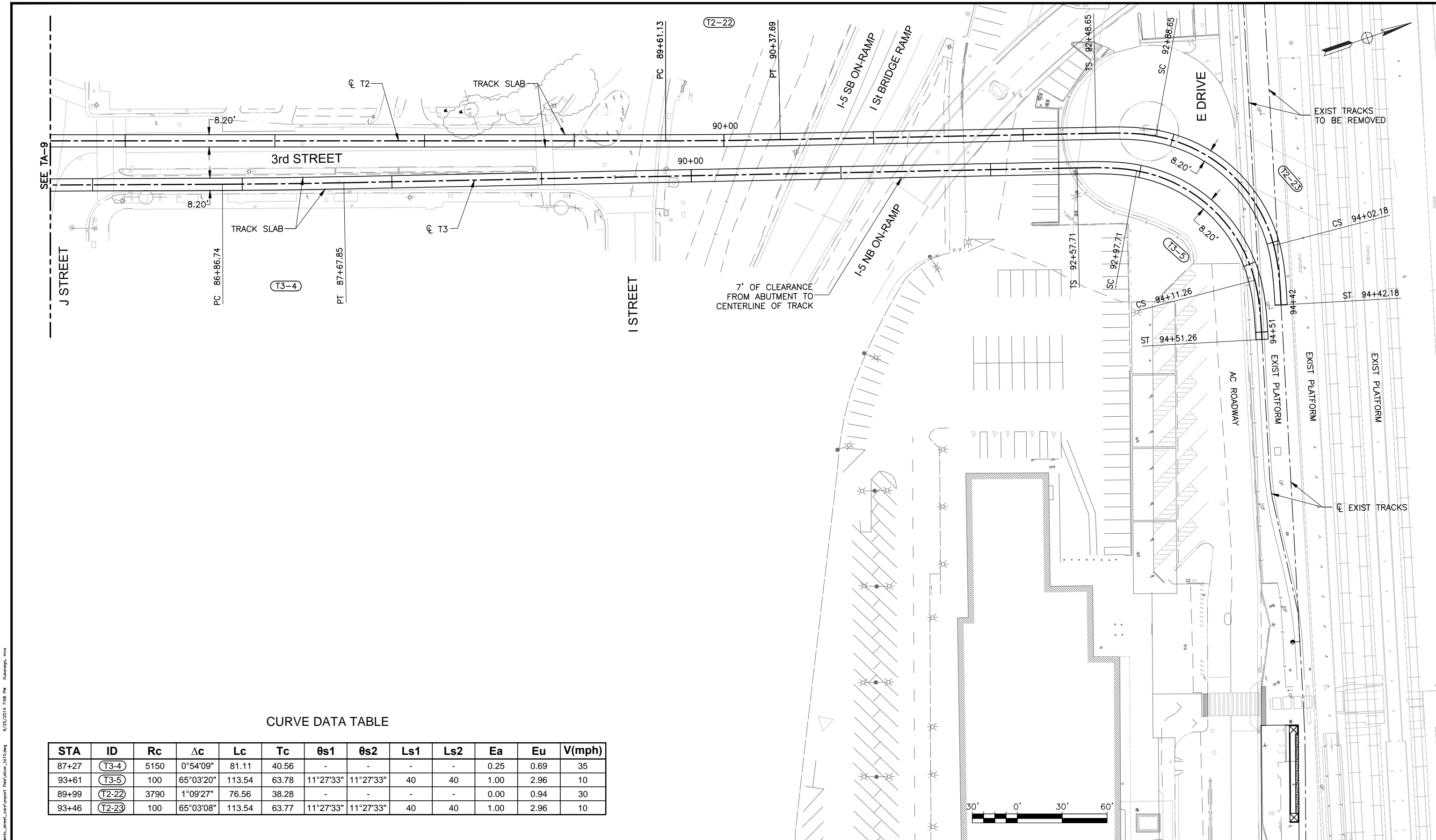
CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	θs1	θs2	Ls1	Ls2	Ea	Eu	V(mph)
72+96	(T3-1)	82	63°11'33"	90.44	50.44	13°58'28"	13°58'28"	40	40	1.25	2.66	9
76+33	(T3-2)	675	4°58'30"	58.61	29.32	1°16'24"	1°16'24"	30	30	1.00	1.35	20
65+68	(T2-16)	1000	1°30'39"	26.37	13.19	0°51'34"	0°51'34"	30	30	1.00	1.09	23
68+61	(T2-17)	25000	0°13'37"	98.97	49.49	-	-	-	-	0.00	0.14	30
70+31	(T2-18)	800	3°44'42"	52.29	26.15	1°04'27"	1°04'27"	30	30	0.75	1.23	20
72+90	(T2-19)	82	63°01'37"	90.20	50.28	10°28'51"	10°28'51"	30	30	1.00	2.91	9



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				CHECKED: EH	PROJECT NO. CAD FILE: STCAR_TA08.DWG				DWG. NO. TA-8	



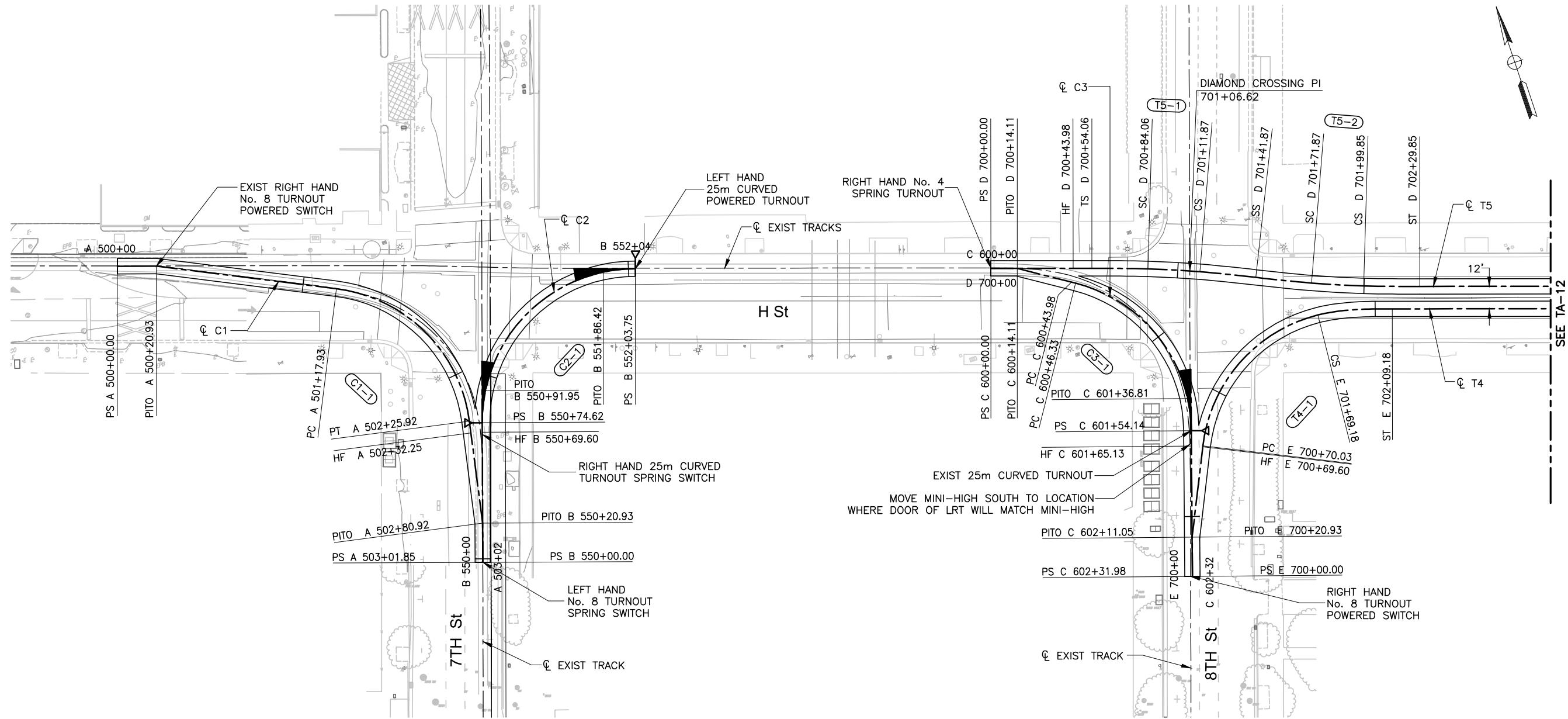
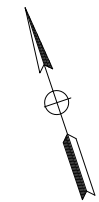
CURVE DATA TABLE

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87+27	T3-4	5150	0°54'09"	81.11	40.56	-	-	-	-	0.25	0.69	35
93+61	T3-5	100	65°03'20"	113.54	63.78	11°27'33"	11°27'33"	40	40	1.00	2.96	10
89+99	T2-22	3790	1°09'27"	76.56	38.28	-	-	-	-	0.00	0.94	30
93+46	T2-23	100	65°03'08"	113.54	63.77	11°27'33"	11°27'33"	40	40	1.00	2.96	10



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				CHECKED: EH						PROJECT NO.		CAD FILE: STCAR_TA10.DWG		

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CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	$\theta s1$	$\theta s2$	Ls1	Ls2	Ea	Eu	V(mph)
501+81	(C1-1)	82	75°27'27"	107.99	63.44	-	-	-	-	0.00	2.37	7
551+57	(C2-1)	82	90°13'27"	129.13	82.32	-	-	-	-	0.00	2.37	7
601+10	(C3-1)	82	75°19'45"	107.81	63.30	-	-	-	-	0.00	2.37	7
701+27	(T4-1)	82	69°16'30"	99.14	56.65	-	13°58'28"	-	40	0.00	2.37	7
700+98	(T5-1)	520	3°03'53"	27.81	13.91	1°39'10"	1°39'10"	30	30	0.00	1.71	15
701+86	(T5-2)	520	3°04'59"	27.98	13.99	1°39'10"	1°39'10"	30	30	0.00	1.71	15



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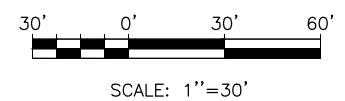
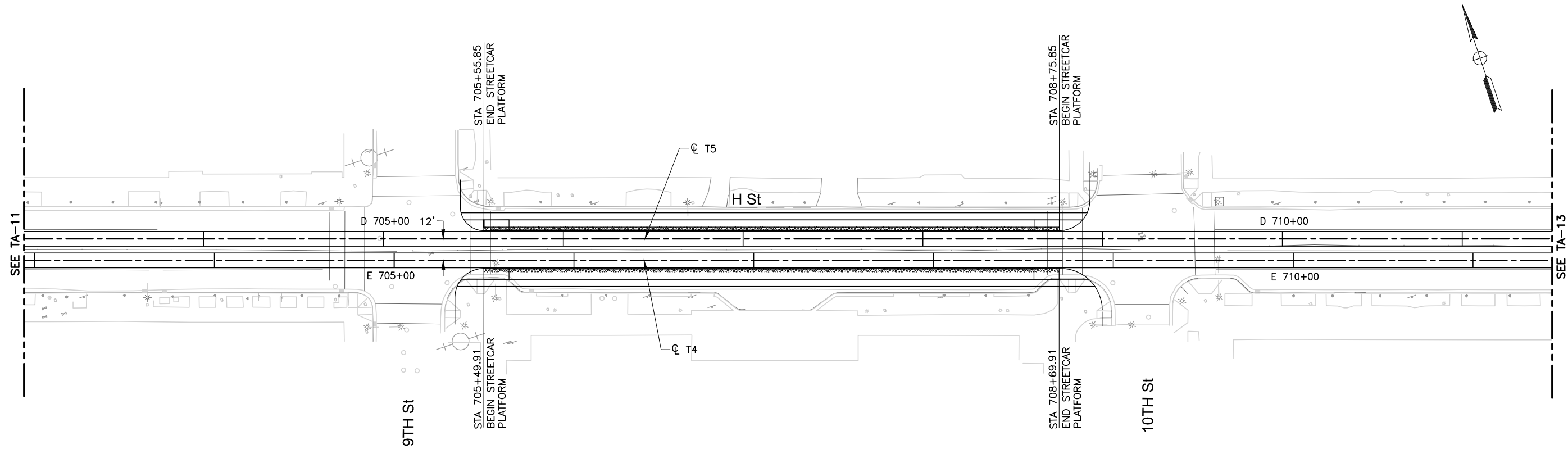
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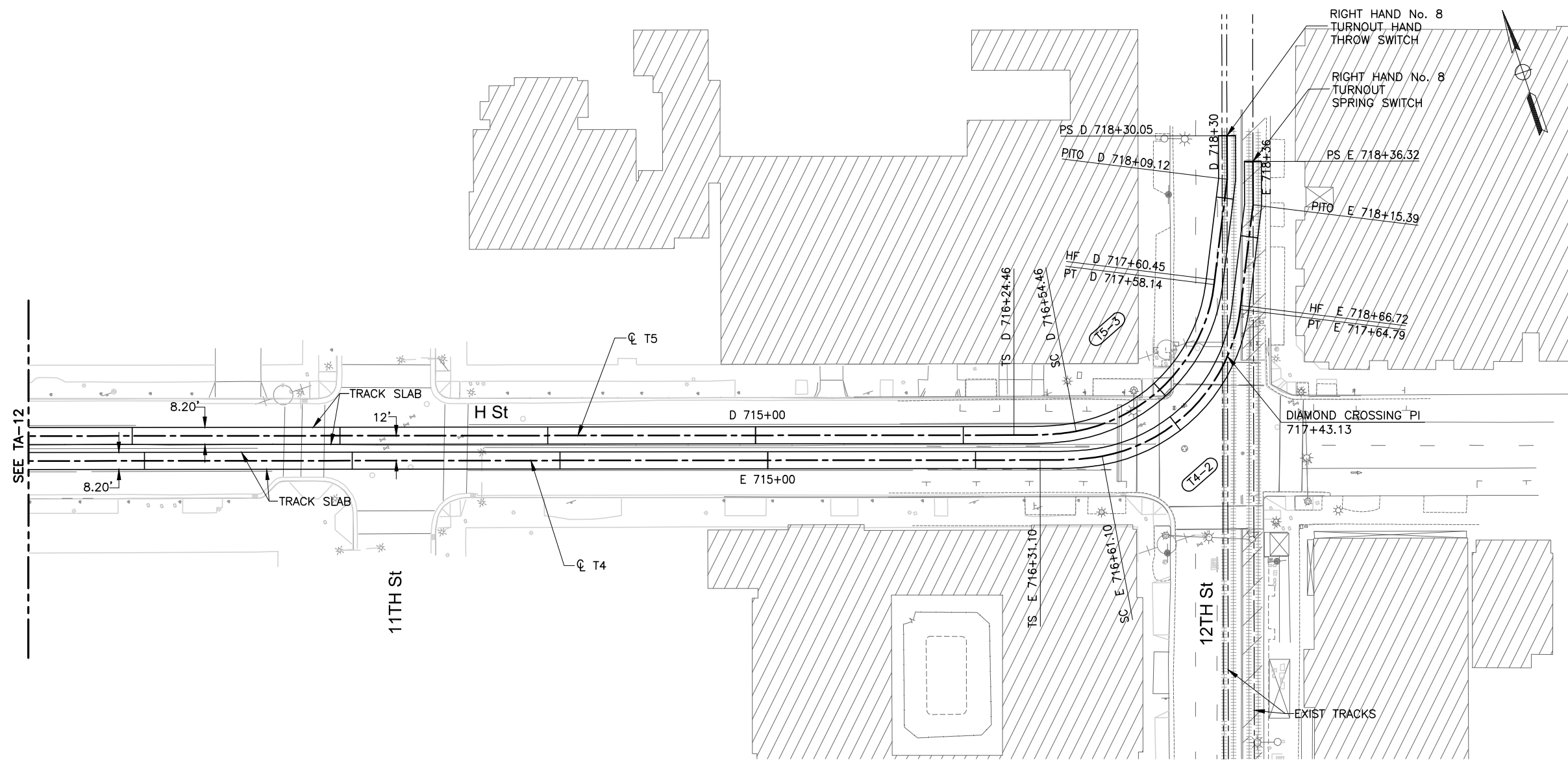
DOWNTOWN/RIVERFRONT STREETCAR PROJECT
TRACK ALIGNMENT

XX OF TOT
 DWG. NO. TA-11

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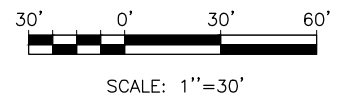


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				CHECKED: EH	PROJECT NO.					
					CAD FILE: STCAR_TA12.DWG					
									TRACK ALIGNMENT	DWG. NO. TA-12



CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	$\theta s1$	$\theta s2$	Ls1	Ls2	Ea	Eu	V(mph)
717+22	(T4-2)	82	72°26'55"	103.69	60.07	10°28'51"	-	30	-	0.00	2.37	7
717+15	(T5-3)	82	72°26'55"	103.69	60.07	10°28'51"	-	30	-	0.00	2.37	7



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DRAWN: IK	SCALE HORIZ: 1" = 30' VERT: N/A
CHECKED: EH	PROJECT NO. CAD FILE: STCAR_TA13.DWG

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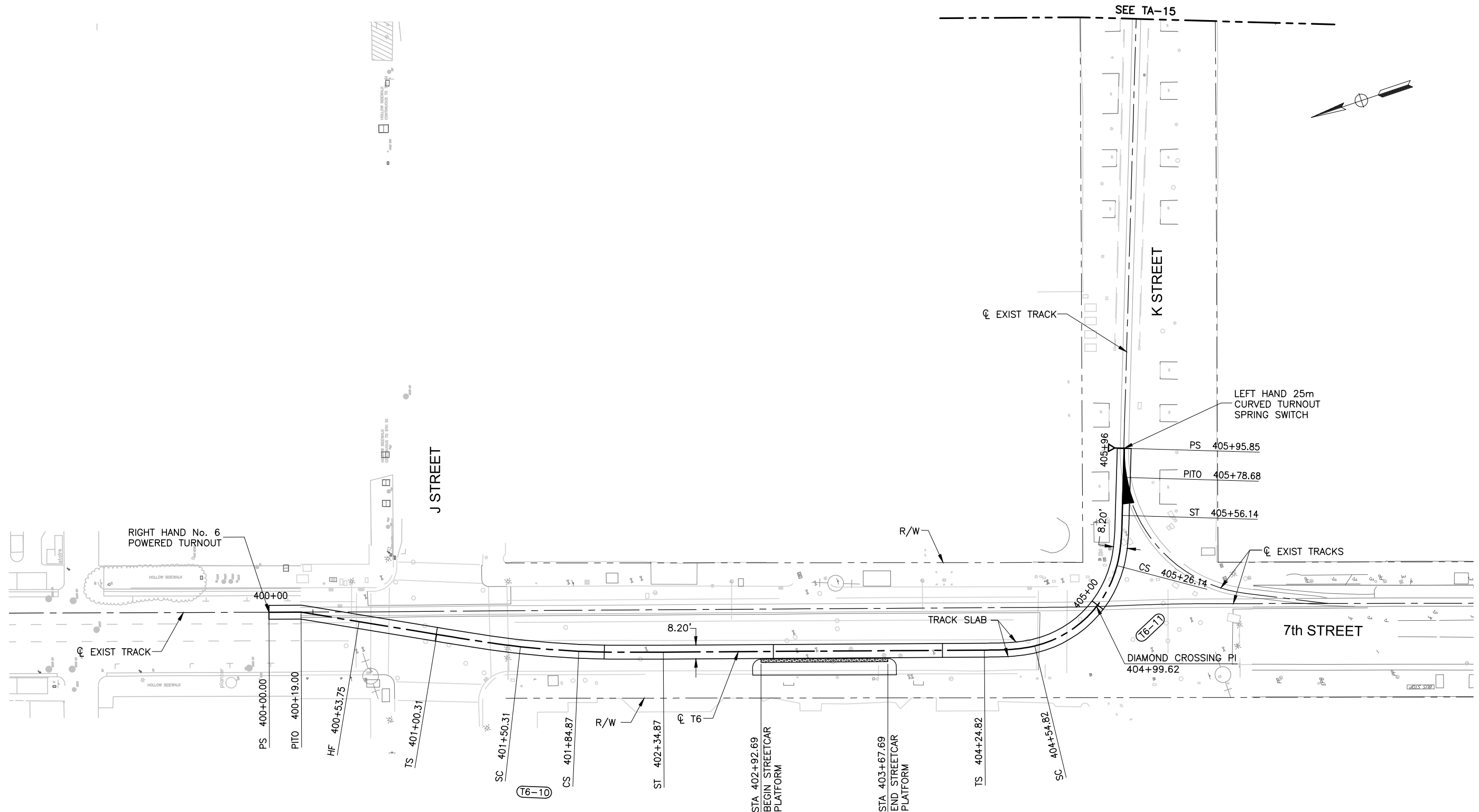


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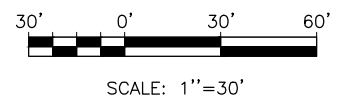
XX OF TOT

DWG. NO. TA-13



CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	θs1	θs2	Ls1	Ls2	Ea	Eu	V(mph)
401+67	(T6-10)	500	3°57'35"	34.56	17.28	2°51'53"	2°51'53"	50	50	1.00	2.17	20
404+94	(T6-11)	66	61°54'46"	71.32	39.59	13°01'18"	13°01'18"	30	30	0.00	2.94	7



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NO.	REVISION	BY	DATE

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SCALE HORIZ: 1" = 30' VERT: N/A
PROJECT NO. CAD FILE: STCAR_TA14.DWG

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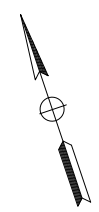
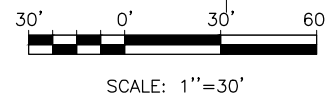
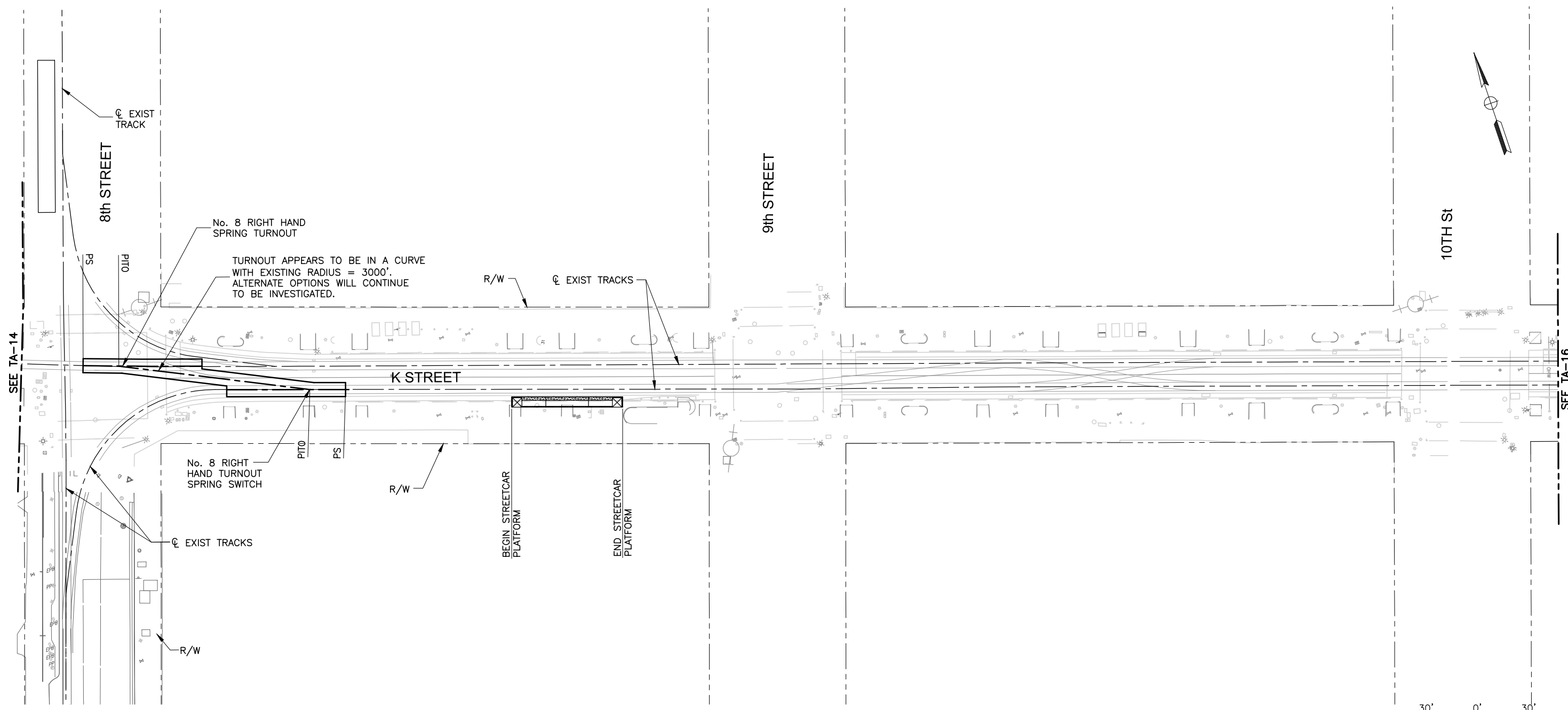
DOWNTOWN/RIVERFRONT STREETCAR PROJECT

TRACK ALIGNMENT

XX OF TOT

DWG. NO. TA-14

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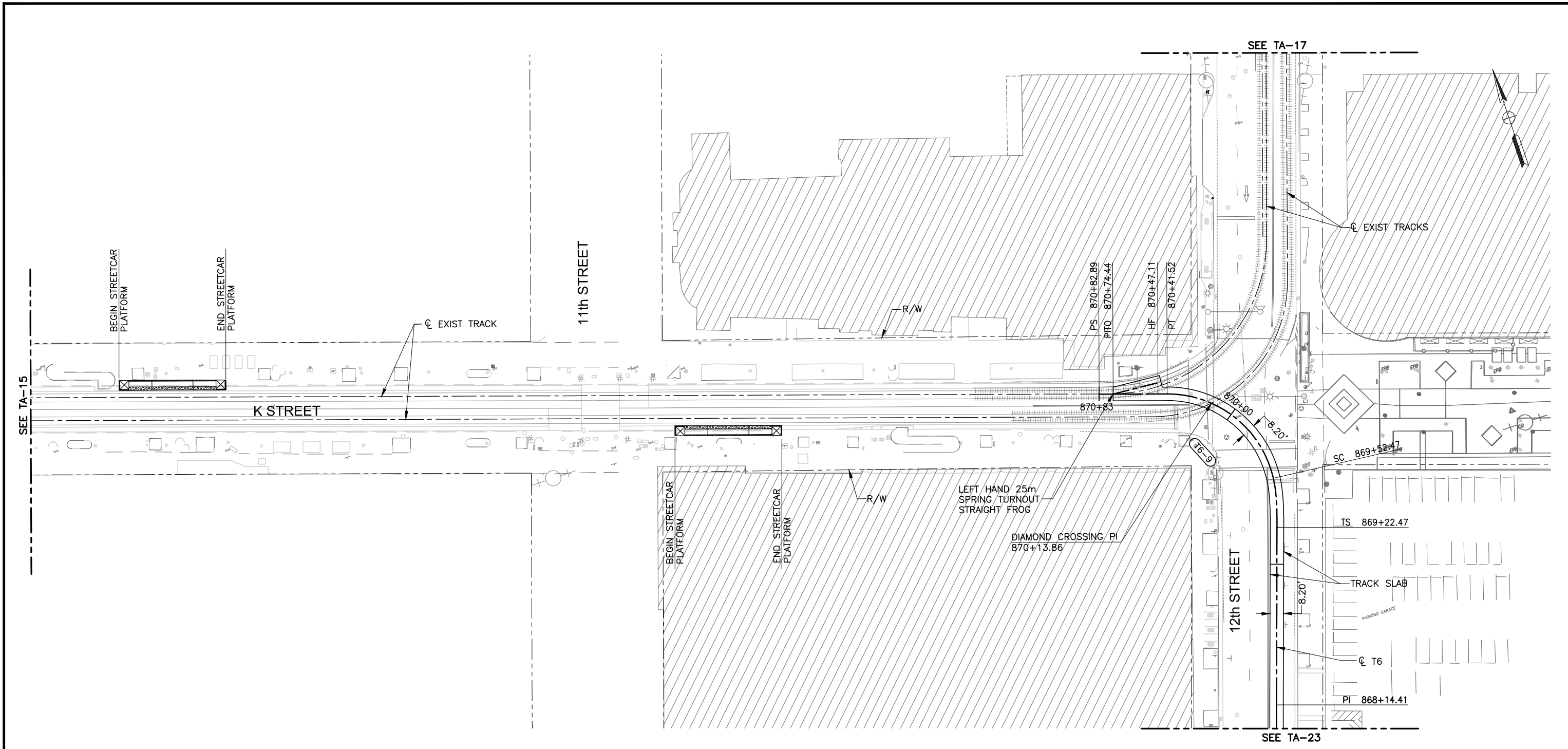


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TRACK ALIGNMENT

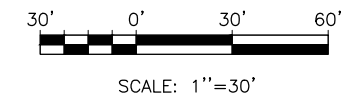
XX OF TOT

DWG. NO. TA-15



CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	θs1	θs2	Ls1	Ls2	Ea	Eu	V(mph)
870+05	(T6-9)	66	77°18'27"	89.05	52.79	13°01'18"	-	30	-	0.00	2.94	7



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NO.	REVISION	BY	DATE

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DRAWN: IK	SCALE: HORIZ: 1" = 30' VERT: N/A
CHECKED: EH	PROJECT NO.
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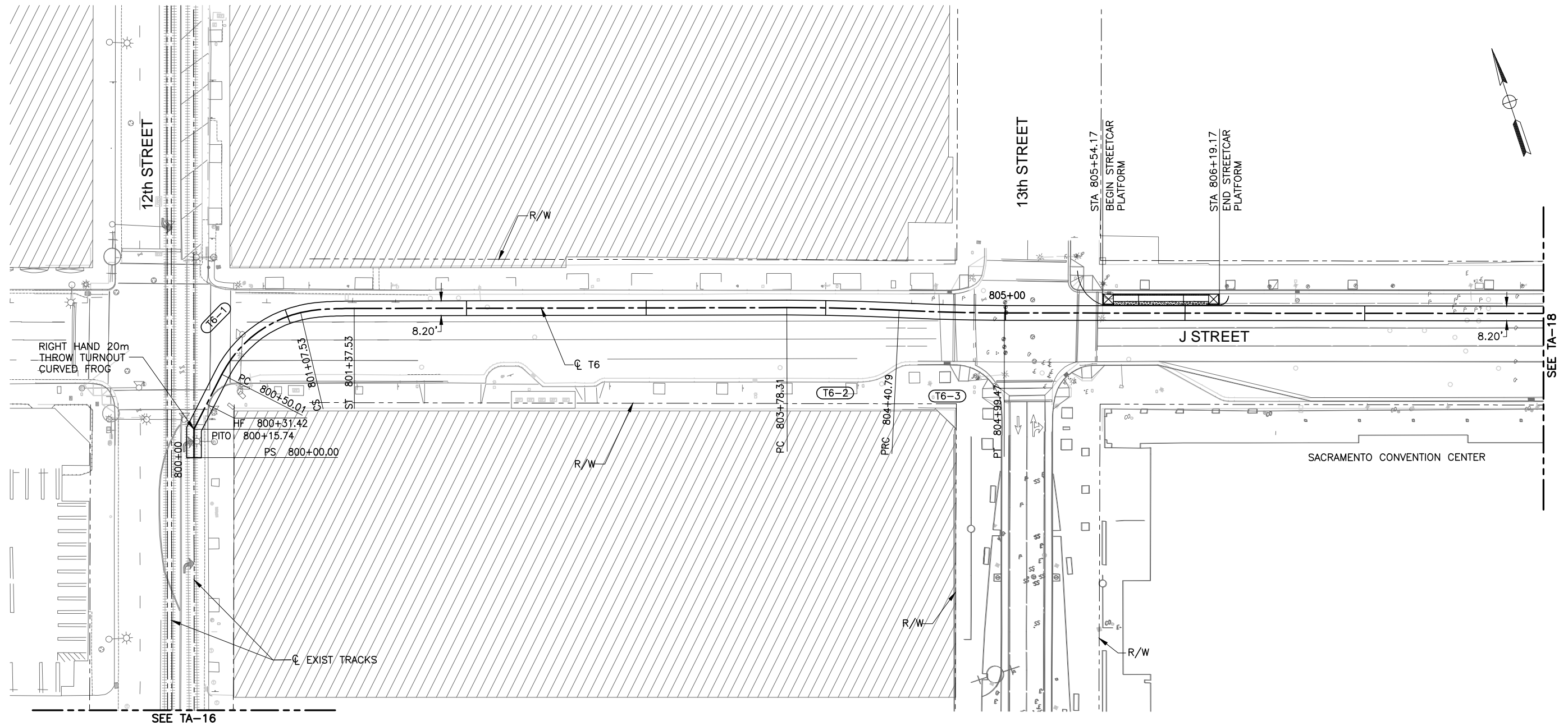


DOWNTOWN/RIVERFRONT STREETCAR PROJECT

TRACK ALIGNMENT

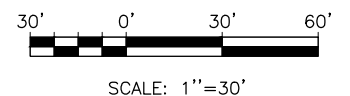
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DWG. NO. TA-16



CURVE DATA TABLE

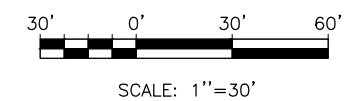
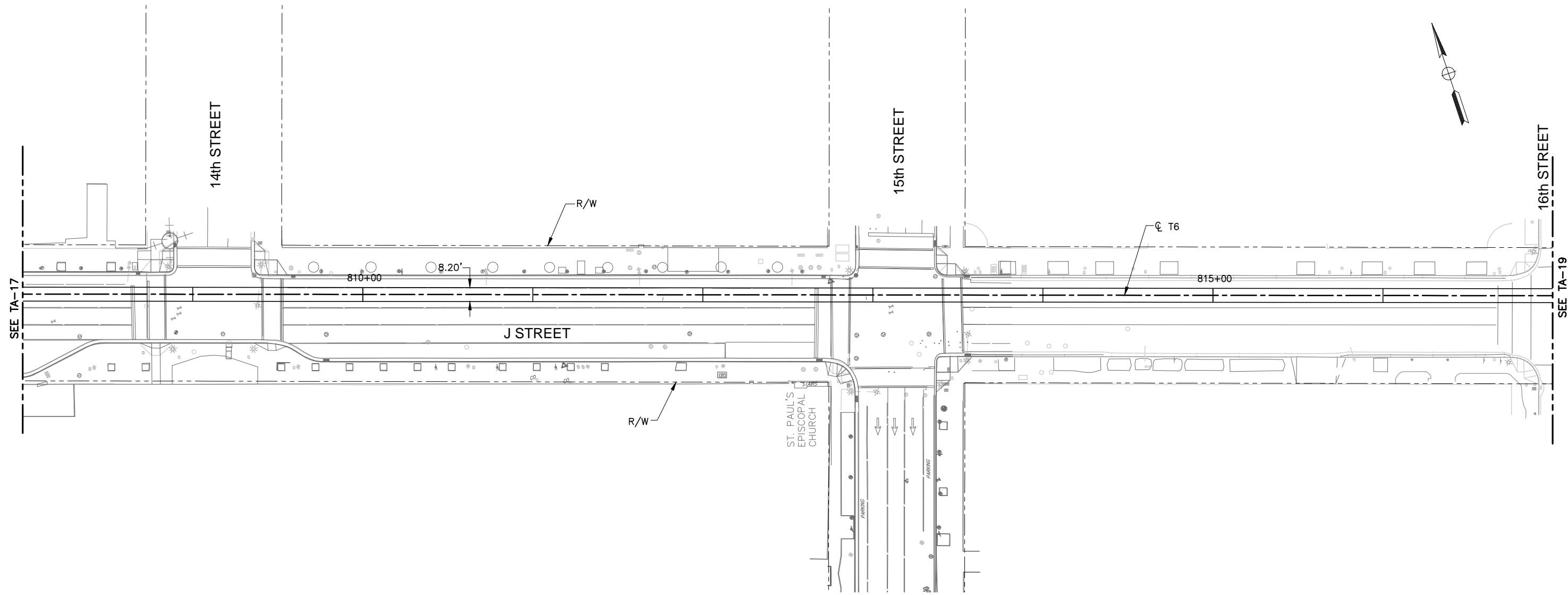
STA	ID	Rc	Δc	Lc	Tc	$\theta s1$	$\theta s2$	Ls1	Ls2	Ea	Eu	V(mph)
800+80	(T6-1)	66	49°55'53"	57.52	30.73	-	13°01'18"	-	30	0.00	2.94	7
804+09	(T6-2)	1213	2°57'03"	62.47	31.24	-	-	-	-	0.00	0.73	15
804+70	(T6-3)	1213	2°46'20"	58.69	29.35	-	-	-	-	0.00	0.73	15



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TRACK ALIGNMENT									DWG. NO. TA-17	

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DRAWN: IK	SCALE HORIZ: 1" = 30' VERT: N/A
CHECKED: EH	PROJECT NO.
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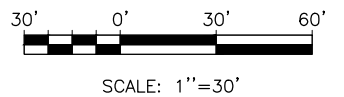
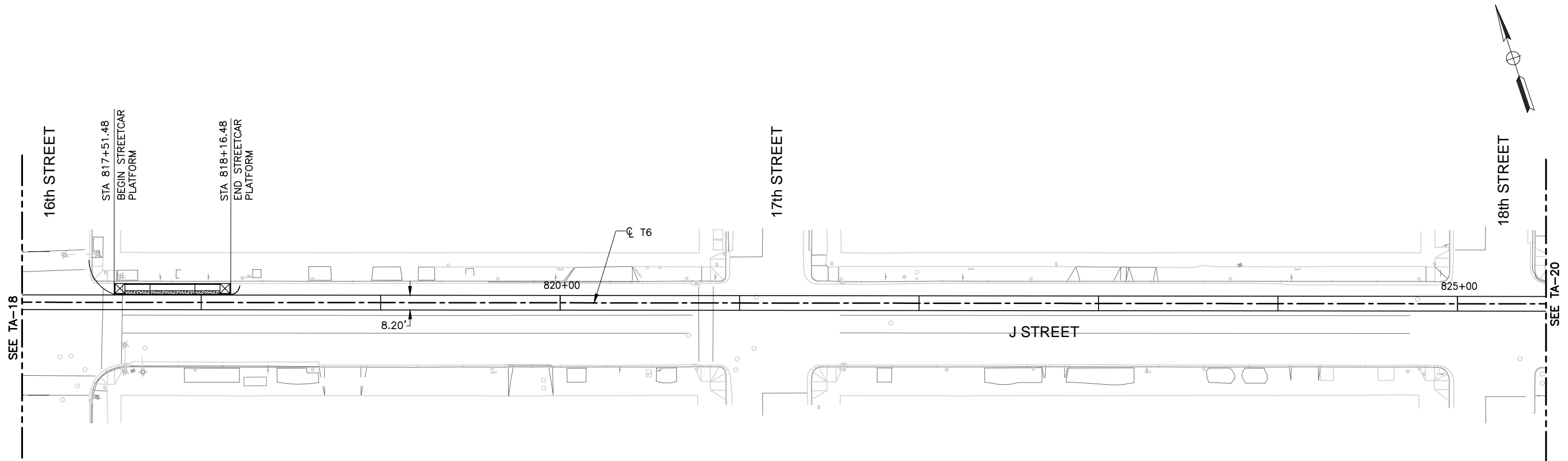


DOWNTOWN/RIVERFRONT STREETCAR PROJECT

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XX OF TOT

DWG. NO. TA-18



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DRAWN: IK	SCALE HORIZ: 1" = 30' VERT: N/A
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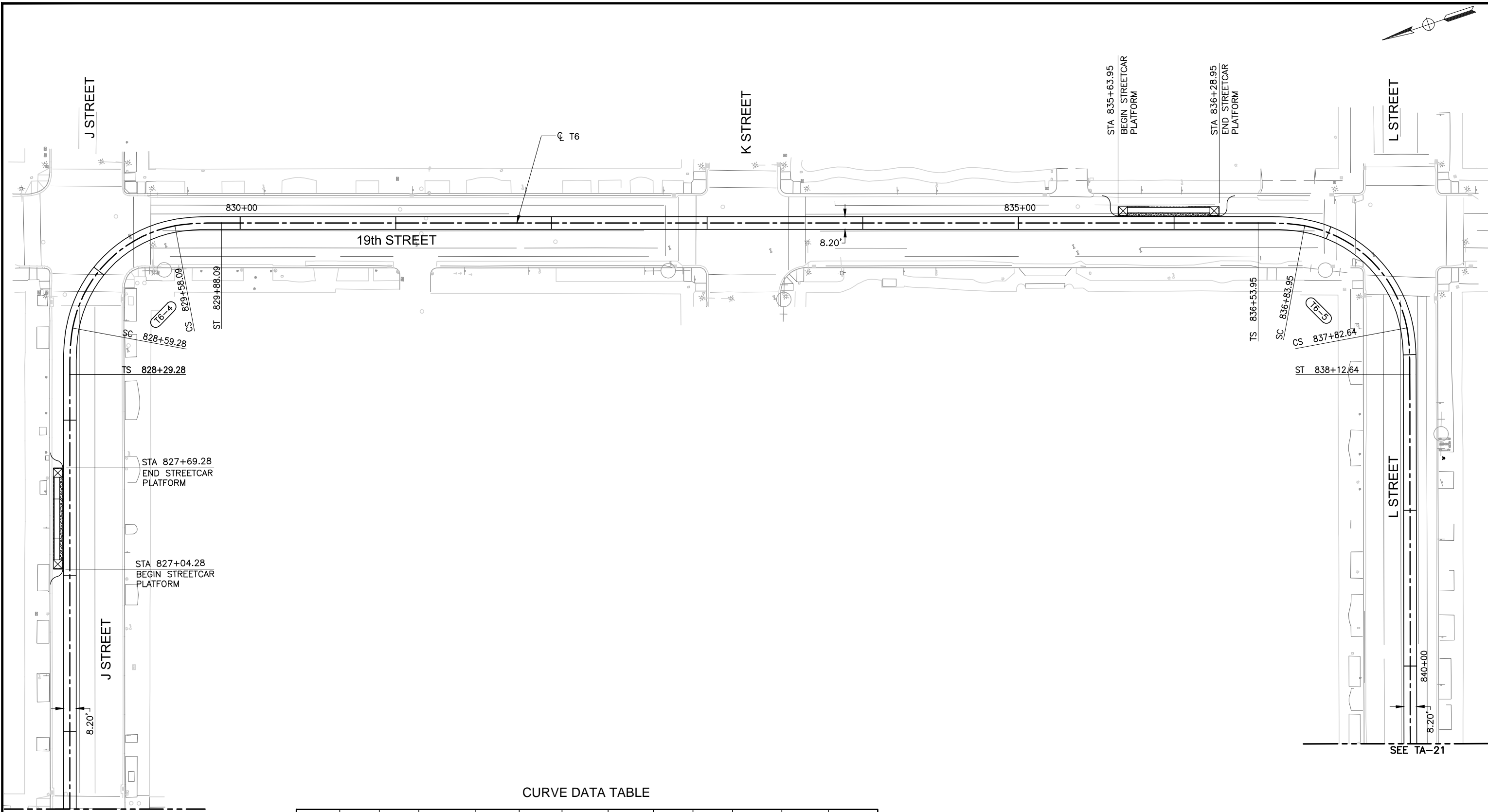
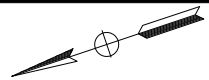


DOWNTOWN/RIVERFRONT STREETCAR PROJECT

TRACK ALIGNMENT

XX OF TOT

DWG. NO. TA-19



CURVE DATA TABLE

STA	ID	Rc	Δc	Lc	Tc	$\theta s1$	$\theta s2$	Ls1	Ls2	Ea	Eu	V(mph)
829+15	T6-4	82	69°02'19"	98.81	56.40	10°28'51"	10°28'51"	30	30	0.00	2.37	7
837+40	T6-5	82	68°57'33"	98.69	56.31	10°28'51"	10°28'51"	30	30	0.00	2.37	7



SCALE: 1"=30'

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RECORD DRAWING DATE: 09/25/2014
SCALE HORIZ: 1" = 30' VERT: N/A
PROJECT NO. CAD FILE: STCAR_TA20.DWG

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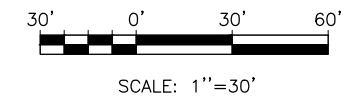
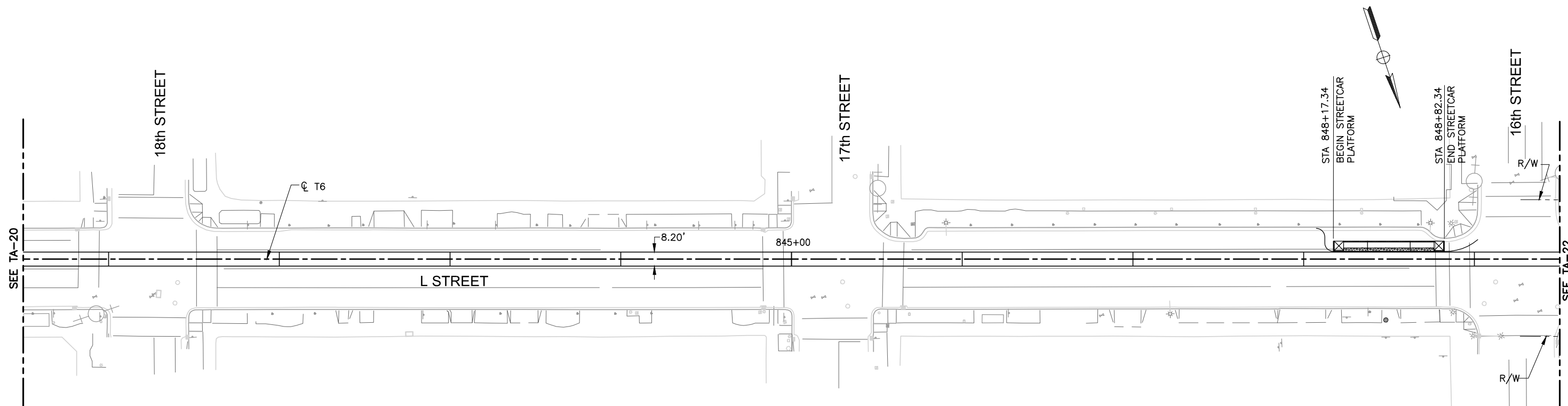
DOWNTOWN/RIVERFRONT STREETCAR PROJECT

TRACK ALIGNMENT

XX OF TOT

DWG. NO. TA-20

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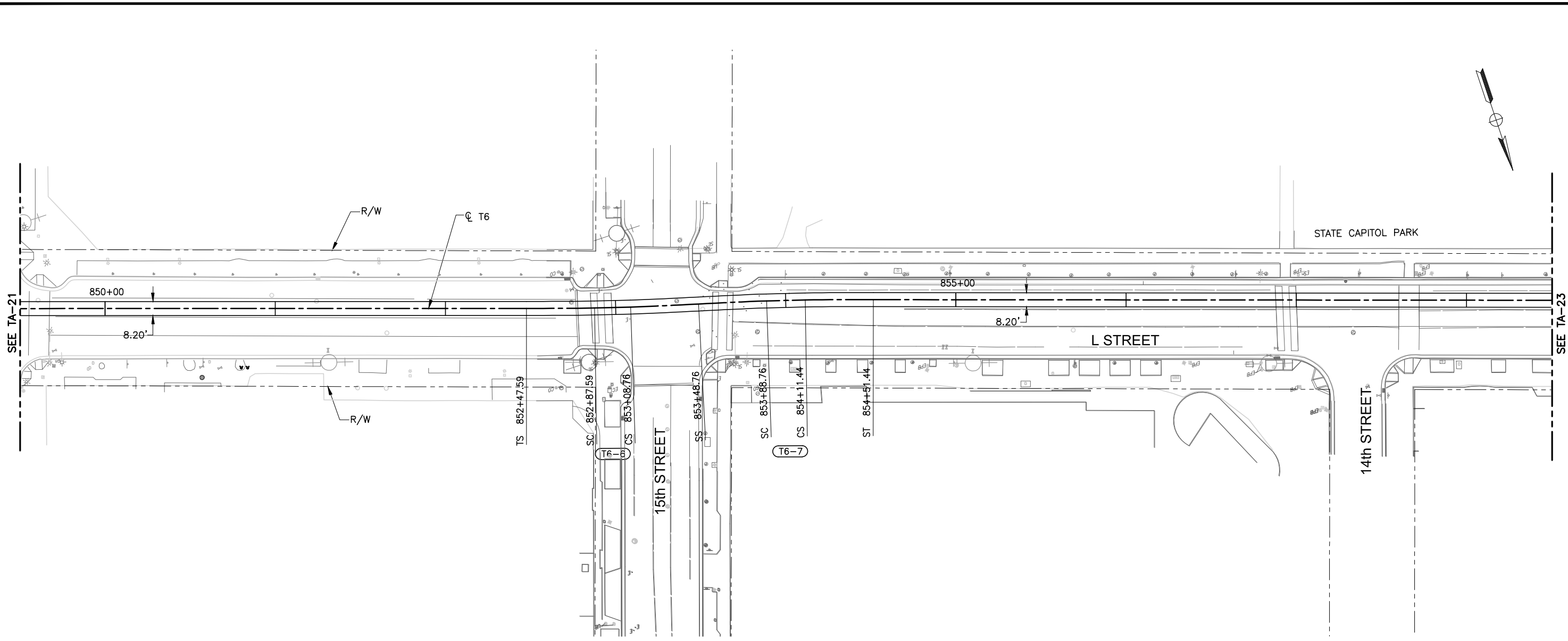


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TRACK ALIGNMENT

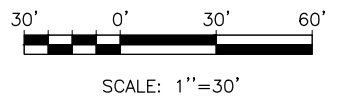
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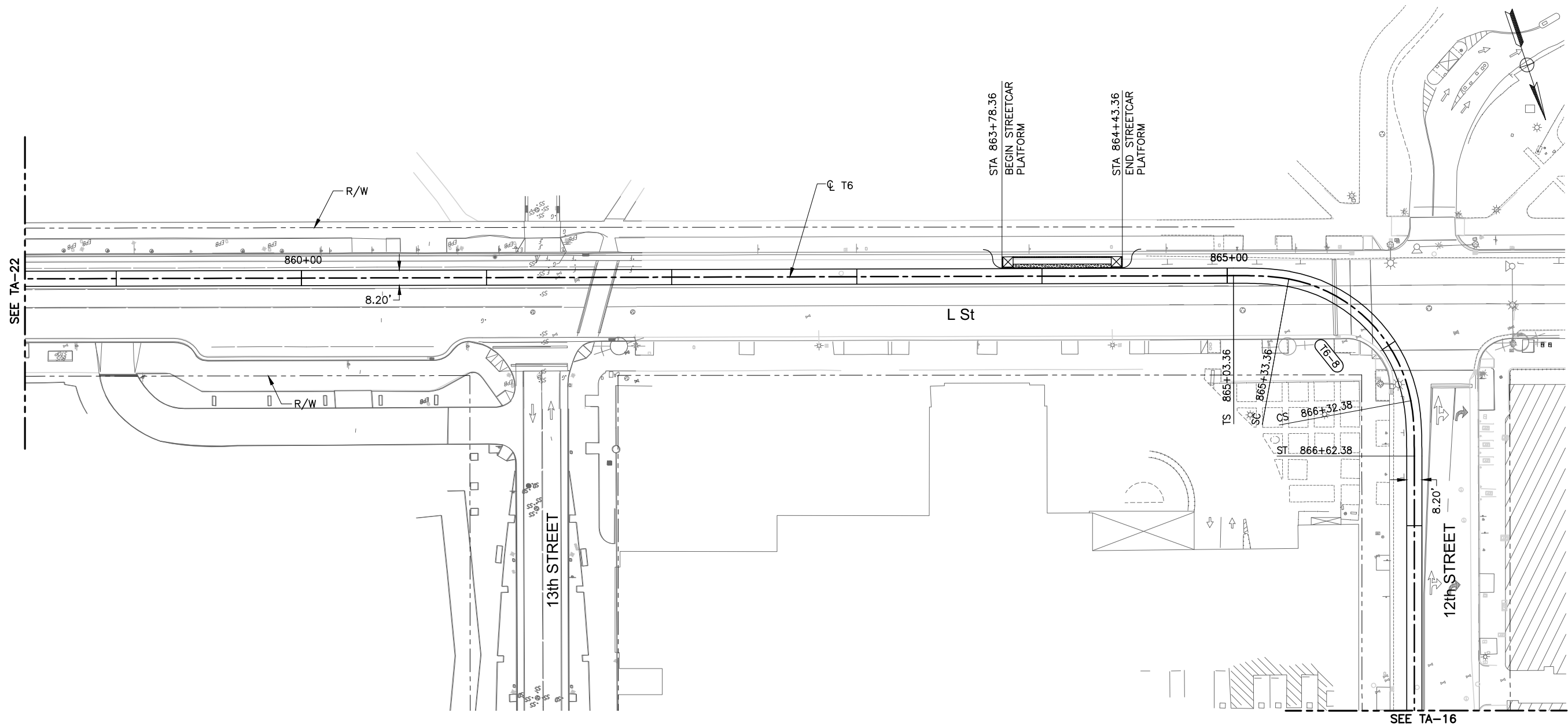
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854+00	(T6-7)	1210	1°04'25"	22.67	11.34	0°56'49"	0°56'49"	40	40	0.75	1.29	25



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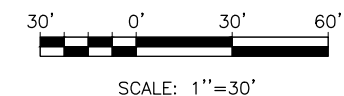
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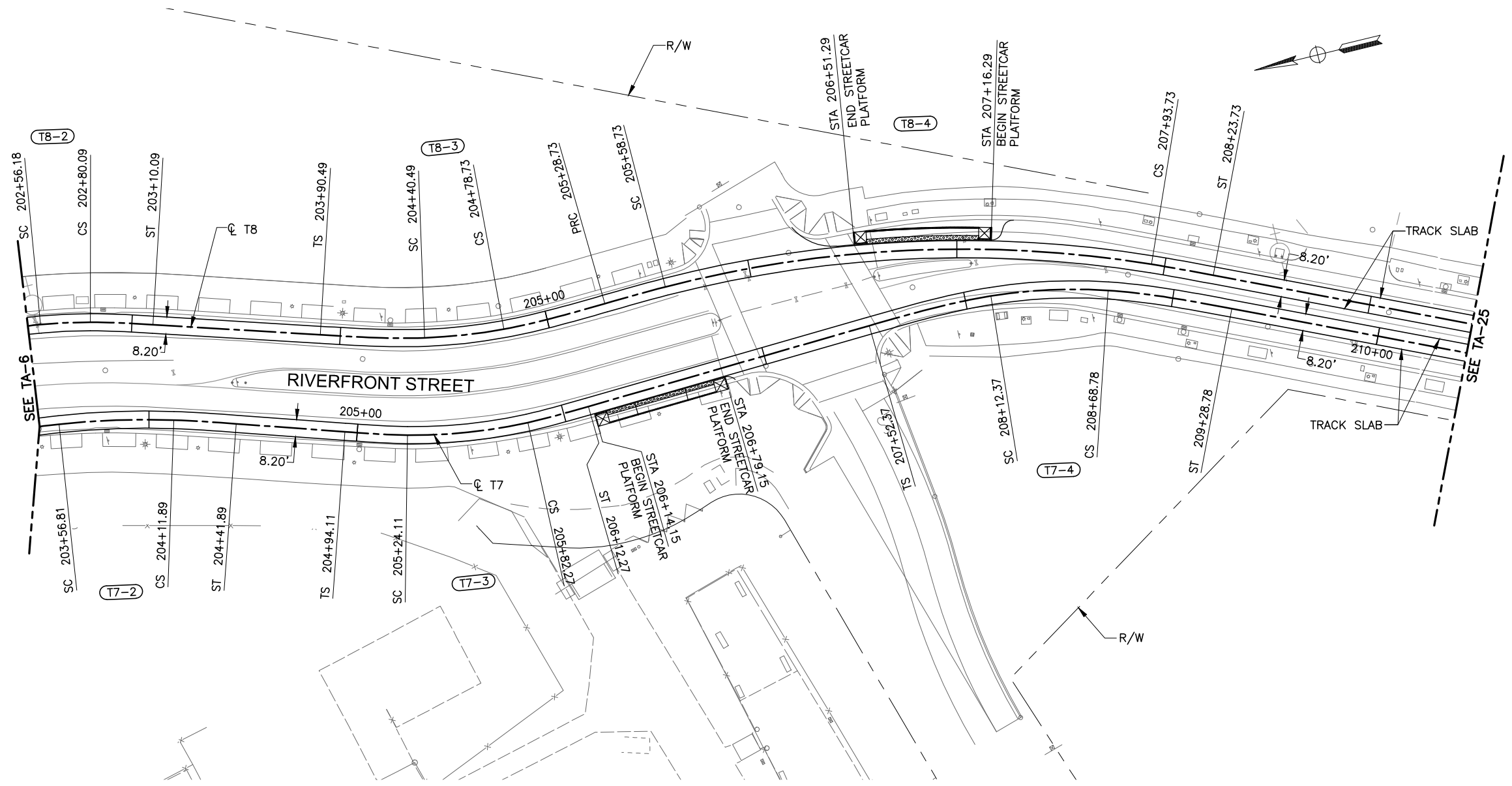
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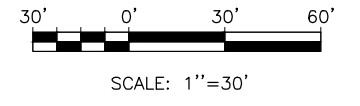
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XX OF TOT
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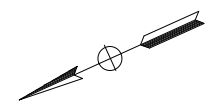
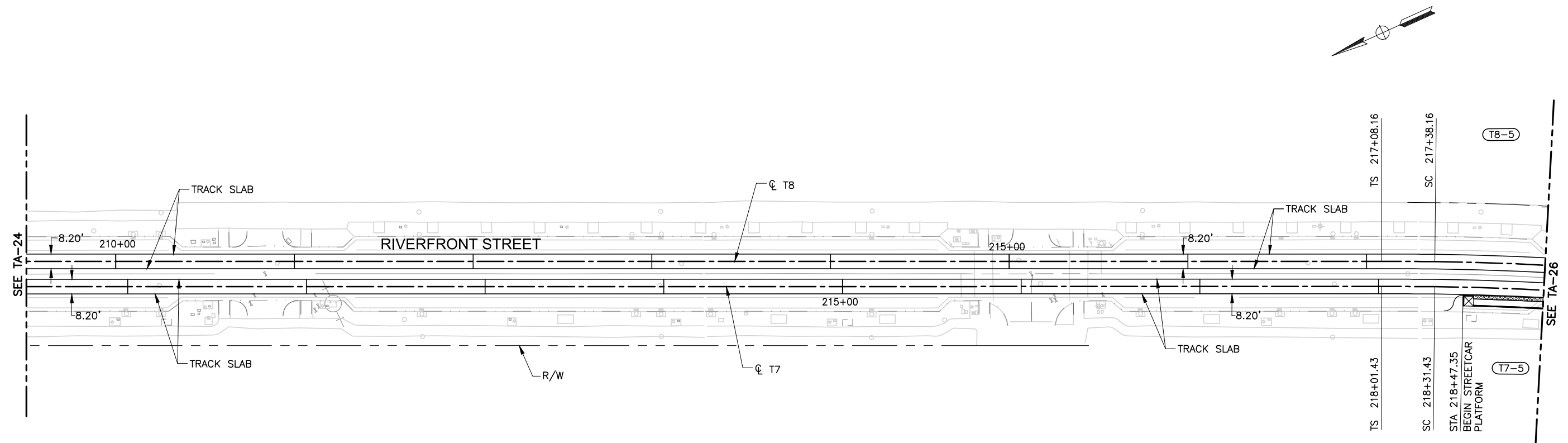
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205+53	(T7-3)	250	13°19'45"	58.16	29.21	3°26'16"	3°26'16"	30	30	0.75	1.93	13
208+40	(T7-4)	250	12°55'48"	56.42	28.33	6°52'32"	6°52'32"	60	60	1.75	2.30	16
202+68	(T8-2)	250	5°28'47"	23.91	11.96	3°26'16"	3°26'16"	30	30	0.75	1.93	13
204+59	(T8-3)	260	8°25'38"	38.24	19.16	5°30'33"	5°30'33"	50	50	0.50	2.93	15
206+92	(T8-4)	570	23°37'18"	235.00	119.19	1°30'28"	1°30'28"	30	30	0.00	1.56	15



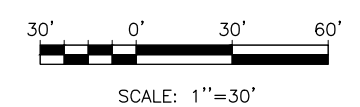
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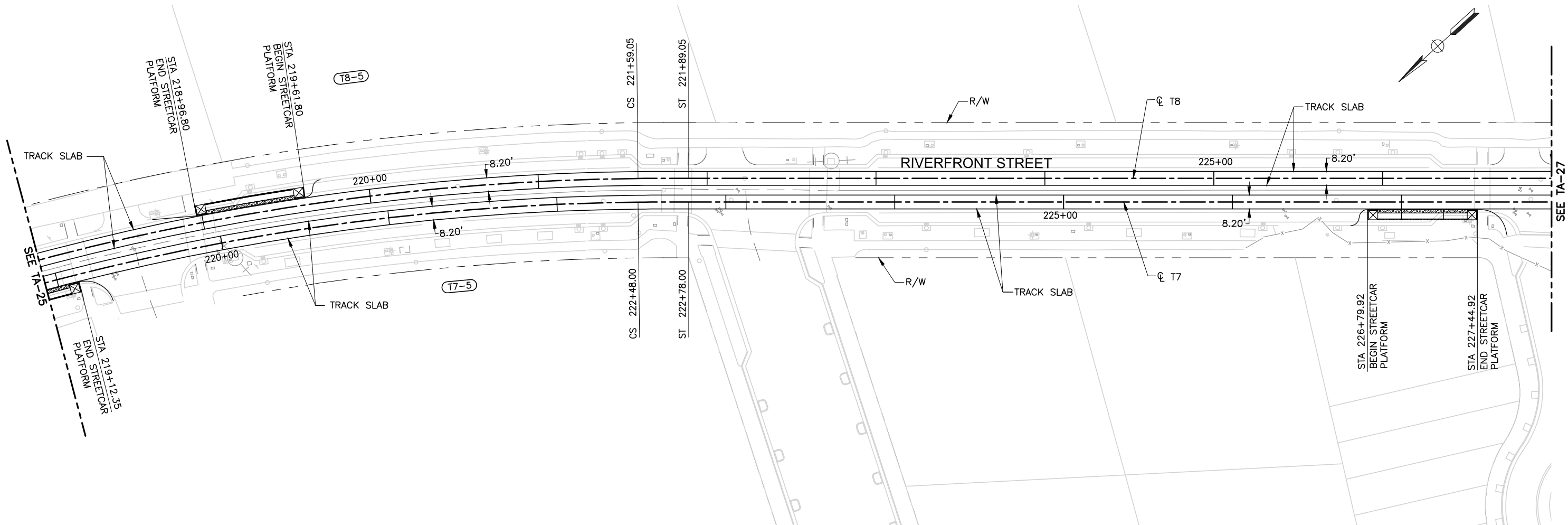
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219+60	(T8-5)	1439	16°45'30"	420.89	211.96	0°35'50"	0°35'50"	30	30	0.00	1.21	21



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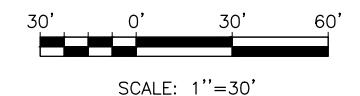
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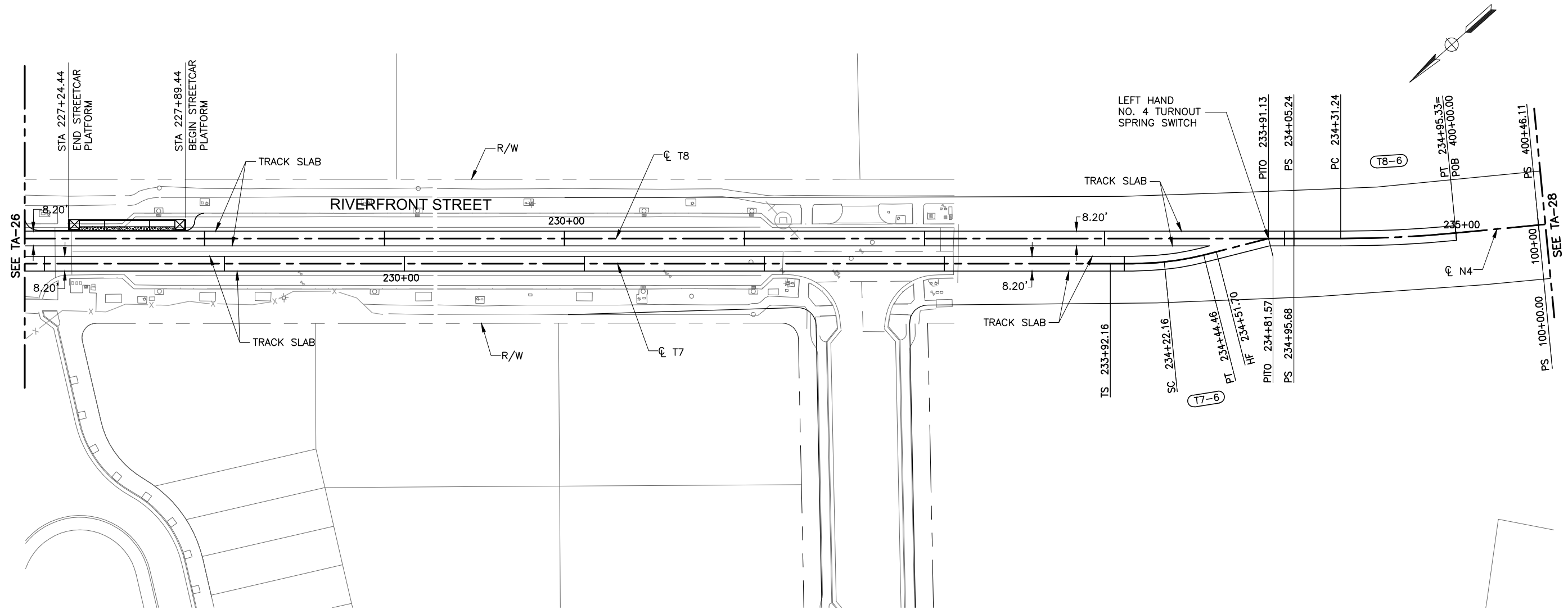


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219+60	(T8-5)	1439	16°45'30"	420.89	211.96	0°35'50"	0°35'50"	30	30	0.00	1.21	21

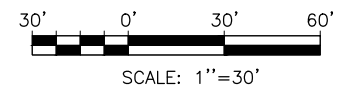


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234+63	(T8-6)	665	5°31'20"	64.09	32.07	-	-	-	-	0.00	0.60	10



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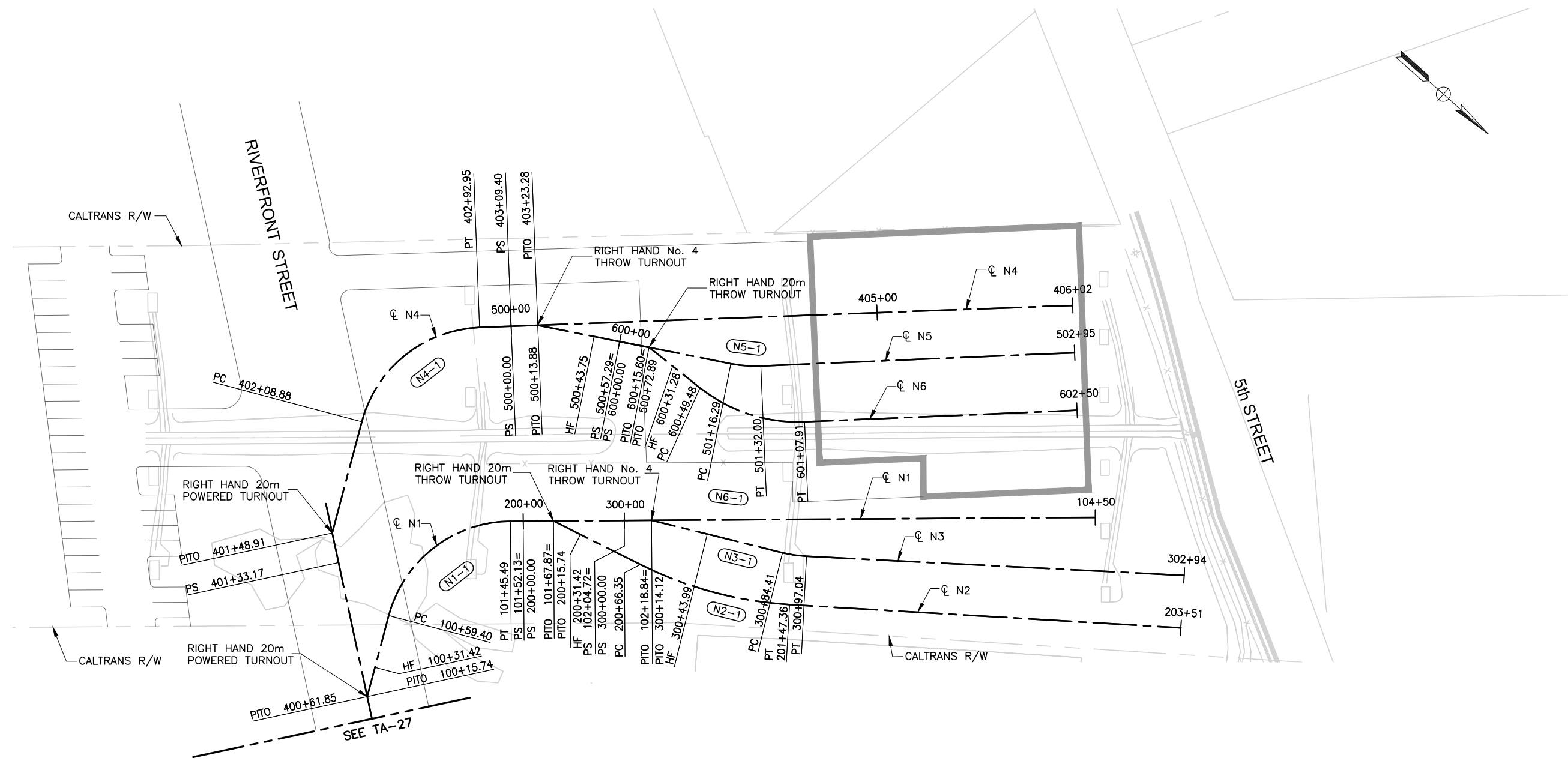


DOWNTOWN/RIVERFRONT STREETCAR PROJECT

TRACK ALIGNMENT

XX OF TOT

DWG. NO. TA-27



CURVE DATA TABLE

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201+07	(N2-1)	200	23°12'20"	81.00	41.06	-	-	-	-	0.00	1.50	5
300+10	(N3-1)	66	10°58'06"	12.63	6.34	-	-	-	-	0.00	1.50	5
402+58	(N4-1)	66	72°59'06"	84.07	48.82	-	-	-	-	0.00	1.50	5
501+24	(N5-1)	66	13°38'41"	15.72	7.90	-	-	-	-	0.00	1.50	5
600+80	(N6-1)	82	40°49'37"	58.43	30.52	-	-	-	-	0.00	1.21	5



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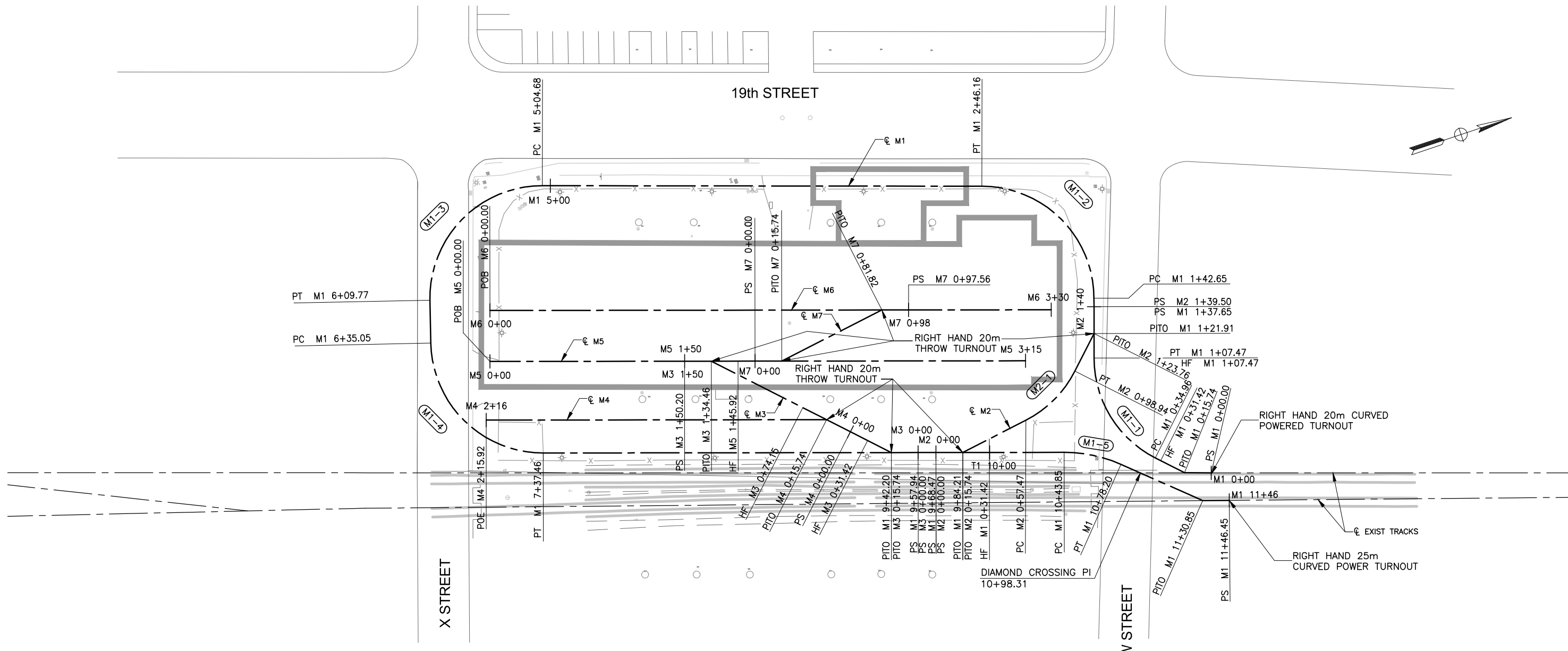
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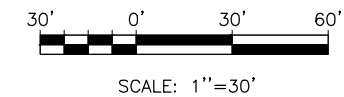
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TRACK ALIGNMENT

XX OF TOT
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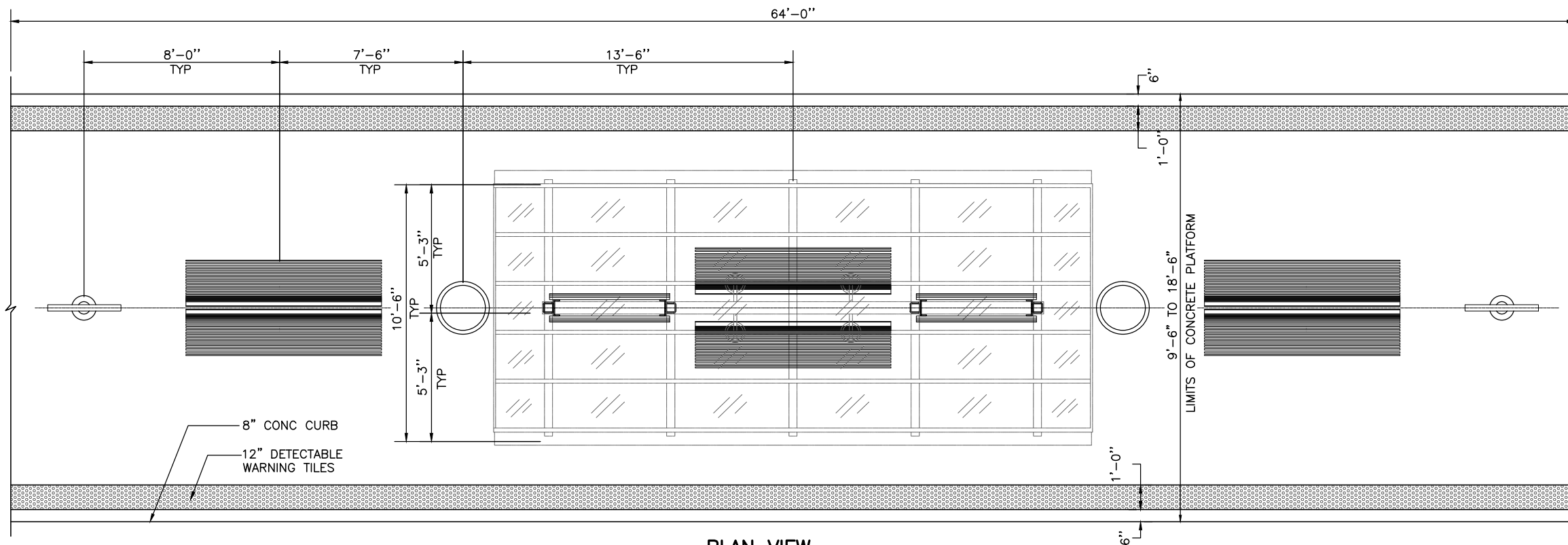
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5+72	(M1-3)	66	91°14'00"	105.09	67.44					0.00	1.50	5
7+00	(M1-4)	66	88°54'24"	102.41	64.75					0.00	1.50	5
10+61	(M1-5)	82	24°00'00"	34.35	17.43					0.00	1.21	5
0+79	(M2-1)	66	36°00'00"	41.47	21.44					0.00	1.50	5

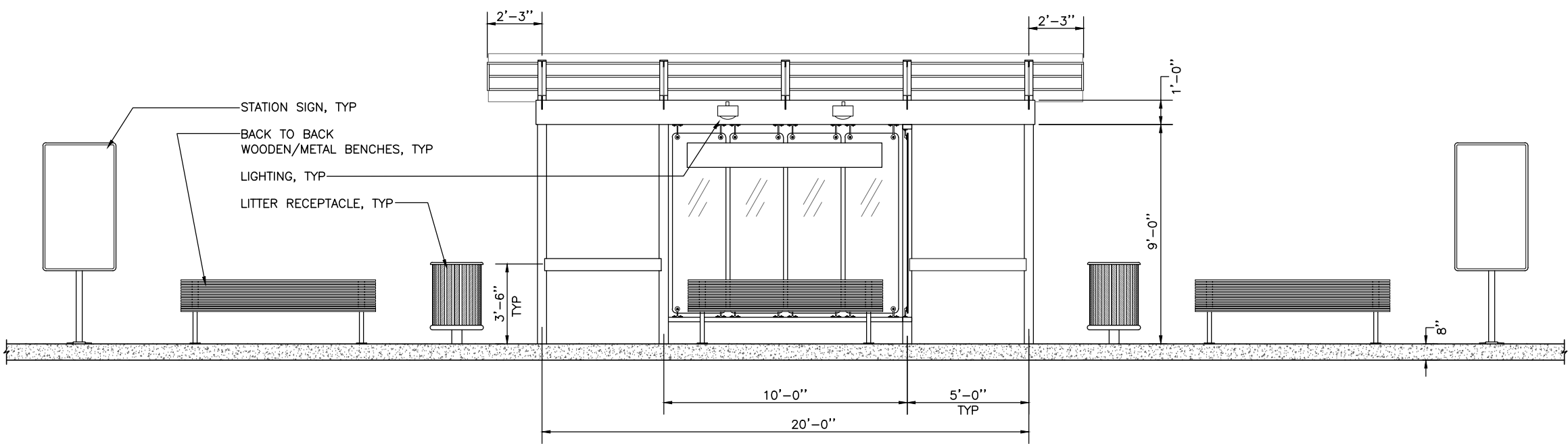


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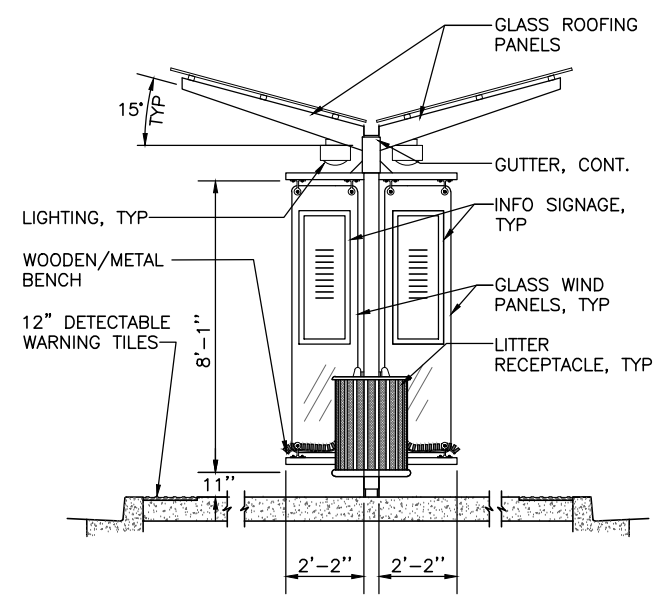
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PLAN VIEW
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FRONT ELEVATION
SCALE: 3/32"=1'-0"



SIDE ELEVATION
SCALE: 3/32"=1'-0"

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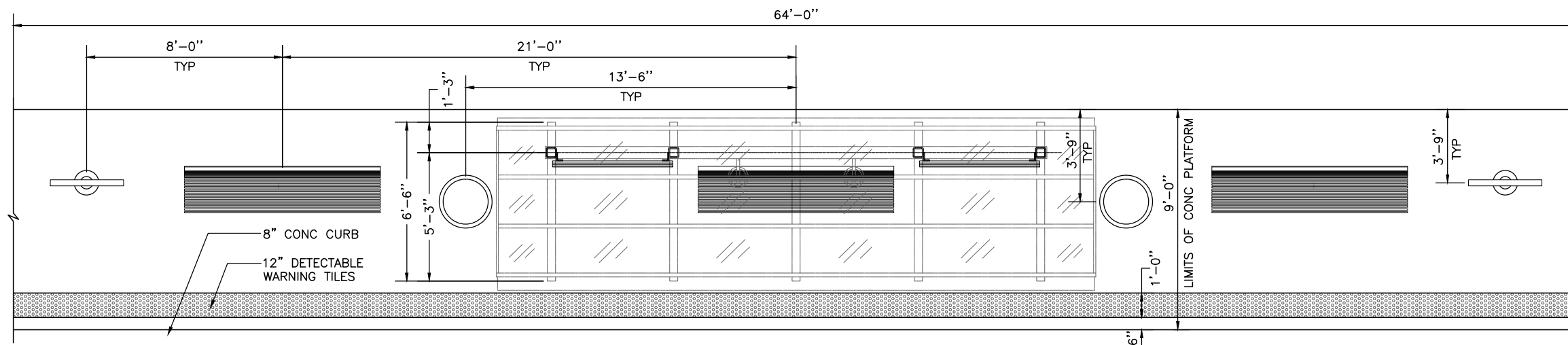
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DOWNTOWN/RIVERFRONT STREETCAR PROJECT

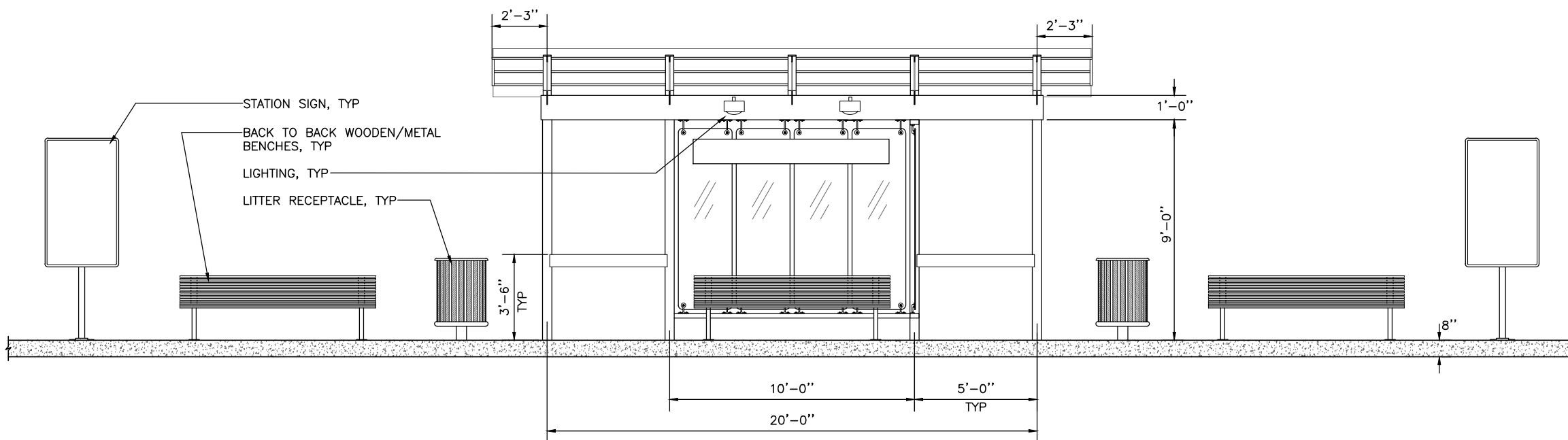
TYPICAL STATION PLAN CENTER PLATFORM

XX OF TOT
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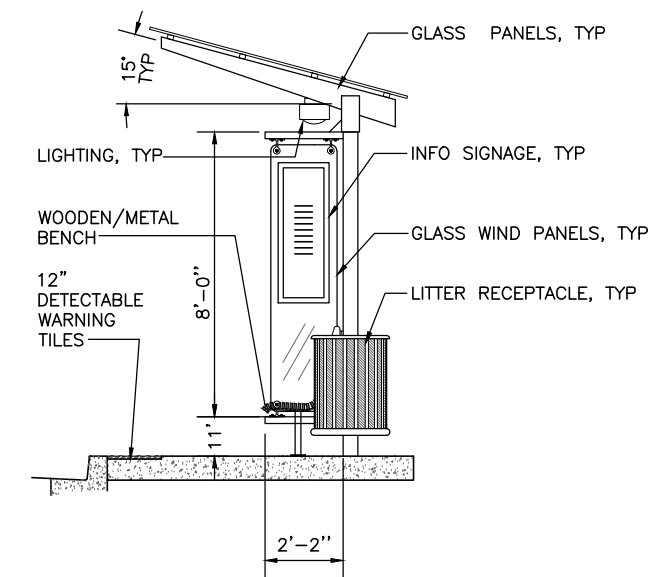
PLAN VIEW

SCALE: 3/32"=1'-0"



FRONT ELEVATION

SCALE: 3/32"=1'-0"



SIDE ELEVATION

SCALE: 3/32"=1'-0"

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DOWNTOWN/RIVERFRONT STREETCAR PROJECT

**TYPICAL STATION PLAN
SIDE PLATFORM**

XX OF TOT
DWG. NO. C-5

Appendix C

Special-Status Species with Potential to Occur in the Study Area



Appendix C: Special-Status Species with Potential to Occur in the Study Area

Name	Scientific Name	Federal Status	State Status	Habitat	Potential for effect/Habitat Presence
Reptiles					
giant garter snake	<i>Thamnophis gigas</i>	FT/	ST	Inhabits agricultural wetlands, irrigation and drainage canals, sloughs, ponds, small lakes, low-gradient streams, and adjacent uplands in the Central Valley and rice fields in the Sacramento Valley.	Low. Typically absent from larger rivers because of lack of suitable habitat and emergent vegetative cover. The Sacramento River in the Study area provides low quality habitat for this species and it is not expected to be affected by the project.
western pond turtle	<i>Emys marmorata</i>	FSC/	SSC	Slow-moving, aquatic habitat with basking sites such as exposed rocks and often with emergent vegetation.	Low. Typically absent from larger rivers because of lack of suitable habitat and presence of non-native competitive species. The Sacramento River in the Study area provides low quality habitat for this species and it is not expected to be affected by the project.
Birds					
bank swallow	<i>Riparia riparia</i>	MBTA	SSC	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, and ocean, into which it digs nesting holes.	Low. Not expected to nest onsite because no suitable habitat is present.
black-crowned night heron	<i>Nycticorax nycticorax</i>	MBTA	None	Colonial nester, usually in trees, occasionally in tule patches.	Low. This species may forage along the Sacramento River in the Study Area, but no nest colonies are reported in the vicinity.
Cooper's hawk	<i>Accipiter cooperii</i>	MBTA	SSC	Nests in a wide variety of habitat types, from riparian woodlands and digger pine, oak woodlands to mixed conifer forests.	Low. CNDDDB lists a sighting just outside the eastern boundary of the proposed study area (CNDDDB, 2013). This species has a moderate potential to nest in large stature riparian trees along the Sacramento River in the vicinity
double-crested cormorant	<i>Phalacrocorax auritus</i>	MBTA	None	Forages in open water habitat, including streams, lakes, and oceans. Riparian forest, scrub, or woodland.	Low. This species may forage along the Sacramento River in the Study Area, but no nest colonies are reported in the vicinity.
ferruginous hawk	<i>Buteo regalis</i>	MBTA	None	Open grasslands, sagebrush flats, desert scrub, low foothills, and fringes of pinyon-juniper habitats.	Low. This species may occasionally forage in the project area, but it is not expected to nest in the vicinity.



Appendix C: Special-Status Species with Potential to Occur in the Study Area

Name	Scientific Name	Federal Status	State Status	Habitat	Potential for effect/Habitat Presence
golden eagle	<i>Aquila chrysaetos</i>	MBTA	FP	Rolling foothills, mountain areas, sage-juniper flats, and desert.	Low. Suitable habitat for this species is not present in the study area.
grasshopper sparrow	<i>Ammodramus savannarum</i>	MBTA	SSC	Frequents dense, dry, or well-drained large grassland, especially native grassland. Nests at base of overhanging clump of grass.	Low. Suitable habitat for this species is not present in the study area.
great blue heron	<i>Ardea herodias</i>	MBTA	CSC	Variety of habitats close to bodies of water, including fresh and saltwater marshes, wet meadows, lake edges, and shorelines. Colonial nester in tall trees, cliff sides, and sequestered spots on marshes.	Low. This species may forage along the Sacramento River in the Study Area, but no nest colonies are reported in the vicinity. Individual observed at base of the Tower Bridge during site assessment in 2013.
great egret	<i>Ardea alba</i>	MBTA	CSC	Found in salt- and freshwater marshes of significant size, marshy ponds, and tidal flats.	Low. This species may forage along the Sacramento River in the Study Area, but no nest colonies are reported in the vicinity..
merlin	<i>Falco columbarius</i>	MBTA	CSC	Inhabits the seacoast, tidal estuaries, open woodlands, and ranch lands. Clumps of trees or windbreaks are required for nesting in open areas.	Low. This species may forage along the Sacramento River in the Study Area, but it is not known or expected to nest in the vicinity.
mountain plover	<i>Charadrius montanus</i>	T/MBTA	None	Sandy beaches, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	Low. This species may occasionally forage in the vicinity along the Sacramento River, but it is not known or reported to nest in the vicinity.
purple martin	<i>Progne subis</i>	MBTA	SSC	Woodlands and low-elevation coniferous forests of Douglas fir, ponderosa pine, and Monterey pine provide cover. Often nests in tall trees or old trees near a body of water. Also nests occasionally in residential areas.	Moderate. This species has potential to nest in trees and structures in the project vicinity.
snowy egret	<i>Egretta thula</i>	MBTA	None	Colonial nester, with nest sites situated in protected beds of dense tules.	Low. This species may occasionally forage in the vicinity along the Sacramento River, but it is not known or reported to nest in the vicinity..



Appendix C: Special-Status Species with Potential to Occur in the Study Area

Name	Scientific Name	Federal Status	State Status	Habitat	Potential for effect/Habitat Presence
song sparrow ("Modesto" population)	<i>Melospiza melodia</i>	MBTA	SSC	Riparian shrub-scrub and trees.	Low. Although suitable habitat is present and CNDDDB lists one occurrence near the study area from 1900, this species is considered extirpated from the area.
Swainson's hawk	<i>Buteo swainsoni</i>	MBTA	T	Nests in riparian forests and scattered trees. Forages in grasslands and agricultural fields.	Moderate. CNDDDB occurrence from 2010 on western side of the Sacramento River just south of the Tower Bridge and 0.2 mile southeast of Raley Field in West Sacramento. Suitable nesting habitat includes large stature trees along the Sacramento River and in developed areas..
tricolored blackbird	<i>Agelaius tricolor</i>	MBTA	CSC	Nests in dense cattails and tules, riparian scrub, and other low, dense vegetation. Forages in grasslands and agricultural fields.	Low. This species may occasionally forage in the vicinity along the Sacramento River, but it is not known or reported to nest in the vicinity..
Western burrowing owl	<i>Athene cunicularia</i>	MBTA	CSC	Nests in burrows in the ground, often in old ground-squirrel or badger burrows, in open dry grassland and desert habitat.	Low. This species may occasionally forage in the vicinity, but it is not known or reported to nest in the vicinity do the existing trees, utility poles, and land development.
western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T/MBTA	SSC	Sandy beaches, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	Low. This species may occasionally forage in the vicinity along the Sacramento River, but it is not known or reported to nest in the vicinity..
western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	T/MBTA	E	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Low. This species may occasionally forage in the vicinity along the Sacramento River, but it is not known or reported to nest in the vicinity..
white-faced ibis	<i>Plegadis chihi</i>	MBTA	None	Shallow fresh-water marsh. Dense tule thickets for nesting interspersed with areas of shallow water for foraging.	Low. This species may occasionally forage in the vicinity along the Sacramento River, but it is not known or reported to nest in the vicinity..
white-tailed kite	<i>Elanus leucurus</i>	MBTA	CSC/FP	Forages in grasslands and agricultural fields; nests in isolated trees or small woodland patches.	Moderate. Suitable nesting habitat includes large stature trees along the Sacramento River and in developed areas.
yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	MBTA	SSC	Nests in freshwater emergent wetlands with dense vegetation and deep water; often along borders of lakes or ponds.	Low. This species may occasionally forage in the vicinity along the Sacramento River, but it is not known or reported to nest in the vicinity..



Appendix C: Special-Status Species with Potential to Occur in the Study Area

Name	Scientific Name	Federal Status	State Status	Habitat	Potential for effect/Habitat Presence
Fish					
Central Valley spring-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	T	T	Spawns in large, permanent coastal streams and rivers, over gravel beds.	Low. This species occurs in the Sacramento River, but aquatic habitats are not expected to be affected by the project.
Sacramento River winter-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	E	E	Spawns in Sacramento River and its tributaries, over gravel beds.	Low. This species occurs in the Sacramento River, but aquatic habitats are not expected to be affected by the project.
longfin smelt	<i>Spirinchus thaleichthys</i>	None	T	Found in open waters of estuaries, mostly in middle or bottom of water column.	Low. This species occurs in the Sacramento River, but aquatic habitats are not expected to be affected by the project.
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	None	SSC	Slow-moving river sections, dead-end sloughs. Requires flooded vegetation for spawning and foraging for young.	Low. This species occurs in the Sacramento River, but aquatic habitats are not expected to be affected by the project.
Invertebrates					
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E	None	Endemic to the grasslands of the northern two-thirds of the central valley; found in large, turbid pools.	Low. Not expected to occur onsite because there is no suitable vernal pool habitat present.
valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	None	Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.	Low. The host plant, blue elderberry, occurs in riparian corridors and adjacent uplands in the vicinity, but the study area is in urban habitat with concrete and asphalt ground cover. No elderberry plants were observed along the proposed alignment.
vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	None	Common in vernal pools; also found in sandstone rock outcrop pools.	Low. Not expected to occur onsite because there is no suitable vernal pool habitat present.
vernal pool tadpole shrimp	<i>Lepidurus packardi</i>	E	None	Vernal pools and ephemeral stock ponds.	Low. Not expected to occur onsite because there is no suitable vernal pool habitat present.
Mammals					
American badger	<i>Taxidea taxus</i>	None	SSC	Most abundant in drier, open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Low. Suitable habitat for this species is not present in the study area. Considered extirpated from area.



Appendix C: Special-Status Species with Potential to Occur in the Study Area

Name	Scientific Name	Federal Status	State Status	Habitat	Potential for effect/Habitat Presence
hoary bat	<i>Lasiurus cinereus</i>	None	CSC	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Generally roosts in dense foliage of medium to large trees. Preferred sites are hidden from above.	Low. Although a female specimen was collected close to the study area in 1991 (CNDDDB, 2013), suitable roosting habitat for this species is not present.
pallid bat	<i>Antrozous pallidus</i>	None	CSC	A variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests. Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Also nests in various human structures such as bridges (especially wooden and concrete-girder designs).	Moderate. Suitable roosting habitat for this species is present in the study area on the Tower Bridge and at the West Sacramento Maintenance Facility site. However, there are no CNDDDB occurrences for this species within ¼ mile of the study area.
Plants					
Ahart's dwarf rush	<i>Juncus leiospermus</i> var. <i>ahartii</i>	None	CRPR 1 B.2	Found on margins of vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
alkali milk-vetch	<i>Astragalus tener</i> var. <i>tener</i>	None	CRPR 1 B.2	Meadows, valley, and foothill grassland.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Baker's navarretia	<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	None	CRPR 1 B.1	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, and lower-montane coniferous forest.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
bearded popcornflower	<i>Plagiobothrys hystriculus</i>	None	CRPR 1 B.1	Vernal pools, valley and foothill grassland.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	None	SE/CRPR 1 B.2	Marshes and swamps (freshwater), vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
bristly sedge	<i>Carex comosa</i>	None	CRPR 2.1	Marshes and swamps.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.



Appendix C: Special-Status Species with Potential to Occur in the Study Area

Name	Scientific Name	Federal Status	State Status	Habitat	Potential for effect/Habitat Presence
Colusa grass	<i>Neostapfia colusana</i>	FT	SE/ CRPR 1 B.1	Usually in large or deep vernal-pool bottoms; adobe soils.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Crampton's tuctoria or Solano grass	<i>Tuctoria mucronata</i>	None	CRPR 1 B.1	Vernal pools, valley and foothill grassland.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
dwarf downingia	<i>Downingia pusilla</i>	None	CRPR 2 B.2	Valley and foothill grassland (mesic sites), vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Ferris' milk-vetch	<i>Astragalus tener</i> var. <i>ferrisiae</i>	None	CRPR 1 B.1	Alkali playa, valley, and foothill grassland, vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
heartscale	<i>Atriplex cordulata</i> var. <i>cordulata</i>	None	CRPR 1 B.2	Chenopod scrub, valley, and foothill grassland, meadows.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Heckard's pepper-grass	<i>Lepidium latipes</i> var. <i>heckardii</i>	None	CRPR 1 B.2	Vernal pools, valley and foothill grassland.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
legenere	<i>Legenere limosa</i>	None	CRPR 1 B.1	Moist areas and vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Mason's lilaepsis	<i>Mason's lilaepsis</i>	None	CRPR 1 B.1	Freshwater and brackish marshes, riparian scrub.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
palmate-bracted bird's-beak	<i>Chloropyron palmatum</i>	FE	SE/ CRPR 1 B.1	Chenopod scrub, valley, and foothill grassland.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Peruvian dodder	<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	None	CRPR 2 B.2	Marshes and swamps (freshwater).	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.



Appendix C: Special-Status Species with Potential to Occur in the Study Area

Name	Scientific Name	Federal Status	State Status	Habitat	Potential for effect/Habitat Presence
Sacramento Orcutt grass	<i>Orcuttia viscida</i>	FE	SE/ CRPR 1 B.1	Vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
saline clover	<i>Trifolium hydrophilum</i>	None	CRPR 1 B.2	Marshes and swamps, valley and foothill grassland, vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
San Joaquin sparscale	<i>Atriplex joaquinana</i>	None	CRPR 1 B.2	Chenopod scrub, alkali meadow, valley and foothill grassland.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Sanford's arrowhead	<i>Sagittaria sanfordii</i>	None	CRPR 1 B.2	Shallow freshwater, marshes and swamps.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
slender Orcutt grass	<i>Orcuttia tenuis</i>	FT	SE/ CRPR 1 B.1	Vernal pools.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
Suisun Marsh aster	<i>Symphyotrichum lentum</i>	None	CRPR 1 B.2	Marshes and swamps (brackish and freshwater).	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.
woolly rose-mallow	<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i>	None	CRPR 2. 2	Freshwater marshes and swamps.	Low. Not expected to occur because there project area consists of developed or disturbed habitats, and no suitable habitat is present.

Status: FE = Federally Endangered, FT = Federally Threatened, SE=State Endangered, ST=State Threatened, SSC= Special Concern, FS = Fully Protected Species, MBTA=Migratory Bird Treaty Act

CRPR:
(1A) Presumed extinct in California, (1B) Rare, threatened, or endangered in California and elsewhere; (2) Rare, threatened, or endangered in California, but more common elsewhere; (3) More information is needed; (4) Limited distribution, watch list

Threat Rank:

- 0.1 Seriously threatened in California (more than 80% of occurrences threatened/high degree of immediacy of threat)
- 0.2 Fairly threatened in California (20% to 80% occurrences threatened/moderate degree of immediacy of threat)
- 0.3 Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Appendix D

Section 106 Consultation



U.S. Department
of Transportation
**Federal Transit
Administration**

REGION IX
Arizona, California,
Hawaii, Nevada, Guam
American Samoa,
Northern Mariana Islands

201 Mission Street
Suite 1650
San Francisco, CA 94105-1839
415-744-3133
415-744-2726 (fax)

Dr. Carol Roland-Nawi
California Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

NOV 8 2013

Re: Initiating Section 106 Consultation for
the Downtown/Riverfront Streetcar Project,
West Sacramento, CA

Dear Ms. Roland-Nawi:

The Federal Transit Administration (FTA) is initiating the Section 106 consultation process for the Sacramento Area Council of Governments' (SACOG) Downtown/Riverfront Streetcar project, located in West Sacramento, California. FTA seeks your concurrence in the determination of the area of potential effects (APE) for the project. FTA has enclosed a map of the APE with this letter.

Area of Potential Effects

The APE is generally confined to the public right of way where the alignment and maintenance facility sites are to be located. At station platforms, adjacent properties are included within the APE.

The streetcar would travel eastward from the City of West Sacramento Civic Center just west of Merkley Avenue, curve south, and turn onto Tower Bridge Gateway to 3rd Street, as indicated in the attached APE map. A proposed extension that would permit revenue service south from Tower Bridge Gateway/3rd Street along Riverfront Drive in West Sacramento is also being considered, and this area is included in the APE. The streetcar alignment would cross the Sacramento River on Tower Bridge restoring the rail line that once operated on this historic structure.

In Sacramento, the streetcar alignment would cross I-5 on Capitol Mall before turning north on 3rd Street to H Street. The alignment would continue north of the Sacramento Valley Station historic depot along H Street before turning south using existing Sacramento Regional Transit District (RT) light rail transit (LRT) track and platforms on 7th/8th Streets to reach K Street. Under consideration is moving the existing LRT operation from K Street to H Street between 7th/8th and 12th Streets and replacing LRT service on the K Street Mall with streetcar service. The streetcar alignment would continue to use LRT track and stations along K Street before turning north on 12th Street and then east on J Street to 19th Street. The streetcar would have its eastern terminus at a station located on 19th Street near J Street, looping back to the K Street Mall via 19th, L, and 12th Streets. The entire alignment and all station platforms would be located within the existing public street right of way.

To store and maintain the streetcar fleet, one or two proposed facility sites on Caltrans property under the US 50 viaduct would be used. In Sacramento, the site is located under US 50 immediately west of 19th Street. Streetcars would access the site using existing RT LRT track on the South Sacramento Corridor Line and a new short lead track entering the site. In West Sacramento, the site would be accessed by the proposed extension, as described above, along Riverfront Drive leading directly to the facility site, under the US 50 viaduct.

Identification of Section 106 Resources

An historic architectural and archaeological inventory along much of the current alignment in West Sacramento, on Tower Bridge and Capitol Mall to 3rd, along K between 7th/8th to 13th, and J and L between 13th and 15th was previously conducted for the Downtown/Riverfront Streetcar Study Environmental Impact Report (EIR), certified in 2009. The previous analysis and findings will be reviewed and updated as appropriate for this Section 106 consultation. In addition, an inventory of cultural resources within the APE along the new portions of the streetcar alignment, as well as the two proposed maintenance facility sites will be conducted and analyzed. The documentation of Section 106 resources within the APE, and an analysis of potential impacts to these resources, will be provided to SHPO once they are completed, following concurrence from SHPO with the attached APE map.

Project Location and Description

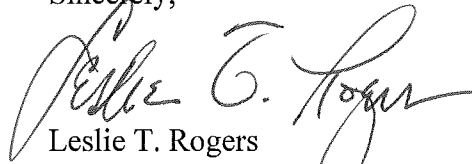
SACOG, in cooperation with FTA, proposes to develop a new streetcar line and associated maintenance facility that would serve and connect West Sacramento with Downtown and Midtown Sacramento. The new streetcar service would address anticipated growth in corridor travel; enhance regional connectivity; alleviate traffic congestion; improve regional air quality by reducing auto emissions; and improve mobility options for downtown commuters and corridor residents; as well as support local economic and land development goals by increasing transit service to current and future corridor activity centers.

In 2006, the Cities of West Sacramento and Sacramento, in cooperation with Sacramento Regional Transit (RT) and Yolo County Transportation District (YCTD), formed a partnership to study the reintroduction of streetcar service to connect the Cities of West Sacramento and Sacramento and their shared riverfront. The feasibility study, which included a discussion of technology, alignment, financing opportunities, and operating plans, was completed in May 2007 and summarized in the Phase 1 Summary Report, Downtown/Riverfront Streetcar Study. The City Council of West Sacramento, acting as the local lead agency, adopted the findings of the Phase 1 report on May 9, 2007. Following the adoption of the Phase 1 report, the City of West Sacramento completed a project-level EIR in April 2009 that evaluated a streetcar line that would connect West Sacramento with the City of Sacramento via the Tower Bridge.

Subsequent to the adoption of the Final EIR, additional planning studies were undertaken to conduct additional outreach to stakeholders, identify funding options, and further refine the alignment. These studies were finalized in 2012 with the completion of the Sacramento Streetcar System Plan and the selection of a Locally Preferred Alternative (LPA) for a Starter Line that would extend the original alignment to the east to provide improved connections to Sacramento Midtown and further north toward H Street to better serve Downtown activity centers. The LPA is delineated in the attached APE map. SACOG is seeking an Environmental Assessment from FTA.

Pursuant to 36 CFR 800, FTA requests SHPO's review of the attached APE and concurrence in the APE study limits. If FTA does not receive any correspondence from SHPO within 30 days of receipt of this letter, FTA will assume that SHPO concurs with the APE. FTA will continue to consult with SHPO regarding the assessment of adverse effects and resolution of adverse effects related to Section 106 resources for this project. If you have any questions or comments regarding this request, please contact Lucinda Eagle, Community Planner, at (415)744-0140 or Lucinda.Eagle@dot.gov, or you may contact Mike Luken, Transportation Manager, City of West Sacramento Public Works Department, (916) 617-4881. We appreciate your assistance with this project.

Sincerely,



Leslie T. Rogers
Regional Administrator

Enclosure: Area of Potential Effects (APE) Map

Copy: Mike Luken (via email)

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

P.O. BOX 942896
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December 10, 2013

Reply To: FTA_2013_1112_001

Leslie Rogers
Regional Administrator
Federal Transit Administration
201 Mission Street, Suite 1650
San Francisco, CA 94105-1839

Re: Section 106 Consultation for the Area of Potential Effect for the Downtown/Riverfront Streetcar Project, West Sacramento and Sacramento, Sacramento County, CA

Dear Mr. Rogers:

Thank you for your letter of November 8, 2013 initiating consultation for the above referenced undertaking in order to comply with Section 106 of the National Historic Preservation Act of 1966 and its implementing regulation at 36 CFR Part 800. The Federal Transit Administration (FTA) is requesting that I concur with the preliminary determination of the Area of Potential Effect (APE) for the project.

As I presently understand it, the undertaking proposes to develop a new streetcar line and associated maintenance facility that would serve and connect West Sacramento with Downtown and Midtown Sacramento. As described in your letter, the proposed APE is generally confined to the public right-of-way where the alignment and facility sites are to be located. At station platforms, adjacent properties are included within the APE. The streetcar would travel eastward from the City of West Sacramento Civic Center just west of Merkley Avenue, curve south, and turn onto Tower Bridge Gateway to 3rd Street. A proposed extension that would permit revenue service south from Tower Bridge Gateway/3rd Street along Riverfront Drive in West Sacramento is also being considered, and this area is included in the APE. The streetcar alignment would cross the Sacramento River on Tower Bridge restoring the rail line that once operated on this historic structure.

In Sacramento, the streetcar alignment would cross I-5 on Capitol Mall before turning north on 3rd Street to H Street. The alignment would continue north of the Sacramento Valley Station historic depot along H Street before turning south using existing Sacramento Regional Transit District (RT) light rail transit (LRT) track and platforms on 7th/8th Streets toward K Street. Under consideration is moving the existing LRT operation from K Street to H Street between 7th/8th and 12th Streets, and replacing LRT service on the K Street Mall with streetcar service. The streetcar alignment would continue to use LRT track and stations along K Street before turning north on 12th Street and then east on J Street to 19th Street. The streetcar would have its eastern terminus at a station located on 19th Street near J Street, looping back to the K Street Mall via 19th, L and 12th Streets. The entire alignment and all station platforms would be located within the existing public street right of way.

The streetcar fleet would be stored and maintained at one or two proposed facility sites on Caltrans property under the US 50 viaduct. In Sacramento, the site is located under US 50 immediately west of 19th Street, and would be accessed using existing LRT track on the South Sacramento Corridor Line. A new short lead track would be constructed to enter the site. In

West Sacramento, the site is located under US 50 and would be accessed by the proposed extension along Riverfront Drive. I do not object to this APE.

However, I offer the following comments:

- Please define the vertical APE, including any areas of direct ground disturbance during project construction, areas for staging and temporary construction activities. Please define the maximum depth of the vertical APE for the project. This will better inform the research and identification strategy for archaeological resources, as well as maximize the efficiency of the identification efforts.
- The City of Sacramento is a Certified Local Government, providing a role for them in the Section 106 consultation process, per 36 CFR Part 800.2(c)(3). I recommend that you contact Roberta Deering, Preservation Director, at 916-808-8259 or rdeering@cityofsacramento.org, if you have not already done so.

Thank you for considering historic properties in your planning process, and I look forward to continuing consultation on this project with the FTA. If you have any questions, please contact Kathleen Forrest of my staff at (916) 445-7022 or e-mail at kathleen.forrest@parks.ca.gov.

Sincerely,



Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

Cc: Roberta Deering (via email)



U.S. Department
of Transportation
**Federal Transit
Administration**

REGION IX
Arizona, California,
Hawaii, Nevada, Guam
American Samoa,
Northern Mariana Islands

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Dr. Carol Roland-Nawi
California Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

RE: FTA_2013_1112_001; Continued Section 106
Consultation for the Downtown/Riverfront
Streetcar Project West Sacramento,
Yolo County, and Sacramento,
Sacramento County, California

Dear Ms. Roland-Nawi

The Federal Transit Administration (FTA) is continuing consultation for the above-referenced project to address your request regarding the vertical area of potential effect (APE) from your December 10, 2013 letter. FTA is also seeking concurrence on a modification to the APE by the inclusion of 8th Street between H Street and K Street in Sacramento; on the adequacy of the studies conducted pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations found under 36 Code of Federal Regulations (CFR) 800, as amended; concurrence with the determinations of National Register of Historic Places eligibility for five buildings within the APE (one eligible, four not eligible); and with a determination of no adverse effect finding to historic properties pursuant to 36 CFR 800.5(b).

Project Description

The Cities of West Sacramento and Sacramento, California, are proposing to implement streetcar service to connect the two cities and their shared riverfront along the Sacramento River. The Downtown/Riverfront Streetcar project (Project) is being sponsored by the Sacramento Area Council of Governments (SACOG), the cities of West Sacramento and Sacramento, the Yolo County Transportation District (YCTD), and the Sacramento Regional Transit District (RT). The Project will be funded by the FTA's Small Starts program, along with local match. The Project will connect the downtown of West Sacramento and Sacramento via the Tower Bridge across the Sacramento River. The Project area includes portions of Yolo and Sacramento Counties in the southern Sacramento Valley (Attachment 1, Figure 1), and is depicted in un-sectioned portions of the Sacramento West and Sacramento East 7.5' USGS topographic quadrangles (Attachment 1, Figure 2), Township 8-9 North, Range 4-5 E, Mount Diablo Meridian. The 3.3 mile streetcar alignment would extend from the West Sacramento Civic Center to the Midtown entertainment and retail district in Sacramento (Attachment 1, Figure 3). The alignment for the Project is primarily located along existing city streets. The one exception is a small section of 3rd street north of I Street to the Sacramento Intermodal Transportation Facility, which is the western terminus of H Street.

The Project includes the installation of track, station platforms, and the overhead contact system (OCS) poles. New track would be laid for the entire alignment within West Sacramento and across Tower Bridge. East of Tower Bridge, new track would be installed in the road bed on Capitol Mall to 3rd Street and north on 3rd Street to the Sacramento Intermodal Transportation Facility where it would connect with existing LRT tracks that run east onto H Street. Short sections of new track would also be necessary on 7th Street from just north of J Street to K Street, and on 12th Street between K and L streets. The full lengths of J, L, and 19th streets within the APE would require new track. Finally, new track would be placed on H Street between 8th and 12th streets to accommodate the relocation of LRT from K Street. The installation of track would require removal of the current top layers of road bed to a depth not exceeding 3 feet and likely less. Two options for maintenance and storage facilities (MSFs) are under consideration in Sacramento and in West Sacramento; both are proposed to be constructed beneath elevated portions of Business 80/Highway 50 interchange on land currently owned by the California Department of Transportation (Caltrans).

New station platforms would be concrete slabs designed with a berthing area 60 to 65 feet in length, and a boarding area 40 to 45 feet in length with a height of about 8 inches. These slabs would be constructed within the sidewalk and/or roadbed and would not require removal of any existing granite curbs or street trees. The installation of station elements that would require ground disturbance, such as structural supports and electrical conduit, would be designed to not exceed 3 feet in depth.

The traction power facilities (support poles, catenary poles, and substations) would be located within the public right-of-way. Substations would occupy approximately 375 square feet of space. Support and catenary poles of the OCS will be spaced along the streetcar alignment; existing utility and LRT poles, and suitable buildings (i.e., not historic properties) will be used whenever possible to attach wires. OCS poles must be positioned in the ground at a depth of 10 to 20 feet, depending on pole loading, pole size, and geotechnical conditions. The Project sponsors have identified methods to avoid significant subsurface cultural resources in sensitive areas during construction.

Area of Potential Effects

The APE is defined under 36 CFR 800.16(d) as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” Because the Project will be constructed entirely within public right-of-way, the direct APE is restricted to the public right-of-way along the project route where construction activities, such as the laying of track, establishment of station stops, and installation of OCS poles, have the potential to impact historic properties (Attachment 1, Figure 4a through 4f). This includes the outside edge of the street/sidewalk right-of-way where tracks will be laid, OCS poles will be installed, and station platforms will be built. The direct APE also includes the two power substations and MSFs. The proposed location of a maintenance station in Sacramento is a discontinuous element of the APE for the Project since it will be accessed through existing LRT track.

The indirect (architectural) APE was delineated to include the adjacent legal parcel or parcels where a new streetcar stop is proposed for a location on the edge of the street. Adjacent parcels were not included for those stops proposed for the street median. The indirect APE is designed to

take into account visual, audible, or atmospheric intrusions resulting from the platform locations, vibrations from construction activities, or change in access or use that might affect historic properties of the built environment.

Your letter of December 10, 2013 concurred with the indirect APE defined for the project, which also included the direct APE within the public right-of-way. However that map did not include a section of the streetcar alignment along 8th Street from about 150 feet south of H Street to K Street. Map 4 in Attachment 1 depicts the complete direct and indirect APE for this undertaking.

In response to your request of December 10, 2013 a vertical APE has been defined to address subsurface disturbances caused by Project construction. Installation of new track is expected to require excavation from 12 to 18 inches, with a maximum of 3 feet, into the existing street bed, while OCS poles will be secured to depths of 10 to 20 feet below the current ground surface. Construction of new station stops, including features such as canopy mounted on structural supports, supplemental lighting, and fare machines, will be designed to not exceed 3 feet in depth. Power substations would be placed on a concrete slab foundation that would be no more than 3 feet deep. New underground duct banks to house electrical cable at the power substations would be no more than 5 feet deep. The maintenance facility will also likely be constructed on a concrete slab foundation with ground disturbance limited to a depth of 3 feet. However this facility will require a service bay, which is a pit up to 8 feet deep, and the installation of OSC poles.

As a result, the vertical APE for most of the Project (new tracks; concrete slabs for new stations, power substations, and the maintenance facility) has a depth of 3 feet. Restricted locations will have a deeper vertical APE: 5 feet for concrete duct banks at the power stations; 8 feet for the service bay at the maintenance station; and up to 20 feet at OCS pole locations.

Identification of Historic Properties

Built environment and archaeological inventories were conducted, as documented by Attachments 2 and 3. Consultations with Native American tribes were conducted to identify potential traditional cultural properties; these efforts are detailed in Chapter 3 of Attachment 3 and FTA has been in direct coordination with tribes.

These inventories identified three resources within the APE that are historic properties listed on the NRHP. The historic properties include:

- The Tower Bridge,
- The Southern Pacific Depot, and
- The State Capitol Building and Grounds.

While the Tower Bridge links the cities of West Sacramento and Sacramento over the Sacramento River, the remaining two historic properties are located in downtown Sacramento (Attachment 1, Figure 5).

One resource that had previously been determined eligible for listing in the NRHP was identified:

- The Raised Streets/Hollow Sidewalks (RSHS) District (also referred to as P-34-2358 by the California Historical Resources Information System [CHRIS]).

The RSHS District covers a portion of Sacramento roughly bounded by Front Street on the west, 12th Street on the East, H Street to the north, and L Street to the south¹ (Attachment 1, Figure 6). It combines features recorded by Tremaine and Downey and, thus, contains 14 contributing elements, six of which are considered individually eligible for the NRHP. The 14 features and contributing elements to the RSHS District, and the depths at which they have been encountered in the APE are listed below:

- site P-34-2359 (3.0-10.0 feet);
- site P-34-2360 (5.0-8.5 feet);
- underground, or hollow, sidewalks² (8.0 feet)
- redwood plank crosswalks (8.0-9.2 feet);
- stacked streets dating from 1850 (from unimproved dirt roads, to brick rubble and cobbles, to cobblestones, to modern concrete and asphalt) (2.0-8.0 feet)
- street rail track dating from 1870 (2.0 feet);
- redwood conduit (3.0-5.0 feet);
- concrete duct banks (various);
- 1854 wood sewer box (8.0 feet);
- 1880 a brick sewer main (9.0-10.0 feet);
- raised street earthworks (depth not applicable);
- the 6th Street levee/first transcontinental railroad grade (1852-1868) (depth not applicable); and
- the landfill of historic Sutter Lake (depth not applicable).

The built environment study (JRP 2015) also identified one resource that appears eligible for the NRHP:

- Llewellyn Williams Mansion at 923 H Street, Sacramento

The Llewellyn Williams Mansion at 923 H Street in Sacramento is a three story structure built in the high-style Italianate design. Constructed in 1885, it is the work of master architects Seth Babson and James Seadler, both of whom left their marks on the cityscape of late 19th century Sacramento. The property appears to be historically significant under NRHP Criterion C as an important example of an Italianate Style residence and as the work of a master architects Babson and Seadler. In addition to meeting these criteria, the property retains sufficient integrity to convey its significance. The DPR 523 form for the Llewellyn Williams Mansion, found in Attachment 2, provides additional details about this resource.

¹ This boundary follows that proposed by Tremaine (2008a). Downey's (2010a, b) boundary was slightly smaller and included Front Street on the west, 11th Street on the East, I Street to the north, and L Street to the south.

² Hollow sidewalks are discussed in the Historic Architectural Survey Report (Bunse and Melvin 2014) for this Project.

Four additional buildings in the APE were evaluated for NRHP eligibility. The resources at **901 H Street, 1819 J Street, 1827/1831 J Street, and 1901 L Street** are all commercial buildings built between 1936 and 1967 in the Downtown and Midtown areas of Sacramento. These buildings have been evaluated under Criteria A, B and C and none of these buildings appear eligible for listing in the NRHP. DPR 523 forms for each of these resources are provided in Attachment 2.

Evaluation of Effects

Attachments 2 and 3 include detailed analyses of the potential effects of the Project on historic properties. It has been concluded that the significance of the Tower Bridge, Southern Pacific Depot, State Capitol Building and Grounds, and the Llewellyn Williams Mansion would not be altered or materially impaired as a result of the proposed project because the project would not diminish the physical characteristics of the properties that convey their historical significance and that justify their eligibility for listing in the NRHP. The proposed project would also avoid adverse effects to the RSHS District due to design. However, although the Project is being designed to avoid all historic and archaeological resources, the Project has the potential to result in residual impacts to NRHP-eligible historic properties and CRHR-eligible historical resources due to inadvertent discovery during construction. In order to avoid unanticipated adverse effects, a number of avoidance and minimization measures have been identified. These include:

- Additional preconstruction research to pinpoint known subsurface feature locations; possibly including pre-construction subsurface explorations.
- Preparation of an Archaeological Treatment Plan (ATP) to guide treatment of all cultural resources encountered during subsurface activities.
- Monitoring of construction by qualified archaeologists to ensure the ATP guidelines are followed.
- Involve Native American tribes identified as consulting parties in the Project as monitors during construction, when appropriate, to ensure their input.
- Stoppage of work when cultural resources or human remains are inadvertently discovered during construction and following the ATP guidelines.

These measures are fully described in Section 6 of Attachment 2, and in Section 4 of Attachment 3.

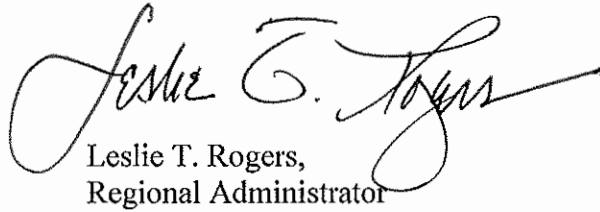
Request for Concurrence

In accordance with 36 CFR 800.4(a)(1), the FTA requests that SHPO concur with the following, as detailed above and in the attachments:

- The appropriateness of the modified APE that includes the direct APE on 8th Street in Sacramento from 150 feet south of H Street to K Street, and the vertical APE
- The adequacy of the historic property identification efforts pursuant to 36 CFR 800.4(b);
- The determination that the Llewellyn Williams Mansion is eligible for the NRHP
- The determinations that the buildings at 901 H Street, 1819 J Street, 1827/1831 J Street, and 1901 L Street are not eligible for the NRHP pursuant to 36 CFR 800.4(c)

FTA will seek concurrence on our determination of no adverse effect following review of the environmental document and consultation with the SHPO and appropriate Consulting Parties. If you need any additional information, please contact Lucinda Eagle at (415) 744-0140. Pursuant to 36 CFR 800.3(c)(4), if we have not heard from your office within 30 days, we will contact your office to address any comments you may have.

Sincerely,



Leslie T. Rogers,
Regional Administrator

cc: Roberta Deering, LEED AP, Preservation Director, City of Sacramento (via electronic mail)
David Tilley, Principal Planner, City of West Sacramento (via electronic mail)
Daniel Fonseca, Shingle Spring Rancheria (via electronic mail)
James Sarmento, Yocha Dehe Wintun Nation (via electronic mail)

Attachment 1 – Maps

Attachment 2 – Built Environment Resources Report (JRP 2015)

Attachment 3 – Archaeological Resources Assessment (URS 2015)

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

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May 1, 2015

Reply To: FTA_2013_1112_001

Leslie Rogers
Regional Administrator
Federal Transit Administration
201 Mission Street, Suite 1650
San Francisco, CA 94105-1839

Re: Section 106 Consultation for the Downtown/Riverfront Streetcar Project, West Sacramento and Sacramento, Sacramento County, CA

Dear Mr. Rogers:

Thank you for your letter of April 6, 2015, continuing consultation for the above-referenced undertaking in order to comply with Section 106 of the National Historic Preservation Act of 1966 and its implementing regulations at 36 CFR Part 800. Included with your letter were:

- Area of Potential Effect (APE) maps
- *Built Environment Resources Report, Downtown/Riverfront Streetcar Project (JRP 2015)*
- *Draft Technical Report, Archaeological Resources Assessment, The Downtown/Riverfront Streetcar Project (URS 2015)*

The undertaking proposes to develop a new 3.3 mile streetcar line and associated maintenance facility that would serve and connect West Sacramento with Sacramento, as shown in Attachment 1 of your letter. The streetcar alignment would extend from the West Sacramento Civic Center to Midtown Sacramento. The undertaking includes the installation of new track, station platforms, and the overhead contact system (OCS) poles. The Light Rail would also be relocated from K Street to H Street between 8th and 12th Streets. The entire alignment and all station platforms would be located within the existing public street right of way.

Two options for maintenance and storage facilities (MSFs) are under consideration in Sacramento and West Sacramento; both are proposed to be constructed beneath elevated portions of the Business 80/Highway 50 interchange. Support and catenary poles of the OCS will be spaced along the streetcar alignment; existing utility poles, Light Rail Transit (LRT) poles, and suitable buildings will be used whenever possible to attach wires.

FTA consulted previously regarding the APE for the undertaking, and I offered comments on the delineation of that APE in my letter of December 10, 2013. As previously described, the proposed APE is generally confined to the public right-of-way where the alignment and facility sites are to be located. At station platforms, adjacent

properties are included within the APE. In response to my comments, FTA has defined the vertical APE in the current consultation as 3 feet; isolated locations will extend to a depth of 20 feet. FTA has also modified the APE to include a section of the streetcar alignment along 8th Street from about 150 feet south of H Street to K Street. Construction staging and laydown areas were not identified.

The methodologies for the built environment and archaeological inventory and evaluation are fully explained in the reports noted above. Three built environment resources in the APE are listed on the National Register of Historic Places (NRHP), and one has been determined eligible for listing. The built environment identification efforts also one additional property that appears eligible for listing in the NRHP, the Llewellyn Williams Mansion at 923 H Street in Sacramento. Four additional buildings were evaluated for NRHP eligibility and recommended as not eligible.

The efforts to identify archaeological historic properties resulted in the identification of one archaeological district, P-34-2358/the Raised Streets Hollow Sidewalks (RSHS) District, previously determined eligible for listing in the NRHP under Criteria A, C, and D. The RSHS District consists of 14 contributing elements, 6 of which are considered individually eligible for listing in the NRHP. The individually eligible elements of the RSHS District include prehistoric and historic-era properties found eligible for the NRHP under Criterion D, and include: P-34-2359, a prehistoric pithouse with associated human burials and cremations; P-34-2360, a Gold-Rush Era trash deposit and camp site; and the Ethnographic and Early to Mid-Holocene components of CA-SAC-38 (Sa'cum village). Additionally, the China Slough/Sutter Lake historic landfill was found eligible for the NRHP under Criteria A and C, and the "raised street works," was found eligible for the NRHP under Criterion A.

Following review of the documentation provided, I offer the following comments regarding the proposed APE and historic property identification efforts:

APE

- In my response letter dated December 10, 2013, I requested that the FTA define the vertical APE and the maximum depth of the APE, identify any areas of direct ground disturbance during project construction, and identify areas for staging and temporary construction activities.
- In your April 6, 2015, letter the FTA expanded the proposed APE to include 8th Street in Sacramento from 150 feet south of H Street to K Street and further defined the maximum depth of the vertical APE as it relates to specific construction components. However, the FTA has yet to identify specific locations of direct ground disturbances associated with construction features (e.g. specific proposed locations of OEC poles, power substations and related underground duct banks, station canopy foundations, and the maintenance station service bay). The FTA has indicated that specific direct ground disturbances will be identified in a final design phase of the project. I do not object to this approach, however, until the specifics of the vertical APE are further defined, I will not be in a position to either agree or object with the proposed APE.

- The technical documents provided with your submission do not indicate that consideration has been given for the relocation of existing utilities in defining the APE for direct effects. I recommend that the FTA consider utility relocations when continuing to define the direct effects APE.
- The FTA has yet to identify areas for staging and temporary construction activities in the proposed APE. Please identify areas for staging and temporary construction activities and include those areas within your efforts to identify historic properties.
- I do not object to the inclusion of 8th Street in Sacramento from 150 feet south of H Street to K Street within the APE.

Historic Properties Identification

- The historic properties identification efforts have not investigated the potential for historic-era archaeological properties to exist within the proposed maintenance facilities. Adequate identification efforts should incorporate archival research to identify previous land use and ownership, and discuss the potential for intact cultural deposits in these portions of the APE.
- Pursuant to 36 CFR 800.3(e) and (f), the FTA is responsible for carrying out consultation with Indian tribes, the public, and other interested parties. A federal agency cannot delegate its government-to-government consultation with Indian tribes to applicants or other non-federal entities, including state and local governments, without prior consent from the tribes. It is important to remember that Indian tribes are under no obligation to consult directly with an applicant. Absent a formal agreement or approved protocol previously negotiated between the federal agency and the Indian tribe, an agency must initiate and conduct the consultation process with the Indian tribe.
- When conducting Native American consultation for this undertaking, I recommend that the FTA invite participation from all Native American individuals and organizations who may have knowledge of cultural resources in the project area, including representatives from the Lone Band of Miwok Indians and the Wilton Rancheria Indian Tribe, in addition to those identified in the NAHC letter dated November 18, 2013.

In addition to my comments regarding the appropriateness of the APE and the adequacy of the historic property identification efforts, I submit for your consideration the following comments regarding the Draft Archaeological Resources Assessment:

- When defining the proposed Environmentally Sensitive Areas (ESAs) for P-34-2359 and the ethnographic and Early – Mid Holocene components of CA-SAC-38, I recommend that the FTA consider the potential for Native American human remains and grave goods to be encountered in disturbed contexts outside the recorded boundaries of the intact cultural deposits (e.g., utility trenches previously backfilled with native soils may harbor Native American human remains and grave goods removed from their original contexts).
- If the FTA is anticipating that the undertaking will have no adverse effects to historic properties, the preparation of an Unanticipated Discovery Plan may be more appropriate than preparing an Archaeological Treatment Plan. I

recommend that an Unanticipated Discovery Plan for historic properties be prepared in consultation with my office, and other interested parties, including the City of Sacramento, the City of West Sacramento, and interested Native American individuals and organizations. I advise the FTA to consider including provisions for the discovery and appropriate treatment of Native American human remains and grave goods in the Unanticipated Discovery Plan. Furthermore, I recommend that the consultation in developing the Unanticipated Discovery Plan identify how to comply with the applicable state laws regarding the identification, treatment, and disposition of human remains and grave goods which may be unintentionally discovered as a result of the undertaking.

- To better inform our future consultation regarding the assessment of potential adverse effects, it would be helpful for the FTA to describe and illustrate specific locations for the various areas of direct ground disturbances and their spatial relationship to the ESAs.
- Finally, the supporting documents attached to the Draft Archaeological Resources Assessment include partial copies of archaeological site records for P-34-2359 and P-34-2360, and no site records were provided for CA-SAC-38. In the course of our continued consultation, please provide complete archaeological site records for all properties discussed.

Based on the comments above, I cannot concur with the adequacy of FTA's historic property identification efforts, or finding of no adverse effect at this time. I am happy to discuss the comments above with you, should you have any questions or require further information.

Thank you for considering historic properties in your planning process, and I look forward to continuing consultation on this project. If you have any questions, please contact Patrick Riordan of my staff at (916) 445-7017 or email at patrick.riordan@parks.ca.gov, or Kathleen Forrest of my staff at (916) 445-7022 or e-mail at kathleen.forrest@parks.ca.gov.

Sincerely,



Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

Cc: Roberta Deering (via email)



U.S. Department
of Transportation
**Federal Transit
Administration**

REGION IX
Arizona, California,
Hawaii, Nevada, Guam
American Samoa,
Northern Mariana Islands

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415-744-3133
415-744-2726 (fax)

Dr. Carol Roland-Nawi
California Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

MAY 11 2015

Re: FTA_2013_1112_001; Continued Section 106
Consultation for the Downtown/Riverfront
Streetcar Project

Dear Ms. Roland-Nawi:

The Federal Transit Administration (FTA) is responding to the California Office of Historic Preservation's letter, dated May 1, 2015, which provided comments on the Area of Potential Effect (APE), historic property identification efforts, and draft Archaeological Resources Assessment report for the proposed Downtown/Riverfront Streetcar Project (Project) in West Sacramento, Yolo County, and Sacramento, Sacramento County, California.

In our April 6, 2015 letter, FTA provided clarification on the vertical APE and sought concurrence on a modification to the direct APE by the inclusion of 8th Street between 150 feet south of H Street and K Street in Sacramento; on the adequacy of the studies conducted pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations; and concurrence with the determinations of National Register of Historic Places (NHRP) eligibility for five properties within the APE (one eligible, four not eligible). FTA appreciates your concurrence with expansion of the APE by 150 feet to the south to K Street.

The following supplemental information is being provided in response to comments raised by your May 1, 2015 letter. Note that an Environmental Assessment (EA) is being prepared pursuant to the National Environmental Policy Act (NEPA) for this project and that revisions contained herein, will be incorporated into the EA as appropriate.

Area of Potential Effects

Your letter states that FTA has "yet to identify specific locations of direct ground disturbances associated with the construction features (e.g., specific proposed locations of OEC poles, power substations and related underground duct banks, station canopy foundations, and the maintenance station service bay)." The APE has not been revised, but additional detail is provided in the Attachment 1 figure to help address your comments. The additional details include:

- Identification of the proposed power substation sites within the APE, both are in West Sacramento;
- Proposed station platform locations and associated features;

- Further definition of Maintenance and Storage Facility (MSF) footprints within the APE; and
- Identification of the vertical depth of the APE for new track, MSF, and station platforms.

The Project will limit construction staging and laydown areas to existing street rights-of-way and the proposed MSF sites within the APE. The MSF sites will be the primary location for construction laydown activities. Please see Attachment 1 concerning the vertical depth of new track work, the MSF sites, and station platforms, which includes the corresponding depths for construction.

The overhead catenary system (OCS) will be designed during the final design phase of the Project and specific pole locations have not yet been determined, as noted during our September 24, 2014 meeting with your office, FTA, the Sacramento Council of Governments (SACOG), and the City of Sacramento. The maximum span between OCS poles is typically 120 feet. Existing utility and light rail transit (LRT) poles, and suitable buildings (i.e., not historic properties) will be used whenever possible to attach wires. During final design, detailed research and testing will be utilized to avoid historic features, with particular attention to determining the location of underground hollow sidewalks in areas where previous investigations have not been conclusive. These methods could include obtaining permission to enter adjacent buildings, where access to below-ground is possible for remote sensing equipment, test drilling, and/or ground penetrating radar. Avoidance options include modifying proposed OCS pole locations, modifying track and system elements that are causing a conflict, modifying the foundation type, using a building attachment, or attaching span or pull-off wires to a backbone wire between two other poles or structures.

FTA, in coordination with SACOG, has evaluated the portion of the Project alignment within the Raised Streets Hollow Sidewalks District. As shown in Attachment 1, the APE denotes where existing LRT facilities will be utilized and that deep excavations associated with OCS poles will not occur within the Raised Streets Hollow Sidewalk District. In addition, Attachments 2, 3, 4a illustrate the proximity of known historic properties to the APE. Attachment 4b also provides an overview, based on specific segments of the Project as illustrated in Attachment 4a, where new construction could encounter contributing elements of the Raised Streets Hollow Sidewalk District.

Similarly, the relocation of existing utilities will be coordinated with utility companies and, thus, specific locations would be speculative at this time. Any utility relocation would occur within existing street rights-of-way and, based on prior LRT construction, would not exceed a depth of 8 feet. The final design of the project is intended to avoid historic properties using methods discussed above. Minimization measures have been included and it is assumed that coordination with your office will continue during the final design phase.

Historic Properties Identification

In response to your comments regarding further historic property identification efforts, additional archival research is currently underway to identify previous land use and ownership in the areas

of the MSF sites. The *Archaeological Resource Assessment* report will be updated to include the results of this archival research and to address the potential for intact cultural deposits in those portions of the APE. The revised *Archaeological Resource Assessment* report will be forwarded to your office and the appropriate Consulting Parties upon completion.

FTA is in consultation with Native American tribes, including the Yocha Dehe Wintun Nation and the Shingle Springs Band of Miwok Indians, both of whom are copied on this letter. FTA will provide copies of the EA and cultural resource reports to the appropriate Native American tribes, including the Wilton Rancheria Tribe, when the EA is made available for public and agency comment.

Draft Archaeological Resources Assessment

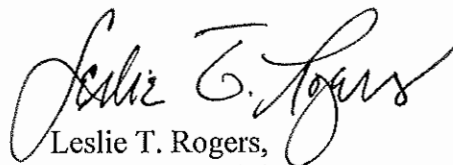
Your letter recommends that FTA “consider the potential for Native American human remains and grave goods to be encountered in disturbed contexts outside the recorded boundaries of the intact cultural deposits (e.g., utility trenches previously backfilled with native soils may harbor Native American human remains and grave goods removed from their original contexts).” The letter further recommends the preparation of an Unanticipated Discovery Plan rather than the Archaeological Treatment Plan currently proposed. The *Archaeological Resource Assessment* report will be updated in response to these recommendations and will address the potential for human remains and associated grave goods to be encountered in disturbed contexts and will include a revised minimization measure that requires the preparation of an Unanticipated Discovery Plan.

Your letter requests that FTA “describe and illustrate specific locations for the various areas of direct ground disturbances and their spatial relationship” to the Environmentally Sensitive Areas (ESAs). You have also requested additional site records for previously recorded sites. The revised *Archaeological Resource Assessment* report will address spatial relationships and will include Attachments 1-4, as well as relevant discussions related to the proximity of project activities to known resources. The revised *Archaeological Resource Assessment* report, with complete site records appended, will be forwarded to your office and the appropriate Consulting Parties upon completion.

Request for Continued Consultation

FTA requests concurrence on the APE in light of the additional information provided and the potential NHRP eligibility of the properties previously provided in our April 6, 2015 letter. FTA would also like to request a meeting to discuss this Project further. If you need any additional information, please contact Lucinda Eagle of this office at (415) 744-0140.

Sincerely,


Leslie T. Rogers,
Regional Administrator

cc: Roberta Deering, LEED AP, Preservation Director, City of Sacramento (via electronic mail)
David Tilley, Principal Planner, City of West Sacramento (via electronic mail)
Daniel Fonseca, Shingle Spring Rancheria (via electronic mail)
James Sarmento, Yocha Dehe Wintun Nation (via electronic mail)

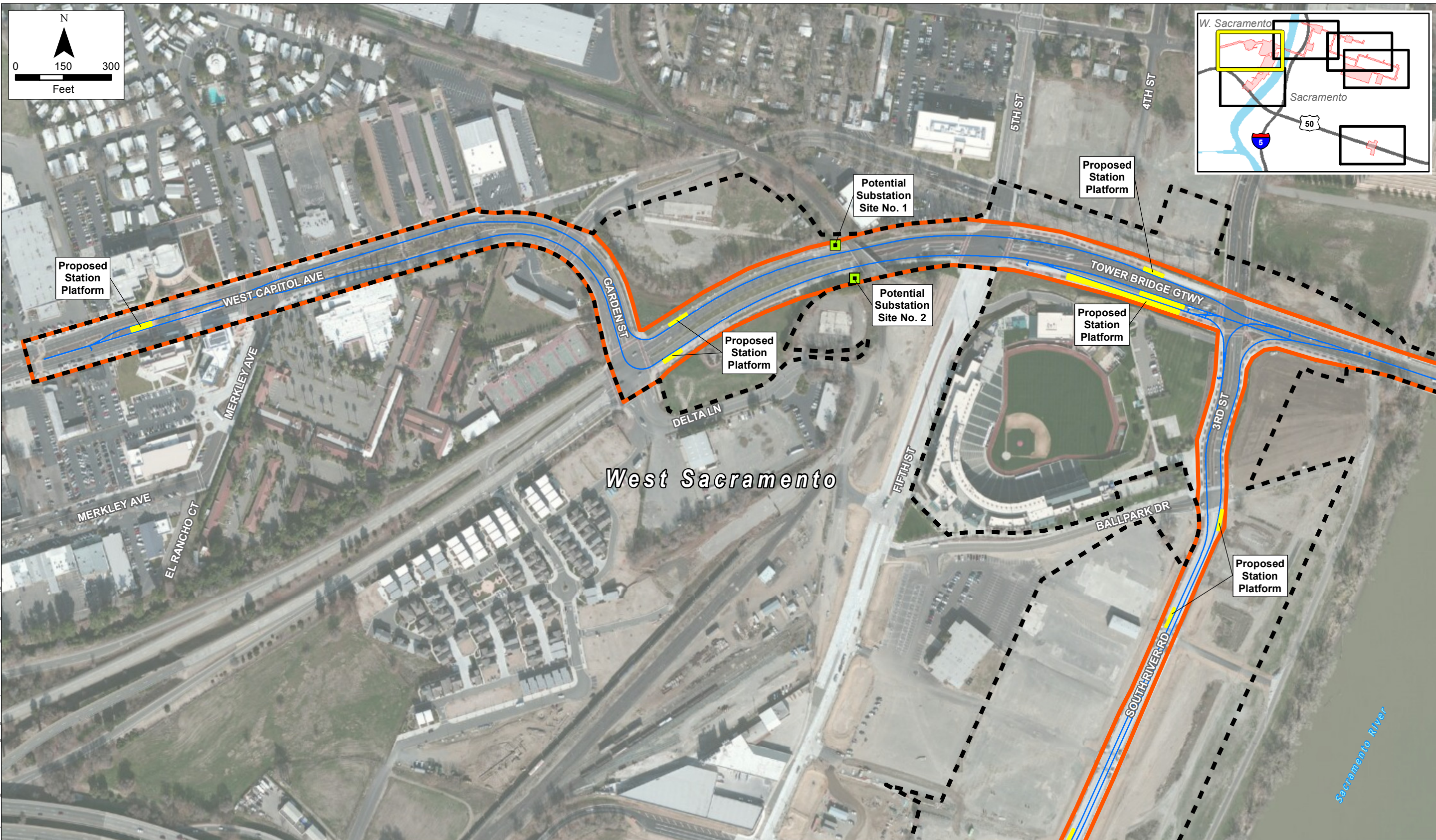
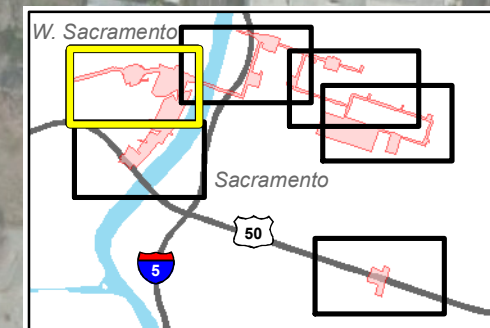
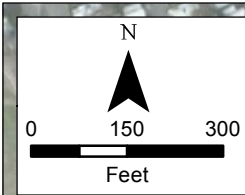
Attachment 1: Aerial imagery depicting the revised APE

Attachment 2: Map depicting the location of historic properties in proximity to the APE

Attachment 3: Map depicting the location of hollow sidewalks in proximity to the APE

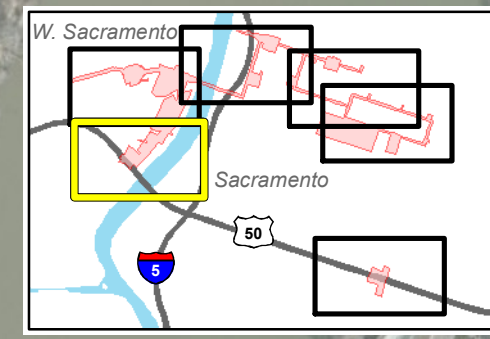
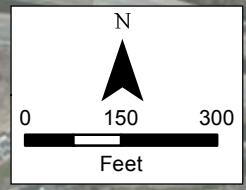
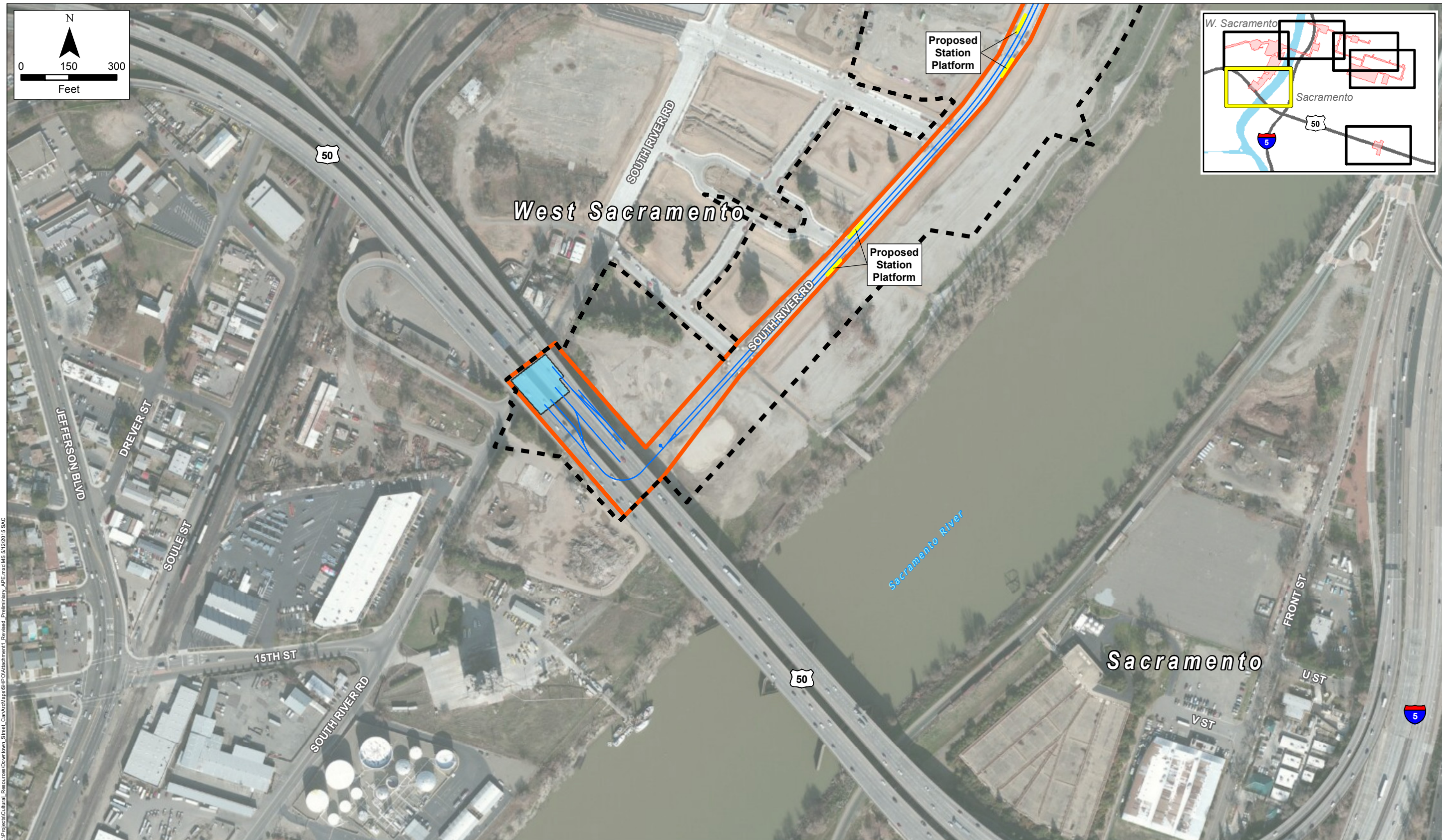
Attachment 4a: Map depicting Raised Streets Hollow Sidewalk (RSHS) District Contributing Elements

Attachment 4b: Table summary of construction segments with associated RSHS District Elements



- Potential Substation Site (construction depth of 5 feet)
- Existing Track
- Archaeological Area of Potential Effects (APE)
- Indirect Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Proposed Station Platform (construction depth of 3 feet)
- Proposed Track (construction depth of 3 feet)
- Existing Rail Stop

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- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Indirect Area of Potential Effects (APE)
- Proposed Station Platform (construction depth of 3 feet)
- Existing Rail Stop
- Existing Track
- Proposed Track (construction depth of 3 feet)

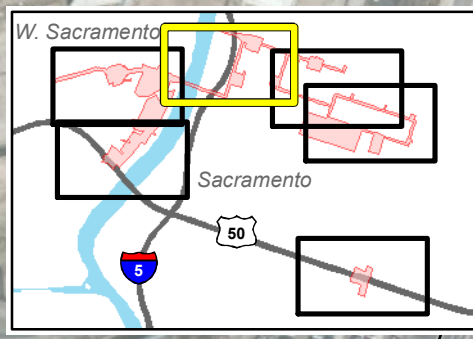
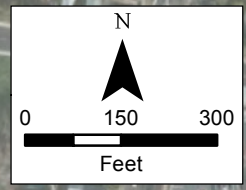
Revised Preliminary APE

May 2015
17327116

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento

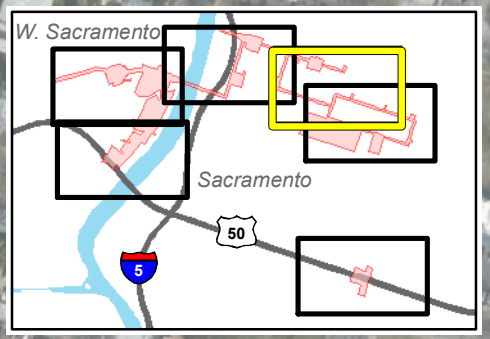
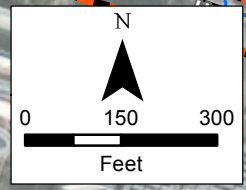


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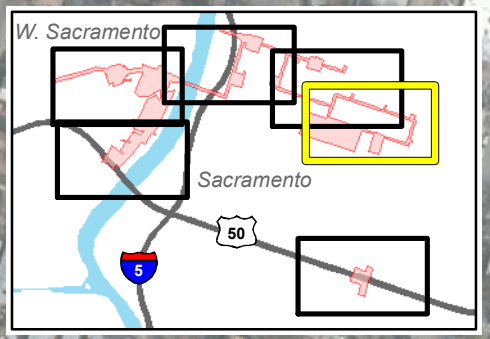
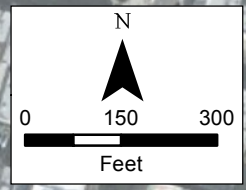
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- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Station Platform (construction depth of 3 feet)
- Existing Track
- Indirect Area of Potential Effects (APE)
- Existing Rail Stop
- Proposed Track (construction depth of 3 feet)

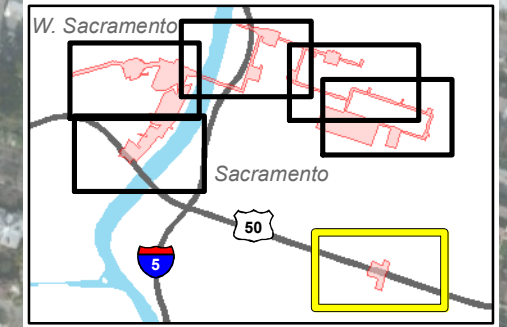
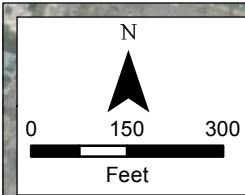


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- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Proposed Station Platform (construction depth of 3 feet)
- Existing Track
- Indirect Area of Potential Effects (APE)
- Existing Rail Stop
- Proposed Track (construction depth of 3 feet)



- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Existing Track
- Indirect Area of Potential Effects (APE)
- Proposed Station Platform (construction depth of 3 feet)
- Proposed Track (construction depth of 3 feet)
- Existing Rail Stop



- Potential Substation Site (construction depth of 5 feet)
- Archaeological Area of Potential Effects (APE)
- Proposed Maintenance Area (construction depth of 3 to 8 feet)
- Proposed Station Platform (construction depth of 3 feet)
- Existing Track
- Indirect Area of Potential Effects (APE)
- Existing Rail Stop
- Proposed Track (construction depth of 3 feet)

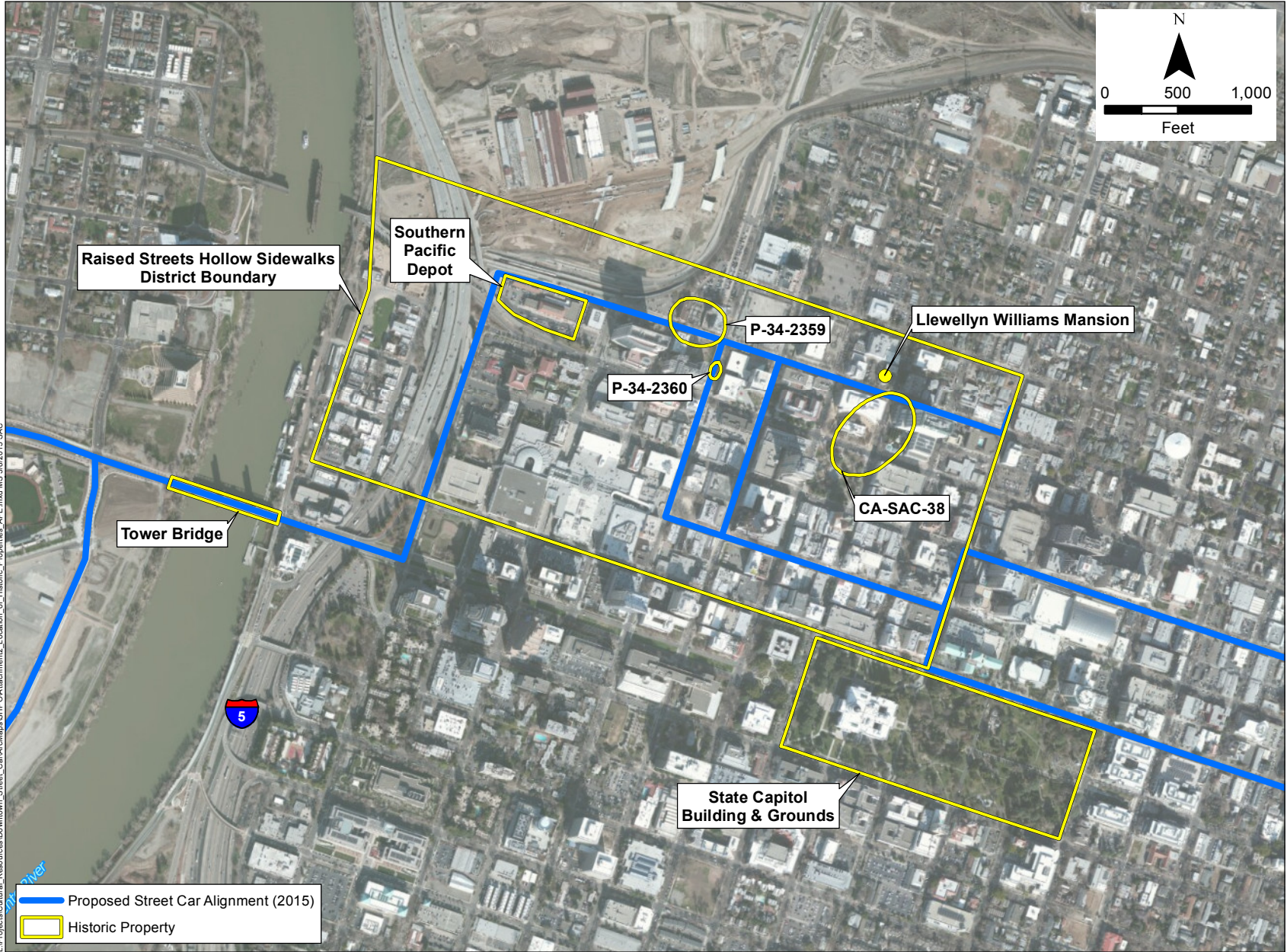
Revised Preliminary APE

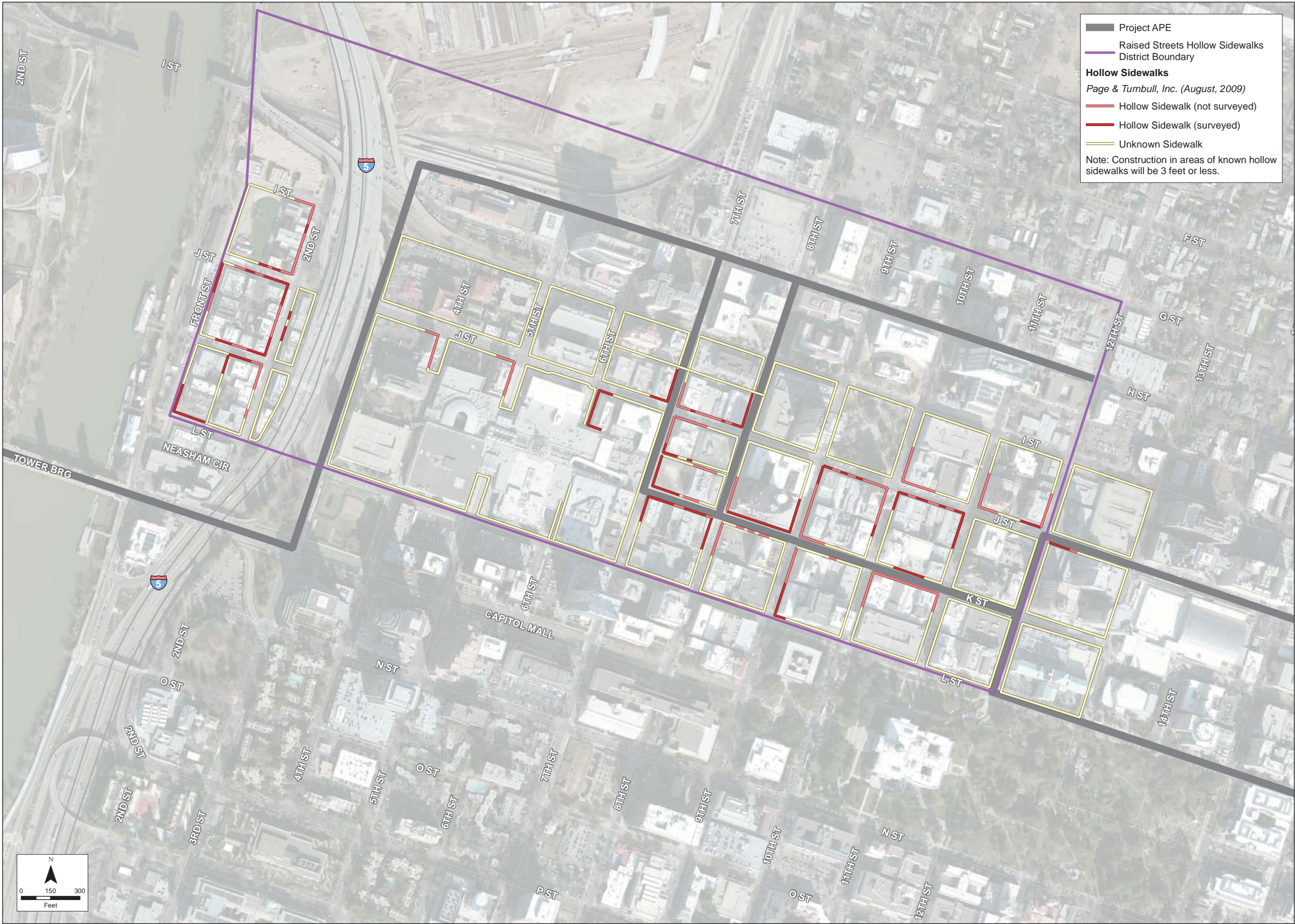
May 2015
17327116

Downtown/Riverfront Streetcar Project
Sacramento & West Sacramento



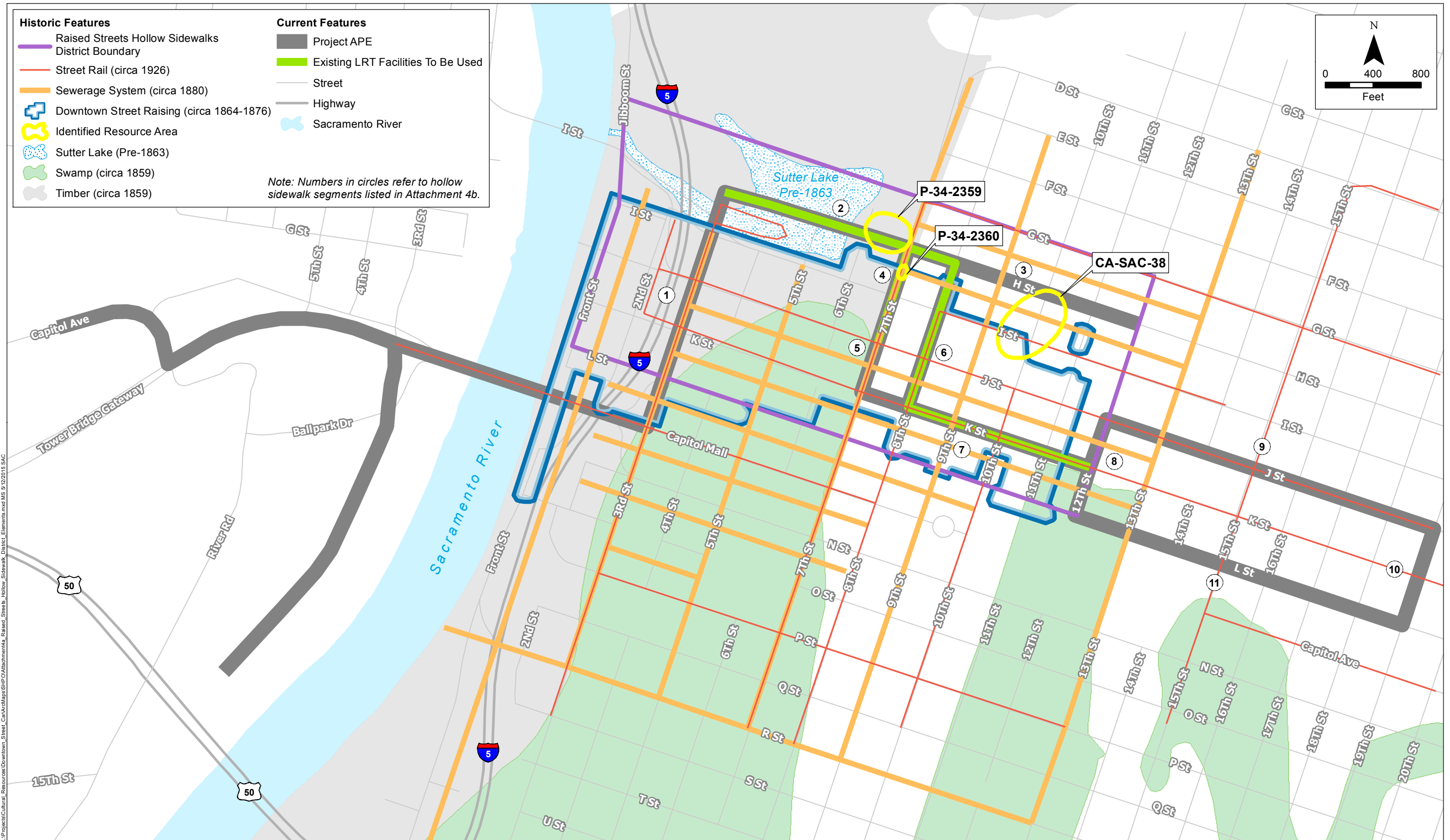
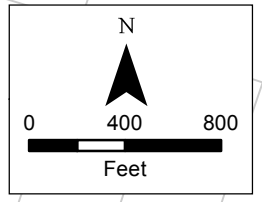
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Historic Features	Current Features
Raised Streets Hollow Sidewalks	Project APE
District Boundary	Existing LRT Facilities To Be Used
Street Rail (circa 1926)	Street
Sewerage System (circa 1880)	Highway
Downtown Street Raising (circa 1864-1876)	Sacramento River
Identified Resource Area	
Sutter Lake (Pre-1863)	
Swamp (circa 1859)	
Timber (circa 1859)	

Note: Numbers in circles refer to hollow sidewalk segments listed in Attachment 4b.



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Attachment 4b
Construction Segments with Associated RSHS District Elements

Street Segment	Track	Possible Buried Resources
1. 3rd Street – L Street to north of Southern Pacific Depot	new	None likely due to extensive redevelopment, including I-5, Downtown Plaza, new onramp to northbound I-5, recent Sacramento Intermodal Transportation Facility improvements. However, possible buried resources include hollow sidewalks; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
2. H Street – Southern Pacific Depot to 8th Street	LR	One prehistoric site; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box.
3. H Street – 8 th Street to 12 th Street	new	One prehistoric site; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box.
4. 7th Street – H Street to J Street	LR	One prehistoric site; hollow sidewalks; one historic-era Gold Rush site; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.
5. 7th Street –J Street to K Street	new	None likely due to construction of Downtown Plaza and previous LR installation. However, possible buried resources include hollow sidewalks; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
6. 8th Street – H Street to K Street	LR	Hollow sidewalks; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
7. K Street – 7th street to 12th street	LR	Hollow sidewalks; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
8. 12 street – J Street to L Street	new	Hollow sidewalks; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.
9. J Street – 12th Street to 19th Street	new	Hollow sidewalks; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main; street rail track.
10. 19th Street – J Street to L Street	new	Redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.
11. L Street – 12th Street to 19th Street	new	Hollow sidewalks; redwood crosswalks; cobbled roads; redwood conduit; concrete duct bank; wood sewer box; street rail track; brick sewer main.

RESOLUTION NO. 18-07-_____

Adopted by the Board of Directors of the Sacramento Regional Transit District on this date:

July 23, 2018

ADOPTING A MITIGATED NEGATIVE DECLARATION FOR THE DOWNTOWN RIVERFRONT STREETCAR PROJECT

WHEREAS, an Initial Study/Environmental Assessment was prepared by the Sacramento Area Council of Governments (“SACOG”) to ascertain whether the Downtown Riverfront Street Project (Project) would have a significant effect on the environment and to identify any project changes and/or mitigation measures to avoid or reduce any such impacts to a less than significant level; and

WHEREAS, SacRT, acting as a Responsible Agency in accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15381, possesses discretionary authority to approve its portion of the aforesaid Project and may thereby use the aforesaid Initial Study/Environmental Assessment to make its own environmental findings for those portions of the Project over which it has discretionary authority; and

WHEREAS, the Initial Study/Environmental Assessment identified less than significant impacts with mitigation on air quality, biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, noise and vibration, and transportation and traffic; and

WHEREAS, comments were requested on the Initial Study/Environmental Assessment from Responsible Agencies, Trustee Agencies, and other federal, state and local agencies in compliance with CEQA Guidelines; and

WHEREAS, the Initial Study/Environmental Assessment, a Notice of Intent to Adopt a Mitigated Negative Declaration, and a Mitigated Negative Declaration were provided to the public, transportation planning agencies, other Responsible Agencies, Trustee Agencies, federal agencies, and the County Clerk in compliance with CEQA Guidelines; and

WHEREAS, the Notice of Intent to Adopt a Mitigated Negative Declaration and the Mitigated Negative Declaration were sent to designated parties, published in local newspapers, and sent to owners and occupants of properties contiguous to the project; and

WHEREAS, the Initial Study/Environmental Assessment, Notice of Intent to Adopt a Mitigated Negative Declaration, and a Mitigated Negative Declaration were forwarded to the Office of Planning and Research pursuant to CEQA Guidelines, and

WHEREAS, the County Clerk posted the proposed Mitigated Negative Declaration for at least 20 days; and

WHEREAS, the proposed Mitigated Negative Declaration was submitted to the State Clearinghouse pursuant to CEQA Guidelines; and

BE IT HEREBY RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO REGIONAL TRANSIT DISTRICT AS FOLLOWS:

THAT, this Board does hereby adopt the following findings, which this Board finds are supported by substantial evidence in light of the whole record:

- A. THAT, an Initial Study/Environmental Assessment has been prepared pursuant to CEQA;**
- B. THAT, the Initial Study/Environmental Assessment identified less than significant impacts with mitigation on the environment from the proposed modifications to the Project;**
- C. THAT, the Initial Study/Environmental Assessment identified mitigation measures that would avoid or mitigate the effects to a point where no significant impacts would occur;**
- D. THAT, the Initial Study/Mitigated Negative Declaration incorporates mitigation measures into the Project that would avoid or mitigate the effects to a point where no significant impacts would occur;**
- E. THAT, the Board certifies the Initial Study/Mitigated Negative Declaration has been completed and circulated in compliance with CEQA and is consistent with state and SacRT guidelines implementing CEQA;**
- F. THAT, the Board has before it all of the necessary environmental information required by CEQA to properly analyze and evaluate any and all of the potential environmental effects of the proposed modifications to the Project;**
- G. THAT, the Board has reviewed and considered the Initial Study/Environmental Assessment and Mitigated Negative Declaration and related Mitigation Monitoring and Reporting Program, which reflects the Board's independent judgment;**
- H. THAT, the Board finds that there is no substantial evidence in the record that the Project, as mitigated, will have a significant effect on the environment. Mitigation measures have been incorporated into the Project to reduce impacts to a less than significant level; and**
- I. THAT, based on the evidence presented and the records and files herein, the Board determines that the proposed modifications to the Project will not have a significant effect on the environment if the mitigation measures listed and identified in the Mitigated Negative Declaration are implemented.**

RESOLVED FURTHER THAT, the Board approves and adopts a Mitigated Negative Declaration for the Downtown Riverfront Street Project, set out as Exhibit A and incorporated herein by this reference; and

RESOLVED FURTHER THAT, the Board directs staff to file a Notice of Determination within five working days of this approval; and

RESOLVED FURTHER THAT, the Board designates the Vice President, Engineering and Facilities, or his/her designee, located at 1400 29th Street, Sacramento, CA, 95816, as the custodian of the records in this matter.

PATRICK KENNEDY, Chair

A T T E S T:

HENRY LI, Secretary

By: _____
Cindy Brooks, Assistant Secretary

Exhibit A
PROPOSED MITIGATED NEGATIVE
DECLARATION
Pursuant to: Division 13, Public
Resources Code

The Federal Transit Administration (FTA) and the Sacramento Area Council of Governments (SACOG) have prepared a joint Environmental Assessment (EA)/Initial Study (IS) to address the environmental effects of the proposed Downtown/Riverfront Streetcar Project (Project) in compliance with the National Environmental Policy Act (NEPA) of 1969, and the California Environmental Quality Act (CEQA) of 1970. FTA is serving as the lead agency for NEPA, and SACOG is the lead agency for CEQA. Other public agencies that have discretionary approval over the Project—and are, therefore, responsible agencies under CEQA—are the cities of West Sacramento and Sacramento, Sacramento Regional Transit District (RT), Yolo County Transportation District (YCTD), and the California Department of Transportation (Caltrans).

PROJECT DESCRIPTION

SACOG, the City of Sacramento, the City of West Sacramento, YCTD, and RT, have undertaken advanced planning, environmental, and engineering activities for the reintroduction of the streetcar to connect the cities of West Sacramento and Sacramento and their shared riverfront. It is anticipated that the development plans and growth projections for West Sacramento's redevelopment areas and Downtown Sacramento will generate greater travel demand for local mobility and roadway capacity than is currently available. The purpose of the Project is to improve transit service and local circulation by connecting West Sacramento and Downtown Sacramento with an alternative (non-auto) mode, and supporting existing and future development in the City of West Sacramento and Downtown Sacramento.

The 3.3-mile streetcar alignment would extend from the West Sacramento Civic Center to the Midtown entertainment and retail district in Sacramento. Mixed-use neighborhoods in the Washington Neighborhood and the Railyards Specific Plan area have been planned around a future high-quality transit system intended to serve these new and emerging employment and residential districts. Several key destinations in these neighborhoods would be connected by the Project, including: Raley Field; Old Sacramento; the Sacramento Valley Station in the Railyards Specific Plan area; Downtown Plaza Mall; the historic Memorial Auditorium; the Sacramento Community Center Theater; the California State Capitol building; the Sacramento Entertainment and Sports Center (ESC); and the Sacramento Convention Center. The alignment also includes service to the Bridge District in West Sacramento along Riverfront Street and the relocation of existing

light rail service from K Street to H Street between 7th and 12th streets in Downtown Sacramento, both to be constructed in later phases of the project.

The alignment for the proposed streetcar is primarily along existing city streets. New track would be laid for the entire alignment within West Sacramento and across Tower Bridge. East of Tower Bridge, new track would be installed in the road bed on Capitol Mall to 3rd Street and north on 3rd Street to the Sacramento Intermodal Transportation Facility where it would connect with existing LRT tracks that run east onto H Street. Short sections of new track would also be necessary on 7th Street from just north of J Street to K Street, and on 12th Street between K and L streets. The full lengths of J, L, and 19th streets would require new track. New track would also be placed on H Street between 8th and 12th streets to accommodate the relocation of LRT from K Street.

The proposed project includes the installation of 12 westbound and 13 eastbound stations. New station platforms would be concrete slabs constructed within the sidewalk and/or roadbed and would not require removal of any existing granite curbs or street trees. Station elements may include such amenities as a canopy mounted on structural supports, supplemental lighting, fare machines, schedule and patron information rack, bench, lean rail, trash receptacle, sign with stop name, and an ADA pedestrian warning strip running the length of the boarding area.

The traction power facilities (support poles, catenary poles, and substations) would also be located within the public right-of-way. Substations would convert electrical current to the proper voltage for streetcars and be approximately 375 square feet in size. Support and catenary poles of the Overhead Contact System (OCS) will be spaced along the streetcar alignment and will be similar to the system that is currently in place today for the light rail system in Downtown Sacramento. The maximum span between OCS poles is typically 120 feet; existing utility and LRT poles, and suitable buildings (i.e., not historic properties) will be used whenever possible to attach wires.

There are two potential sites considered for a maintenance and storage facility (MSF), one in Sacramento and the other in West Sacramento. The MSF will accommodate daily and routine vehicle inspections, interior/exterior cleaning of the streetcars, preventive (scheduled) maintenance, unscheduled maintenance, and component change-out. The potential MSF in Sacramento would be constructed beneath the Business 80/50 elevated freeway viaduct in the area bounded by X Street, W Street, 19th Street, and RT's South Line LRT tracks, on land currently owned by Caltrans and leased to the City of Sacramento for parking. The potential MSF in West Sacramento would be constructed beneath the Business 80/50 freeway (Pioneer Bridge) near South River Road and Mill Street/Riverfront Street in Caltrans right-of-way.

DETERMINATION

SACOG has prepared an Initial Study (IS) for this Project as the Lead Agency; and pending public review, SacRT expects to determine from the IS that the Project would not have a significant effect on the environment for the following reasons:

- **The Project would result in no effects on agriculture and forest resources, mineral resources, population and housing, seismicity, risk of wildland fire, or generate the need for new public services.**
- **Compliance with existing plans, regulations and required permits would ensure that the Project would have less-than-significant impacts on aesthetics, air quality, geology and soils, greenhouse gas emissions, hydrology and water quality, land use and planning, recreation, and utilities and service systems.**
- **Although the Project could result in significant impacts to biological resources, cultural resources, hazards and hazardous materials, noise and vibration, and transportation, these impacts would be reduced to less-than-significant levels with the incorporation of the following avoidance, minimization, and mitigation measures:**

Mitigation Measure Bio-1: Nesting Birds

To avoid direct impacts to nesting birds during construction, including raptors such as Swainson's hawk and migratory birds, the following impact avoidance and minimization measures shall be implemented.

Conduct site preparation, such as vegetation removal, and initiate construction, during the non- nesting season (generally September 1 through February 15). If work is initiated during the nesting season (generally February 15 through August 31), then a qualified biologist shall conduct a pre-construction survey within 2 weeks prior to construction to determine if active nests occur in the project area or could be affected in the vicinity. If at any time during construction there is a delay of activities of at least 2 weeks during nesting season, then surveys shall be conducted again. The surveys must cover the construction area footprint, and out a distance of at least 250 feet for passerines and 500 feet for raptors. Surveys for Swainson's hawk shall follow the methods described in the Swainson's hawk Technical Advisory Committee Guidelines. If no active nests are identified, then no impacts would be expected, and no further measures are required.

If active bird nests are identified, one or more of the following additional measures are required:

- **Construction in the vicinity of the nest must be delayed until a qualified biologist has determined that the nest is no longer active, or has been abandoned, or young have fledged.**
- **If construction cannot be delayed, then a qualified biologist with stop**

work authority shall establish a non-disturbance buffer with either modified or no ground-disturbing work, and monitor the nest site to determine if nesting behavior is being disrupted. CDFW and USFWS shall be consulted to reach concurrence on the suitability of the non-disturbance buffer, considering line of site, distance, species, and type of activities proposed near the nest. If nesting behavior is disrupted, then work activities shall be redirected to other areas and/or modified in such a way that no further disruption is observed. Monitoring, if needed, shall occur at least twice per week during construction until the nest is no longer active.

Mitigation Measure Bio-2: Bird Nests on Structures

Swallow nests and nests of other species, such as martins, that could be affected by construction shall be removed prior to new ground disturbance during the non-nesting season. Swallows are persistent, and continued monitoring and maintenance is required to ensure that nests that are initiated are removed. Nest removal is commonly accomplished mechanically with a jet of high pressure water, such as with a fire hose. As the birds attempt to build new nests, they shall be removed as needed, typically weekly or even daily, before they are completed. Alternatively, exclusion devices could be installed on structures to prevent new nests from being established during construction. Pre-emptive nest removal, prevention of new nesting, and ongoing monitoring and maintenance during nesting season, would avoid disruption of active nests on structures during construction.

Mitigation Measure BIO-3: Roosting Bats

The most suitable habitat for pallid bat in the study area is around and inside man-made structures. Preconstruction bat surveys would be conducted to inspect the undersides of the Tower Bridge and the Business Interstate 80 (I 80) overpass for roosting bats. A qualified biologist shall inspect structures and trees prior to removal or construction to determine if bats are roosting. If no roosting bats are found, no further mitigation would be necessary. If bats are present, the biologist shall direct the installation of one-way exclusion devices to allow bats to vacate the structure or tree prior to construction. Exclusionary devices, such as plastic sheeting, or plastic or wire mesh, can be used to allow bats to exit but not reenter any occupied roosts. Expanding foam and plywood sheets can be used to prevent bats from re-entering unoccupied roosts during construction. Exclusion devices shall be inspected, monitored, and maintained on structures during construction. Excluding bats from project trees and structures would avoid construction related impacts to this species.

Mitigation Measure BIO-4: Replace Any Removed Tree per City of Sacramento and City of West Sacramento Requirements.

At this time, there are no tree removals anticipated within the City of Sacramento. In West Sacramento, 15 recently planted London plane trees in the median of West Capitol Ave in front of West Sacramento City Hall will likely be removed. There is also one landmark-sized liquid amber tree in front of City Hall that also may be affected. Should trees need to be removed for construction, the Project sponsor will follow the applicable conditions of the City of Sacramento or City of West Sacramento requirements for replacing removed trees. The ordinances require a permit for tree removal or impacts to street trees, and either, replanting and maintaining replacement trees at an appropriate ratio specified by the cities under the ordinance; or, the payment of an in-lieu fee to the cities. The in-lieu fees fund the planting and maintaining of street trees in the cities, and therefore compensate each jurisdiction for in-kind replacement.

Mitigation Measure CR-1: Pre-Construction Resource Identification.

Additional identification efforts will consist of further archival research and subsurface exploration to avoid impacts to historic properties. As the Project design is advanced, additional archival research will be conducted to help identify specific locations in the APE where contributing elements of the RSHS District may exist. This research will target those areas of the design that coincide with known or likely below-grade hollow sidewalks or raised street structures. Preconstruction subsurface explorations will be conducted where construction is anticipated to approach the vertical limits of the APE in areas sensitive for cultural resources (both pre-historic and historic). The Project proponent will also coordinate with the City of Sacramento and property owners to obtain permission to access any remaining hollow sidewalk segments that are identified or suspected to exist in areas that could be affected by construction, particularly installation of OCS poles. If access is obtained and hollow sidewalks are present, the potentially affected hollow sidewalk segment(s) will be field recorded and the data collected will be added to the existing RSHS District Department of Parks and Recreation (DPR) 523 recordation forms (Downey, 2010), following the protocol described in the Unanticipated Discovery Plan (UDP) for the Project described below. This recordation will capture data about the hollow sidewalks/raised streets that are not readily available, and will improve access to information about these historic resources. If access cannot be obtained, the Project proponent will use ground-penetrating radar or other means to confirm the presence or absence of hollow sidewalk segments in the construction footprint. Should hollow sidewalks be identified in areas of potential OCS pole location, avoidance options will be executed. These options include modifying the proposed OCS pole locations, modifying track and system elements that are causing a conflict, modifying the pole foundation type, using a building attachment, or attaching span or pull-off wires to a backbone wire between two other poles or structures. The attachment of wires to adjacent buildings may require

modification of the APE to accommodate those buildings, which would also necessitate re-consultation with the SHPO. No structures that are historic properties would be selected for wire attachment.

Furthermore, if research or field investigation confirms the presence of historic or prehistoric archaeological resources that are eligible for the NRHP, and that would be in conflict with Project construction, the Project proponent will revisit the design to avoid adverse effects to historic properties.

Mitigation Measure CR-2: Monitoring.

All ground-disturbing activities in Downtown Sacramento (not including the Sacramento MSF option) will be monitored by a qualified archaeologist and, when appropriate, a Native American representative of any tribe that has been determined a consulting party to the Project. If any prehistoric or historic-era features, or human remains, are exposed during construction, work will stop or be redirected to allow for recordation, including photography, measurements, and Global Positioning System/Geological Information System (GPS/GIS) data. Field recordation data will be added to the existing P-34-2358/RSHS District DPR 523 recordation form (Downey, 2010; Tremaine, 2008).

Mitigation Measure CR-3: Discovery.

Inadvertent discovery of cultural resources. If cultural resources are encountered at a location beyond the Downtown Sacramento area, or in locations not identified by research or other investigations during the pre-construction period, work will stop or be redirected within 50 feet of the finds to allow for recordation, including photography, measurements, and GPS/ GIS data in accordance with the UDP.

Inadvertent discovery of hollow sidewalk. If hollow sidewalk features or raised street structures are encountered in locations not identified by research or other investigations during the pre-construction period, work will stop in order to allow recordation. The field recordation data collected (e.g., photography, field measurements, and GPS/GIS data) will be added to the existing RSHS District DPR 523 (Downey, 2010) recordation form. This recordation will follow the protocol for treating cultural resources identified as inadvertent discoveries described in the UDP for the Project. The UDP will describe treatment for both prehistoric and below-grade historic-era resources, including all elements that contribute to the RSHS District.

Inadvertent discovery of human remains. Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. If human remains are encountered, work should halt within 100 feet of the remains and, as required by law, the Sacramento or Yolo County Coroner should be notified immediately. If human remains are of Native American origin,

the Coroner must notify the NAHC within 24 hours of that determination. Pursuant to California Public Resources Code 5097.98, the NAHC, in turn, will immediately contact an individual who is most likely descended from the remains (aka: a Most Likely Descendent [MLD]). The MLD has 48 hours to inspect the site and recommend treatment of the remains. The landowner is obligated to work with the MLD in good faith to find a respectful resolution to the situation and entertain all reasonable options regarding the descendants' preferences for treatment.

Mitigation Measure CR-4: Prepare an UDP.

An UDP will be developed prior to the initiation of construction. The UDP will provide detailed descriptions of protection and mitigation measures for archaeological resources in the APE. The UDP will include guidelines for avoidance of historic properties and establishment of environmentally sensitive areas; data recovery guidelines for those known historic properties/ historical resources that cannot be avoided by Project design; protocols for treating cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as inadvertent discoveries, including human remains; monitoring during construction; responsibilities and coordination with Native American tribes and individuals; and curation of recovered materials. The UDP will address treatment for both prehistoric resources, including human remains, and historic-era resources, including all elements that contribute to P-34-2358/RSHS District. All activities outlined in the UDP will be conducted under the direction of individuals who meet the professional qualification standards in Archaeology and Historic Preservation, Secretary of Interior's Standards and Guideline (Federal Register, Volume 48, No. 190, September 29, 1983).

As Project design progresses, all effort will be made to avoid known historic properties in the APE. Resources avoided by Project design will be identified as environmentally sensitive areas to ensure that these locations are not inadvertently encroached upon during construction. Newly identified cultural resources identified during preconstruction subsurface explorations, monitoring activities, and as inadvertent discoveries during construction will require testing to assess their research potential and eligibility for the listing in the NRHP and the CRHR.

Archaeological testing will proceed with guidance from the National Park Service Guidelines for Evaluating and Registering Archeological Properties (National Park Service, 2000). Evaluation efforts will involve archival research and archaeological fieldwork. Fieldwork methodologies will be tailored to the location, circumstance, and nature of the find. It therefore may be appropriate to use mechanical trenching techniques, controlled excavation units, or block exposures, shovel sampling explorations, or any combination of the above. All

newly identified resources will be thoroughly mapped, photographed, located through Global Positioning System (GPS), and recorded on DPR 523 forms. If resources are found to be eligible to the NRHP or the CRHR, and they cannot be avoided by construction, data recovery will be required. Data recovery will conform to the principles in Parts I and II of Treatment of Archaeological Properties: A Handbook (Advisory Council on Historic Preservation, 1980), the “Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation” (Federal Register, Vol. 48, September 29, 1983, pp. 44716–44742), and appropriate SHPO guidelines. Data recovery may involve archaeological excavation, or for resources such as hollow sidewalks, detailed recordation on DPR 523 forms.

All construction will immediately cease within 100 feet in all directions of the discovery of human remains, which will then be treated in accordance with the requirements of Section 7050.5 of the California State Health and Human Safety Code. If the County Coroner determines that the remains are of Native American origin, the coroner will notify the California NAHC, and the provisions of Section 5097.98 of the California Public Resources Code will be followed.

All subsurface construction related to the Project will be monitored by a professional archaeologist, and as appropriate, by a Native American representative. Monitors will be responsible for working with construction personnel and identifying cultural resources that may be uncovered during ground disturbance. If cultural materials are unearthed, the monitor will have the authority to immediately halt work to allow the onsite archaeological monitor to inspect and assess the materials, determine whether additional analysis of the find is warranted, or whether construction can proceed without further analysis. Should additional analysis be required, testing protocols will be developed.

The FTA and the Project proponent will continually consult with Native American tribes about the treatment of resources of ancestral significance throughout Project development and construction. The UDP will define the responsibilities of the Native American tribes or individuals who are consulting parties to the Project. Native American monitors will have the opportunity to be present during testing and data recovery excavations on prehistoric and multicomponent sites, and during all construction activities in areas determined sensitive for the presence of subsurface prehistoric or ethnographic resources. It is recommended that Native American monitors meet the minimum qualifications in the guidelines provided by the NAHC (2012). Participating tribes will ultimately be responsible for identifying the individuals who will represent their tribe as monitors. The Native American monitors are expected to report to their tribal government or designee to keep them informed of Project activities. The Native American monitors and archaeological monitors will work together as a team to observe ground-

disturbing activities.

All cultural materials and associated records resulting from identification, evaluation, and treatment of historic properties conducted under the UDP shall be properly maintained in accordance with 36 CFR Part 79, and the provisions under 43 CFR Part 10 if the archaeological materials are determined to be of Native American origin, and the State of California's Guidelines for the Curation of Archeological Collections (State Historical Resources Commission, Department of Parks and Recreation, 1993). The Project proponent will consult with Native American tribes and individuals affiliated with the cultural materials on repatriation, as appropriate. If the Project proponent and consulting tribes cannot agree, the FTA will ensure that all cultural materials discovered on State lands are curated.

Mitigation Measure CR-5: Train construction personnel on paleontological resources, and cease work in event of paleontological discovery.

The Project applicant shall retain a qualified paleontologist to carry out all actions related to paleontological resources. Prior to the start of any ground-disturbing activities, the qualified paleontologist shall train all construction personnel working on the Project. The training shall include an overview of potential paleontological resources that could be encountered during ground-disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the qualified paleontologist for further evaluation and action, as appropriate. The training should also include an overview of penalties for unauthorized artifact collecting or intentional disturbance of paleontological resources.

If any items of paleontological interest are discovered, the contractor shall be required to immediately suspend all work activities within 100 feet of the discovery site and immediately contact the lead agency. Work shall not be resumed until authorization is received from the lead agency and any recommendations received from a qualified paleontologist are implemented. Any accidental discovery of paleontological resources during construction shall be evaluated by the qualified paleontologist. If it is determined that the Project could damage a unique paleontological resource, as defined per the CEQA Guidelines, mitigation shall be implemented in accordance with PRC Section 21083.2, and Section 15126.4 of the CEQA Guidelines. If avoidance is not feasible, the paleontologist shall develop a treatment plan in consultation with the lead agency.

The treatment plan shall be a site-specific plan in report format that shall:

- 1. Detail strategies for the management of the affected paleontological sites;**

2. **Include standards for further testing, sampling, documentation, data recovery, preservation and protection, analysis, and report preparation;**
3. **Outline an effective preservation plan or data recovery and documentation plan for those resources that the paleontologist has determined to have significant research or other value;**
4. **Provide a schedule for the implementation of the treatment plan; and**
5. **Provide a cost estimate for mitigation strategies, including testing, data recovery, curation, and report preparation.**

Mitigation Measure HZ-1: Site Investigation.

To mitigate the potential for encountering unknown contaminated soil and/or groundwater in the Project area, a Phase I Environmental Site Assessment will be conducted along the proposed alignment and MSFs in areas where excavation or subsurface disturbance will take place close to sites with listed known soil or groundwater contamination. The Phase I investigation will be done during the design phase and completed prior to the completion of final design. The purpose of the Phase I investigation will be to determine whether suspected contamination, as listed in the records search, is actually present on the property, and if additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm. The Phase I investigation may include activities such as geophysical surveys, drilling, trenching, soil sampling, soil gas sampling, ground water sampling, and surface water sampling. If the Phase I investigation finds that additional site characterization is necessary prior to implementation of the Project to protect the public and environment from harm, then a Phase II investigation shall be required for areas where soil and/or groundwater contamination are suspected. The Phase II investigation will be conducted to determine the nature and extent of contamination. If the Phase II investigation concludes there is a potential to encounter contaminated materials (during and post-construction), then a soil and groundwater management plan shall be developed and implemented. The soil and groundwater management plan shall provide detailed procedures to be followed in the event that contaminated materials are encountered (during and post-construction).

Mitigation Measure NV-1: Implement Wheel Noise Control Measures.

Resilient wheels or suitable equivalent noise control measures shall be implemented that achieves a reduction of wheel squeal to Moderate or No Impact level, as defined by the FTA noise criteria.

Mitigation Measure NV-2: Substation Design.

To alleviate noise impacts from substation operation, noise impacts from substation operation will be mitigated in one of the following ways:

- Locate traction power substations at a distance farther from noise-sensitive receptors than the screening distance determined in this analysis.
- Re-evaluate the inside buffer during engineering design, and if necessary, install efficient enclosures to meet local noise threshold criteria.
- Place traction power substations in underground utility vaults.

Mitigation Measure NV-3: MSF Facilities.

To avoid noise impacts from the MSF facilities in West Sacramento, install sound walls around the MSF in West Sacramento. A perimeter wall that is 6 to 8 feet high would minimize noise from the MSF at this location.

Mitigation Measure NV-4: Vibration Control.

To avoid vibration-related impacts from streetcar operations:

- Additional measurements, including soil vibration propagation testing, shall be made during the engineering design phase to evaluate the potential for efficient soil propagation at distances beyond 50 feet, site-specific vibration propagation, and the effects on vibration transmission into those buildings identified as being impacted in the current analysis.
- If streetcar operational speeds are 30 to 35 mph, then various forms of vibration control will need to be investigated during the engineering phase of the Project. There are different measures available depending on the level of vibration reduction required. For the highest level of reduction indicated for the Project (e.g., 13 VdB), a floating slab track may be implemented. Where lower levels of vibration reduction are required (e.g., 5 VdB or less), it may be possible to use a resilient ballast mat if the track design permits this approach, similar to that implemented at SFMTA. At special trackwork (i.e., crossover), it should be possible to implement “flange-bearing frogs,” as has been accomplished elsewhere (e.g., SFMTA). The majority of vibration impacts due to streetcar operations would be eliminated if the streetcar speeds were reduced to 20 mph or less. In the City of Sacramento, the remaining vibration impacts at 20 mph or less would occur at the Cathedral of the Blessed Sacrament and the Cathedral Building Apartments where a crossover is to be located. As with the case where speeds are 30 to 35 mph, a flange-bearing frog would control vibration from such special trackwork. Assuming mitigation of flange bearing frog is implemented, then for the remaining receptors impacted at a vehicle speed of 20 mph the vibration level would be reduced if operating speeds were lower. The predicted level for 20 mph with flange bearing frog

are 1 dB over criterion. Speed reduction would be minimal (e.g., 18 mph instead of 20mph).

Mitigation Measure NV-5: Noise-Limiting Construction Practices.

To control the potential impacts to the nearby community during construction of the Project, the following array of mitigation strategies would be employed:

- **Locate noisy equipment as far as possible from noise-sensitive receptors. In addition, temporary barriers should be employed around the equipment.**
- **Use temporary noise barriers along the Project right-of-way. Barriers/curtains must achieve a Sound Transmission Class of 30 or greater in accordance with American Society for Testing and Materials International (ASTM) Test Method E90, and be constructed from material having a surface density of at least 2 pounds per square foot to ensure adequate transmission loss.**
- **Use sound absorption for temporary barriers in the area of Downtown Sacramento. In this area, a reverberant environment is produced due to the narrow distance between buildings and hard pavement surfaces. Line the inner face of the temporary barrier or use a curtain with an absorptive face. The absorptive liner or absorptive face should have a Noise Reduction Coefficient rating of 0.70 or greater, in accordance to ASTM Test Method C423.**
- **Require ambient-sensitive (“smart”) backup alarms, SAE Class D, or limit to SAE Class C (97 dB).**
- **Fit silencers to combustion engines. Ensure that equipment has quality mufflers installed, in good working condition.**
- **Switch off engines or reduce to idle when not in use.**
- **Lubricate and maintain equipment regularly. Equipment is normally quieter when well maintained.**
- **Construction-related truck traffic should be re-routed along roadways that would produce the least disturbance to sensitive receptors.**

Mitigation Measure NV-6: Vibration Monitoring.

To avoid vibration-induced annoyance impacts due to construction activities, the activities should be kept below the FTA impact criteria for each land use category. Equipment and methods selected by the contractor to reduce the potential for annoyance will be reviewed and approved by the Project proponent. Possible mitigation strategies that will be implemented to ensure vibration-induced annoyance does not exceed the impact criteria include:

- **Avoid the use of pavement breakers. Instead, use a hoe ram with hydraulic chisel.**
- **Avoid the use of dynamic compaction at a distance closer than 25 feet**

from any sensitive receptors, or use alternative methods of compaction in areas of construction that would be closer than 25 feet from sensitive receptors.

- Monitor vibration during construction to ensure compliance with criteria for building damage for buildings within 40 feet of construction activities. Conduct a preconstruction crack survey of these buildings.
- Plan routes for hauling material out of the Project site that would cause the least impact (annoyance). Propose truck routes along roads where the sensitive receptors are at least 75 feet from the street centerline.

Mitigation Measure TRA-1: Implement temporary bicycle detours during construction.

Bicycle detours will be devised and publicized in advance of streetcar construction. Alternatively, it may be possible to route bicycles along short sidewalk segments, depending on the pedestrian volumes along the sidewalk.

Mitigation Measure TRA-2: Develop Construction Traffic and Parking Management Plan.

The Project sponsor will develop a Construction Traffic and Parking Management Plan that will be subject to review and approval by the City of West Sacramento Traffic Engineer, the City of Sacramento Department of Transportation, Caltrans, and local emergency service providers, including the fire and police departments. The plan will ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. At a minimum, the plan will include:

- The number of truck trips, time, and day of street closures;
 - Time of day of arrival and departure of trucks;
 - Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting;
 - Provision of a truck circulation pattern;
 - Provision of driveway access plan so that safe vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas);
 - Maintain safe and efficient access routes for emergency vehicles;
 - Manual traffic control when necessary;
 - Proper advance warning and posted signage concerning street closures;
- and
- Provisions for pedestrian safety.

A copy of the construction traffic management plan will be submitted to local emergency response agencies, and these agencies will be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.

Mitigation TRA-3: Coordinate construction activities with the U.S. Coast Guard.

If construction activities limit or impede use of the lift mechanism of the Tower Bridge during intermittent or extended periods, the U.S. Coast Guard will be informed of these occurrences a minimum of 30 days in advance of the interruption to navigational traffic. The U.S. Coast Guard will post notice of the temporary closure in the Federal Register, and businesses and boat owners that would be most affected by the obstruction of navigation will be notified individually. The Project sponsor will coordinate with Caltrans, the owner of the Tower Bridge, the U.S. Coast Guard, and affected businesses/boat owners to minimize or alleviate the potential impact by providing proper notification of the bridge closures; by scheduling closures in the non-peak excursion season (October through April); or by raising the bridge for an extended time to allow continuous river navigation, while temporarily rerouting vehicular and non-motorized traffic.

Finding: The SacRT Board finds, on the basis of the whole record before it, that there is no substantial evidence showing that the proposed project would have a significant effect on the environment, with incorporation of the mitigation measures recommended herein. This Initial Study and Mitigated Negative Declaration reflects the Board's independent judgment and analysis.

PATRICK KENNEDY, Chair

A T T E S T:

HENRY LI, Secretary

By: _____
Cindy Brooks, Assistant Secretary

RESOLUTION NO. 18-07-_____

Adopted by the Board of Directors of the Sacramento Regional Transit District on this date:

July 23, 2018

APPROVING THE DOWNTOWN RIVERFRONT STREETCAR GOVERNANCE DOCUMENTS, CONSISTING OF THE SUBRECIPIENT AND INTERAGENCY AGREEMENT; DESIGN PROCUREMENT AND CONSTRUCTION AGREEMENT, AND OPERATIONS AND MAINTENANCE AGREEMENT.

BE IT HEREBY RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO REGIONAL TRANSIT DISTRICT AS FOLLOWS:

THAT, this Subrecipient and Interagency Agreement for Streetcar Funding, by and between Sacramento Regional Transit District, a public corporation (therein "RT"), the City of Sacramento and the City of West Sacramento, municipal corporations (each referred to therein as a "City" and collectively, "Cities") and the Riverfront Joint Powers Authority, a California joint powers authority (therein "Authority"), whereby RT agrees to provide specified funds to the Authority for the Downtown Riverfront Streetcar Project subject to compliance by Authority and by the cities in their individual capacities with the requirements of the specified funding, as further set forth therein, is hereby approved.

THAT, the Design, Procurement and Construction Agreement for the Streetcar Project by and between Sacramento Regional Transit District (therein "RT") and the Riverfront Joint Powers Authority, a joint power authority established by the Cities of Sacramento and West Sacramento (therein "Authority"), whereby RT is appointed to perform specified design and construction services for the Streetcar Project and Authority agrees to compensate RT for such services, as further set forth therein, is hereby approved.

THAT, the Operations and Maintenance Agreement for the Streetcar Project, by and between Sacramento Regional Transit District (therein "RT") and the Riverfront Joint Powers Authority, a joint power authority established by the Cities of Sacramento and West Sacramento (therein "Authority"), whereby RT agrees to perform services to operate and maintain the Streetcar Project, and Authority agrees to compensate RT for the performance of such services, as further set forth therein, is hereby approved.

THAT, the General Manager/CEO is hereby authorized and directed to execute the foregoing agreements.

PATRICK KENNEDY, Chair

A T T E S T:

HENRY LI, Secretary

By: _____
Cindy Brooks, Assistant Secretary