6th Street Viaduct Seismic Improvement Project

LOS ANGELES COUNTY, CALIFORNIA
DISTRICT 7 – Bridge Nos. 53C-1880 and 53-0595

EA 25120K

Federal Project Number 5006 (342)

SCH#2007081005

Draft Environmental Impact Report/ Environmental Impact Statement and Section 4(f) Evaluation

Prepared by

City of Los Angeles
and
State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

May 2009

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6TH STREET VIADUCT SEISMIC IMPROVEMENT PROJECT

DRAFT
ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT AND SECTION 4(f) EVALUATION

Submitted Pursuant to: (State) Division 13, Public Resources Code
(Federal) 42 U.S.C. 4332(2)(C), 49 U.S.C. 303, and 23 U.S.C. 327.

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City of Los Angeles (Local Lead Agency)
and
STATE OF CALIFORNIA
Department of Transportation (Federal Lead Agency)

5/28/2009
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Abstract

The 6th Street Viaduct was constructed in 1932 using then state-of-the-art concrete technology and an onsite mixing plant. Over the last 75 years, concrete elements of the viaduct have cracked and deteriorated as a result of an internal chemical reaction called Alkali Silica Reaction (ASR).

The results of seismic vulnerability studies, completed in 2004, concluded that the viaduct, in its current state of material deterioration and lack of structural strength, has a high vulnerability to failure as a result of a major earthquake. In addition to its vulnerability to collapse under predictable seismic forces, the 6th Street Viaduct also has geometric design and safety deficiencies.

The proposed project would either retrofit the existing structure or replace it with a new structure to reduce the vulnerability of the 6th Street Viaduct in major earthquake events, to resolve design deficiencies in the viaduct, and to preserve 6th Street as a viable east-west link between Boyle Heights and Downtown Los Angeles. This joint Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) documents potential environmental impacts associated with proposed seismic improvement alternatives. Two build alternatives and a No Action Alternative are analyzed in this draft EIR/EIS. Notable impacts that have been identified consist of:

- Use of an historic site protected under Section 4(f) of the U.S. Department of Transportation Act of 1966 and an adverse effect under Section 106 of the National Historic Preservation Act of 1966
- Displacement and relocation of active industrial and commercial activities
- Conversion of industrial/commercial land use to public and transportation use
- Air pollutant emissions during the construction period
- Traffic disruption during the construction period
- Emergency response delay during the construction period

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Summary

Proposed Action

The City of Los Angeles (City) and the California Department of Transportation (Caltrans) propose to undertake the seismic improvement of the 6th Street Viaduct over the Los Angeles River (Bridge No. 53C-1880) and the 6th Street Overcrossing, which spans the US 101 Hollywood Freeway (Bridge No. 53-0595). These two bridges comprise a single structure – the 6th Street Viaduct. The proposed project would correct seismic deficiencies of this critical Los Angeles River crossing by either retrofitting the existing structure or replacing the 6th Street Viaduct entirely. Under the replacement alternative, the proposed project would also correct geometric design and structural detailing deficiencies of the existing viaduct by constructing the replacement to current standards set forth by American Association of State Highway and Transportation officials (AASHTO) and the City of Los Angeles Department of Transportation (LADOT).

The proposed project is subject to federal, as well as City and state environmental review requirements because the City proposes the use of federal funds managed by the Federal Highway Administration (FHWA). Therefore, the project requires an FHWA approval action. Environmental documentation has been prepared in compliance with both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). FHWA's responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable federal laws for this project is being carried out by Caltrans under its assumption of responsibility pursuant to Section 6005 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) codified at 23 United States Code (U.S.C.) 327(a)(2)(A).

Alternatives Considered

Three alternatives are being analyzed in this Environmental Impact Report/Environmental Impact Statement (EIR/EIS) as follows:

Alternative 1 – No Action

This alternative provides neither retrofit nor replacement of the seismically and functionally deficient 6th Street Viaduct. The Alkali Silica Reaction (ASR) deterioration of the structure would continue, and the seismic vulnerabilities would worsen as the concrete strength continues to degrade. The City would continue to provide ongoing inspection and maintenance on the viaduct to keep it open to traffic as long as possible, given the ongoing ASR deterioration and seismic vulnerabilities. Furthermore, the 6th Street Viaduct would remain at its existing roadway width of 46 feet (ft), which accommodates 2 travel lanes in each direction with no outside shoulders or safety median. The substandard shoulder and sidewalk widths and unsafe railings would also not be corrected under this alternative.

Alternative 2 – Viaduct Retrofit

This alternative would seismically retrofit the viaduct's columns by encasing them with heavy steel, and infill walls would be constructed between selected columns. In addition, new foundations, grade beams, retrofitting of bent caps, and closure of some expansion joints in the superstructure would be constructed in combination with the column retrofits. The structure would be retrofitted to the minimal standard of "no collapse" for the design seismic event. Based on the cost estimates of $226 million, Alternative 2 is a fully funded alternative[1].

Alternative 3 – Viaduct Replacement

This alternative is comprised of two elements: bridge type, designated by numeric labels; and alignment, designated by alpha labels. The replacement alternative would construct a new viaduct along one of three alignments under consideration. The main-span bridge type would be selected from one of five type alternatives under study, including (1) Replication; (2) Cast-in-Place (CIP) Box Girder with Steel Tied Arch Pedestrian Ways; (3) Steel Half-Through Arch with CIP Box Girder Approaches; (4) Extradosed (cable-supported) Concrete Box Girder with Dual Pylons; and (5) Extradosed Concrete Box Girder with Single Pylon. The new structure would have a cross section that meets secondary highway standards as required by LADOT. The new 70-ft-wide (curb-to-curb) roadway would consist of two 11-ft-wide lanes with an 8-ft-wide shoulder in each direction, and a 10-ft-wide median. The proposed cross section also allows for 10-ft-wide sidewalks. Based on the cost estimates from a low of $304 million to a high of $402 million, Alternative 3 variations are not fully funded[2]. Sources or mechanisms of additional funds are being identified. Potential funding sources include Highway Bridge Program (HBP) funds, Proposition 1B Local Bridge Seismic Retrofit Account (LBSRA), and City Matching Funds.

Environmental Impacts

Environmental impacts associated with the two Build Alternatives and the No Action Alternative were fully analyzed, and the results are summarized in Table ES-1.

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1 The 6th Street Viaduct Seismic Improvement Project is included in the 2008 Regional Transportation Improvement Program (RTIP), which is programmed for $245 million over a 6-year period (Fiscal Years 2008/9 to 2013/14).

2 Ibid.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Land Use and Planning	None	• City of Los Angeles Maintenance Facility and one privately owned business would need to be relocated. These right-of-way (ROW) displacements would be inconsistent with the City of Los Angeles Community Plan objective of preserving the industrial area and employment. • Would not provide the City with an opportunity to designate 6th Street along the 6th Street Viaduct as a bikeway. • Would provide less redevelopment opportunity for the area in the immediate vicinity of the viaduct. • Would provide a seismically safe bridge, with a 30-year design life, between Boyle Heights and Downtown Los Angeles to support the objectives of various adopted plans and policies.	• Several industrial buildings in the designated “industrial preservation and employment protection zone” would be acquired for ROW. The proposed action would be inconsistent with the Community Plan. • Would have a bikeway and standard sidewalk on both sides of the viaduct. • Would provide a seismically safe bridge, with a 75-year design life, between Boyle Heights and Downtown Los Angeles to support the objectives of various adopted plans and policies. • Would provide redevelopment opportunities for the vacated area in the immediate vicinity of the viaduct.	• Would have greater ROW impacts compared to Alignment 3A. Inconsistent with industrial preservation objective. • Would provide more vacated land around the 6th Street Viaduct for redevelopment opportunities compared to Alignment 3A. • Would have a bikeway and standard sidewalk on both sides of the viaduct. • Would provide a seismically safe link, with a 75-year design life, between Boyle Heights and Downtown Los Angeles to support the objectives of various adopted plans and policies. • Would provide redevelopment opportunities for the vacated area in the immediate vicinity of the viaduct.	• Would have less ROW impacts compared to Alignment 3A. Inconsistent with industrial preservation objective. • Would provide less vacated land around the 6th Street Viaduct for redevelopment opportunities compared to Alignment 3A. • Would have a bikeway and standard sidewalk on both sides of the viaduct. • Would provide a seismically safe bridge, with a 75-year design life, between Boyle Heights and Downtown Los Angeles to support the objectives of various adopted plans and policies. • Would provide redevelopment opportunities for the vacated area in the immediate vicinity of the viaduct.
Community Impacts: Community Character and Cohesion	None	• Community disconnection could occur on a temporary basis during construction.	• Community disconnection could occur on a long-term (4-year) basis during construction. • Loss of historic resource and community landmark to which many residents are attached.	Same as Alignment 3A.	Same as Alignment 3A.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Community Impacts: Relocation and Business Disruption	None	• Construction would require a partial lane closure on the 6th Street Viaduct. Temporary blockage of roadways would occur during construction due to the required partial traffic lane closure and construction equipment movement. • A City of Los Angeles Maintenance Facility and one privately owned business would need to be relocated. • Minimal employment impacts.	• The viaduct and all acquired buildings would be first removed. Roadway blockage to the remaining businesses would temporarily occur during the demolition and construction activities. • A City Maintenance Office would need to be relocated, and up to 11 businesses (33 parcels) would be either partially or fully impacted by ROW acquisition. • Potential job loss affecting approximately 200 employees due to business relocation. (Actual job loss cannot be accurately estimated at this stage of the project.)	• The viaduct and all acquired buildings would be first removed. Roadway blockage to the remaining businesses would temporarily occur during the demolition and construction activities. • A City Maintenance Office would need to be relocated, and up to 13 businesses (36 parcels) would be either partially or fully impacted by ROW acquisition. • Potential job loss due to business relocation at larger extent than Alignment 3A.	• The viaduct and all acquired buildings would be first removed. Roadway blockage to the remaining businesses would temporarily occur during the demolition and construction activities. • A City Maintenance Office would need to be relocated, and up to 7 businesses (40 parcels) would be either partially or fully impacted by ROW acquisition. • Potential job loss due to business relocation at lesser extent than Alignments 3A and 3B.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Community Impacts: Environmental Justice	None	• The project study area contains predominantly minority and low-income populations compared to the larger area within the city and county of Los Angeles. Construction would require partial lane closures on the 6th Street Viaduct. Construction of Alternative 2 would cause disproportionately high adverse effects on minority and/or low-income populations living closer to the construction zone as per Executive Order 12898 regarding environmental justice.	• Construction would require full closure of the 6th Street Viaduct. Construction of the Replacement Alternative would cause disproportionately high adverse effects on minority and/or low-income populations who live closer to the viaduct and the proposed detour routes as per Executive Order 12898 regarding environmental justice • No adverse impact pertaining to environmental justice relative to business owners is anticipated; however, low-income and minority workers employed by the potentially affected businesses could experience the permanent loss of jobs if business owners decide to relocate their business elsewhere. • Residents in the area adjacent to the viaduct would receive higher benefit from the opportunity to redevelop the area as a result of the proposed project.	Same as Alignment 3A.	Same as Alignment 3A.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Utilities and Emergency Services	None	• Temporary or permanent relocation of some utility services may be required. • Disruption to railroad operations during construction. • Permanently reduce horizontal clearance between the center of existing tracks and the retrofitted columns of the viaduct by approximately 1 ft. • Partial lane closure on the 6th Street Viaduct during the 2.5-year construction period would delay emergency response services.	• Temporary or permanent relocation of some utility services would be required. • Potential disruption to railroad operations to a larger extent than with Alternative 2. • Full closure of the 6th Street Viaduct during the 4-year construction period would delay emergency response services. • Beneficial effects from providing the median and shoulders for emergency use.	Same as Alignment 3A.	Same as Alignment 3A.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Traffic, Transportation, Pedestrian Facilities	None	• Construction would cause localized, temporary traffic disruption, sidewalk blockage, and parking space obstruction. • Possible loss of some currently public parking spaces underneath and along the local streets near the viaduct, creating inconvenience to area residents and businesses. • Minor disruption to public transit operations due to possible partial lane closures on the 6th Street Viaduct.	• Construction would require full closure of the 6th Street Viaduct for up to 4 years, resulting in traffic detours along the street network east and west of the river. Traffic analysis revealed up to 13 out of 31 intersections under study would be impacted by detouring traffic. In addition, the 6th Street frontage roads on both sides of the viaduct would need to be vacated, causing obstruction to the operations of adjacent businesses that are not subject to relocation and depend on the frontage roadways for access. Sidewalk closure requiring rerouting of pedestrians, and the loss of approximately 50 public parking spaces around the viaduct would also occur during the construction phase. • Loss of public parking spaces underneath and along the local streets near the viaduct would create inconvenience to area residents and businesses. • Travel delays of 5 to 10 minutes on public transit would occur from traffic detours.	Same as Alignment 3A.	Same as Alignment 3A.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Visual/Aesthetic	None	• Retrofit would encase most of the existing columns with heavy steel covered by architectural mortar creating a more massive column configuration. In addition, construction of sheer walls between many of the columns would limit many of the views under the viaduct. The view restriction under the viaduct deck could affect activities such as filming.	• Replacement of the viaduct and the subsequent loss of the historic landmark would impact the views to the structure. The various bridge replacement concepts would be expected to alter the existing views to varying degrees. The most notable visual impact would be from replacement of the historic structure with a new structure of contemporary design (i.e., the cable-supported design); however, each of the designs analyzed would maintain the vividness/memorability, unity, and visual intactness experienced with the current viaduct structure.	Same as Alignment 3A.	Same as Alignment 3A.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Cultural Resources	None	• The project area has the potential for buried archaeological materials to be encountered during ground disturbance. • Retrofitting would alter and/or destroy the historic materials, features, and spatial relationships that characterize the viaduct, resulting in an adverse effect to a designated historic resource.	• The project area has the potential for buried archaeological materials to be encountered during ground disturbance. • Replacement of the viaduct would remove the 6th Street Viaduct, resulting in an adverse effect to a designated historic resource. • The viaduct would be removed from the city-wide inventory of historic bridges over the Los Angeles River, impacting the City's remaining monumental resources on a cumulative basis.	Same as Alignment 3A.	Same as Alignment 3A.
Hydrology and Floodplains	None	None	None	None	None
Water Quality and Stormwater Runoff	• All stormwater runoff from the viaduct would continue to be discharged to the Los Angeles River without prior treatment	• No permanent treatment best management practice (BMP) devices would be installed with this alternative; all stormwater runoff from the viaduct would continue to be discharged to the Los Angeles River without prior treatment.	• Stormwater from the new viaduct would be treated before discharging to the Los Angeles River.	Same as Alignment 3A.	Same as Alignment 3A.

Table ES-1 Summary of Potential Impacts from Alternatives					
Area of Impact	**Alternative 1 No Action**	**Alternative 2 Retrofit**	**Alternative 3 Replacement Alignment 3A**	**Alternative 3 Replacement Alignment 3B**	**Alternative 3 Replacement Alignment 3C**
Geology, Soils, Seismicity	None, but the viaduct would continue to deteriorate from Alkali Silica Reaction (ASR) weakening the concrete elements.	• Alternative 2 would design the retrofitted features to prevent collapse under a design seismic event. Due to access restrictions near the railroad, Bent 12 would not be retrofitted. The design life expectancy to prevent seismic collapse under this alternative is approximately 30 years. The viaduct would have to be replaced if it collapses during a major earthquake or the ASR deterioration renders it unsafe.	• Would have a beneficial effect because Alternative 3 would replace the existing severely damaged viaduct with a new viaduct that is designed to meet current seismic safety standards required by Caltrans.	Same as Alignment 3A.	Same as Alignment 3A.
Paleontology	None	• No previously recorded paleontological sites were identified during the records search; however, there is the potential to uncover fossil remains as a result of earth-moving activities.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
Hazardous Waste/Materials	None	• Based on the results of a site investigation conducted along the existing viaduct corridor, soil and groundwater at the project site have the potential to be contaminated with volatile organic compounds (VOCs) and petroleum hydrocarbons; this could impact workers and the environment.	• Based on the results of a site investigation conducted along the existing viaduct corridor, soil and groundwater at the project site have the potential to be contaminated with VOCs and petroleum hydrocarbons; this could impact workers and the environment.	Same as Alignment 3A.	Same as Alignment 3A.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Hazardous Waste/Materials		• Buildings to be demolished may have asbestos-containing materials (ACM) in the form of coatings, insulation, and/or expansion joint compounds and lead-based paint (LBP) coatings, which could cause health effects to workers. • Costs associated with hazardous waste remediation and disposal under Retrofit Alternative 3 are estimated at $6 million.	• Soils near US 101 may contain aerially deposited lead (ADL) generated by motor vehicle exhaust, which could cause health effects to workers. • The viaduct and buildings to be demolished may have ACM in the form of coatings, insulation, and/or expansion joint compounds and LBP coatings, which could cause health effects to workers. • Costs associated with hazardous waste remediation and disposal under Replacement Alternative are estimated at $4.7 million.	Same as Alignment 3A.	Same as Alignment 3A.
Air Quality	None	• Under the worst-case day of the construction period (i.e., viaduct closed and traffic detour in effect), the regional emissions of nitrogen oxides (NO_x) would exceed the daily significance threshold set forth by South Coast Air Quality Management District (SCAQMD).	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.

Table ES-1 Summary of Potential Impacts from Alternatives					
Area of Impact	**Alternative 1 No Action**	**Alternative 2 Retrofit**	**Alternative 3 Replacement Alignment 3A**	**Alternative 3 Replacement Alignment 3B**	**Alternative 3 Replacement Alignment 3C**
Noise and Vibration	None	• Noise impacts from retrofit activities would be confined to a relatively narrow corridor extending along both sides of the viaduct and corresponding to the construction sequence. The commercial/industrial areas adjacent to the viaduct are not identified as “frequent human outdoor-use” locations; therefore, no adverse construction noise impacts to commercial/ manufacturing uses along the 6th Street corridor are anticipated. The closest residences to the viaduct are located 600 ft away; no adverse noise impact would occur. • During construction, the highest vibration levels would be caused by the impact pile driver. Buildings located adjacent to the pile driving location could temporarily experience the vibration effect. Since no fragile buildings or historic buildings are located within 50 ft of the proposed construction site, no adverse impacts from construction vibration to adjacent buildings are expected to occur.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.

Table ES-1
Summary of Potential Impacts from Alternatives

Area of Impact	Alternative 1 No Action	Alternative 2 Retrofit	Alternative 3 Replacement Alignment 3A	Alternative 3 Replacement Alignment 3B	Alternative 3 Replacement Alignment 3C
Biological Resources	None	• Limited biological resources exist within the viaduct footprint where construction activities would occur. No mature trees would be removed; hence, no adverse impacts to plant species are anticipated. Although no cliff swallows or roosting bats were apparent underneath the 6th Street Viaduct during the survey, they may establish new nests or roosts under the viaduct deck at any time. A preconstruction survey would be conducted to confirm the absence or presence of any nesting birds or roosting bats. If found, steps would be taken to remove them and prevent establishment of new nests or roosts prior to the beginning of the nesting season.	• Ornamental trees within the survey area have a limited potential to support nesting birds, which are protected by the Migratory Bird Treaty Act. A preconstruction survey would be conducted to identify any mature trees subject to removal prior to the commencement of construction activities. Although no cliff swallows or roosting bats were apparent underneath the 6th Street Viaduct during the survey, they may establish new nests under the viaduct deck at any time. A preconstruction survey would be conducted to confirm the absence or presence of any nesting birds or roosting bats. If found, steps would be taken to remove them and prevent establishment of new nests or roosts prior to the beginning of the nesting season.	Same as Alignment 3A.	Same as Alignment 3A.

Avoidance, Minimization, and Mitigation Measures

The proposed project alternatives have been designed to avoid or minimize potential environmental impacts. Mitigation measures are proposed when avoidance and minimization attempts could not fully resolve the impacts. The following tables present standard measures and provisions based on applicable laws, regulations, ordinances and formally adopted City standards to minimize project effects (Table ES-2), and specific mitigation measures (Table ES-3).

Table ES-2
Standard Measures under Applicable Laws, Regulations, and Adopted City Standards to be Incorporated into Bid and Specification Package

No.	Standard Measures	Impacted Resources
1	Continue the outreach program to keep residents, businesses, and any service providers within the area informed, and to inform surrounding communities about the project construction schedule, relocation plans and assistance programs, traffic-impacted areas and the Transportation Management Plan (TMP), and other relevant project information.	Community Impacts
2	Compensate the private parking owners for the loss of any private parking spaces through the right-of-way (ROW) acquisitional process.	Community Impacts
3	Provide assistance to the local businesses within the project limits to the extent allowed by laws and regulations in the event permanent property acquisition or temporary business closures result from project construction.	Community Impacts
4	Coordinate closely with the railroad owners or their representatives during the design phase of the project to ensure that the final designs are reviewed and approved by respective railroad authorities.	Utility Impacts
5	Obtain a construction license agreement with respective railroad authorities for construction within the railroad ROW prior to start of construction. Coordinate with railroad representatives during the construction phase to minimize interruption to railroad operations.	Utility Impacts
6	Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and Monitoring program. The SWPPP would include erosion and sediment control; non-stormwater management; post-construction stormwater management; waste management and disposal; maintenance, inspection, and repair of Best Management Practices (BMPs); employee training to perform inspections of the BMPs at the construction site; and a sampling and analysis plan for contaminated storm runoff. The SWPPP would describe both structural and nonstructural BMPs to minimize or eliminate the potential for spills and leakage of construction materials and erosion of disturbed areas by water and wind.	Water Quality
7	Require the construction contractor to conduct soil profiling (in particular, but not limited to, metals and aerially deposited lead [ADL]) while handling soil at the project site during construction. If the soil contains contaminant concentrations that meet the definition of hazardous materials, then the contractor will be required to adhere to City Standard Specifications (known as the Greenbook), which address the management of various hazardous materials and wastes and that is consistent with the federal and state of California requirements pertaining to hazardous materials and wastes management.	Hazards and Hazardous Materials
8.	Require the construction contractor to conduct a survey to screen for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to demolition activities. If ACM is found, then the contractor shall comply with South Coast Air Quality Management District (SCAQMD) Rule 1403 notification and removal processes.	Hazards and Hazardous Materials
9	Require the construction contractor to dispose of any hazardous materials or wastes encountered during demolition and construction according to current regulatory guidelines.	Hazards and Hazardous Materials
10	Require the construction contractor to obtain an NPDES permit for wastewater discharge if there is a potential for dewatering activities at the project site during construction.	Hazards and Hazardous Materials
11	Require the construction contractor to implement PM_{10} control by applying measures contained in Tables 1 and 2 of SCAQMD Rule 403.	Air Quality

Table ES-2
Standard Measures under Applicable Laws, Regulations, and Adopted City Standards to be Incorporated into Bid and Specification Package

No.	Standard Measures	Impacted Resources
12	Require the construction contractor to implement the following measures, when feasible, to reduce PM_{10} and NO_x emissions generated by construction equipment: a Water the construction site three times daily, or apply nontoxic soil stabilizers, as needed, to reduce offsite transport of fugitive dust from all unpaved staging areas and unpaved road surfaces. b Properly tune and maintain construction equipment in accordance with manufacturer's specifications. c Keep trucks and vehicles in loading/unloading queues with their engines off when not in use to reduce vehicle emissions. The contractor shall phase construction activities to avoid emissions peaks, where feasible, and discontinue work during second-stage smog alerts. d To the extent possible, use construction equipment that is powered by aqueous diesel or alternative fuel sources (e.g., methanol, natural gas, propane). e Where feasible, use diesel oxidation catalyst for heavy-duty construction equipment.	Air Quality
13	Incorporate the following requirements in the construction specifications: a. Use newer equipment with improved noise muffling and ensure that all equipment has the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding). b. Utilize construction methods or equipment that will provide the lowest level of noise and ground vibration impact, such as alternative low-noise pile installation methods. c. Turn off idling equipment. d. Implement a construction noise and/or vibration monitoring program to limit the impacts. e. Comply with all appropriate provisions of the City Noise Ordinance including, but not limited to, the restrictions on hours of construction and mechanical equipment noise levels. f. Limit construction activities to daytime hours. If nighttime construction is necessary, then the proper permits and variances shall be obtained. g. Comply with the TMP on construction routes to avoid or minimize impacts on noise-sensitive receptors located in areas of close proximity to the project site. h. Keep noise levels relatively uniform and avoid impulsive noises. i. Keep area residents and businesses informed of the schedule, duration, and progress of the construction to minimize public objections of unavoidable noise. Notify communities in advance of the construction and of the expected temporary noise impacts during the construction period.	Noise

Table ES-3
Proposed Specific Mitigation Measures

Environmental Factor	Mitigation Measures	
	Alternative 2 – Retrofit	**Alternative 3 – Replacement**
Community Impacts and Environmental Justice	• The City of Los Angeles would develop a construction staging plan and TMP in close coordination with the members of the Downtown Construction Traffic Management Committee and with agencies or developers responsible for other planned projects in the immediate vicinity of the proposed project to minimize direct and cumulative construction impacts on the community. The TMP should also identify and provide alternate traffic detour routes, construction materials hauling routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.	• The City of Los Angeles would actively participate in the community planning exercise process to redevelop the vacated area around the 6th Street Viaduct to provide recreational, retail, and cultural, or other amenities. • The City of Los Angeles would provide landscape and streetscape improvements to enhance the aesthetics of the affected intersections along the proposed detour routes that could not be mitigated to the less than significant level. • The City of Los Angeles would actively participate in implementation of the Los Angeles River Revitalization Master Plan (LARRMP) to improve the area near the 6th Street Viaduct that is compatible within accordance with the Greening Concept features objectives set forth in the Master Plan. • The City of Los Angeles would develop a construction staging plan and TMP in close coordination with members of the Downtown Construction Traffic Management Committee and with agencies or developers responsible for other planned projects in the immediate vicinity of the proposed project to minimize direct and cumulative construction impacts on the community. The TMP should also identify and provide alternate traffic detour routes, construction materials hauling routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.
Traffic, Transportation and Pedestrian Facilities	No specific mitigation is required.	• The City of Los Angeles would install new traffic signals, and connect to Los Angeles City ATSAC system at the intersection of 4th Street and I-5 SB On-/Off-Ramps/Gertrude Street. • The City of Los Angeles would restripe to add an eastbound right-turn lane at the intersection of 4th Street and Soto Street. • The City of Los Angeles would provide alternative pedestrian access within the vicinity of the 6th Street Viaduct during the construction period.

Table ES-3
Proposed Specific Mitigation Measures

Environmental Factor	Mitigation Measures	
	Alternative 2 – Retrofit	**Alternative 3 – Replacement**
Emergency Services	• The City of Los Angeles would notify emergency service providers at least 2 weeks in advance of the project construction schedule. Provide detailed information on the construction schedule, roadway closures, traffic detour route maps, and expected congested intersections. • The City of Los Angeles would coordinate with emergency service providers throughout the construction period to notify them of any changes in construction schedule, roadway closures, and detour routes.	Same as Alternative 2.
Aesthetics and Visual Resources	• During the preliminary design stage of the project, the City and Caltrans have been conducting ongoing design workshops with community representatives.	• During the preliminary design stage of the project, the City and Caltrans have been conducting ongoing design workshops with community representatives. • Continue to work with the community during the Draft EIR/EIS circulation for public review for input through a formalized Context Sensitive Solutions process to develop Aesthetic and Urban Design Guidelines for the new structure. • Evaluate the benefit to the community of preserving open space created by the project. Work with the community and other stakeholders, including City agencies, in developing the Greening Concept to include open space and park amenities within the community, including the viaduct design for future connections to the river corridor. • Develop bridge architecture to create a Community/City Gateway – including possible bridge monuments with decorative lighting, parapet wall treatments, decorative fencing/railing and lighting, and abutment/wing walls – to increase the memorability and announce the presence of the bridge. • Texturize and color slope paving and other smooth surfaces to deter graffiti and enhance the bridge aesthetics. • Apply architectural detailing to the retaining walls, including textures, colors, and patterns. Include caps that will provide shadow lines.
Cultural/ Historical Resources	• The City of Los Angeles would implement all stipulations and measures to resolve the adverse effect to be developed as part of the executed Memorandum of Agreement (MOA) between the State Historic Preservation Officer (SHPO), City of Los Angeles, and Caltrans. • The City of Los Angeles would establish an Environmental Sensitive Area (ESA) Action Plan, which will include fencing of site no. 19-003683, archaeological and Native American monitoring during ground-disturbing activities, and training of construction workers.	Same as Alternative 2.

Table ES-3
Proposed Specific Mitigation Measures

Environmental Factor	Mitigation Measures	
	Alternative 2 – Retrofit	**Alternative 3 – Replacement**
	• The City of Los Angeles would provide a qualified archaeological monitor to be present at the site during ground-disturbing activities. In the event buried cultural resources are encountered during construction, construction would be halted and the discovery area isolated and secured until the archaeologist finishes evaluating the nature and significance of the find. • The City of Los Angeles would provide a Native American monitor(s) to be present at the site during ground-disturbing activities • If human remains are discovered, then the City of Los Angeles would notify County coroner as soon as is reasonably possible. There would be no further site disturbance where the remains were found. If the remains are Native American, then the coroner is responsible for contacting the NAHC within 24 hours. The Commission would immediately notify those persons it believes to be the Most Likely Descendents (MLDs) of the human remains. Treatment of the remains would be dependent on the views of the MLD.	
Paleontology	• The City of Los Angeles would retain a qualified paleontologist prior to the start of construction to develop and implement a Paleontological Mitigation Plan (PMP). The PMP would include obtaining a written storage agreement with a recognized museum repository; presenting preconstruction meeting instructions for construction personnel on environmental awareness; instructions on fossil remains handling requirements for archival archiving; archival requirements for remains prior to transfer to the repository for permanent storage and maintenance; instructions on fossil remains handling requirements; a discussion of bulk sample requirements of fine-grained sediment from fossiliferous or potentially fossiliferous strata; and preparation of a report summarizing the findings of the work conducted under the PMP. • The City of Los Angeles would provide a paleontological monitor onsite on a full-time basis to inspect new exposures created by earth-moving activities in areas underlain by the older alluvium and at depths greater than 5 ft below current grade for the younger alluvium. • If fossil remains are discovered, the City of Los Angeles would temporarily halt earth-moving activities at the fossil site to allow the monitor to recover the fossil remains.	Same as Alternative 2.

Table ES-3
Proposed Specific Mitigation Measures

Environmental Factor	Mitigation Measures	
	Alternative 2 – Retrofit	**Alternative 3 – Replacement**
Biological Resources	• If construction occurs between February 1 and August 31, conduct a preconstruction survey by a qualified biologist to identify any active nesting or roosting locations. If the biologist finds an active nest within the construction area and determines that it may be impacted, then the biologist would delineate an appropriate buffer zone around the nest depending on the species and the type of construction activity. Any active nests or roost observed during the survey would be mapped on an aerial photograph. The biologist would serve as a construction monitor during those periods when construction activities occur near active nest or roost areas to ensure that no inadvertent impacts on these nests occur. Results of the preconstruction survey and any subsequent monitoring would be provided to the California Department of Fish and Game (CDFG).	• To protect any possible migratory bird nesting activity, avoid removal of non-native ornamental vegetation between September 1 and January 31. If construction occurs between February 1 and August 31, conduct a preconstruction survey by a qualified biologist to identify any active nesting locations. If the biologist finds an active nest within the construction area, then the CDFG biologist would be consulted on how to relocate them to avoid any construction impacts.

Areas of Controversy

Under both build alternatives for this project, the proposed undertaking would have an adverse effect on the 6th Street Viaduct pursuant to provisions of the National Historic Preservation Act (NHPA). Alternative 2 – Retrofit proposes work that would alter the character-defining features of the viaduct, potentially making the property ineligible for inclusion in the National Register of Historic Places (NRHP) by compromising the integrity of the historic structure. Alternative 3 – proposes to replace the existing viaduct with the new structure, resulting in the removal of the historic structure. The 6th Street Viaduct is 1 of 12 historically significant bridges/viaducts that cross the Los Angeles River and are considered important both for their distinctive architecture and for the critical role they played in the development of Los Angeles as a world-class city. The 6th Street Viaduct is also a visual landmark that links the communities of Boyle Heights and Downtown Los Angeles. City preservationists are concerned about the loss of the historic viaduct, and citizens of both communities have expressed concern at public meetings about the importance of this landmark to the community and how modifications to the structure or its removal could have an adverse effect on community values.

In public and agency meetings held during project scoping, support was expressed for opportunities created by viaduct replacement to redevelop the area surrounding 6th Street Viaduct. This was viewed as an opportunity to enhance the quality of life of those living in the local community and the region. Examples of redevelopment and land use opportunities included adding more recreational area adjacent to the new viaduct; making the viaduct a landmark destination; development of retail and gallery space; provision of river access; and making the area around the viaduct a defensible space to facilitate the elimination of crime and homeless occupation. While these opportunities are compatible with the objectives and plans of the Los Angeles River Revitalization Master Plan, redevelopment of this land for non-industrial uses would be inconsistent with the local community plans that aim to preserve the industrial land uses and protect employment within the community plan area.

Another area of public debate that arose during project meetings has been the wide-ranging preferences for replacement bridge types to be constructed for the main span over the Los Angeles River. Five bridge types have been evaluated by the Project Development Team members, the bridge experts, and the general public. The bridge types under consideration include a replication of the existing viaduct, variations of a contemporary arch structure, and ultra-modern "extradosed" (cable-supported) structures.

Agreements and Permits to be Obtained from other Agencies

The following permits, reviews, and approvals would be required for project construction:

Agency	Permit/Approval
U.S. Army Corps of Engineers (USACE)	Section 404 Permit for possible discharge of dredged or fill material into the Los Angeles River
State Historic Preservation Officer (SHPO)	Section 106 consultation and agreement document to resolve the adverse effect to the historic 6th Street Viaduct
Los Angeles Regional Water Quality Control Board (RWQCB)	Section 401 Water Quality Certification for work in the Los Angeles River Channel
RWQCB	Groundwater Dewatering Permit for discharges of groundwater from construction and project dewatering to surface waters in the watersheds of Los Angeles
California Department of Fish and Game (CDFG)	Section 1602 Agreement for Streambed Alteration
All railroad agencies owning and operating railroad tracks along both sides of the Los Angeles River	Railroad License/Agreement for work within railroad ROW

Chapter 1
Purpose and Need

Chapter 1 Purpose and Need

1.1 Introduction

The California Department of Transportation (Caltrans) and the City of Los Angeles (City) propose to undertake the improvement of the 6th Street Viaduct over the Los Angeles River (Bridge No. 53C-1880) and the 6th Street Overcrossing, which is a portion of the US 101 Hollywood Freeway (Bridge No. 53-0595). The structure is located in a highly urbanized area just east of Downtown Los Angeles in the County of Los Angeles, California, as shown in Figure 1-1.

On September 11, 2007, Caltrans entered into a cooperative agreement, in which the City of Los Angeles is designated as the California Environmental Quality Act (CEQA) lead agency for the whole project, which covers both the City- and state-owned portions of the viaduct. Therefore, the City has accepted CEQA responsibility.

This Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) has been prepared in accordance with the 2002 City of Los Angeles Environmental Quality Act Guidelines, adopted pursuant to the requirements of Section 15022(a) of the CEQA Guidelines; the Council on Environmental Quality (CEQ) Regulations implementing the National Environmental Policy Act (NEPA) (40 *Code of Federal Regulations* [CFR] 1500-1508); and the Federal Highway Administration (FHWA) Environmental Regulations (23 CFR 771) to inform the public and decision makers of the environmental effects of the 6th Street Viaduct Seismic Improvement Project. This document has been prepared jointly by Caltrans, the federal lead agency for NEPA, functioning as a designee of FHWA, and by the City of Los Angeles, who is the lead agency for CEQA.

Caltrans first published a Notice of Intent (NOI), in accordance with NEPA, in the *Federal Register*, and the City simultaneously published a Notice of Preparation (NOP), in accordance with CEQA, to announce preparation of an EIR/EIS for the 6th Street Viaduct Seismic Improvement Project. The NOI was published in the *Federal Register* on August 31, 2007, and the NOP was filed on August 1, 2007, with the Governor's Office of Planning and Research Statewide Clearinghouse. The NOP was also published in newspapers of general circulation and ethnic publications corresponding to the demographic profile of the communities subject to impact. The NOP and invitations to attend a scoping meeting were also mailed to government agencies, business groups, neighborhood associations, property owners, and additional stakeholders. Three separate scoping meetings (two on August 24, 2007, and one on August 26,

2007) were held to receive recommendations for the range of actions, alternatives, mitigation measures, and environmental effects to be analyzed in the EIR/EIS.

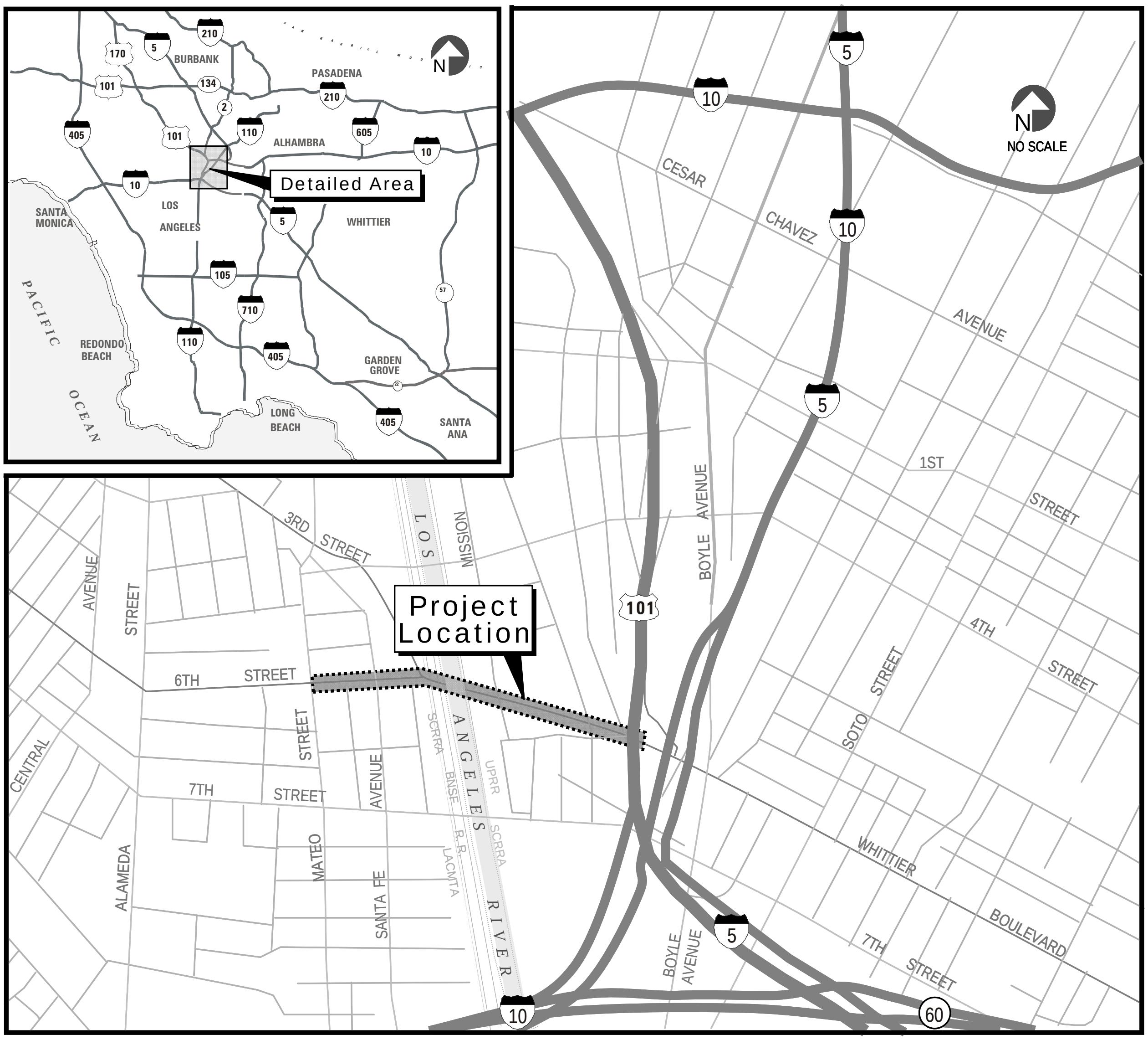

Figure 1-1 Project Location and Vicinity Maps

1.2 Project Location and Setting

The 6th Street Viaduct (Bridge No. 53C-1880) and 6th Street Overcrossing (Bridge No. 53-0595) comprise a single structure that spans a portion of the Hollywood Freeway (US 101), the Los Angeles River, city streets, and several railroad tracks (Figure 1-2). The structure is located in a highly urbanized area just east of Downtown Los Angeles and connects Downtown Los Angeles on the west side of the river with the Boyle Heights community on the east side of the river. The 66-foot (ft)-wide viaduct (from outside edge to outside edge) is approximately 3,500 ft long, with a 46-ft-wide (curb-to-curb) four-lane roadway having 11-ft-wide interior and 12-ft-wide exterior traffic lanes, no shoulders, and variable-width sidewalks extending along both sides. An approximate 3,264-ft-long segment of the viaduct is owned by the City, and the 235-ft-long portion overcrossing US 101 is owned by Caltrans.

The proposed project is located within a fully developed, mixed-use urban setting. The project limits would extend along 6th Street from west of southbound (SB) Interstate 5 (I-5) on the east side of the Los Angeles River to Mill Street on the west side of the river (see Figure 1-2). The project is located at the boundary of the City of Los Angeles' Central City North and Boyle Heights General Plan areas. Sixth Street is one of the primary thoroughfares connecting Downtown Los Angeles and Boyle Heights.

The 6th Street Viaduct crosses the Los Angeles River along an east-west alignment. Land uses along the north and south sides of the viaduct are predominantly industrial and commercial. A City Department of Public Works maintenance office is located within the area underneath the viaduct on the west side of the river. Many homeless people shelter under the viaduct on both sides of the river. A United States Army Corps of Engineers (USACE) tunnel, which is located under the viaduct on the west side of the river, provides access to the river from Santa Fe Avenue near the frontage road on the south side of the viaduct.

Railroad corridors exist along the east and west banks of the river. On the west bank of the river, the two tracks closest to the river are owned by the Metropolitan Transportation Authority (MTA) and used by the Southern California Regional Rail Authority (SCRRA) to operate Metrolink trains. The five tracks west of the MTA tracks are owned by Burlington Northern Santa Fe (BNSF), and the rest of the tracks are owned by MTA and used for the Metro Red Line. Amtrak and BNSF also operate trains on MTA's two tracks on the west bank. On the east bank, the two tracks closest to the river are owned by MTA, and the Union Pacific Railroad (UPRR) owns the rest of the tracks. UPRR also operates trains on MTA's tracks on the east side of the river.

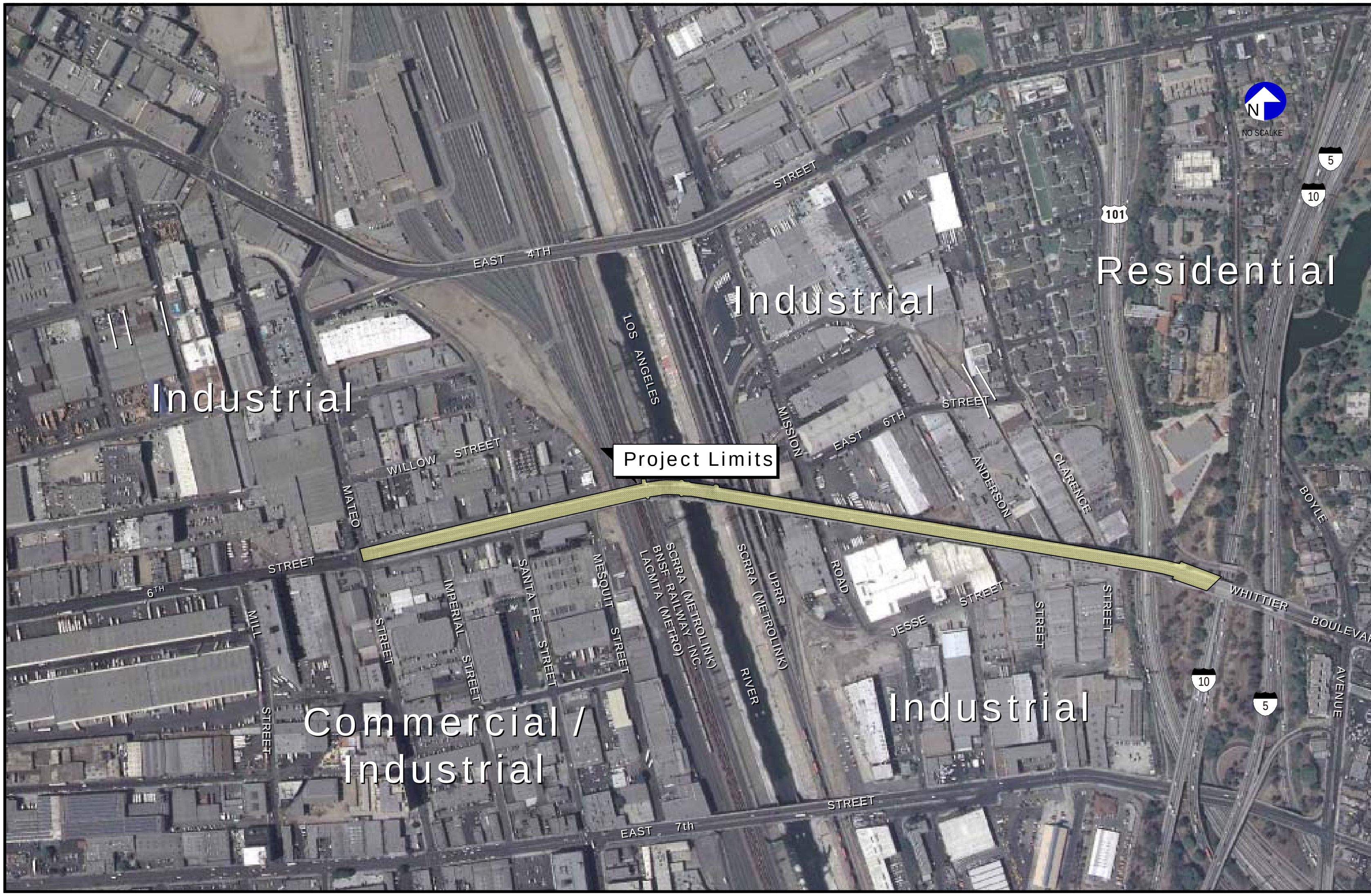

Figure 1-2 Aerial View of the Proposed Project Vicinity

The Los Angeles River, which passes beneath the viaduct in a north-south direction, is contained within a trapezoidal concrete-lined channel. The Los Angeles River is a flood control channel that receives stormwater runoff from its 834-square-mile watershed, treated effluent from two wastewater treatment plants, and some rising groundwater in the Glendale Narrows area. The river discharges to an estuary in Queensway Bay in the Long Beach Harbor.

Within the immediate project area, three high-voltage transmission lines, which are operated by the Los Angeles Department of Water and Power (LADWP), are located along and cross the river – one line on each bank with wires overhanging the viaduct and one crossing on the south side of the viaduct (see Figure 1-3).

Figure 1-3 High-Voltage Transmission Towers in the Vicinity of the Viaduct

1.3 Project Funding

The 6th Street Viaduct Seismic Improvement Project is included in the 2008 Regional Transportation Improvement Program (RTIP), in which the project is programmed for $245 million over a 6-year period, Fiscal Years 2008/9 to 2013/14.

On December 8, 2005, FHWA issued a Memorandum *"Project Financial Plan Requirements under SAFETEA-LU,"* which directed every state Department of Transportation (DOT) to prepare Project Financial Plans for projects between $100 and $500 million in accordance with the FHWA Financial Plan Guidance issued May 2000.

The Project Financial Plan for the 6th Street Viaduct Seismic Improvement Project has been prepared in accordance with the FHWA guidance. Cost estimates for various project alternatives, as outlined in Chapter 3, range from $225 million for the Retrofit Alternative to $402 million for the most costly bridge type under the Replacement Alternative. The Project Financial Plan is developed using the average cost of $345 million, which would include:

- Preliminary design and preparation of Project Report and Environmental Document.
- Preparation of plans, specifications, and estimate, as well as Caltrans services to secure required right-of-way (ROW).
- Construction services, including Caltrans construction contract administration and inspection, and City of Los Angeles/consultant team involvement during construction.
- Capital costs to secure parcels that require easements.
- Costs for demolition and reconstruction of the viaduct.

The three funding sources identified for this project include:

- <u>Highway Bridge Program (HBP) funds –</u> These are federal funds that are apportioned by formula to the states. Caltrans then programs these funds to the various bridge projects in the state. The City of Los Angeles has received programmed approval from Caltrans for approximately $200 million in HBP funds and is seeking programming authority for an additional $92 million. The City will work with Caltrans to identify additional HBP funds available each year. In some years, Advanced Construction (AC) Authority may have to be used if HBP funds are over-committed within the state.

- <u>Proposition 1B Local Bridge Seismic Retrofit Account (LBSRA)</u> <u>–</u> These funds are part of the $20 billion Proposition 1B passed by California voters in November 2006. The LBSRA account provides $125 million for the 11.5 percent required match for the federal HBP Fund for the Local Seismic Bridge Retrofit Program projects. The City of Los Angeles 6th Street Viaduct Seismic Improvement Project is eligible for these funds.

  The California Transportation Commission (CTC) approved the Caltrans March 9, 2007, list of eligible Proposition 1B LBSRA projects, and the 6th Street project was included on that list.

As of June 19, 2008, the 6th Street project was officially approved by the CTC to receive $25,807,045 of Proposition 1B LBSRA match funding. In a June 19, 2008, letter, Caltrans notified Gary Moore, City Engineer, City of Los Angeles, that the 6th Street project, as well as 12 other City of Los Angeles bridge projects, will receive Proposition 1B LBSRA matching funds.

Approval for the 6th Street project includes $5,964,395 in ROW funds and $19,842,650 in construction funds for a total of $25,807,045 of LBSRA matching funds. This funding saves the City of Los Angeles a like amount of local funds to match the $199,188,992 of federal HBP funds.

The City of Los Angeles is now seeking an additional $11 million of state match, either from additional LBSRA funds or other state funds, to match the additional HBP funds needed.

- City Matching Funds – These funds are composed of Proposition C 25-percent Local Return funds, which are a component of the Los Angeles County Proposition C half-cent sales tax measure allocated by formula to the cities within Los Angeles County. The other City matching fund source is Proposition G, the City of Los Angeles' seismic bond funds.

1.4 Project Purpose

The purpose of the proposed project is to:

- Preserve 6th Street as a viable east-west link between Boyle Heights and Downtown Los Angeles
- Reduce vulnerability of the 6th Street Viaduct in major earthquake events
- Resolve design deficiencies of the 6th Street Viaduct

1.5 Project Need

The following discussion summarizes the present conditions of the existing 6th Street Viaduct that constitute the need for the proposed improvements.

1.5.1 Preserve Viability of 6th Street Transportation Corridor

The 6th Street Viaduct is an important link between East Los Angeles communities, such as the Boyle Heights Community and Downtown Los Angeles. The viaduct carries more than 13,000 vehicle trips per day compared to 12,690 along the 1st Street Viaduct and 17,680 along the 4th Street Viaduct, which are two other important links between East Los Angeles and the downtown area (refer to Table 3.7-2 in Chapter 3). With known development projects currently underway and under planning within the project vicinity (see Section 1.6), the 6th Street transportation corridor will become increasingly important to local communities east and west of the viaduct and to the regional transportation network.

In addition to being an important link between East Los Angeles and Downtown Los Angeles, many Boyle Heights residents view the viaduct as a community landmark and an iconic emblem of the City of Los Angeles as a whole. Residents in the Arts District also view the viaduct as an iconic symbol of the City. The 6th Street Viaduct has a unique role in fostering cohesion of the larger communities in the City of Los Angeles since it is the venue for *Festival de la Gente*, which is an annual festival celebrating the traditional Latino holiday *Dia de los Muertos*, the Day of the Dead. The festival, which is a major community event celebrating Latino culture, first started in 1999. In recent years, the festival has been sponsored by the Los Angeles City Council member of the 14th Council District in conjunction with the Speaker of the California Assembly, and Los Angeles City Mayor, with additional support by private corporate sponsors. The festival is the nation's largest *Día de los Muertos* celebration and features local Hispanic artists and entertainers, and various food and crafts booths. It is held annually during the last week of October, one or two days before the Day of Dead. In 2006, more than 70,000 people attended the celebration.

The recently adopted Los Angeles River Revitalization Master Plan (LARRMP) designated the area covering the 6th Street Viaduct and its surrounding area as the "Downtown Industrial Opportunity Area," one of the five demonstration areas of the LARRMP. There are currently two alternatives for the development of the opportunity area: the DI-A and DI-B concepts. Both concepts designate 6th Street in the proposed project area as a Primary Arterial Green Street. The alternatives also propose an expanded multi-use and bicycle trail on the western bank of the Los Angeles River, and a promenade along the eastern bank of the river, each having its own underpass under the 6th Street Viaduct. In addition, both alternatives provide pedestrian bridge access ramps from the west side of 6th Street north to the proposed expanded trail. Alternative DI-A designates the area east of the river north of 6th Street as a *Neighborhood Gateway*, while Alternative DI-B establishes this area as a *Regional Gateway*. See more detailed discussion on the LARRMP in Section 3.2 of this EIR/EIS.

1.5.2 Reduce Vulnerability to Seismic Collapse

The 6th Street Viaduct is classified as a Category I structure by Caltrans[3], and mandatory seismic retrofit is required. The viaduct was constructed in 1932 using state-of-the-art concrete technology and the use of an onsite concrete batch plant. Over the last 75 years, concrete elements of the viaduct have cracked and deteriorated as a result of an internal chemical reaction called Alkali Silica Reaction (ASR), which is believed to be caused by the aggregate used to prepare the concrete. Because of this ongoing and irreversible chemical action, the 6th Street Viaduct's concrete has lost significant strength, and the structure is subject to failure under predictable seismic energy releases.

Damage of concrete due to ASR was first recognized in the United States during the 1940s. Alkali Silica Reaction is a chemical reaction in the concrete matrix that occurs between the alkaline pore solution of the cement paste and silica in the aggregate particles. The ASR deterioration of the mortar and concrete is due to the swelling of gel formed by the reaction of alkali in the cement with reactive silica in aggregates in the presence of moisture. The expansion of the gel generates tensile stresses in the concrete element, resulting in expansion and cracking. The most common manifestations of ASR are surface cracking. In the advanced stages, a clear to milky gel (i.e., silica gel) will sometimes extrude from cracks in the concrete.

In the late 1980s, the deck of the 6th Street Viaduct was stripped of asphalt and a waterproof coating applied to the underlying concrete in an attempt to minimize moisture infiltration, which is a necessary component for ASR. In addition, the City has repeatedly patched the viaduct using epoxy injection – a process that has left stains and discoloration and necessitated the application of cementitous coatings to hide the unsightly honeycomb effect of these repairs and to further seal the surface from moisture. Cracking is evident throughout the viaduct, with large cracks and spalling evident on its outer columns. Core samples show more severe cracking within the concrete matrix than on the outer surface.

While the deteriorated surface appearance of the viaduct is an issue, its underlying structural integrity is of much greater concern. In 1989, the Whittier Narrows earthquake caused damage to shear keys and a column crack at Bent 33. The structure has since been classified by Caltrans as a Category I structure and placed on the mandatory seismic retrofit list.

In the mid 1990s, Caltrans conducted an evaluation of Bridge No. 53-0595, which is the portion of the viaduct owned by Caltrans that crosses US 101. This evaluation determined that seismic retrofit was warranted, and in 1995 Caltrans undertook a retrofit construction project for that

[3] A Category 1 structure is a highway structure that has been classified by Caltrans to be vulnerable to collapse during a design-level earthquake. This classification of structure requires mandatory seismic retrofit.

portion of the 6th Street Viaduct. The Caltrans seismic retrofit project placed infill walls between existing columns at the bents adjacent to the mainline roadbed, from Bent 37 to the east abutment. While this improvement was consistent with the Category I seismic retrofit program by eliminating potential collapse vulnerabilities, it did not resolve the long-term ASR problem and only improved the state-owned 235-ft-long portion of the 3,500-ft-long viaduct. The City elected to not move forward with a retrofit design similar to the one employed by Caltrans because of concerns that such a strategy would not address the ongoing degradation of the viaduct concrete due to ASR. The ASR deterioration continues to weaken the concrete strength, which results in greater seismic vulnerability over time.

In late 2000, the City engaged a consultant to determine the strength of the existing concrete and the overall condition of the structure through a materials testing program. This extensive investigation, completed in January 2002, confirmed the presence of severe cracking and low concrete strength throughout the viaduct and identified its root cause to be ASR[4]. Figure 1-4 shows cracks due to ASR, and Figure 1-5 shows a concrete core sample exhibiting the damage caused by ASR. Figure 1-6 graphically summarizes findings of the materials testing program at various elements of the 6th Street Viaduct due to ASR. As can be seen, the areas closest to the river show the most damage.

The *Final Seismic Retrofit Strategy Report*, completed in 2004[5] following the extensive material testing program mentioned earlier, concluded that the viaduct, in its current state of material deterioration and lack of structural strength, is subject to collapse under loadings associated with a major earthquake. The probability that the viaduct will fail under major seismic events exceeds 70 percent in 50 years. This vulnerability level is extremely high compared to the normally accepted collapse probability of 10 percent or less over 50 years, as defined by the American Association of State Highway and Transportation Officials (AASHTO) and Caltrans. The high risk of collapse and continuing concrete deterioration indicates the need for timely corrective action to either seismically retrofit the viaduct or replace the viaduct.

[4] Sixth Street Viaduct Over Los Angeles River (Bridge No. 53C-1880): Field Sampling and Testing Program Final Report, February 2002.

[5] Sixth Street Viaduct Final Seismic Retrofit Strategy Report. 2004.

Figure 1-4 Cracks due to ASR

Figure 1-5 Concrete Core Sample Showing Damage Caused by ASR

1.5.3 Resolve Viaduct Geometric and Structural Design Deficiencies

The National Bridge Inspection Standards (23 CFR 650) apply to all structures defined as bridges located on public roads. Inspection records and bridge inventories are maintained in accordance with the standards through the Caltrans Structure Maintenance and Investigations *Bridge Inspection Records Information* report. Each bridge is to be inspected at regular intervals not to exceed 2 years.

Based upon the inspection records and bridge inventory data, a sufficiency rating is calculated for the particular bridge. The sufficiency rating is a method of evaluating highway bridge data by calculation of four separate factors to obtain a numeric value that is indicative of the adequacy of the bridge to remain in service. The result of this method is a percentage where 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient (deficient) bridge. These factors include:

1) Structural adequacy and safety, up to 55 percent
2) Serviceability and functional obsolescence, up to 30 percent
3) Essentiality for public use, up to 15 percent
4) Special reductions, up to 13 percent

The City-owned viaduct (Bridge No. 53C-1880) has a sufficiency rating of 52.4[6]. Bridges are deemed structurally deficient by the federal government if the deficiency rating is below 80, and therefore eligible for federal funding to correct the deficiency. The purpose of the rating system is to help the federal government determine which bridges need funding for repair or replacement. The major factors contributing to the low sufficiency rating of the structure include:

- Cracking and condition of deck, superstructure, and substructure elements
- Inadequate roadway width
- Out of specification bridge and approach railing, and approach rail ends
- Poor roadway alignment
- Out of specification geometric and seismic detail design

[6] Caltrans. 2006. Bridge Inspection Records Information, Structure Inventory and Appraisal Report, Bridge No. 53C-1880, California Department of Transportation, Structure Maintenance and Investigation. August.

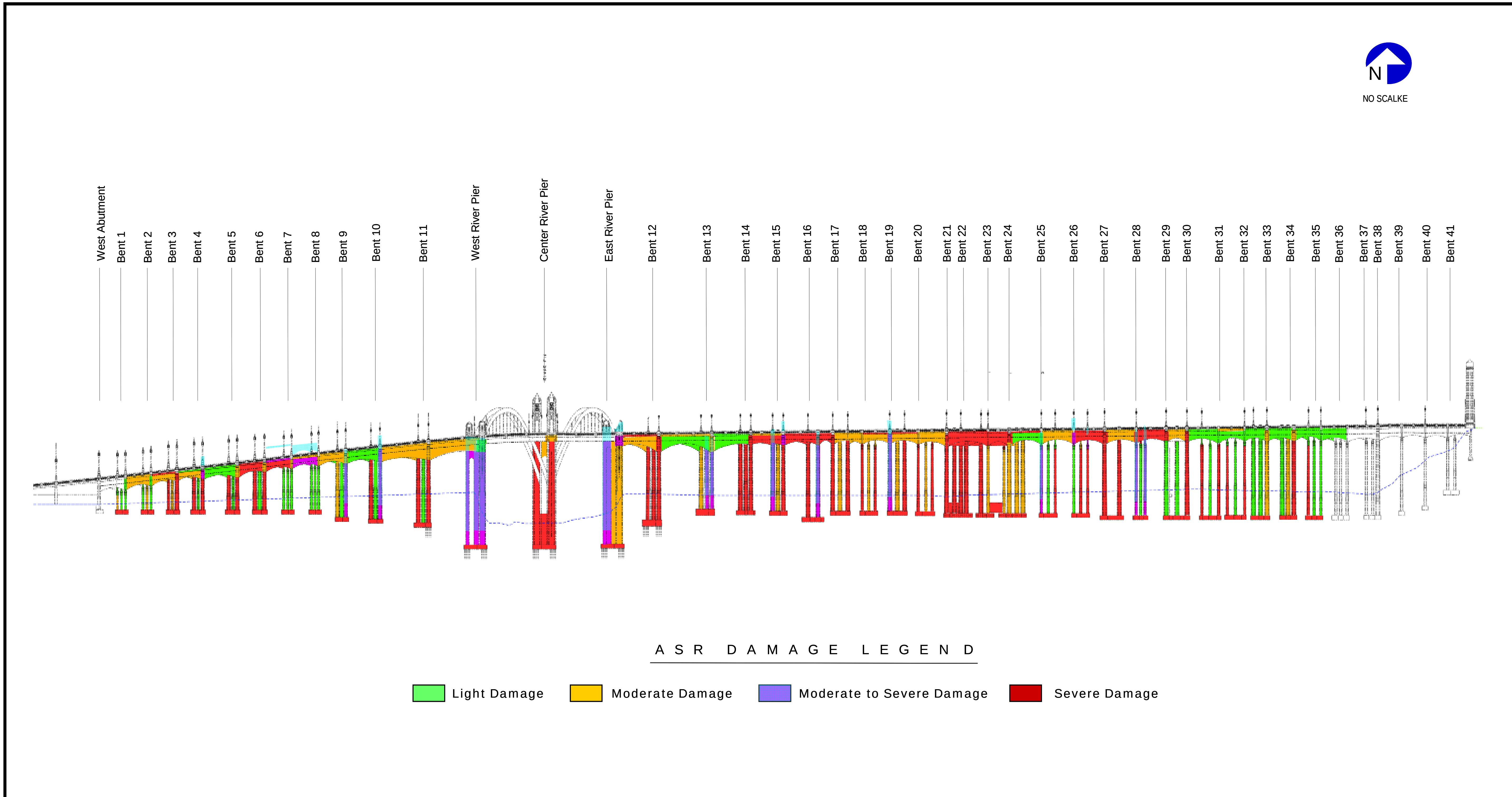

Figure 1-6 Level of Damage in Various Elements of the 6th Street Viaduct due to ASR

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1.5.4 Accident History

Accident records from January 1, 2000, to September 30, 2006, for the viaduct and adjacent streets, were obtained from the Los Angeles Department of Transportation (LADOT). Twelve (12) accidents were recorded at the intersection of 6th and Mateo Streets, which consisted of six broadside, four involved with fixed objects, one rear-end, and one head-on collision. The high percentage of broadside and fixed-object accidents may be due to the connection of the 6th Street frontage roads on both sides of the viaduct to the intersection of Mateo Street.

Along the segment of 6th Street between Mateo Street and the US 101 northbound (NB) ramp, 33 accidents were recorded during this period. The accidents included 20 fixed-object and 8 sideswipe collisions. Fourteen (14) out of the 33 accidents occurred within 600 ft east and west of the mid-point of the tight-radius (kinked) segment and could be attributable to the lack of median area, the tight horizontal curve, and obscured sight distance near the kink in the main span through the arch ribs. Furthermore, 3 fatalities occurred within this 1,200-ft-long segment.

1.6 Related Projects

Several projects are known to be proposed, approved, or under construction within the immediate Downtown Los Angeles area and nearby vicinity. Six projects have been identified as contributing to additional traffic in the proposed construction years of this proposed project. A review of the City of Los Angeles highway improvement public works project list further identified four additional projects that may impact traffic operations within the project area during the construction period; however, these public work projects would not contribute to capacity enhancement of the study intersections and street segments.

Information provided by the LADOT Planning Department on the traffic-generating related projects is summarized in the following paragraphs.

- **Hollenbeck Police Station Replacement:** The project involves the replacement of the existing Hollenbeck Police Station with new offices and is located at the corner of 1st Street and Saint Louis Street, Los Angeles. The new office would have a capacity of 350 sworn and civilian personnel, a potential increase of 73 employees. The additional 73 employees generate an estimated 445 daily trips. The existing uses on the site provide trip credits, and it is allowed by LADOT traffic analysis guidelines. Due to the trip credits from existing uses, it is expected that there would be a net decrease in the total daily trips and minimal increase in peak period traffic.

- **Mixed-Use Project: 100-300 South Santa Fe Avenue:** This is a proposed residential, retail, and commercial mixed-use project development. The project is part of the MTA Maintenance Yard site located on the east side of Santa Fe Avenue between 1st Street and north of 4th Street in Downtown Los Angeles. The site address is within the Central City North Community Plan and Artists-in-Residence District. The project proposes development of 442 apartment units, 17 live/work units, and 25,000 square feet of retail use. The project will generate approximately 2,443 total trips per day, which includes 208 trips during the morning peak hour and 229 trips during the afternoon peak hour.

- **Pollo Campero Restaurant – 425 South Soto Street:** The Pollo Campero Restaurant is proposed in an existing commercial center located at the southwest quadrant of South Soto Street and 4th Street in the Boyle Heights area in the City of Los Angeles. The proposed restaurant is at 425 South Soto Street. The building area is 2,660 square feet and would include a drive-through facility.

- **East Los Angeles Area New High School No. 1 – Mission Road and Plaza Del Sol:** The project involves the construction of 4 new buildings totaling 108,000 square feet on a 6.22-acre site with a maximum enrollment of 1,026 students. A subterranean parking structure with 95 parking spaces and a two-way driveway with access from Mission Road for staff and guests would be provided below the first building. The second and third building would each be two-story structures with 19 classrooms in each building. The fourth building would house an indoor gymnasium and locker facilities, a library, a performing arts facility, and student services. A student drop-off/loading and unloading zone is proposed on the south side of Plaza Del Sol just east of Mission Road.

- **Freight Yard Redevelopment Project – 970 S. 3rd Street:** The Southern California Institute of Architecture proposes to redevelop the 12-acre site bounded by 4th Street, Santa Fe Avenue, East 3rd Street, and Merrick Street. Project-generated business trips will be distributed mainly through Merrick Street and Santa Fe Avenue.

- **7th Street and Santa Fe Project:** This commercial project would distribute vehicular trips to the intersections of 6th Street/Mateo Street, 7th Street/Mateo Street and 7th Street/Santa Fe Avenue. Total trips generated during the PM peak hour are not significant (i.e., less than 30).

In addition to the above, three major public work projects were identified as related projects. When completed, these projects do not generate vehicular traffic or contribute to capacity enhancement within the study area; however, the construction schedule of these public work projects may contribute to cumulative impacts to the construction of the proposed 6th Street

Viaduct Seismic Improvement Project. These projects are briefly discussed in the following paragraphs:

- **First Street Viaduct and Street Widening Project:** Currently under construction, this project widens the 1st Street Viaduct deck by 26 feet to accommodate the future MTA Gold Line Light Rail Extension project. It will restore two lanes of vehicular traffic in each direction. Viaduct approaches and transition roadways will be improved. Construction will be completed in 2009.

- **East LA Area Primary Sewer Rehabilitation:** This project proposes rehabilitating approximately 21,635 linear feet of aging and structurally deteriorated sewers, ranging from 16 inches to 40 inches in diameter. The sewer reaches targeted for rehabilitation are scattered throughout the entire Central Area. Impacts to the 6th Street Viaduct Replacement Alternative include 7th Street in the vicinity of Santa Fe Avenue and Alameda Street between 6th Street and 7th Street. The rehabilitation schedule is from January 2010 to March 2012.

- **North Outfall Sewer (NOS) Rehabilitation Project:** This project will rehabilitate a portion of the NOS along the east side of the Los Angeles River. The reach of sewer will stretch from 6th Street and Mission Road to the Humboldt Division, which is approximately 2.7 miles north of 6th Street. The project is scheduled to be constructed between April 2014 and December 2016.

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Chapter 2
Proposed Project Alternatives

Chapter 2 Proposed Project Alternatives

2.1 Introduction

This section describes the proposed action and the design alternatives that were developed by a multidisciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. Two Action Alternatives and a No Action Alternative are analyzed in this Draft EIR/EIS.

2.2 Proposed Project Description

2.2.1 Proposed Action

The California Department of Transportation (Caltrans) and the City of Los Angeles (City) propose to undertake the improvement of the 6th Street Viaduct over the Los Angeles River (Bridge No. 53C-1880) and the 6th Street Overcrossing, which is a portion of the US 101 Hollywood Freeway (Bridge No. 53-0595), to correct seismic deficiencies of this critical Los Angeles River crossing by either retrofitting the existing structure or replacing the 6th Street Viaduct. The proposed project would also correct geometric inadequacies of the existing viaduct to meet current codes set forth by AASHTO and LADOT. Nearby roadway, intersection, and adjacent land improvements would also be undertaken.

2.2.2 Description of Existing Viaduct

The 6th Street Viaduct is comprised of 43 concrete spans and 2 large steel through arch truss spans over the Los Angeles River. Most of the structure sits on 58-ft-high columns supported by spread footings. The 6th Street Viaduct was determined eligible for inclusion in the National Register of Historic Places (NRHP) because of its association with the Los Angeles River bridge program and its extraordinary Streamline Moderne design rendered in steel and reinforced concrete. It also is a historical resource for purposes of CEQA, because it meets CEQA Guidelines §15064.5(a)(3)(A) and (C). Its period of significance is from 1933, when it was completed, until 1957 (50-year cutoff), and its significance is at the state level.

Most of the structure is supported by multiple column bents and spread footings. The viaduct can be divided into the following three segments: (1) approach spans west of the Los Angeles River, (2) steel through arch spans over the river (main spans), and (3) approach spans east of the river. Table 2-1 summarizes design features of the viaduct.

Table 2-1
Summary of 6th Street Viaduct Design Features

Component	Design Features
Superstructure Type	Approach spans: cast-in-place concrete T-beams
	Los Angeles River spans: half-through steel arch with suspended deck
Substructure	Tapered concrete columns on concrete pedestals
Foundation	Approach spans: spread footing, 15 ft to 20 ft plus or minus below ground
	Los Angeles River spans: pile foundations (precast concrete piles)
Total Span Length	3,178 ft (West Abutment to East Abutment)
Number of Spans	45 (43 concrete spans plus 2 steel arch spans)
Spans within Caltrans Right-of-Way (ROW)	Bent 37 to East Abutment
Length within Caltrans ROW	235 ft
Average Span Length	71 ft
River Spans	2 Spans each approximately 163 ft
Width	46 ft curb-to-curb with 5-ft-wide raised walkways on both sides
	Total outside-to-outside width = 55 ft 10 inches (River spans and East Approach)
Average Column Height	West Approach spans: 30 ft above ground
	East Approach spans: 55 ft above ground
	Los Angeles River spans: 61 ft above river

Source: 6th Street Viaduct Seismic Improvement Project Bridge Type Selection – Structure Type Screening Phase,David Evans and Associates, Inc., October 2007.

West Approach Spans: The west approach has 12 spans. The reinforced concrete deck, longitudinal T-beams, and diaphragm beams are supported on reinforced concrete bent caps. The viaduct superstructure is supported on a seat-type abutment on the west side. On the east end, the approach superstructure is supported on the west river pier. Expansion joints exist at nearly every third span of the superstructure, and the longitudinal T-beams of the superstructure are continuous between the expansion joints. All piers are supported on spread footings, except at Bent 11, where columns are supported on pile foundations.

River Spans: The middle segment of the viaduct consists of a dual, two-span continuous asymmetrical steel tied arch. The arch ribs consist of built-up sections with varying depth that form a compression arch that rises above the deck from the east and west river piers and then dives below the concrete deck just before reaching the center river pier, with the base of the arches supported at the center pier. Thus, the arch ribs are fixed to the center river pier while supported on segmental rockers on the west and east river piers.

East Approach Spans: The east approach is similar in construction to the west approach. It has 31 spans between the east river pier and the east abutment. The span lengths and skew angles to the bents vary to allow several local streets to pass underneath the viaduct. Columns of Bent 12 are supported on pile foundations, whereas columns in all other bents are supported on spread footings.

2.3 Description of Evaluated Project Alternatives

Several project alternatives were developed during the project development stage. Screening exercises were conducted to select the most viable alternatives for evaluation in this EIR/EIS. Selection of an alternative will not occur until there is full evaluation of all environmental impacts, consideration of all public hearing comments, and approval of the final environmental document.

2.3.1 Alternative 1 – No Action

This alternative provides neither retrofit nor replacement of the seismically and functionally deficient 6th Street Viaduct. The alkali silica reaction (ASR)-induced deterioration of the structure would continue, and the seismic vulnerabilities would worsen as the concrete strength continued to deteriorate. The City would provide ongoing inspection and maintenance on the viaduct to keep it open to traffic as long as possible, given the ongoing ASR deterioration and seismic vulnerabilities. The 6th Street Viaduct would remain at its existing roadway width of 46 ft, which accommodates two travel lanes in each direction with no outside shoulders or safety median. None of the design deficiencies would be corrected under this alternative.

2.3.2 Alternative 2 – Viaduct Retrofit

Two retrofitted schemes were selected for detailed study and evaluation in this EIR/EIS, including Infill Wall and Heavy Steel Casing and Substructure Replacement. The following subsections provide detailed descriptions of each retrofit scheme.

2.3.2.1 Retrofit using Infill Wall and Heavy Steel Casing Method

Under this alternative, the viaduct's columns would be retrofitted by encasing them with steel, and infill walls would be constructed between selected columns. In addition, new foundations, grade beams, retrofitting of bent caps, and closure of some expansion joints in the superstructure would be constructed in combination with the column retrofits. The structure would be retrofitted to the minimal standard of "no collapse" for the design seismic event.

Column Retrofit

Under this retrofit alternative, 76 columns would be encased, of which 26 would utilize 7/8-inch plates and 50 would utilize 5/8-inch steel plates. A 6-inch layer of architectural mortar would conceal the exposed plates, channels, and bars (Figure 2-1). All exterior columns with "Light" or "Moderate" damage ratings would also be encased to account for future concrete degradation due to ASR expansion. Encasing all exterior columns would also maintain visual balance and consistency for the retrofitted structure. The interior columns in Bents 1, 4, and 5 would be encased to enhance their shear strengths. Bent 12 would be excluded from retrofitting because of the lack of space available for construction of the column encasement due to proximity of railroad tracks.

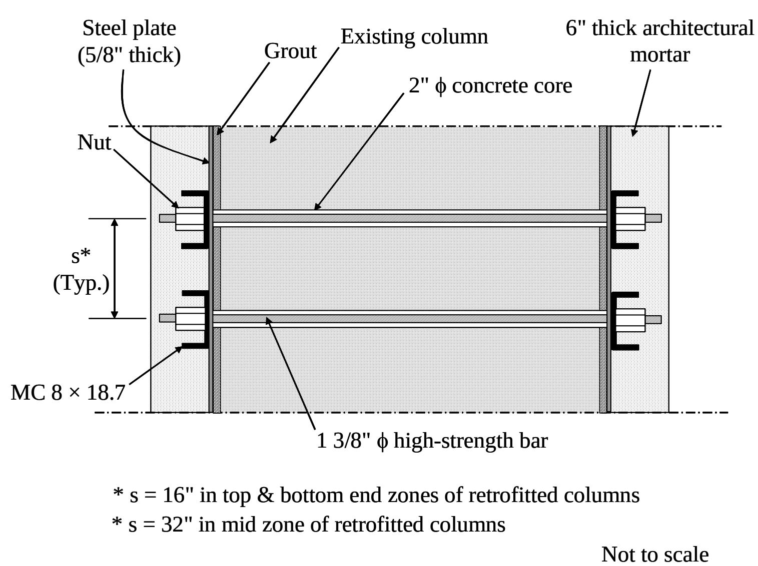


Figure 2-1 Steel Encasement of Columns

Infill Walls, New Foundations, Grade Beams, and Closure of Expansion Joints

Infill shear walls would be constructed between the columns to reduce transverse seismic movements of the structure. Grade beams would be constructed below ground between the existing pile caps to reduce longitudinal seismic movement of the structure. Expansion joints in the superstructure would be reconstructed at Bents 27 and 33, connecting adjacent spans to reduce seismic longitudinal displacement demands for the East Approach Spans. Figure 2-2 presents a conceptual sketch of the proposed infill walls and column casings.

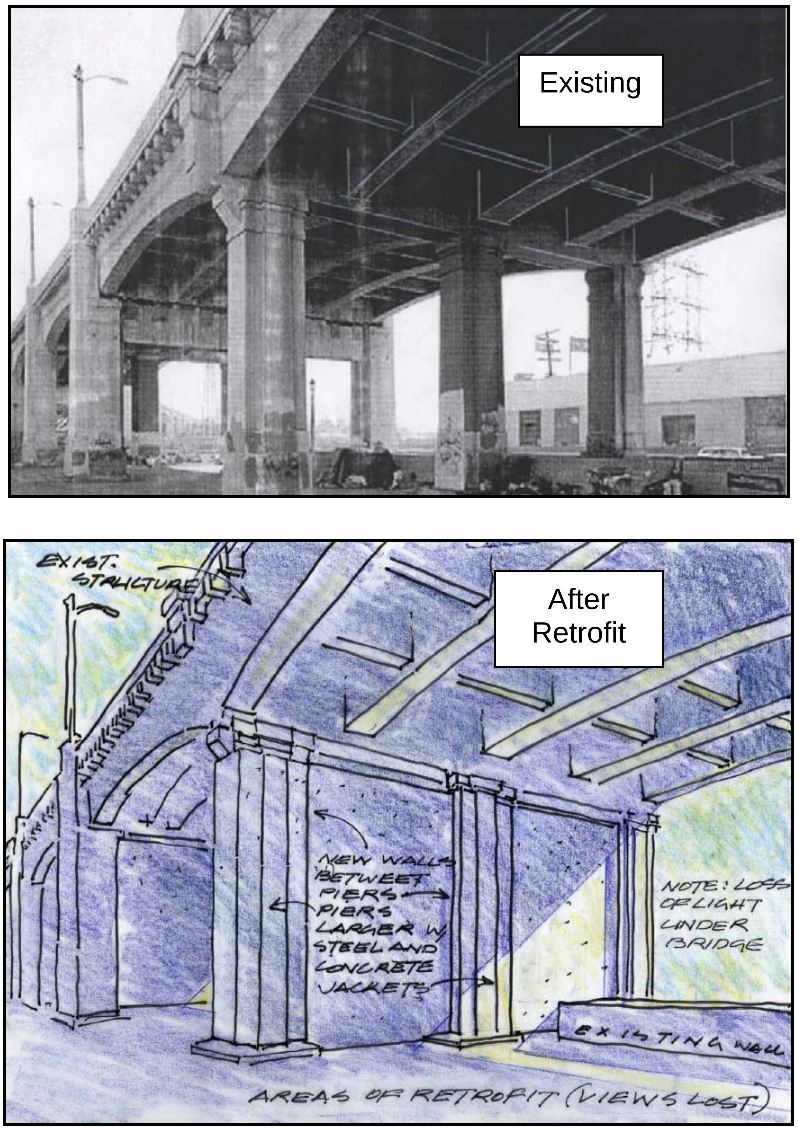


Figure 2-2 Conceptual Drawing Alternative 2 – Retrofit

Bent Caps Retrofit

Retrofitting of bent caps would ensure that the expected seismic damage would take place in a controlled fashion. Retrofitting of bent caps for flexural strength enhancement is proposed at 16 bents (excluding Bents 27 and 33 where expansion joints would be closed). Bent cap retrofit would be achieved by means of concrete bolsters, which would be bonded to the bent caps by dowels that run through pre-drilled cores in the existing bent cap. Continuity of the concrete bolsters along the length of the bent cap would be achieved by post-tensioning of high-strength bars that would run through pre-drilled cores in the superstructure girders (see Figure 2-3). The post-tensioning bars would be anchored at their ends by exterior steel plates; these exposed plates and the bars would also be concealed by mortar.

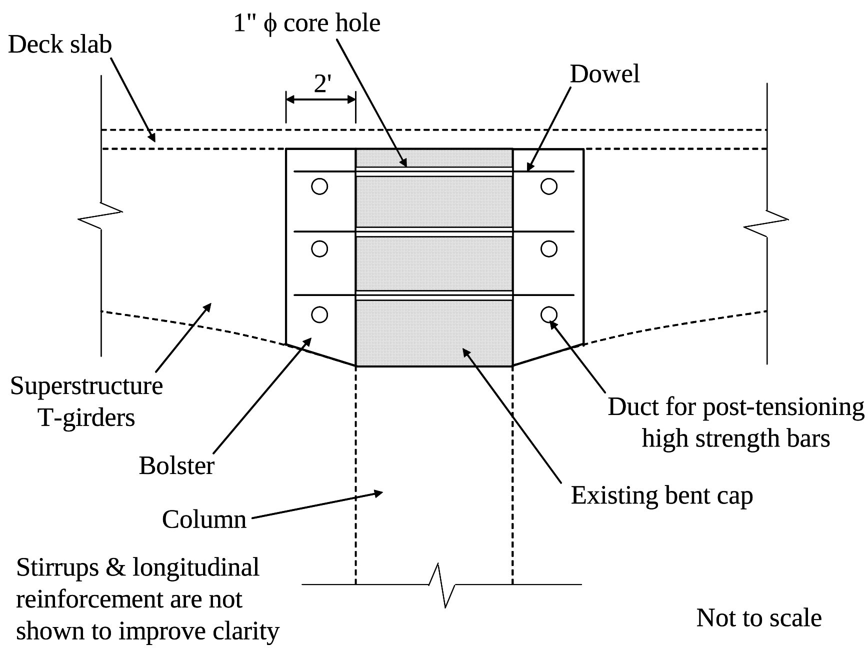


Figure 2-3 Retrofitting of Bent Caps by Concrete Bolsters

Bent caps at locations of expansion joints would be retrofitted as shown schematically in Figures 2-4 and 2-5. The positive flexural moment capacity would be enhanced by adding drop caps at the soffit of the existing bent caps. The new drop caps would be bonded to the existing bent cap by dowels. Steel plates would be placed along the sides of the bent caps and bonded to the concrete by means of high-strength bars inside core holes. The steel plates would enhance flexural capacity and resistance to horizontal shear.

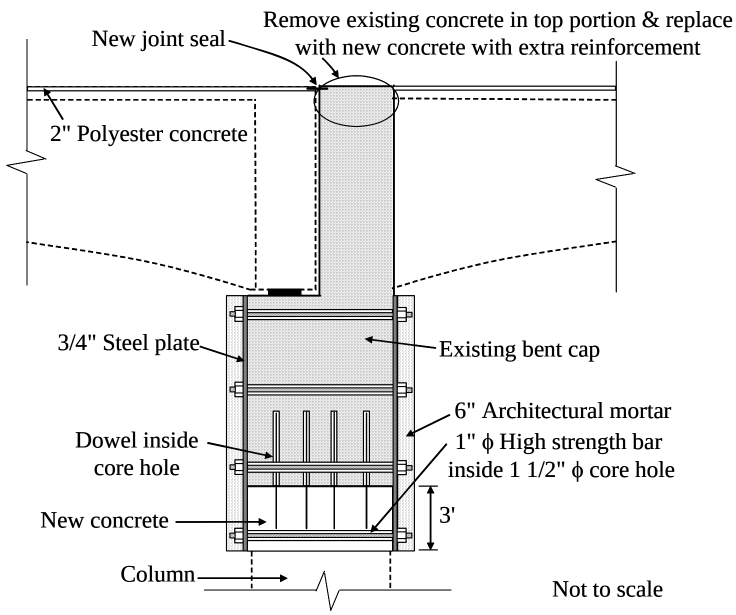


Figure 2-4 Bent Cap Retrofit at Expansion Joints (one simply supported span)

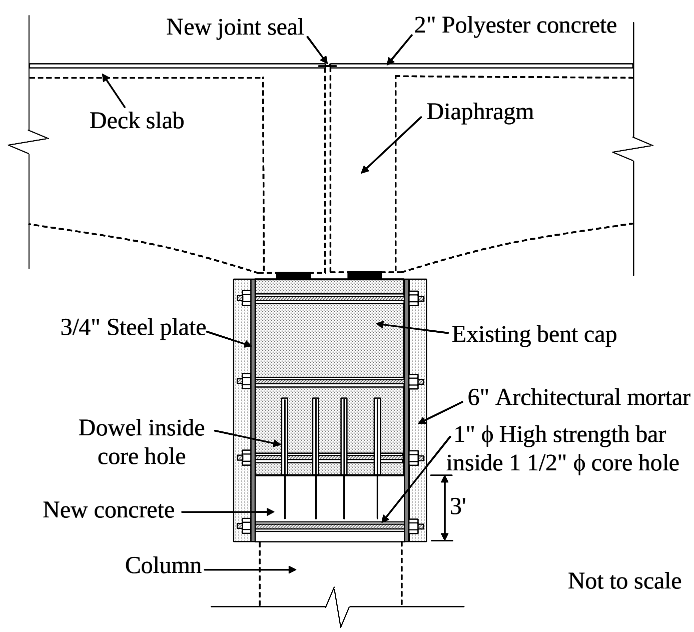


Figure 2-5 Bent Cap Retrofit at Expansion Joints (two simply supported spans)

River Piers Retrofit

The river piers would be retrofitted by placing infill walls between columns at the West and East River Piers. In addition, new pile foundations would be constructed around the existing foundations at the West and East River Piers to confine the poor lap-splices of the longitudinal column reinforcement and to allow column bases to develop their full plastic moment capacities.

New Expansion Joint Seals

Installation of new expansion joint seals is essential for long-term efficiency of the retrofit design because it helps protect the substructure from direct water flow onto concrete members. Additional moisture at the concrete surface can accelerate the ASR and subsequent concrete damage. Figures 2-4 and 2-5 show the proposed new expansion joint seals.

Design Life

The current design standard for seismic retrofit is to prevent failure (collapse) of the structure when it is subject to the maximum credible earthquake (MCE). The retrofit design life expectancy to prevent seismic collapse under the MCE event and loss of structural strength due to ASR deterioration is approximately 30 years. Based on AASHTO guidelines, design life is the period of time that a bridge is expected to be in operation. New bridge structures are designed to have a structural design life of 75 years. The actual life will depend on several factors, including exposed conditions of the structure to the environment, quality of materials, design and construction, and level of maintenance performed.

Design Standards

The viaduct's roadway does not meet the City's design standards for a Secondary Highway, and substantial physical changes to the superstructure would not be part of this alternative. Existing nonstandard viaduct features would continue to exist (i.e., inadequate sidewalk width, absence of safety median and shoulders; and inadequate stopping sight distances). The retrofit alternative would also not replace the existing barrier rails, which do not meet current crash-test standards. Consistent with Caltrans requirements, the retrofit design would only be for the prevention of collapse under the design seismic event, and the damaged bridge would have to be replaced after a major earthquake.

Estimated Alternative Cost

The cost of Alternative 2 – Viaduct Retrofit using the infill wall and heavy steel casing method is estimated at $226 million (midyear of construction dollars, 2012/2013), as shown below.

Item	Cost
Design and Administration	$40,271,000
Construction cost	$154,665,000
ROW	$30,624,000
TOTAL	$225,560,000

Construction Duration and Phasing

Construction of the retrofit alternative would be divided into the following phases:

1. Retrofit Foundations
2. Retrofit Columns
3. Retrofit River Piers
4. Construct In-fill Walls
5. Retrofit Bent Caps
6. Retrofit Expansion Joints

The 2.5-year construction period is assumed to start in 2011. At each bent location, the foundation excavation and reconstruction would take place first, followed by the column, in-fill wall, and bent cap reconstruction.

Traffic Staging

The general traffic staging to maintain circulation during construction of this retrofit scheme is presented below. If this alternative were selected, a detailed traffic staging plan would be developed during final design.

6th Street Viaduct between Mateo Street and Boyle Avenue

During retrofit of the deck expansion joints and possibly during bent cap retrofit, traffic lanes would be reduced to one lane in each direction. It is estimated that one lane in each direction would be able to handle the anticipated traffic volume without substantial diversion of motorists to surrounding streets.

Surface Streets under the 6th Street Viaduct

During retrofit of the bridge foundations and columns, temporary street closure and traffic detours would be necessary along the street network east and west of the river. It is anticipated that access to local businesses would be maintained. Construction activity would be sequenced by column bent number to minimize impacts to traffic, parking, and local business access. Parking under the viaduct would be prohibited and restricted in the immediate vicinity of the viaduct on the north and south sides during construction. It is anticipated that only foundation retrofit work would require frontage road closure. Anticipated traffic restrictions and management are summarized below (see Figure 1-6 for referenced bent locations).

- Bent 3: Construction would require temporary closure of the north and south frontage roads to through traffic between Mateo Street and Santa Fe Avenue to allow foundation modifications. Local business access would be maintained by allowing one-way traffic under the viaduct between Bents 1 and 2. Through traffic east of Bent 3 would be detoured through Santa Fe Avenue via Jesse Street and Willow Street. No parking would be allowed on frontage roads between Bents 1 and 4.
- Bents 4 and 5: Temporary closure of both curbside lanes on Santa Fe Avenue would be required under the viaduct. Parking would be restricted under the viaduct and on frontage roads between Bents 3 and 6. Frontage roads may be partially blocked.
- Bents 7 and 9: Temporary closure of the north and south frontage roads to through traffic would be required between Santa Fe Avenue and Mesquit Street to allow foundation modifications. Local business access would be maintained through Mesquit Street using alternate entrances to the businesses north and south of the viaduct. Through traffic would be detoured through Mesquit Street via Jesse Street and Santa Fe Avenue. Parking would be restricted on frontage roads and under the viaduct between Bents 6 and 10.
- Bents 1 and 2: Parking would be restricted under the viaduct and frontage roads between the west abutment and Bent 3. Frontage roads may be partially blocked.
- Bents 6 and 8: Parking would be prohibited under the bridge and restricted on the frontage roads between Bents 5 and 9. Frontage roads may be partially blocked.
- Bent 10: Parking would be restricted under the bridge and frontage roads between Bent 9 and the MTA right-of-way (ROW). No traffic restriction is expected east of Mesquit Street in this area. The east curb lane of Mesquit Street would be blocked under the viaduct.
- Bent 11: Temporary closure of the MTA electrified yard track would be required west of Bent 11 and Amtrak track east of Bent 11. Track closure may require alternate shoo-fly tracks for each closed track.
- River West Pier: Temporary closure of the SCRRA (Metrolink) track would be required adjacent to the river west bank. Track closure may require alternate shoo-fly track for closed track.
- River East Pier: Temporary closure of the SCRRA (Metrolink) track would be required adjacent to the river east bank. Track closure may require alternate shoo-fly track for closed track.
- Bent 13: Temporary closure of the Union Pacific Railroad (UPRR) industry track connection adjacent to the commercial building located west of Mission Road (Ventura Foods, Inc.) would be required.

- Bents 15 and 16: Both east and west curbside segments of Mission Road under the viaduct would be partially blocked. Parking would be prohibited under and restricted adjacent to the bridge at Mission Road.
- Bents 17 through 36: Both east and west curbside segments of Anderson Street (Bents 30 and 31) and Clarence Street (Bent 36) under the viaduct would be partially blocked. Parking would be prohibited under and restricted adjacent to the bridge between Mission Road and Clarence Street. Alleys under the viaduct would be closed to both traffic and parking.

Proposed Laydown Areas

A laydown area is an area where the contractor can store equipment and materials needed for the project. The laydown area for this retrofit scheme would likely be the area underneath the viaduct or adjacent vacant parcels. The precise location for the final laydown area would be identified by the construction contractor with close coordination with the City.

2.3.2.2 Substructure Replacement

This retrofit scheme would replace all substructure elements, including piles, footings, grade beams, columns, and bent caps, to provide additional strength required to accommodate the anticipated seismic demands (see Figure 2-6). The design would include substructure replacement for the length of the entire structure, including the west approach spans, main spans, and east approach spans. In addition, this retrofit scheme would replace the existing substandard concrete barrier with a crash-tested Type 80 modified barrier consistent with current Caltrans specifications. The new barrier would mimic the aesthetics of the existing barrier. As part of the barrier replacement, the existing luminaires would be replaced with light standards replicating 1930s design.

This alternative would be designed to meet current seismic demands by replacing all substructure elements with members that conform to current seismic detailing standards. By replacing the substructure elements rather than using traditional strengthening retrofit solutions, the viaduct's aesthetics and historic nature could be replicated by utilizing architectural features similar to the existing members. Columns would be designed according to current seismic design criteria, including displacement and ductility capacity requirements.[7]

[7] Retrofit Analysis Technical Memorandum for Substructure Replacement. June 2008.

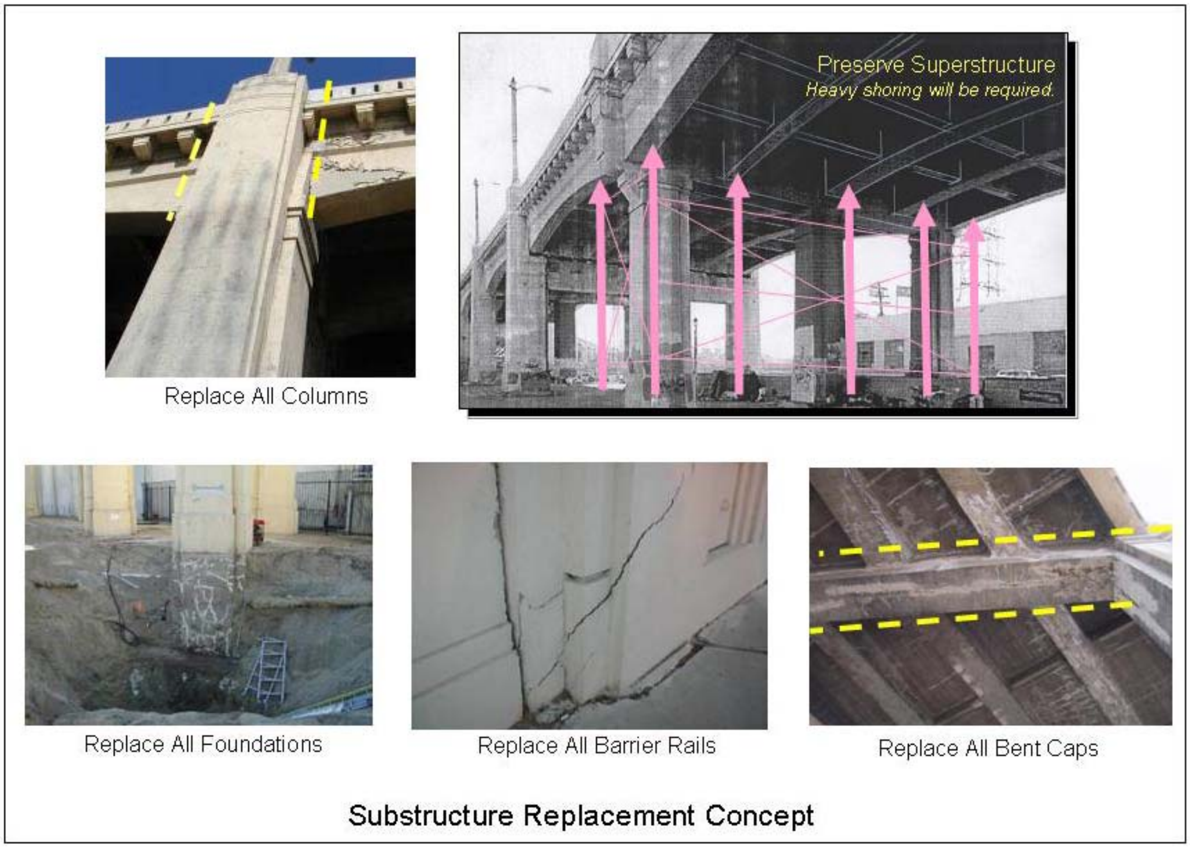


Figure 2-6 Substructure Replacement Concept

The existing concrete approach spans are supported primarily on multi-column bents with spread footing foundations. Existing spread footings lack top mat reinforcement, which is required to resist seismic damage. This retrofit scheme would replace all foundations with combined pile-supported footings featuring increased footing thickness and current seismic detailing to provide the necessary strength to resist anticipated seismic demands.[8] The increased strength in the foundations would provide a fixed connection to the columns, which would reduce the seismic displacement demands.

Columns would be designed to provide sufficient displacement capacity to ensure that a ductile plastic hinge forms in the column elements. Aesthetically, the retrofit design would match the geometric features of the existing concrete columns.

The piers supporting the main span have also been determined to be seismically deficient. As part of this alternative, the River Bank Piers and the Center River Pier would be replaced. The

[8] Ibid.

new main-span supports would attempt to aesthetically match the existing supports. Due to the size of the main-span supports, the piers would be comprised of hollow reinforced concrete elements.[9]

As previously discussed, bent caps would be designed to provide sufficient capacity to ensure that plastic hinging is limited to the column members. A review of as-built drawings indicated that the existing bent caps lack sufficient strength to form plastic hinges in the column members; therefore, all bent caps would be removed and replaced. Existing superstructure reinforcement that is continuous through the bent cap would need to be maintained and integrated with the new bent cap reinforcement to provide the required continuity of the superstructure.

Design Life

This retrofit scheme would specifically address the ASR in the substructure by removing ASR-compromised material and replacing it with new materials, but it would not address the ASR in the superstructure; therefore, the design life of the substructure would be 75 years, while the superstructure would continue to be vulnerable to earthquakes. Closure of the viaduct after a design earthquake event would likely be required due to superstructure damage.

Design Standards

Similar to design standards described in Subsection 2.3.2.1.

Estimated Alternative Cost

The cost of this alternative is estimated at $382 million (midyear of construction dollars, 2012/2013), as shown below.

Item	Cost (millions)
Design and Administration	$40,271,000
Construction cost	$310,719,000
ROW	$30,624,000
TOTAL	$381,614,000

Construction Duration and Phasing

It is anticipated that the viaduct would be taken out of service during the entire construction period to replace all bents at one time. The 2.5-year construction period is assumed to start in

[9] Ibid.

2011. Heavy-duty shoring would be required to support the existing superstructure, which would restrict access to the foundations and columns. Large temporary shoring would be required adjacent to the existing building foundations and operational railroad tracks.

Traffic Staging

Traffic staging to maintain circulation during construction of this retrofit scheme would be similar to the Heavy Steel Casing method described in the previous section.

Proposed Laydown Areas

The laydown area for this retrofit scheme would likely be the area underneath the viaduct or adjacent vacant parcels. The precise location for the final laydown area would be identified by the construction contractor with close coordination with the City.

2.3.3 Alternative 3 – Viaduct Replacement

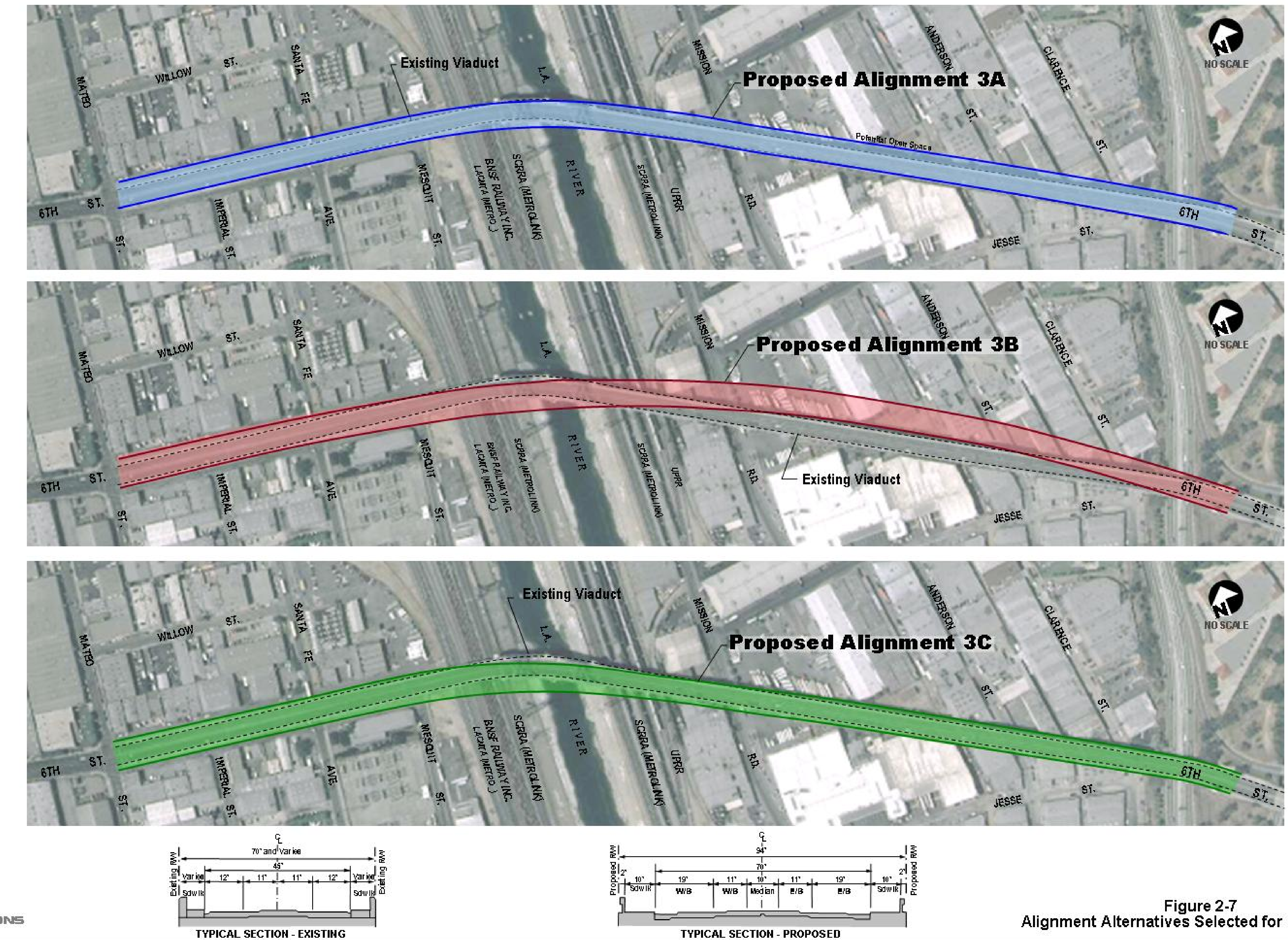
This alternative would construct a new viaduct along one of the three alignments under study. The main-span bridge type would be selected from one of the five alternatives under consideration. The design life expectancy of Alternative 3 is 75 years.

2.3.3.1 Viaduct Alignment Corridors

Throughout this document, the term “alignment” should be understood to connote corridors within which a precise alignment may be subsequently defined in the final design phase of the project. As described within this document, the alignments described represent the “worst-case scenario” to permit the analysis of potential impacts consistent with NEPA and CEQA.

Three viaduct replacement alignments (i.e., 3A, 3B, and 3C) out of ten that were evaluated (refer to Section 2.4.2 for information on all alternatives evaluated) were selected for design consideration, as shown in Figure 2-7. A description of each alignment is provided below.

Alignment 3A: The replacement structure would be built along a new horizontal alignment. The new structure would have a cross section that meets secondary highway standards as required by LADOT. The new 70-ft-wide (curb-to-curb) roadway would consist of two 11-ft-wide lanes in each direction, a 10-ft-wide median, and 8-ft-wide shoulders. The proposed cross section also allows for 10-ft-wide sidewalks.



PARSONS

Figure 2-7
Alignment Alternatives Selected for Further Study

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The new viaduct structure would extend east from Mateo Street to just east of US 101. The new roadway design has a transition on the west side of the river from the existing street width at Mill Street to the ultimate width of the proposed 6th Street Viaduct Replacement Alternative at Mateo Street. Because of the wider viaduct replacement structure, the north side of the viaduct footprint would extend further to the north, while the south side of the footprint would remain essentially at the same location except for the segment of the alignment over the Los Angeles River, which would be shifted slightly to the south to improve the horizontal curve radius and provide improved safety with better stopping sight distances.

Alignment 3B: The new viaduct would be designed with the same cross section as Alignment 3A. This option proposes a horizontally curved alignment beginning west of Santa Fe Avenue to the east bank of the river. The curve in the alignment is more gradual than Alignment 3A. This alignment, similar to Alignment 3A, maintains its present location on the south side of the existing bridge from Mateo Street to Santa Fe Avenue, and the alignment shifts to the north from Santa Fe Avenue to the east as it crosses over the river. This alignment would swing to the north approximately 85 ft further than the existing alignment on the east side of the river, which would eliminate the existing tight radius curve at the east end.

Alignment 3C: The new viaduct would be designed with the same cross section as Alignment 3A. To accommodate the wider viaduct, the footprint of the viaduct would be extended on the north and south sides, except for the area between Mateo Street and Mesquit Street, which would be wider to the north only. The segment that extends from the river to the east would be constructed so that the columns and foundations lie within existing ROW and the viaduct roadway deck extends beyond the existing ROW over adjacent private properties.

2.3.3.2 Bridge Types

Fifteen (15) bridge concepts (types) were developed, as described in Section 2.4. Based on the Community Advisory Committee (CAC) and technical staff input, these were screened down to five bridge concepts for further consideration. A description of each bridge type is provided below. Each of the five bridge concepts could be constructed on any of the viaduct replacement alignments (i.e., 3A, 3B, or 3C) discussed above. Full details on the bridge types are contained in the *Advanced Planning Study for 6th Street Viaduct Seismic Improvement Project – Structural Type Screening Phase*.[10] Variants of two of the bridge types have been recommended through CAC input and technical staff review: Concept 1a, which would replicate the existing viaduct from abutment to abutment (as compared to Concept 1, which replicates only the main span), and Concept 4a, with three sets of dual exterior towers housing cables supporting the river and

[10] Advanced Planning Study for 6th Street Viaduct Seismic Improvement Project – Structural Type Screening Phase. June 2008.

railroad spans (see Figure 2-17, Concept 11R). Other elements of each bridge concept are also subject to refinement and modification as input is received during the public comment period and the final design phase.

<u>Bridge Concept 1 – Main Span Replication</u>

The new replica bridge would capture the essence of the old landmark bridge with its decorative off-set corner elements, steel arches, “deco” detailing and off-set of planes at the pier walls, as well as the corners with decorative dentil detailing below the concrete barrier along the entire length of the viaduct. The structure would mimic the original design with complimentary dual arches. The new main center pylon with its belvederes would maintain the pedestrian viewing areas of the original 1932-designed belvederes. Also, the pylons, which historically extended above the bridge deck with the central pylon being most prominent, would be replicated as original in the replacement structure of Concept 1 (Figure 2-8).

Figure 2-8 Computer Model of Bridge Concept 1

The lateral framing at the top of the center span’s new arches would be different than the steel lattice truss framing of the existing bridge. The new lateral steel tube framing is the result of current design standards that are required for new bridges. This new system of steel square tubes would resemble the forms of the steel arch members, thereby tying together the whole structure above the roadway as one cohesive aesthetic unit.

The new bridge handrails, projectile barriers, deck sections, and barrier railing would pick up the open-spaced vertical elements of the original 1932 barriers and handrails. New crash-tested barriers and handrails would comply with current Caltrans specifications. A solids and voids ratio, somewhat similar to the existing edge of deck forms, visually relates to the openings on the original details of the viaduct.

Along the viaduct, the handrails, projectile barriers, barrier railing, and light standards would maintain the proportions and vocabulary of the original design. The embankment piers at each end of the main span would keep a sectional profile and details that would be similar to the architectural vocabulary[11] of the original piers. The new span's steel deck profile matches the profile of the viaduct's concrete girder, allowing a smooth transition and continuity throughout the roadway structure. The details of the new piers along the viaduct would also be consistent with the detailed surface indentations of the new center pier.

The spacing of the arch's vertical suspenders (hangers) would set a modular dimension that the main sidewalk pattern follows along the whole bridge length. The vertical concrete members of the new auto barrier also follow this same modular dimension.

The abutment walls at each end of the viaduct would feature detailed surfaces that would pick up the vocabulary of the main pier's decorative indentations.

Bridge Concept 2 – Cast-in-place Box Girder with Steel Tied Arch Pedestrian Ways

The bridge design of Concept 2 would employ a combination of some of the structural elements proposed for Concept 1 (Figure 2-9). The main span of the bridge would be a concrete box girder, with gateway monuments at each end. In addition, the pedestrian path would be separated from the bridge deck at the main span, allowing pedestrians to enjoy a different experience while crossing the bridge.

Figure 2-9 Computer Model of Bridge Concept 2

[11] Vocabulary in this context means to use the same shapes, materials, and mass sizing between different structural and architectural elements, using the same repeating patterns, to distinguish this from other structures within the area.

The main-span piers would act as entrance monuments and become an integral component in the massing and scale of the bridge. The arches on the main span would anchor themselves to these vertical piers, allowing them to act as a main-span gateway to the flow of traffic on the bridge. The pedestrian and driver would take a visual cue as to where the river edges begin and end.

The viewing belvederes would extend horizontally from the voids within the gateway pier monuments. They would act as an extension to the pedestrian's experience, allowing them to distance themselves from the traffic on the bridge. Each belvedere would be held in place by vertical columns that mimic the structural member section of the arch.

The new bridge handrails, projectile barriers, deck sections, and barrier railing would pick up the open-spaced vertical elements of the original 1932 barriers and handrails. New crash-tested barriers and handrails would comply with current Caltrans specifications. A solids and voids ratio, somewhat similar to the existing edge of deck forms, would visually relate to the openings on the original details of the viaduct.

Along the viaduct, the handrails, projectile barriers, barrier railing, and light standards would maintain the proportions and vocabulary of the original design. The embankment piers at each end of the main span would keep a sectional profile and details that are similar to the architectural vocabulary of the original piers. The new span's steel deck profile would match the profile of the viaduct's concrete girder, allowing a smooth transition and continuity throughout the roadway structure. The details of the new piers along the viaduct would also be consistent with the detailed surface indentations of the new pier.

The spacing of the arch's vertical suspenders (hangers) would set a modular dimension for the main sidewalk pattern along the whole bridge length. The vertical concrete members of the new auto barrier also follow this same modular dimension.

Along each end of the viaduct, for design consistency, the abutment walls would have a detailed surface that would pick up the vocabulary of the main pier's decorative indentations.

Also, along the surface of the new abutments, multiple spaces would be provided for a green landscaped wall. The vertical wall configurations at the Bent 2 location would use the same vocabulary to match the adjacent end abutment wall pattern.

Bridge Concept 3 – Steel Half-Through Arch with CIP Box Girder Approaches

The design of Concept 3 would pick up structural elements found on the original half-through arch of the landmark main span (Figure 2-10). Reaching over the Los Angeles River, the new half-through arches would intersect the bridge deck and nestle into the embankment piers. The lateral tie beams between the arches above the deck would be similar in cross section to that of the arch and vertical structural members of the original bridge.

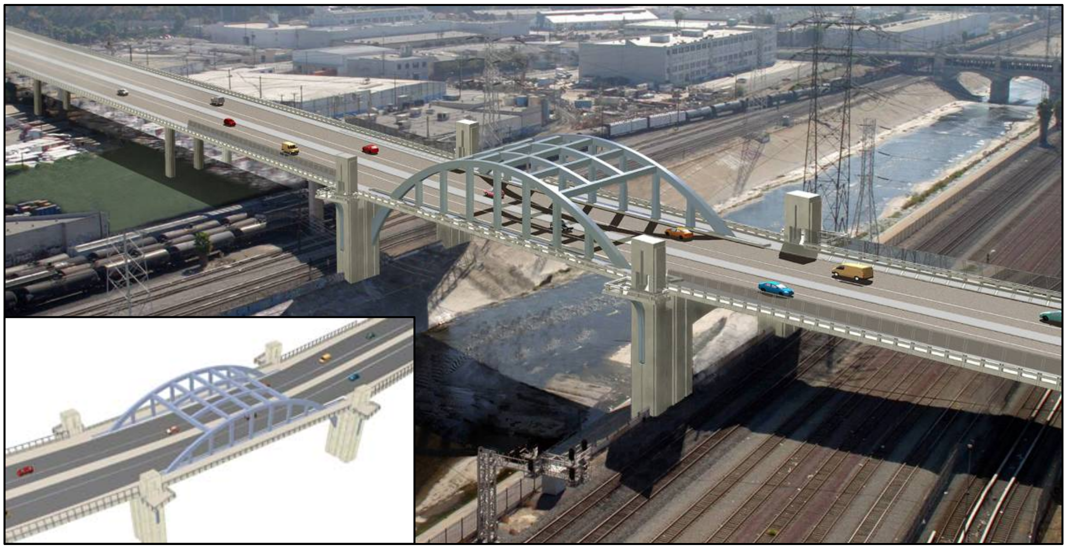


Figure 2-10 Computer Model of Bridge Concept 3

The geometry of the arch structures in plan view is skewed to follow the path of the river. This would affect the shape of the viewing platforms (belvederes) at the piers, yet it would solve the design problem of the bridge and river channel not intersecting at a 90-degree angle.

The structural support on the underside of each belvedere would be a wide flange section member. This member would be shaped in elevation to match that of the bottom part of the main half-through arch intersecting the deck at the embankment pier. The piers on either side of the river's edge would be marked with vertical elements of solids and voids that coincide with the original bridge's indentation of planes and corners. The embankment piers that tower above the bridge deck would act as a demarcation of the river below.

The new bridge handrails, projectile barriers, deck sections, and barrier railing would pick up the open-spaced vertical elements of the original 1932 barriers and handrails. New crash-tested barriers and handrails would comply with current Caltrans specifications. A solids and voids ratio, somewhat similar to the existing edge of deck forms, would visually relate to the openings on the original details of the viaduct.

Along the viaduct, the handrails, projectile barriers, barrier railing, and light standards would maintain the proportions and vocabulary of the original design. The embankment piers at each end of the main span would keep a sectional profile and details that are similar to the original architectural vocabulary of the piers. The new span's steel deck profile would match the profile of the viaduct's concrete girder, allowing for a smooth transition and continuity throughout the roadway structure. The details of the new piers along the viaduct would also be consistent with the detailed surface indentations of the pier.

The spacing of the arch's vertical suspenders (hangers) would set a modular dimension that the main sidewalk pattern follows along the whole bridge length. The vertical concrete members of the new auto barrier would also follow this same modular dimension.

Along each end of the viaduct, for design consistency, the abutment walls would have a detailed surface that picks up the vocabulary of the main pier's decorative indentations.

Also, along the surface of the new abutments, the designers would allow multiple spaces for a green landscape wall. The vertical wall configurations at the Bent 2 location would use the same vocabulary that matches the adjacent end abutment wall pattern.

Bridge Concept 4 – Extradosed Concrete Box Girder with Dual Pylons

Bridge Concept 4, a contemporary cable-supported structure, would present a 21st century structural solution that introduces a relatively new technology to the United States (Figure 2-11). This extradosed type bridge, with dual exterior towers, could invoke a uniquely modern statement over the river. The top of each tower would be illuminated to enhance the nighttime effect of this distinctive structure.

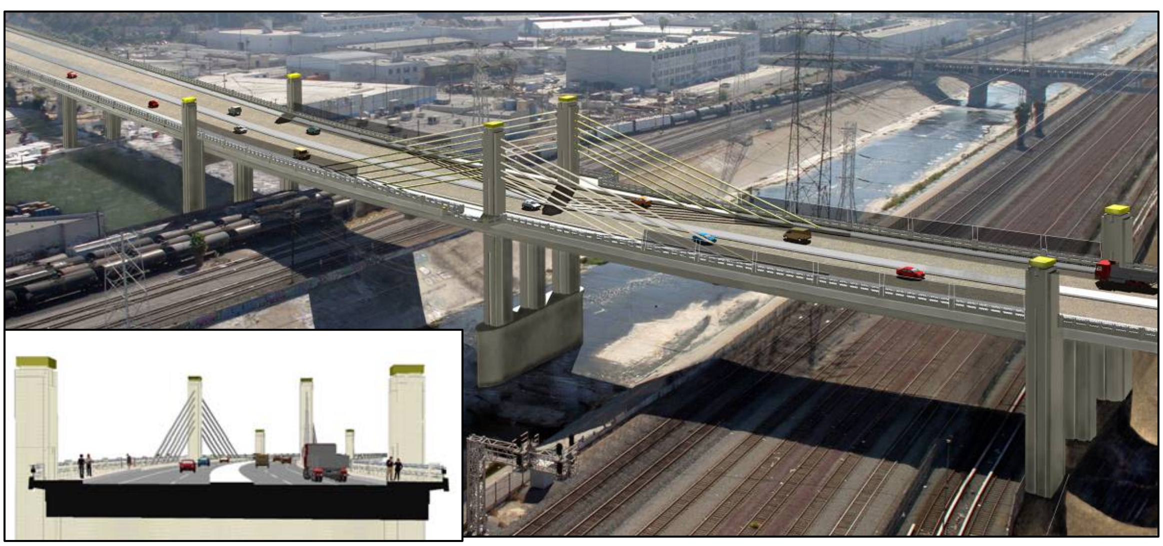


Figure 2-11 Computer Model of Bridge Concept 4

The bridge's main span would be composed of six vertical elements that rise above the bridge deck. The four lower elements on either end of the center span would designate crossing of the

Los Angeles River. The two center pylons would house the cables that support the river span. All of these elements would boast details that derive their scale and decorative form from the existing viaduct. These six vertical elements would also acknowledge that the traveler is on 6th Street. Each pylon would be further accented by lights that crown each top. As a variation, the four lower tower elements could be designed to house cables similar to the two center pylons, thus providing three-dual towers with cables.

The main viewing platforms would sit above the center of the river, and they would be detailed with shapes that are similar in scale to the existing viaduct's belvederes, yet they are in concert with the extradosed bridge pylons and piers reflecting a humanized scaling for a large and imposing structure in the landscape.

The geometry of the bridge pathway passing over the river at a skew would result in shaping the under-deck piers at different angles in plan view. These changes in the direction of the pier structure would be taken at the outside piers by skewing the plan of the piers in accepting the pathways of these different geometric angles. The essence of the architectural vocabulary of Concept 4 is one of stepping planes, notched corners, and modulated paving patterns and barriers.

The new bridge handrails, projectile barriers, deck sections, and barrier railing would pick up the open-spaced vertical elements of the original 1932 barriers and handrails. New crash-tested barrier and handrails would comply with current Caltrans specifications. A solids and voids ratio, somewhat similar to the existing edge of deck forms, would visually relate to the openings on the original details of the viaduct.

Along the viaduct, the handrails, projectile barriers, barrier railing, and light standards would maintain the proportions and vocabulary of the original design. The details of the new piers along the viaduct would also be consistent with the detailed surface indentations of the new center pier.

Along each end of the viaduct, for design consistency, the abutment walls would have a detailed surface that picks up the vocabulary of the main pier's decorative indentations

Also, along the surface of the new abutments, the designers would allow multiple spaces for a green landscape wall. The vertical wall configurations at the Bent 2 location would use the same vocabulary that matches the adjacent end abutment wall pattern.

Bridge Concept 5 – Extradosed Concrete Box Girder with Single Pylon

Concept 5 would comprise six extradosed structures spanning along the center of the bridge and viaduct approaches (Figure 2-12). As with Concept 4, this bridge concept is a state-of-the-art 21st century design with its cabled shapes. The six bridge towers would be symbolically representative of 6th Street. Lighting elements at the top of each tower would be furnished to reinforce the six elements of the 6th Street Viaduct.

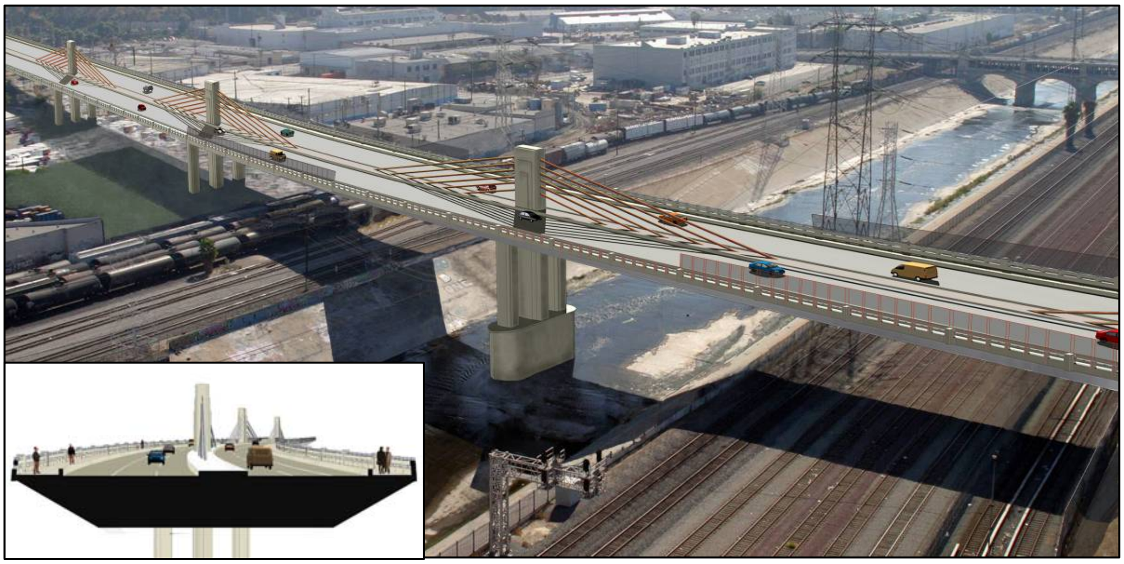


Figure 2-12 Computer Model of Bridge Concept 5

The bridge towers and the under-deck piers would be shaped to express the structural working of the forms. For example, the tower shapes would be wider at the base and gradually taper as they rise to the top, where less structure is needed to withstand seismic activity. This stepping of surfaces would allow the structure to be scaled down. This would humanize such a large and imposing element along the landscape of the Los Angeles River.

This bridge concept would not incorporate outboard belvederes. Belvederes interrupt the flow of the roadway deck and, with the structure supporting the deck running along the center of the bridge, there would not be a natural space to place belvederes. On the preceding schemes, outside elements would be at the roadway deck to shape these protrusions and thereby enhance the natural rhythm of forms along the deck.

The viaduct cross section would be shaped to match and reinforce the design vocabulary of the cable angles. These angular elements could also be seen in the handrails.

The piers, below the deck, would accept the skewed angle of the river's intersection with the geometry of the bridge. This could be seen in detail by viewing the plan shape of the outside front and back piers of the six spans.

The new bridge handrails, projectile barriers, deck sections, and barrier railing would pick up the open-spaced vertical elements of the original 1932 barriers and handrails. New crash-tested barrier and handrails would comply with current Caltrans specifications. A solids and voids ratio, somewhat similar to the existing bridge, would visually relate to the openings on the original details of the viaduct.

Along the viaduct, the handrails, projectile barriers, barrier railing, and light standards would maintain the proportions and vocabulary of the original design. The embankment piers at each end of the main span keep a sectional profile and details that are similar to the architectural vocabulary of the original piers. The details of the new bents along the viaduct would also be consistent with the detailed surface indentations of the new center pier.

Along each end of the viaduct, for design consistency, the abutment walls would have a detailed surface that picks up the vocabulary of the main pier's decorative indentations.

2.3.3.3 Street Design

In addition to improving the geometry of the 6th Street Viaduct, other areas of consideration for roadway design include the transitions from the viaduct to both the west and east ends of the project limits (see Figures 2-13 and 2-14), as well as impacts to the local streets under the viaduct.

On Mateo Street at the west end of the viaduct, the proposed section would be aligned with the existing lane configuration by using a 380-ft transition that would consist of striping and minor modifications to the existing sidewalk and curb and gutter. The existing traffic signal masts would be modified to match the proposed transitions. A left-turn lane along Mateo Street would be provided to allow the southbound (SB) traffic to access the eastbound (EB) direction on 6th Street. This improvement would provide a safer lane configuration and better vehicular traffic movement. Note that under the replacement alternative, existing buildings on the north side of the viaduct west of Mateo Street would need to be removed. New access road and a sidewalk would likely be constructed to provide local circulation within the area.

On the east end of the viaduct, the proposed 94-ft section would taper to match the existing 58-ft section through a 165-ft transition. No additional lanes would be added, and no modifications to the existing sidewalk would be made.

Portions of the existing street crossings under the viaduct may need to be reconstructed for an approximate length of 200 ft on both sides of the viaduct. These improvements may be done in a way that creates opportunities for landscaping.

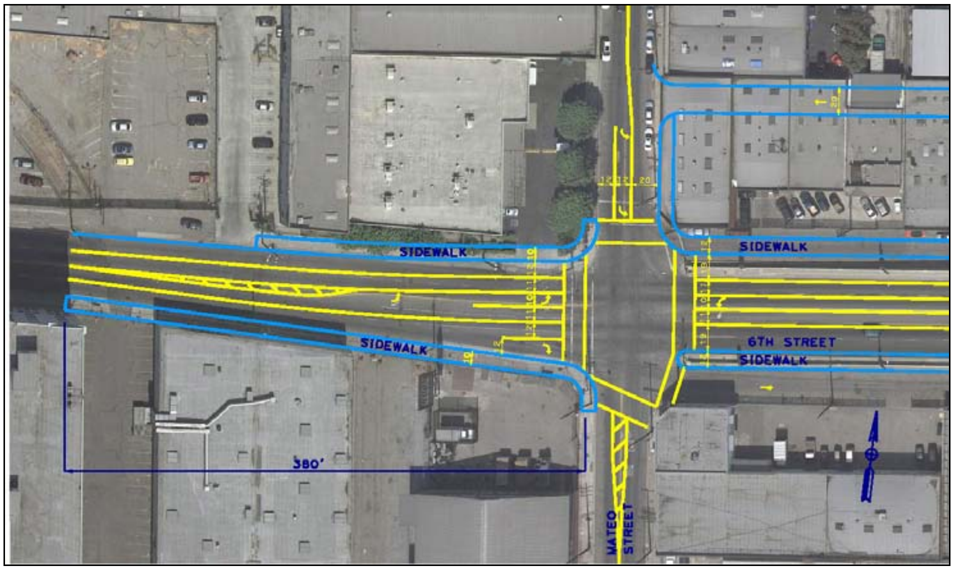


Figure 2-13 West End Transition Configuration

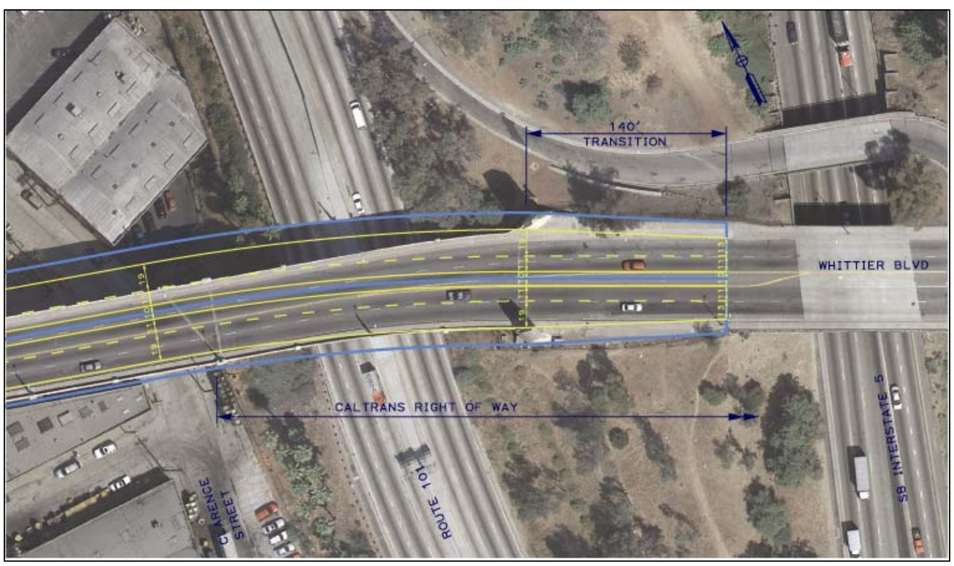


Figure 2-14 East End Transition Configuration

2.3.3.4 Other Roadway Improvements

As part of the proposed project construction, several roadway improvements at nearby intersections would be undertaken to maintain traffic operation during the construction period when the viaduct would have to be closed.

- 6th Street/Boyle Avenue Intersection: The proposed operational improvements at this intersection would: (a) modify signal phasing for the east-west direction to run as opposed phasing, (b) convert number 1 westbound (WB) through lane to a left-turn lane, (c) modify signal phasing to add a SB left-turn phase, and (d) extend the SB left-turn lane by approximately 75 ft.
- 7th Street/Boyle Avenue Intersection: Signal phasing would be modified to add an EB left-turn phase.
- 3rd Street/Central Avenue Intersection: Signal phasing would be modified to add a NB left-turn phase.
- 3rd Street/Alameda Street Intersection: Signal phasing would be modified to add a NB left-turn phase.
- 6th Street/Alameda Street Intersection: Signal phasing would be modified to add a NB left-turn phase.
- 6th Street/Central Avenue Intersection: Signal phasing would be modified to add a SB left-turn phase.
- 5th Street/Central Avenue Intersection: New traffic signals would be installed at this location.

Design Standards

The proposed replacement alternative would be designed to meet the City's street design standards. The structural design for the replacement alternatives would meet AASHTO bridge design standards and Caltrans seismic design criteria.

Debris Management

Demolition of the viaduct would produce several kinds of debris, including crushed concrete, rebar, steel, and other existing appurtenances. Table 2-2 presents the estimated quantity of debris from viaduct demolition and reuse/disposal methods.

Table 2-2
Debris Quantity and Management Method

Type of Debris	Quantity	Reuse Method	Disposal Method
Concrete	43,882 cubic yards	Fill material, landscaping	Truck to landfill or reprocessing facility offsite
Rebar	2,700 tons	Salvage as scrap metal	Truck to metal salvage facility
Light Poles	90	Salvage as scrap metal and concrete as fill material	Truck to metal salvage facility
Steel from Main Span and Handrails	2,692 tons	Salvage as scrap metal	Truck to metal salvage facility

Estimated Cost for Replacement Alternatives

Table 2-3 presents estimated costs of each replacement bridge concept constructed on the three alignment corridors evaluated. As can be seen, the costs vary from a low of $316 million to a high of $375 million for Alignment 1, from a low of $340 million to a high of $402 million for Alignment 2, and from a low of $323 million to a high of $374 million for Alignment 3.

Construction Duration and Phasing

Demolition and construction of the proposed improvements would be accomplished in a multi-phase manner with concurrent subphases. Demolition/construction is assumed to begin in early 2011 and be completed over a 4-year timeframe.

Anticipated construction activities for each year are summarized below.

Year 1

- *Demolition of Adjacent Buildings* – including several buildings east and west of the Los Angeles River
- *Demolition/Replacement of Viaduct* – including west approach, east approach, and river and railroad crossings
- *Utility Relocation* and replacement of sewer siphons.

Year 2

- *Demolition and Replacement* of USACE ramp.
- *Foundation Construction* – for west approach, east approach, and river crossing
- *Column/Pier Table Construction* – for west approach, east approach, river, and railroad crossing
- *Construction* of west approach retaining walls and roadway section
- *Construction* of approach spans

Table 2-3
Viaduct Replacement Estimated Costs

Cost Item	Cost Estimate		
	Alignment 3A	**Alignment 3B**	**Alignment 3C**
Bridge Concept 1			
Design and Administration	$40,271,000	$40,271,000	$40,271,000
Construction cost	$251,505,000	$247,718,000	$268,265,000
ROW	$53,631,000	$81,833,000	$43,810,000
TOTAL	$345,407,000	$369,822,000	$352,346,000
Bridge Concept 2			
Design and Administration	$40,271,000	$40,271,000	$40,271,000
Construction cost	$222,050,000	$218,332,000	$239,023,000
ROW	$53,631,000	$81,833,000	$43,810,000
TOTAL	$315,952,000	$340,436,000	$323,104,000
Bridge Concept 3			
Design and Administration	$40,271,000	$40,271,000	$40,271,000
Construction cost	$232,776,000	$229,091,000	$249,731,000
ROW	$53,631,000	$81,833,000	$43,810,000
TOTAL	$326,678,000	$351,195,000	$333,812,000
Bridge Concept 4			
Design and Administration	$40,271,000	$40,271,000	$40,271,000
Construction cost	$221,178,000	$217,506,000	$238,368,000
ROW	$54,423,000	$81,738,000	$43,949,000
TOTAL	$315,872,000	$339,515,000	$322,588,000
Bridge Concept 5			
Design and Administration	$40,271,000	$40,271,000	$40,271,000
Construction cost	$279,935,000	$280,271,000	$290,025,000
ROW	$54,423,000	$81,738,000	$43,949,000
TOTAL	$374,629,000	$402,280,000	$374,245,000

Year 3

- Completion of foundations construction
- Completion of column/pier table construction
- Completion of west approach roadway and retaining walls construction
- Continuing approach spans construction phases
- Abutment construction and main spans construction
- Surface road demolition and reconstruction

Year 4

- Completion of approach spans construction
- Completion of main spans construction

- Completion of surface roads construction
- Sidewalks and barrier railings construction, bridge deck surface grinding
- Landscaping

Traffic Staging

Traffic detours would occur along the street network east and west of the river due to the closure of the 6th Street Viaduct. In addition, the 6th Street frontage roads on both sides of the viaduct would need to be closed, causing obstruction to the operations of adjacent businesses not subject to relocation that depend on the frontage roadways.

In addition to the detours resulting from the 6th Street Viaduct closures described above, it is anticipated that traffic staging along the viaduct vicinity during construction could include the following closures and detours:

East End of proposed project to Clarence Street

- Provide alternate closures of the SB and NB lanes of US 101 to allow nighttime bridge demolition.

Clarence Street to East of Anderson Street

- Close Clarence Street and the alley west of Clarence Street.
- Divert Clarence Street NB traffic to Jesse Street, then to Anderson Street, then to East 6th Street, and back to Clarence Street.
- Use the same route in the opposite direction for SB traffic.

Anderson Street to West of Alley

- S. Clarence Street would be open for traffic.
- Close Anderson Street and the alley west of Anderson Street.
- Divert Anderson Street NB traffic to Jesse Street, then to Clarence Street, then to East 6th Street, and back to Anderson Street.
- Use the same route in the opposite direction for SB traffic.

West of Alley (above) to Easterly UPRR Railroad Tracks ROW

- Close Mission Road.
- Divert Mission Road NB traffic, except for local business traffic south of the viaduct, to Jesse Street, then to Anderson Street, then to East 6th Street, and then to Mission Road.
- Use the same route in the opposite direction for SB traffic.

Over UPRR/SCRRA ROW Tracks between the Los Angeles River and Ventura Foods, Inc.

- Build platforms spanning bents over railroad tracks. These activities are to be performed during work windows authorized by the railroads.
- Temporarily close the tracks adjacent to the bents to demolish the columns and footings.

Over BNSF/SCRRA/MTA ROW Tracks between the Los Angeles River and Mesquit Street

- Build platforms spanning bents over railroad tracks. These activities are to be performed during work windows authorized by the railroads.
- Temporarily close the tracks adjacent to the bents to demolish the columns and footings.

East of Mesquit Street to East of Santa Fe Avenue

- Close North and South frontage roads between Santa Fe Avenue and Mesquit Street.
- Close Mesquit Street under the 6^{th} Street Viaduct to all traffic.
- Access to Lumary’s Tire Co. would be open on the south side from Mesquit Street only through Jesse Street via S. Santa Fe Avenue or Imperial Street.
- Access to the film studio located on the north side of the bridge would be through S. Santa Fe Avenue from Willow Street at the north side of the property.

East of Santa Fe Avenue to the West Abutment

- Close North and South frontage roads between Santa Fe Avenue and Mateo Street for through traffic.
- Close S. Santa Fe Avenue under the 6^{th} Street Viaduct to all traffic.
- Allow only local business traffic with main entrances at frontage roads. Use flaggers at both ends to control traffic.
- Divert all through traffic on S. Santa Fe Avenue to Mateo Street via Jesse Street on the south side and via Willow Street on the north side.
- South frontage road local traffic diverted to SB Santa Fe Avenue or Mesquit Street.
- Access for the north frontage road local traffic via Mateo Street, then Willow Street, then SB S. Santa Fe Avenue to the frontage road.
- City Maintenance Facility is to be relocated before commencing bridge demolition operations.

West Abutment to Mateo Street

- Remove paving on the 6^{th} Street Viaduct.
- Close through traffic at North and South frontage roads between Mateo Street and Santa Fe Avenue.
- Allow only local business traffic with main entrances at frontage roads. Use flaggers at both ends to control traffic.

- On the South frontage road, local business access east of S. Santa Fe Avenue would be provided via Jesse Street and then S. Santa Fe Avenue to the South frontage road.
- On the North frontage road, local business access west of S. Santa Fe Avenue would be provided via Mateo Street, then Willow Street, then S. Santa Fe Avenue to the North frontage road.

Proposed Laydown Areas

Two locations have been identified as candidate areas that can be used by contractors to store equipment and materials during construction activities. These sites were identified for purposes of the environmental analysis based on the fact that they are either currently vacant parcels with no known development plans or parcels owned by the City. One of the parcels is located on the northwest side of the viaduct at Santa Fe Avenue. This is a triangular-shaped property of approximately 40,605 square feet. The other parcel, owned by the City, is located at the southwest corner of Mission Road and Jesse Street. This is a triangular-shaped property of approximately 79,650 square feet.

The actual laydown areas may vary and would be identified by the Contractor, subject to the approval of the City's construction manager.

2.4 Alternative Development Process

Based on the proposed project's purpose and need, several alternatives were developed and evaluated. Interested agencies and the public were given opportunities to provide input and direction to the development and selection of alternatives through the public scoping process, cooperating agency coordination, citizen advisory committee meetings, and expert panel evaluation. The following subsections describe the alternative development activities that occurred during the project development phases.

2.4.1 Seismic Retrofit Alternatives Evaluation

Following the material testing of the 6th Street Viaduct in 2002, the City prepared a *Seismic Retrofit Pre-Strategy Report* summarizing its findings. In the retrofit pre-strategy phase, linear and nonlinear analyses were conducted to determine seismic demands and capacities of the as-built approach spans of the structure. Seismic deficiencies of the as-built structure were determined from the analytical results. The as-built analyses showed that the structure could collapse under the MCE event. This is evidenced by the high displacement demand-to-capacity (D/C) ratios of the structure under such loading. The analyses also showed that some columns of the existing structure could suffer shear failure under the MCE event due to concrete degradation. A seismic vulnerability study, which was also conducted in the retrofit pre-strategy phase, showed a high probability of collapse.

Five retrofit alternatives were studied and evaluated in the *Final Seismic Retrofit Strategy Report*[12], as described in the following paragraphs. The goal of retrofit Alternatives 1 through 4 was to seismically retrofit the existing structure to meet current public safety requirements. These retrofit alternatives accounted for the structure's material degradation, but they did not provide any measures to arrest future degradation; moreover, each of these alternatives would require future seismic retrofits. The goal of Alternative 5 would be to seismically retrofit the existing structure, taking into account future ASR deterioration of approximately 66 percent of the existing columns over a period of time (approximately 30 years); however, none of the retrofit alternatives accounted for future ASR deterioration in the footings, 33 percent of the existing columns, bent caps, superstructure diaphragms, or bridge deck. These elements, although not necessary to prevent a collapse of the viaduct, would continue to deteriorate from the ASR.

2.4.1.1 Retrofit Alternative 1: Infill Wall Construction

This retrofit alternative consists of construction of infill walls between columns at 17 bents, and construction of 6 grade beams and 2 footings. The retrofit design also includes restrainers at the West and East River Piers and concrete-filled steel pipes at the west abutment to enhance the capacity of shear keys under seismic forces. The alternative was designed by the City of Los Angeles Bureau of Engineering (LABOE) in 1995 and approved by the County of Los Angeles and Caltrans in 1998. The City requested, and subsequently received, an authorization for construction from Caltrans in 2000 in the amount of $18.2 million. Because this alternative did not address the ASR, the City did not proceed with construction.

2.4.1.2 Retrofit Alternative 2: Infill Wall with Steel Casing Construction

This alternative is an enhancement to Retrofit Alternative 1 by adding steel casings to columns in the bents with infill shear walls, in addition to other columns at some of the bents with no infill walls. The steel casings would enhance confinement, ductility, and shear strength of the existing columns. The steel casings would also improve shear force transfer capacity between the infill walls and the deteriorated columns. The major component of Retrofit Alternative 2 proposes construction of infill shear walls at 14 bents in addition to the use of steel plates to provide encasement to 29 columns. Since ductility and displacement capacity of the retrofitted columns would be enhanced, it would be necessary to increase flexural strength of some of the bent caps to assure that plastic hinges would not form in the bent caps after retrofitting of the columns, but

[12] Sixth Street Viaduct Final Seismic Retrofit Strategy Report. 2004.

that plastic hinges would rather form in the columns. This is because of limited ductility capacity of the bent caps due to the lack of continuous bottom reinforcement and inadequate top reinforcement in the cap beams at locations of the columns.

The infill shear walls would reduce seismic transverse displacements in the existing structure. Under this alternative, two expansion joints in the superstructure would be closed, and new grade beams would be constructed to reduce seismic longitudinal displacements. The as-built analyses showed that stability problems may be encountered in the existing structure because of the small-size footings. Thus, new footings are also proposed to reduce displacements and enhance stability of the structure since the existing footings were, according to literature, sized to resist gravity plus 0.10g lateral loads. Also, retrofitting of the existing footings would be necessary because of degradation due to ASR.

Despite the confinement proposed under this alternative, ASR would continue. In addition, the seismic risk would still remain and would require a significant subsequent retrofit in approximately 10 years to maintain the seismic and operational safety of the structure.

2.4.1.3 Retrofit Alternative 3: Catcher Wall Construction

The objective of this retrofit design would increase seismic safety by preventing the collapse of the viaduct during an earthquake. The design would consist of constructing catcher walls at locations of all bents, except Bent 12. This bent would be excluded because of the restricted room available for construction imposed by the proximity of active railroad tracks. These catcher walls would provide a secondary support system to the viaduct to supplement the existing columns and foundations in the event of column collapse.

This alternative would increase seismic safety by preventing structural collapse, but it would not improve seismic performance of the existing structure, resulting in a high likelihood of destructive damage with few, if any, repair options available following a large seismic event. Life expectancy of the structure under this alternative would be approximately 10 years.

2.4.1.4 Retrofit Alternative 4: Concrete Casing Construction

This alternative would utilize concrete column casings to increase the ductility and stiffness of the existing structure. Retrofit Alternative 4 is similar to Retrofit Alternative 2 in that the existing columns would be encased to provide additional confinement to resist lateral dilation of the core. Retrofit Alternative 4 proposes retrofitting all columns and bent caps and construction of new foundations at bents with “Moderate-Severe” to “Severe” concrete column degradation based on results of the material sampling and testing study. No infill shear walls are proposed with this alternative since the concrete column casings and the bent cap retrofit would increase the stiffness of the structure and consequently reduce seismic displacements. The new foundations would also be designed to reduce seismic displacements. Bent 12 would be excluded from retrofitting because of the restricted room available for retrofit construction to take place at this location.

Retrofit Alternative 4 has similar shortcomings to Retrofit Alternative 2. Design of the concrete encasement would not provide sufficient strength to withstand the high internal pressure from continuing ASR activity. Construction of the concrete encasement would take place with rigorous water and moisture control of the existing concrete to prevent trapped moisture inside the encased sections of columns. Life expectancy of the structure under this alternative would be approximately 20 years before the next major retrofit would be required.

2.4.1.5 Retrofit Alternative 5: Shear Wall, Steel Casing, and ASR Protection Construction

Retrofit Alternative 5 is similar to Alternative 2 in that columns would be retrofitted by steel casings, and infill walls would be constructed at more column and bents. Compared to Retrofit Alternative 2, Retrofit Alternative 5 proposed to encase all columns that were identified with "Moderate-Severe" to "Severe"[13] damage ratings (refer to Figure 1-6 in Chapter 1) to reduce the possibility of further deterioration. Additionally, the steel casings would be designed to withstand the high level of internal pressure due to ASR-induced lateral dilation of the encased column. Bent 12 would be excluded from retrofitting because of the limited room available for construction of the column encasement due to the proximity of railroad tracks. Under this retrofit alternative, 76 columns would be encased, of which 26 would have 7/8-inch plates and 50 would have 5/8-inch steel plates. The exposed plates, channels, and bars would be concealed by a 6-inch layer of architectural mortar. All exterior columns with "Light" or "Moderate" damage ratings (refer to Figure 1-6 in Chapter 1) would also be encased to account for future concrete degradation due to ASR. Encasing all exterior columns would also maintain visual balance and consistency for the retrofitted structure. In addition to the above-mentioned columns, the interior columns in Bents 1, 4, and 5 would be encased to enhance their shear strengths.

Note that the steel casing and carbon and fiberglass rehabilitation schemes do not provide a solution to treat the concrete expansion problems within other concrete structural elements, including the railings, deck, girders, and foundations. It is expected that future retrofitting to maintain seismic and operational safety of the structure may not be required for at least 30 years after the retrofitting is completed.

[13] The damage rating was based upon visual observation of the degree of concrete cracking and deterioration during the materials testing program (see Figure 1-6 in Chapter 1).

2.4.1.6 Substructure Replacement

This retrofit scheme was developed for evaluation in response to suggestions from the public to consider other viable retrofit alternatives to be evaluated in the environmental document. The details of this retrofit scheme are presented in Section 2.3.2.2. This retrofit scheme would be designed to meet current seismic demands by replacing all substructure elements with members that conform to current seismic detailing standards. By replacing the substructure elements rather than using traditional strengthening retrofit solutions, the viaduct's aesthetics and historic nature could be preserved by utilizing architectural features similar to the existing members. Columns would be designed according to current seismic design criteria, including displacement and ductility capacity requirements.

Construction of this retrofit scheme would be difficult due to the following constraints:

- Limited access to the site from the sides and limited vertical clearances for placement of shoring
- Proximity of bridge to existing operational railroad
- Proximity of bridge to existing building foundations
- Size and weight of superstructure elements to be supported during removal and replacement of substructure
- Difficult concrete removal work at the bent caps
- Questionable force transfer between the new bent caps and existing superstructure may require large-scale proof testing
- Substandard horizontal clearances between columns and railroad facilities would cause difficulty in obtaining approval from railroad companies

In addition to the above challenges, it is likely that the City would have to pay for all of the cost associated with this retrofit scheme because it does not meet the criteria for federal funding; therefore, this alternative was eliminated from further consideration.

2.4.1.7 Retrofit Alternative Screening

Two retrofit alternatives out of the above five alternatives considered in the *Final Seismic Retrofit Strategy Report*[14], including heavy steel casing and concrete replacement, were evaluated as part of the alternative screening exercise during the project development phase. As part of the screening exercise, a set of criteria was developed, as presented in Table 2-4 (refer to Section 2.4.2.1). The screening results for the retrofit alternatives evaluated are summarized in Table 2-5.

[14] Sixth Street Viaduct Final Seismic Retrofit Strategy Report. 2004.

Table 2-4
Criteria Used for Retrofit and Alignment Alternatives Screening Exercise

Criteria	Explanation	Score Range
Meet Purpose and Need	**Purpose:** • Reduce vulnerability of the viaduct during a major earthquake. • Preserve 6th Street as a viable east-to-west link. • Eliminate design deficiencies of the viaduct. **Need:** • ASR has deteriorated the structural integrity of the concrete, making the 6th Street Viaduct vulnerable to earthquake events. • Bridge railings are damaged and cracked and do not meet crash standards. • Roadway width is substandard.	0 to 5, with “0” assigned to the alternative that does not meet the purpose and need and “5” assigned to the alternative that fully meets the purpose and need.
Constructability	Consideration was given to: • Ease of construction. • Minimum impacts to railroads. • No impacts to transmission towers. • Need for specialized construction techniques.	5 to 1, with “5” assigned to the alternative that would require standard construction and “1” to the alternative that would be very difficult to construct. The retrofit alternative was also given low scores taking into consideration the construction difficulties encountered when retrofitting the structure
Life Span of Facility	A new structure would have a design life span of 75 years, while the retrofitted structure would have a design life span of 30 years.	5 to 1, with “5” assigned to the alternative that has up to a 75-year life expectancy and “1” to the alternative that has a low life expectancy.
Construction Cost	Consideration is given to the following costs: • Right-of-way acquisition. • Railroad impacts. • Business relocation.	5 to 1, with “5” assigned to the alternative with a low construction cost and “1” to the alternative with a high construction cost.
Maintenance Cost	New structure usually requires less maintenance compared to the retrofitted structure.	All replacement alternatives received a score of 5, while retrofit alternative received a lower score.
Community Disruption	Degree of businesses being disrupted due to access or displacement and the number of businesses impacted.	5 to 1, with “5” assigned to the alternative with a high number of potentially affected properties and “1” to the alternative with a low number of potentially affected properties.
Structural Safety	New structure is less vulnerable to collapse and would incorporate required safety features.	5 to 1, with “5” assigned to the alternative with all required safety features incorporated and “1” to the alternative that does not contain the required safety features.
Operational Safety	Evaluation is based on consideration of the opportunity that the proposed project would: • Eliminate sight distance restrictions. • Correct substandard lane widths and sidewalks. • Provide median buffer for opposing lane. • Replace substandard railing.	5 to 1, with “5” assigned to the alternative that meets all required operational safety components and “1” to the alternative that does not meet the requirements.
Historic Preservation	Evaluation is based on consideration of the opportunity and/or ability to preserve historical resources of the community.	5 to 1, with “5” assigned to the alternative that would preserve the historic features and appearance of the bridge and “1” to the alternative that does otherwise.
Other Improvement Opportunities/ Benefits	Evaluation is based on consideration of the opportunities to improve the surrounding area of the viaduct to benefit the community. Key issues and opportunities to be considered include, but are not limited to, design, destination, recreation, safety, and traffic.	5 to 1, with “5” assigned to the alternative that would provide open space for area improvement opportunities echoed by the public and “1” to the alternative that does not provide such opportunities.

Table 2-5
Retrofit Alternative Screening Results

Retrofit Alternative	Evaluation Criteria										Total Score	Carried Forward for Detailed Analysis
	Meet Purpose and Need	Constructability	Life Span of Facilities	Construction Cost	Maintenance Cost	Community Disruption	Structural Safety	Operational Safety	Historic Preservation	Other Improvement Opportunities		
Infill Wall and Heavy Steel Casing	2	2	2	4	2	4	2	1	3	1	23	Yes
Concrete Replacement	3	1	4	1	3	4	3	1	4	1	25	No

Although the Concrete replacement scheme received a slightly higher score, the Project Development Team (PDT) members chose the Infill Wall and Heavy Steel Casing scheme as the retrofit scheme to be evaluated in the environmental document because it would involve much less cost for similar results for the same design life.

2.4.1.8 Other Retrofit Schemes Considered but Eliminated from Further Discussion

During the proposed project development phase following completion of the *Final Seismic Retrofit Strategy Report* preparation, the PDT considered many other retrofit schemes in response to input from interested parties and the public. The following retrofit options were considered.

Lithium Treatment

In March 2007, FHWA published the report *The Use of Lithium to Prevent or Mitigate Alkali-Silica Reaction in Concrete Pavements and Structures*. Lithium treatment for the 6th Street Viaduct was thoroughly evaluated and rejected for the following reasons:

1. The FHWA report states “Lithium treatment will not repair any damage that has already occurred.” Significant ASR damage has already occurred within the 6th Street Viaduct concrete elements; thus, lithium treatment would not be effective.
2. Data from the FHWA report indicate that application of lithium to existing structures can only penetrate approximately an inch below the surface of the concrete member. The structural elements of the 6th Street Viaduct are many feet thick. The most severe ASR damage is within the core of the thick concrete members.

3. In regards to usage of lithium to treat existing ASR-affected structures, the report states "Typically, such studies have used laboratory-sized specimens with relatively small cross-sections and it has not yet been demonstrated that lithium treatment is effective with larger specimens that are more representative of elements of concrete structures." In addition, if the large members of the viaduct could be treated, the treatment still would not correct the damages that have occurred.

Carbon Fiber Wrap Technology

Similar to steel casings, carbon and fiberglass-reinforced polymer rehabilitation schemes do not reverse or stop the ASR deterioration throughout the structural elements. The *Final Seismic Retrofit Strategy Report* did not evaluate this option in depth because of its cost being much higher relative to steel casing and its unknown long-term durability beyond approximately 20 years.

Replace ASR-Damaged Concrete within the Existing Viaduct Structure

This scheme was evaluated in response to suggestions from the public to consider preserving the general appearance of the existing viaduct by replacing the concrete elements that have deteriorated due to the ASR effect. Results of the evaluation indicated that there is no practical method to differentiate and isolate the ASR-compromised concrete from sound material. Many of the cores, which were extracted as part of the previously discussed materials testing program, exhibited a healthy surface appearance but highly distressed interiors (see Figure 1-5); therefore, it was determined that there was no practical way to replace bad concrete with new material without replacing all of the concrete. Implementation of this scheme would essentially require replacement of the entire viaduct. Another sub-option was to replace the foundations, columns, bent caps, and guardrails, along with strengthening the existing arch ribs. The superstructure between bent caps would not be replaced. After approximately 30 years, the superstructure would have to be replaced.

Replacement with Historic Replica (Modified Retrofit)

This retrofit scheme, referred to as Alternative 6A in the *Final Seismic Strategy Report*,[15] was developed and evaluated in response to suggestions from the public to consider partial retrofit and partial replacement. It is essentially a replacement of the existing viaduct structure with a new structure that maintains the historic appearance of the existing 6th Street Viaduct with a reuse of some existing viaduct component for preservation purposes.

[15] Sixth Street Viaduct Final Seismic Retrofit Strategy Report. 2004.

Under this scheme, the new structure would be constructed on the same footprint of the existing viaduct and retain the same vertical profile while making adjustment for current code requirements. All of the viaduct features would be replicated to the maximum extent feasible consistent with arriving at a roadway design that meets current AASHTO standards.

Based on the preliminary design concept, the new replacement structure would have 7 spans on the west approach between the west abutment and the west river pier. The east approach would consist of 14 spans between the east river pier and Bent 37. Span length would vary between 80 ft and 156 ft, with an average span length of 130 ft to 140 ft. The superstructure would be constructed with cast-in-place (CIP) concrete multi-cell box girder. The box girder would have a parabolic soffit with a variable girder depth between 4.5 ft and 6.5 ft in a typical span. Depth of the box girder may reach up to 8 ft at some of the bents. The parabolic soffit of the superstructure would simulate the visual appearance of the existing structure. The bent cap overhang would be constructed with similar details to those of the existing structure. Concrete barrier rails Type T-80 would be used to replace the existing railing and sidewalk. In addition, the new deck would have a 65.5-ft curb-to-curb width in addition to 5-ft-wide sidewalks; thus, the total width of the new structure would be 75.5 ft, and the total width of the deck slab would be 77.5 ft. However, the current design standard for 10-ft-wide sidewalks would need to be approved for an exception.

The steel arches over the Los Angeles River would be preserved in the new replacement structure. The superstructure over the Los Angeles River would consist of a CIP box girder, as described above; however, the steel arches would be moved and reset on the exterior sides of the new superstructure to maintain the visual appearance of the existing viaduct. The steel arches would not participate in load-carrying capacity of the new viaduct portion over the Los Angeles River. With this scheme, the steel arches would carry only their self weight, as well as self weights of the vertical hangers and bracing members.

The new structure would be constructed with circular columns with diameters ranging from 6 ft to 7 ft. The circular columns would be covered by 6-inch-thick architectural precast concrete casings that have a similar exterior shape as that of the existing columns. The objective of the architectural concrete casing would be to maintain the visual appearance of the existing columns, and it would not carry any load of the columns. The columns and the architectural casings would be supported on pile foundations.[16]

This retrofit scheme would eliminate the ASR problem. The life expectancy of the new structure would be an estimated 75 years. This scheme would provide a wider roadway width that meets

[16] Ibid.

the goal of removing the structure from the FHWA Eligible Bridge List (EBL). Although the existing viaduct elements would be replicated to the extent practicable, the new structure would not have exactly the same visual appearance or historical aesthetics of the existing bridge.

2.4.2 Replacement Alternatives Evaluation

2.4.2.1 Alignment Corridor Screening

A screening process was conducted to evaluate and select viable alignment corridors for further design consideration. Based on preliminary engineering investigation and public input, the PDT initially identified more than 20 alignment corridor scenarios for consideration. These alignment corridor scenarios were then refined and integrated into 10 alignment corridor alternatives (Figure 2-15). A workshop was conducted to screen down the proposed alignment corridor alternatives. This workshop resulted in the alternatives being reduced to three alignment corridors for the purpose of evaluation in the environmental document.[17] Representatives from LABOE, Caltrans, and a team of engineering and planning consultants participated in the screening workshop. The evaluation criteria used in the screening exercise are summarized in Table 2-4. Each criterion was given an equal weight.

Table 2-6 summarizes the results of the alignment corridor alternatives evaluation based on the criteria presented earlier in Table 2-4.

Based on the results of the screening analysis, alignment corridors 2 (total score of 40), 5 (total score of 41), and 10 (total score of 40) were chosen to carry forward for analysis in the environmental document (Figure 2-7). Alignment corridors 3, 4, and 5 were very similar, with the variation of the viaduct radius east of the river. Alignment 3 would swing the least to the north, followed by Alignments 5 and 4, respectively. Alignment 3 would be more difficult to construct than Alignments 5 and 4. In addition, Alignments 5 and 4 would provide room for other potential uses. Because Alignment 5 would result in less ROW impacts than Alignment 4, it is selected for further consideration.

[17] Alternatives considered during the workshop included the “No Action” and two “Retrofit Options.” The retrofit options were presented in Section 2.4.1 of this Draft EIR/EIS.

Table 2-6
Alignment Corridors Screening Results

Alignment Corridor (See Description in Table 2-1)	Evaluation Criteria										Total Score	Carried Forward for Detailed Analysis
	Meet Purpose and Need	Constructability	Life Span of Facilities	Construction Cost	Maintenance Cost	Community Disruption	Structural Safety	Operational Safety	Historic Preservation	Other Improvement Opportunities		
Alignment Alternative 1	3	3	5	3	5	4	5	1	3	1	33	No
Alignment Alternative 2	5	5	5	3	5	4	5	5	1	2	40	Yes
Alignment Alternative 3	5	4	5	3	5	4	5	5	1	2	39	No
Alignment Alternative 4	5	5	5	2	5	3	5	5	1	5	41	No
Alignment Alternative 5	5	5	5	2	5	3	5	5	1	5	41	Yes
Alignment Alternative 6	5	1	5	1	5	3	5	5	1	3	34	No
Alignment Alternative 7	5	5	5	2	5	2	5	5	1	3	38	No
Alignment Alternative 8	5	1	5	1	5	2	5	5	5	4	38	No
Alignment Alternative 9	5	1	5	1	5	2	5	5	5	4	38	No
Alignment Alternative 10	5	4	5	2	5	4	5	5	1	4	40	Yes

2.4.2.2 Bridge Concept Alternative Screening

Screening of potential replacement bridge types was conducted for various beam, arch, and cable-supported bridge systems using steel and concrete materials. The purpose of this screening was to identify which bridge concepts would be developed further during the advanced planning phase of project development leading to bridge type selection, thus narrowing the number of potential bridge types for staff's recommendations during the bridge type selection phase.

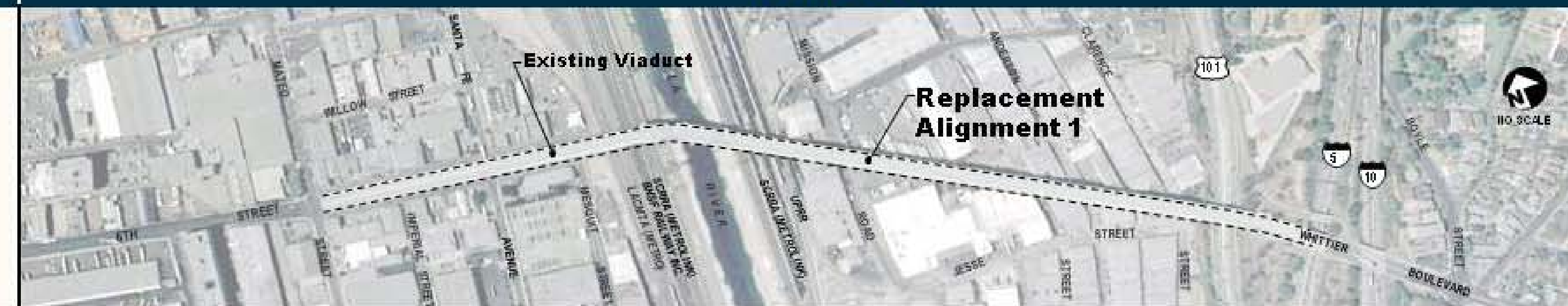
The structure type screening process consisted of the following steps:

1. Develop bridge type alternatives
2. Develop evaluation criteria
3. Obtain public input on the proposed alternatives
4. Evaluate and rank the alternatives
5. Recommend alternatives to be developed during the advanced planning phase, with five concepts moving forward for future development.

Alignment Corridor Description	Plan View

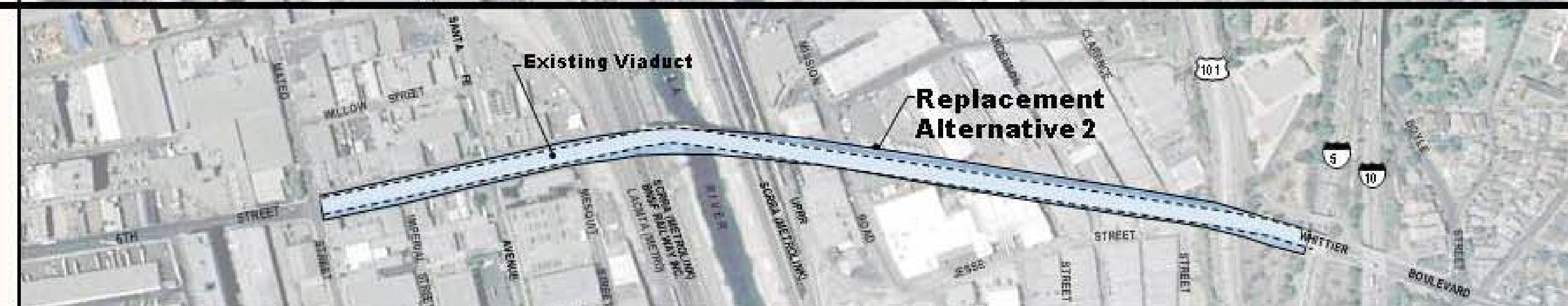
Alignment 1

Remove existing viaduct and construct a new viaduct that replicates existing viaduct on existing alignment. The new viaduct width and profile would be the same as the existing structure. No median or shoulders would be provided.



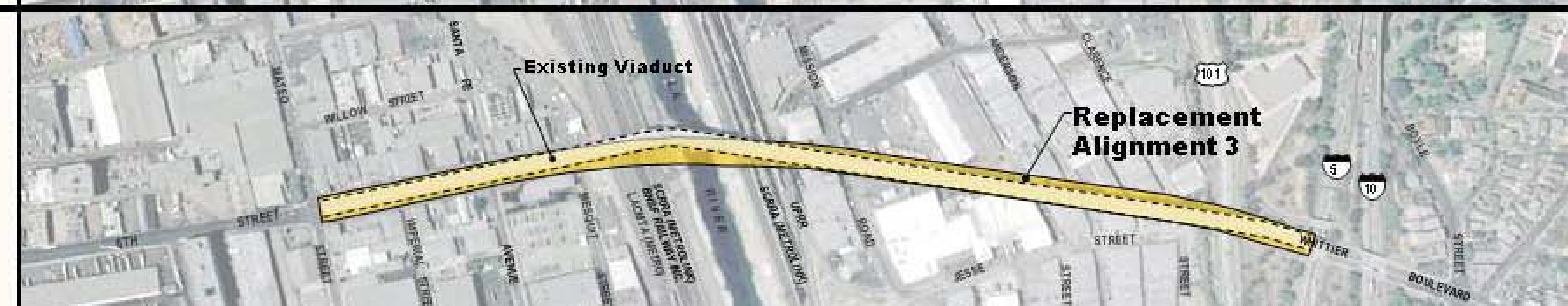
Alignment 2

Remove existing viaduct and construct a new viaduct on a new horizontal alignment. The new viaduct would be designed to have wider traffic lanes, median, shoulders, and sidewalks. To accommodate the widened viaduct, the north side of the viaduct footprint would extend to the north, while the south side of the footprint would remain at the same location except for the segment of the alignment that spans over the Los Angeles River, which would be shifted slightly south to improve the existing horizontal curve radius (2,300 ft) and provide better design speeds and stopping sight distance.



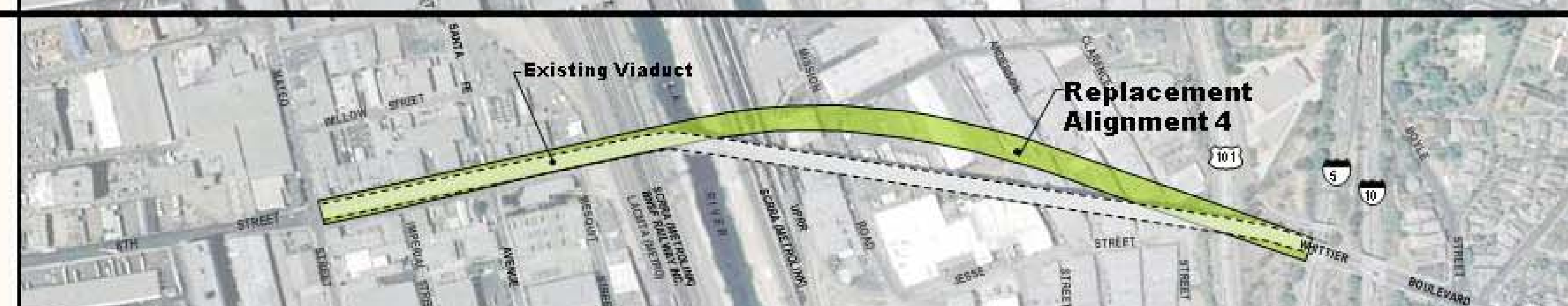
Alignment 3

Remove existing viaduct and construct a new viaduct. It would have a wider cross section as in Alternative 2. The new structure would be built along a new horizontal alignment similar to that described in Replacement Alternative 2, with the exception of a larger radius (4,000 ft) span over the Los Angeles River to allow better design speeds and sight distances and structural layout.



Alignment 4

Remove existing viaduct and construct a new viaduct. It would have a wider cross section as in Alternative 2. The new viaduct would be built on a horizontal straight line alignment for the segment from Mateo Street to the west bank of the Los Angeles River, allowing more bridge type options. The alignment under this option would swing to the north approximately 182 ft from the existing alignment, eliminating the existing radius at the east end and providing the best design speeds compared to the other alignment options under consideration.



Alignment 5

Remove existing viaduct and construct a new viaduct. It would have a wider cross section as in Alternative 2. The alignment under this option is similar to that described under Alternative 4, except that the radius (5,000 ft) east of the river is much larger, resulting in less extension of the viaduct footprint to the north. The alignment under this option would swing to the north approximately 85 ft from the existing alignment, eliminating the existing radius at the east end.

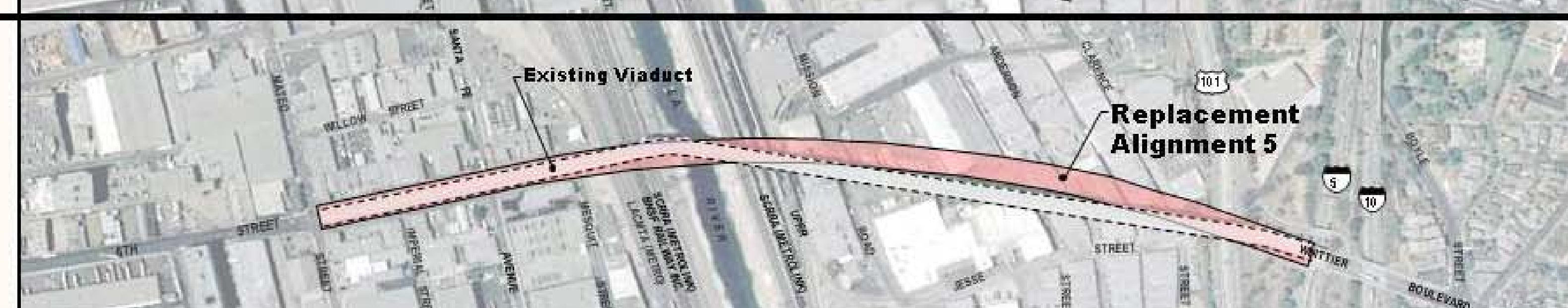


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Figure 2-15 Replacement Alignment Alternatives – Sheet 1

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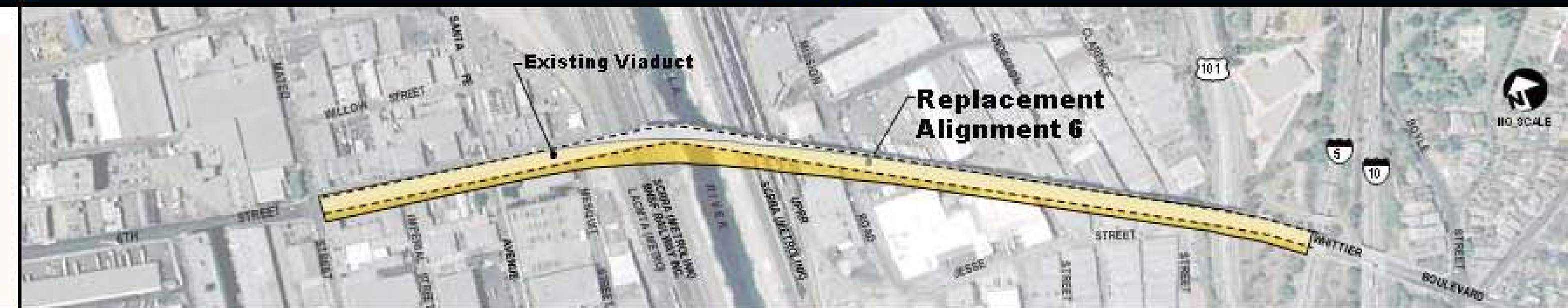
Alignment Corridor Description	Plan View

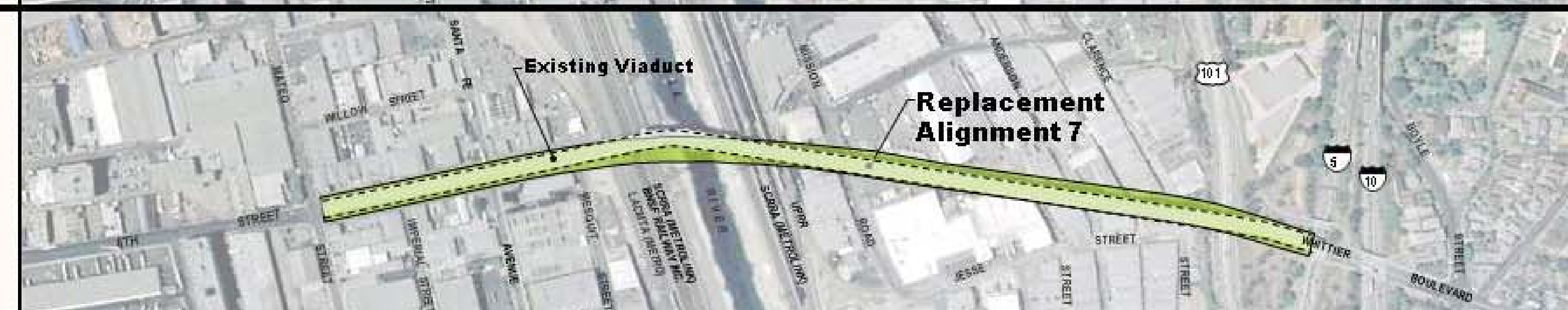
Alignment 6

Remove existing viaduct and construct a new viaduct on a new horizontal alignment. It would have a wider cross section as in Alternative 2. The south side of the viaduct footprint would extend to the south, while the north side of the footprint would remain at the same location.



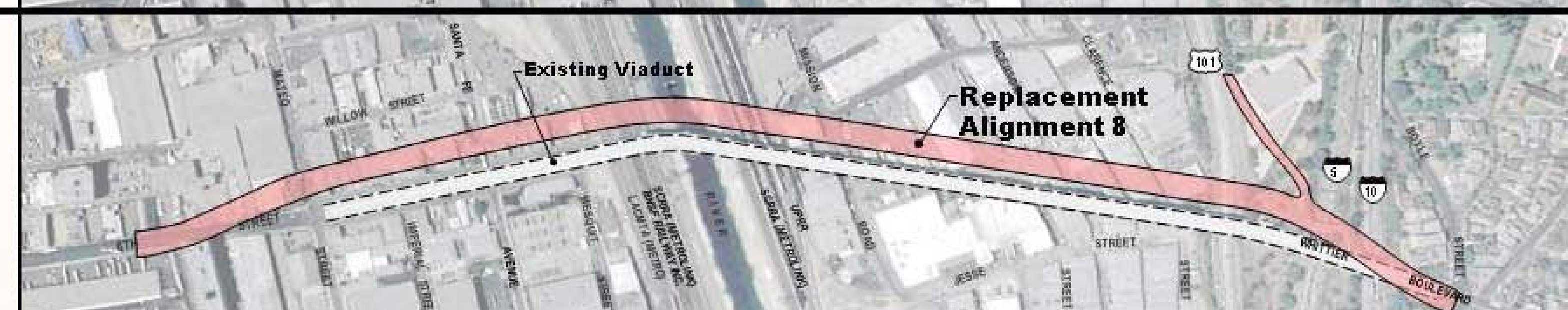
Alignment 7

Remove existing viaduct and construct a new viaduct on a new horizontal alignment. It would have a wider cross section as in Alternative 2. To accommodate the widened viaduct, the footprint of the viaduct would be widened on both the north and south sides.



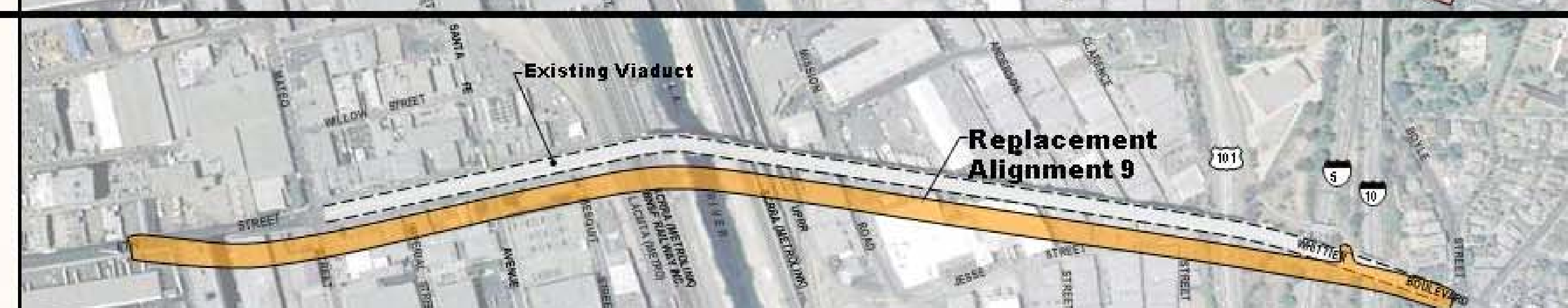
Alignment 8

Construct a new viaduct parallel to the existing viaduct on the north side adjacent to the existing viaduct. It would have a wider cross section as in Alternative 2. Retrofit the existing viaduct for public safety.



Alignment 9

Construct a new viaduct parallel to the existing viaduct on the south side of the existing viaduct. It would have a wider cross section as in Alternative 2. Retrofit the existing viaduct for public safety.



Alignment 10

Remove existing viaduct and construct a new viaduct on a new horizontal alignment. It would have a wider cross section as in Alternative 2. To accommodate the widened viaduct, the footprint of the viaduct would be wider on the north and south sides, except for the area between Mateo Street and Mesquit Street, which would only be wider to the north. The segment that extends from the river to the east would be constructed as a cantilever structure to minimize right-of-way impacts.

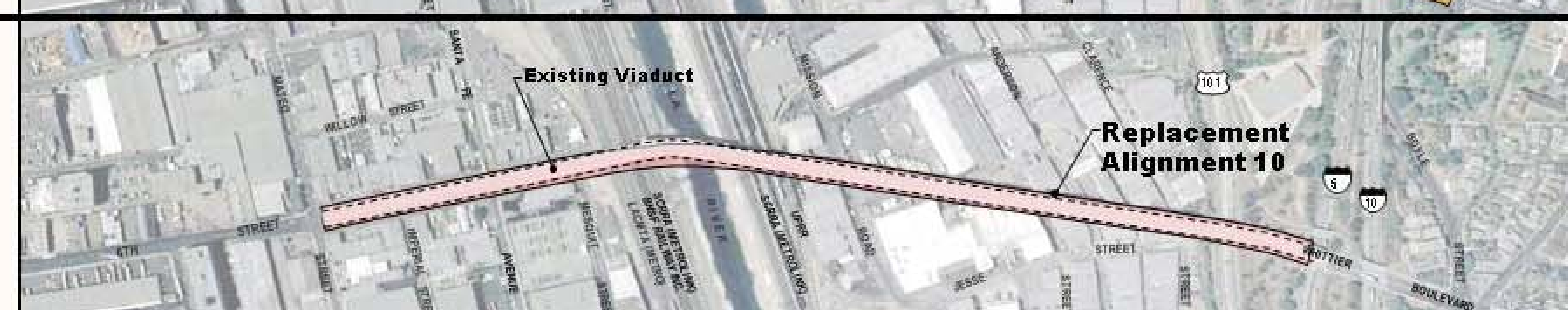


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Figure 2-15 Replacement Alignment Alternatives – Sheet 2

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Bridge Concept Alternative Development

Bridge engineers and architects first developed 15 different concept plans (16, including the existing structure concept), as listed in Table 2-7. The concept plans depicted the alternatives with sufficient detail for the screening process. Further refinement of the selected alternatives is anticipated during the advance planning phase.

The east and west approaches to the main span were considered but were not developed to the same level of detail as the main spans. It is assumed at this stage that the approaches would be beam-type structures (concrete box girders) compatible with the architectural vocabulary of the main span.

Table 2-7
Bridge Type Alternatives for the Main Span

Alt. No.	Description
1R	Replication of Main Span
2R	Haunched CIP prestressed concrete box girder (segmental or built on falsework)
3R	Haunched steel box girder
4R	Concrete slant leg frame
5R	Concrete deck arch
6R	Steel tied arch with top lateral bracing (3 spans of arches)
7R	Steel tied arch without top lateral bracing (1 span of arches)
8R	CIP box girder with steel tied arch pedestrian ways
9R	Steel half-through arch CIP girder approaches
10R	Concrete half-through arch with “Y” piers
11R	Extradosed concrete box girder with dual pylons
12R	Extradosed concrete box girder with single pylons
13R	Cable stay with single pylon
14R	Cable stay with 4-leg pylon
15R	Self anchored suspension

Source: 6th Street Viaduct Improvement Project Bridge Type Selection Structure Type Screening Phase, David Evans and Associates, October 2007.

Evaluation Criteria

Evaluation criteria were developed to identify the relative strengths and weaknesses of each bridge type and help determine those most suitable for the site. Each bridge concept was assigned a value from 1 to 10 based on application of the evaluation criteria. A value of 10 was considered excellent, 7 good, 4 fair, and 1 poor. The total score for each bridge concept was then obtained by summing the individual attribute values for that concept. Construction cost was not considered as a selection factor. The evaluation criteria are described in Table 2-8.

Table 2-8
Criteria Used for Bridge Type Evaluation

Criteria	Explanation
Seismic Performance	What is the seismic performance in terms of repairable damage after a maximum design seismic event, considering the structural system and materials? Will it be difficult to perform construction work after a seismic event, considering availability of materials and different structural elements? Considering the load redundancy of the structural system, are there multiple load paths? Are long frames resulting in minimal expansion joints and hinges possible? Are structural elements capable of sustaining large displacement/deformations while still maintaining load? Are structural elements ductile and/or compact?
Geometric Flexibility	During the design period, will changes in roadway vertical and horizontal alignments be possible without requiring a major modification to the bridge type? Can the bridge type accommodate curved horizontal alignments without adding significant costs? Can the bridge support system accommodate high skews along the railroad corridors and local streets below the structure without adding significant cost? Can the bridge supports be located to avoid conflicts with the existing access tunnel, sanitary sewer siphon, and towers for the overhead power lines?
Roadway and Pedestrian Safety	Will crash barriers be required along the sidewalks to protect structural elements such as arch ribs and cable systems? Will crash barriers be required along the median to protect structural elements such as arch ribs and cable systems? Is sight distance reduced by structural elements projecting above the roadway surface along the curved alignment?
Future River Access from Deck Level	Are piers located so access can be provided from the deck to the ground level along the river bank? Can access be provided along the span to the ground level along the river bank? How will the future access look from an aesthetics view point, blending with the existing structure?
Aesthetics	Should the bridge be a more dominant (large landmark) or more visually recessive (quiet) type structure? Does the bridge demonstrate the setting of a world-class city? Does the bridge fit into the natural and built setting? Should its architectural style include standard and accepted elements of bridge design, reflect the historic elements of the existing bridge, or should it push the current style envelope in an expression of technological, structural, and aesthetic daring? How important is the view of the bridge from below or from the deck? Should the bridge provide motorists a definite experience of a crossing? Is it appropriate for the bridge to evoke emotions of awe and wonder or community pride and signature?
Historical Compatibility	Do structural elements retain the architectural vocabulary of the historical bridge? Are similar materials being used that reflect the existing bridge’s character, using state-of-the-art technology and construction methods? Does the bridge architecture invoke a renaissance of the downtown area?
Design Schedule	Will the structural system require component testing, wind studies, and indicator pile programs that will prolong the design period? Will the design period extend beyond 18 months? Will nonlinear analysis be necessary to model geometric nonlinearity and material nonlinearity?
Hydraulic Impacts	Will the pier layout and shape adversely affect the hydraulic grade within the Los Angeles River?
Environmental Impacts	Can foundation systems be constructed that minimize the need for excavation? Can foundation systems be installed that minimize noise during construction? Will the bridge design or construction cause disruption to adjacent property owners? Will the bridge scheme require additional right-of-way purchases?
Utility Impacts	Will the bridge type require relocation of major utilities such as power transmission lines, fiber-optic lines, water line, sanitary sewer lines, and other wet and dry utilities? Can proposed or future utilities be supported within or on the superstructure?
Railroad Impacts	Will the bridge type require foundation and bent column construction within the railroad right-of-way? Will the bridge type minimize the time period of construction over the railroad right-of-way? Can the bridge type provide adequate vertical clearance during construction over the railroad right-of-way? Can the bridge type and material avoid or minimize maintenance requirements over the railroad right-of-way?
Construction Cost	Is the initial construction cost high relative to other bridge types? Will the structural components be manufactured locally? Does the price of material supplies fluctuate on a monthly basis? Note that the construction cost was evaluated, but it was not added to the total score for screening purpose.
Construction Schedule	Can the bridge be constructed within a 36-month period? Can the material supply be delayed by consequential causes such as labor strikes?

Table 2-8
Criteria Used for Bridge Type Evaluation

Criteria	Explanation
Construction Risk	Has this type of bridge been built before, and what were past experiences regarding claims? Are construction claims normally high for this type of construction? Do contractors have the demonstrated skill and experience to build this type of bridge? Is the structural system “seismically tough” during construction phases? Are construction materials readily available? Do construction material costs fluctuate over the short term?
Constructability	Is the construction scheme clear and uncomplicated? Are the details difficult to construct? Are extensive temporary supports and works or specialized equipment required for construction?
Maintenance/ Serviceability	Are components accessible for inspection? Will special equipment, such as a snooper, be required to inspect components? Can components be removed and replaced without requiring temporary support of adjacent components or the bridge itself? Is routine maintenance difficult or costly? Are components durable?

Public Input

On August 28, 2007, the PDT presented the preliminary sketches of 15 bridge types to the Community Advisory Committee (CAC), which was formed to enhance public involvement in the project development and environmental review process. During a workshop meeting, the CAC expressed their preferences for bridge types. Results of the votes received from the CAC members are presented in Figure 2-17, with the existing bridge type (Through Arches Category) receiving the highest number of votes at 16 and the extradosed concrete box girder (Cable Type Category) receiving 8 votes. The bridge concepts that received the third highest votes at 6 are steel half-through arch CIP girder approaches (Through Arches Category) and concrete slant leg frame concept (Deck Arches Category).

Bridge Concept Evaluation

A technical screening meeting was held on September 14, 2007, and involved a panel of nine bridge experts tasked to evaluate and rank the bridge concepts and to recommend five alternatives to be further developed during the advance planning phase. In addition eight discipline leads from the team of consultants, City staff, and Caltrans staff were in observance of the screening workshop[18]. The expert panel reviewed the 15 bridge concepts and screened them down to eight, taking into consideration the preferences expressed by the CAC at their previous workshop (Figure 2-18). The eight concepts were further evaluated using the criteria listed in Table 2-8. The results of the final screening are shown in Table 2-9. Based on the screening results, five bridge types were carried forward for detailed study (Figure 2-19)

[18] Bridge Type Selection Structure Type Screening Phase. October 2007.

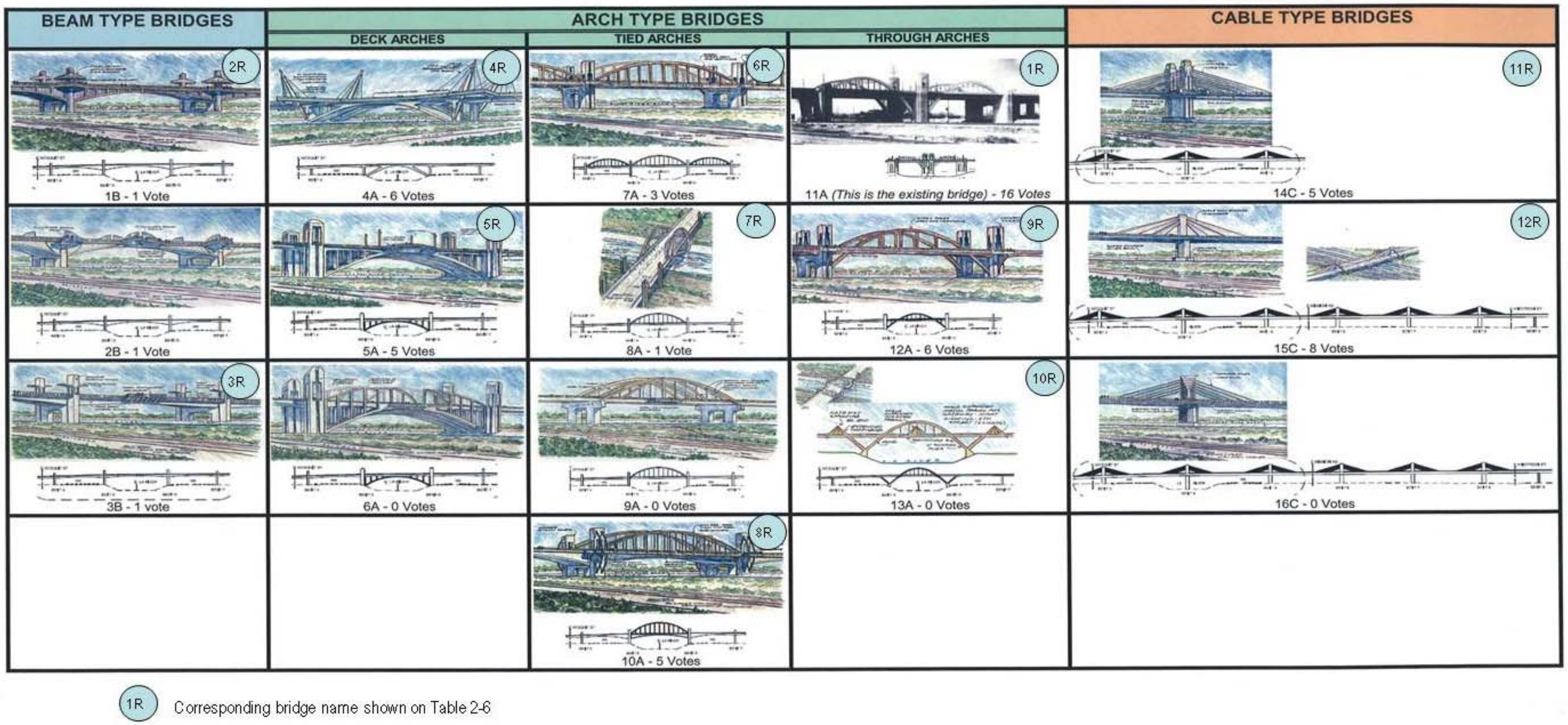
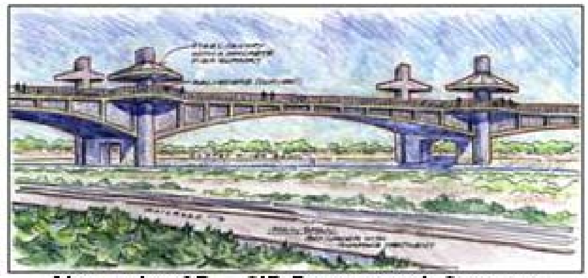
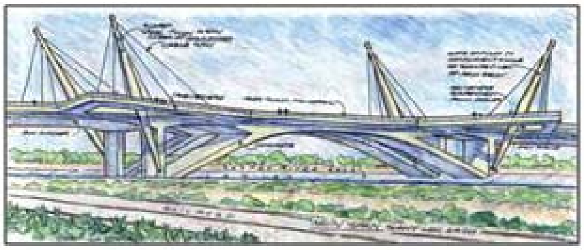


Figure 2-17
Results of Public Input on Preliminary Sketches of Bridge Concept Alternatives

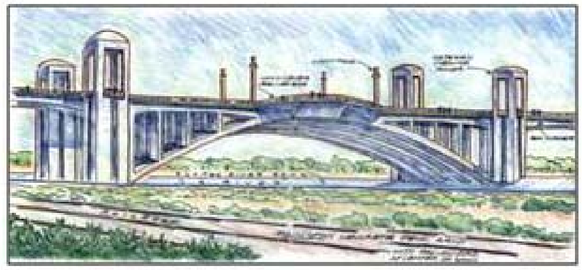
Alternative 1R – Replication



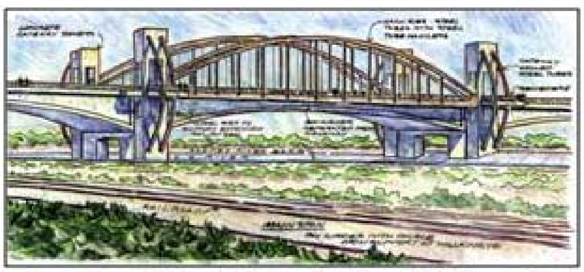
Alternative 2R – CIP Prestressed Concrete Box Girder



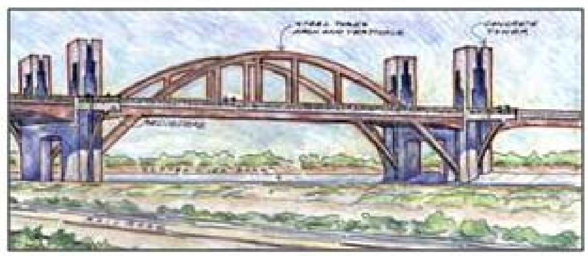
Alternative 4R – Concrete Slant Leg Frame



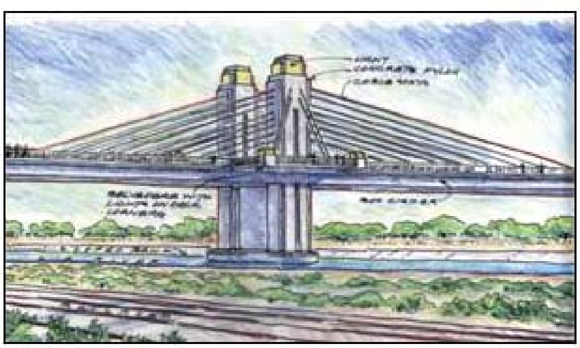
Alternative 5R – Concrete Deck Arch



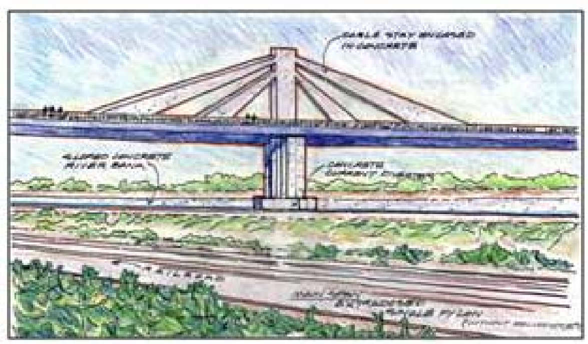
Alternative 8R – CIP Box Girder with Steel Tied Arch Pedestrian Ways



Alternative 9R – Steel Half Through Arch



Alternative 11R – Extradosed Concrete Box Girder with Dual Pylon



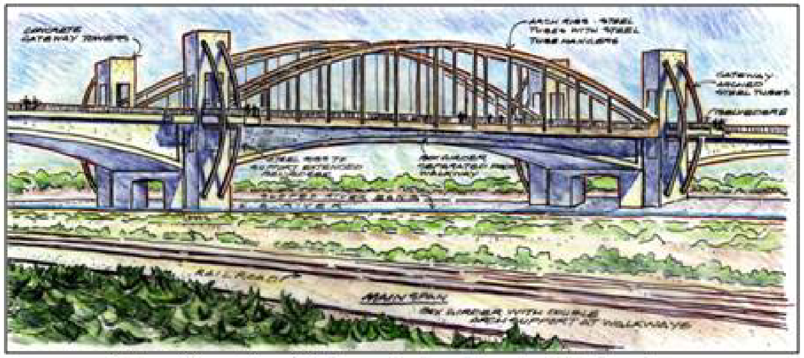
Alternative 12R – Extradosed Concrete Box Girder with Single Pylon

Figure 2-18
Preliminary Sketches of Bridge Concepts Short-listed by Expert Panel for Evaluation

Table 2-9
Bridge Concept Screening Results

Alternative	Evaluation Criteria																Total Score	Carried Forward for Detailed Analysis
	Seismic Performance	Geometric Flexibility	Roadway and Pedestrian Safety	Future River Access from Deck Level	Aesthetics	Historical Compatibility	Design Schedule	Hydraulic Impacts	Environmental Impacts	Utility Impacts	Railroad Impacts	Construction Cost	Construction Schedule	Construction Risk	Constructability	Maintenance/ Serviceability		
Weight	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**		
1R – Replication	7	4	7	7	10	10	4	6	4	7	1	4	7	10	4	4	92	Yes
2R – CIP prestressed concrete box girder	10	10	10	10	4	4	10	9	7	7	9	10	10	10	10	10	130	No
4R – Concrete slant leg frame	7	8	10	10	7	7	4	9	6	6	4	5	8	7	4	8	105	No
5R – Concrete deck arch	7	8	10	10	7	7	4	9	6	7	4	5	8	7	4	10	108	No
8R – CIP box girder with steel tied arch pedestrian ways	7	8	7	10	6	4	8	9	7	7	9	8	9	9	7	7	114	Yes
9R – Steel half-through arch CIP box girder approaches	10	4	7	10	10	7	4	9	6	7	7	6	9	6	7	6	109	Yes
11R – Extradosed concrete box girder with dual pylons	10	8	7	7	10	5	7	7	7	10	10	5	10	9	10	8	125	Yes
12 R – Extradosed concrete box girder with single pylons	10	7	4	7	10	4	7	7	7	10	10	3	10	9	9	8	119	Yes

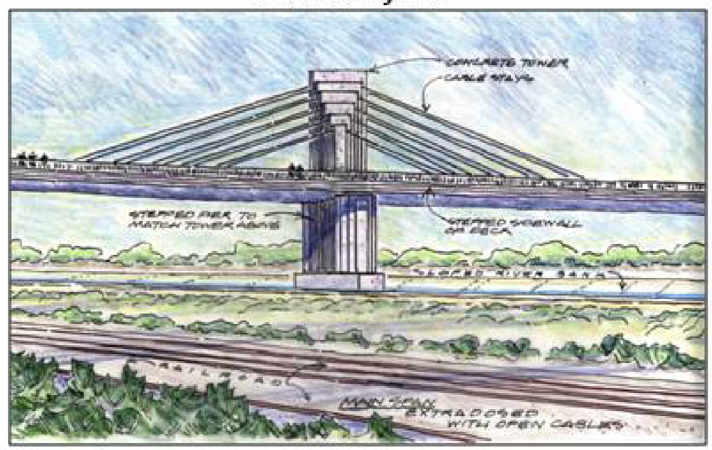
Bridge Type 1 – Replication



Bridge Type 2 – CIP box girder with steel tied arch pedestrian ways

Bridge Type 3 – Steel Half Through Arch with CIP box girder approaches

Bridge Type 4 – Extradosed Concrete Box Girder with Dual Pylons



Bridge Type 5 – Extradosed Concrete Box Girder with Single Pylon

Figure 2-19
Preliminary Sketches of Bridge Concepts Carried Forward for Detailed Study

2.4.2.3 Transportation System Management and Transportation Demand Management Alternative

Caltrans requires consideration of Transportation System Management (TSM) strategies in EIS/EIR documents (Caltrans SER EIS/EIR Annotated Outline, Volume 1, April 2008). TSM strategies consist of actions that increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Some TSM strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. TSM also encourages automobile, public and private transit, ridesharing programs, bicycle, and pedestrian improvements as elements of a unified urban transportation system, all of which can be integrated in multiple forms.

Although TSM measures alone could not satisfy the purpose and need of the project, the following TSM measures have been incorporated into the Replacement Alternative for this project: 10-ft-wide sidewalks; 19-ft-wide outside lanes, including 8-ft-wide shoulders for bicycles; left-turn lane at Mateo Street to improve thorough traffic flow; and traffic signal improvements at both ends of the project.

The City of Los Angeles' signal network system, referred to as the Automated Traffic Surveillance and Control (ATSAC) system, coordinates signals for optimal operations (referred to as signal priority). The ATSAC system is currently in place in East Los Angeles. Transportation Demand Management (TDM) focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled, as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding travelers' transportation choices in terms of travel methods, time, route, costs, and the quality and convenience of the travel experience. TDM includes providing contract funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals. Since the proposed 6th Street Viaduct project is a seismic safety and bridge functional deficiency improvement, TDM does not apply.

2.4.3 Staff Analysis Summary

Nineteen (19) members of the PDT, which includes representatives from the City of Los Angeles Bureau of Engineering's Bridge Improvement Program and Environmental Management Group, LADOT, Caltrans' Environmental Division, and a team of consultants from various disciplines, held a workshop on October 8, 2008. The purpose of the workshop was three-fold:

1. Determine the feasibility of retrofit concepts
2. Identify the highest ranked project alignment from three proposed corridors
3. Identify the highest ranked bridge type from five design concepts

The criteria used in ranking the alternatives, roadway alignments, and bridge types had been developed over the previous 2-year public involvement, preliminary engineering, and environmental review phase. The project team once again reviewed results of extensive previous research to revalidate each of the evaluation criteria, including the value engineering and ASR workshop exercises conducted as part of the project development, and then scored and ranked the alignment alternatives and bridge design concepts.

2.4.3.1 Alternative 2 – Retrofit

Based on the results of the workshop, staff reached a consensus that the Retrofit Alternative is not the recommended alternative because of the following reasons:

- There are no known methods to stop, reverse, or mitigate the ASR deterioration.
- The Retrofit Alternative would have the highest life-cycle cost.
- The Retrofit Alternative would not correct the geometric deficiencies of the existing viaduct.
- Retrofit Alternative construction would require reduction of the railroad horizontal clearances, which does not meet requirements of the railroad agencies.
- Because of access restrictions, column encasement at Bent 12 is infeasible.
- Retrofitting would adversely affect this historic resource.
- The Retrofit Alternative would only meet a “no collapse” standard; significant damage could occur in a design seismic event.

Based on the above reasons, the staff recommended bridge replacement over the Retrofit Alternative.

2.4.3.2 Alternative 3 – Replacement: Alignments A, B, and C

For the Replacement Alternative, the following criteria were used in ranking the three proposed alignments:

- Geometric design
- ROW impacts to parcels within the proposed new viaduct footprint
- ROW impacts to remaining parcels adjacent to the construction site
- Construction impacts
- Capacity to avoid LADWP transmission towers
- Impacts to utilities
- Adequate access to perform future maintenance
- Geometric capability to accommodate various bridge types under consideration
- Future compatibility with the Greening Concept
- Accommodating local plans
- Overall environmental impacts

Following deliberation, Alignment Corridor B had the highest score and ranking, followed by Alignments A and C, respectively. Alignment B had the highest ranking because it met the geometric specifications required by LADOT; however, Alignment B would result in the greatest ROW impacts. To minimize ROW impact, staff recommended that Alignment B be refined.

2.4.3.3 Alternative 3 – Replacement: Bridge Concepts

Based on the results of the ranking evaluation, Bridge Concept 4 (Dual Tower Extradosed [cable supported] with CIP Box Girder Approaches) received the highest score; however, since the bridge type does not affect the results of the environmental impact analysis, all five bridge types are documented in this Draft EIR/EIS as viable options for the Replacement Alternative. Bridge type selection will be made by the City Council based on public input received on the Draft EIR/EIS and staff recommendations.

2.5 Alternatives Considered and Withdrawn

2.5.1 Viaduct Retrofit

Several retrofit alternatives were considered during the project development and screening phase as described in Section 2.4.1. Table 2-10 summarizes the deficiencies of those retrofit alternatives considered but not carried forward for further study.

2.5.2 Viaduct Replacement

Ten alignment corridor alternatives were identified and screened by engineers and planners of the PDT utilizing the criteria described in Section 2.4.2.1. That screening process led to the elimination of seven of the ten corridors from further consideration.

Two of the replacement alternatives eliminated deserve special mention because they are the only alternatives that would allow the existing 6th Street Viaduct to remain standing and still meet the project purpose and need. These are Replacement Alignment 8 and Replacement Alignment 9, as described below:

Table 2-10
Retrofit Alternatives Considered but Eliminated

Retrofit Alternative	Seismic Deficiencies		Material Deficiencies			Operational Deficiencies						Historic Preservation		Traffic Management	
	Meets Minimum No Collapse Criteria	Major Damage Expected Following a Design Earthquake Event	Repairs Concrete Damaged by ASR	Prevents Future ASR Damage within Concrete	Expected Design Life	Resolves Horizontal Stopping Site Distance Deficiency	Provides a Median Barrier	Provides Wider Sidewalks	Provides Shoulders	Provides an Approved Crash-Tested Barrier Rail	Resolves Inadequate Railroad Clearances	Adverse Effect Under Section 106	Opportunity to Preserve Arch Ribs	Railroad Shoefly Required	Long Term Lane Closures on US 101
Infill wall construction	No	Yes	No	No	< 10 years	No	No	No	No	No	No	Yes	Yes	No	No
Infill walls with steel casing construction	Yes	Yes	No	No	10 years	No	No	No	No	No	No	Yes	Yes	No	No
Catcher wall construction	Yes	Yes	No	No	10 years	No	No	No	No	No	No	Yes	Yes	No	No
Concrete casing construction	Yes	Yes	No	No	20 years	No	No	No	No	No	No	Yes	Yes	No	No
Lithium treatment	No	Yes	No	No	< 10 years	No	No	No	No	No	No	Yes	Yes	No	No
Composite materials (carbon/fiberglass)	Yes	Yes	No	No	20 years	No	No	No	No	No	No	Yes	Yes	No	No
Replace concrete damaged by ASR and add reinforcing steel	Yes	Yes	Yes	unknown	75 years for replaced portion	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes
Replacement of substructure	Yes	Yes	Yes for substructure only	Yes for substructure only	75 years for substructure	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes
Replacement with historic replica	Yes	No	Yes	Yes	75 years	No	No	No	No	Yes	Yes	Yes	Yes, but non-load carrying	Yes	Yes

- **Replacement Alignment 8:** Alignment 8 proposes to preserve the existing viaduct by constructing a new viaduct to the north of the existing viaduct. Under this alternative, the existing viaduct would be retrofitted for preservation purposes and used only for pedestrian and bicycle traffic. One of the main drawbacks of this approach is that by constructing a new alignment to the north and extending its limits to the east and west, it would result in substantially greater ROW impacts than any of all the other proposed alternatives. This alternative would be far more expensive because both the new viaduct construction and the existing viaduct retrofit to the same non-collapse standards would be required. Construction of the viaduct under Alignment 8 would create major impacts to the sewer siphon across the Los Angeles River and the sewers located on the east bank of the river. This alignment would also create potential impacts to the LADWP transmission towers located along the east bank of the river. This alignment would require construction of a new US 101 northbound (NB) on-ramp. Two new bridges would also be required over I-5 for the NB and southbound (SB) sections of the freeway. There would be greater impacts to the railroads by adding a new bridge to the north of the existing viaduct, plus the additional space required for retrofitting the existing columns that are located within the railroad ROW.

- **Replacement Alignment 9:** Alignment 9 proposes to preserve the existing viaduct by constructing a new viaduct to the south of the existing viaduct. Under this alternative, the existing viaduct would be retrofitted for preservation purposes and used only for pedestrian and bicycle traffic. One of the main drawbacks of this approach is that by constructing a new alignment to the south and extending its limits to the east and west, it would create substantially greater ROW impacts similar to Alignment 8. This alternative would be far more expensive because both the new viaduct construction and the existing viaduct retrofit the same non-collapse standards would be required. This alignment would impact three LADWP transmission towers (two on the west bank of the river and one on the east bank). In addition, LADWP's electrical substation between Santa Fe Avenue and Mesquit Street would be impacted. A new NB on-ramp connection to US 101 would be required. Two new bridges would also be required over I-5 for the NB and SB sections of the freeway. There would be greater impacts to the railroads by adding a new bridge to the north of the existing viaduct, plus the additional space required for retrofitting the existing columns that are located within the railroad ROW.

2.5.3 Bridge Concepts

Fifteen (15) bridge concepts were identified for evaluation. Bridge type screening was performed by a group of bridge experts taking into consideration input from the CAC received during the concept development process. Based on the evaluation, five bridge concepts were carried forward for detailed consideration, as described in Section 2.3.3.2.

2.5.4 TSM and TDM Alternative

The Transportation System Management (TSM) and Transportation Demand Management (TDM) Alternative alone would not meet the project purpose and need. The City of Los Angeles' signal network system (i.e., ATSAC system) coordinates signals for optimal operations (i.e., signal priority). No additional TSM improvement alternatives have been identified that would improve street operations beyond upgrading the existing facility, providing standard width lanes and a median, and facilitating highway vehicle occupancy.

2.6 Permits and Approvals Needed

The following permits, reviews, and approvals would be required for project construction:

Agency	Permit/Approval
U.S. Army Corps of Engineers (USACE)	Section 404 Permit for possible discharge of dredged or fill material into the Los Angeles River.
State Historic Preservation Officer (SHPO)	Section 106 consultation and agreement for the work that would impact the historic 6th Street Viaduct
Los Angeles Regional Water Quality Control Board (RWQCB)	Section 401 Water Quality Certification for work in the Los Angeles Channel
RWQCB	Groundwater Dewatering Permit for discharges of groundwater from construction and project dewatering to surface waters in the watersheds of Los Angeles
California Department of Fish and Game (CDFG)	Section 1602 Agreement for Streambed Alteration
Los Angeles County Metropolitan Transportation Authority (MTA)/Southern California Regional Rail Authority (SCRRA)/ BNSF Railway (BNSF)/Union Pacific Railroad (UPRR)/ AMTRAK	Railroad License/Agreement for work within railroad ROW

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Chapter 3
Affected Environment, Environmental Consequences, and Mitigation Measures

Chapter 3 Affected Environment, Environmental Consequences, and Mitigation Measures

3.1 Introduction

The proposed project is a joint undertaking by Caltrans and the City of Los Angeles (City), and it is subject to both state and federal environmental review requirements. Project documentation has been prepared in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Federal responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable federal laws for this project that of the Federal Highway Administration (FHWA) is being carried out by Caltrans under its assumption of responsibility pursuant to 23 *United States Code* (U.S.C.) 327. Caltrans is the lead agency under NEPA, and the City of Los Angeles is the lead agency under CEQA for the proposed project.

Analysis of each environmental factor in this EIR/EIS includes discussion of the affected environment, environmental consequences (including construction impacts, permanent impacts, cumulative impacts, and secondary impacts) and avoidance, minimization, and compensation measures for each project alternative. When the impacts were found to be potentially significant, as determined under CEQA, then mitigation measures were developed to reduce the impacts to a less than significant level. CEQA requires that each significant effect on the environment resulting from the project be identified and, to the extent feasible, mitigated.

Under CEQA, thresholds are used to determine if project-related changes to the environment are significant (CEQA Guidelines Section 15064.7). Per NEPA regulations (40 *Code of Federal Regulations* [CFR] 1508.27), significance is based on context and intensity. The magnitude of the impact is evaluated, and no judgment of its significance is made in the document. Usage of the term “significance” in this document is made pursuant to CEQA only, and the evaluation of environmental factors pursuant to CEQA significance thresholds is confined to Chapter 4 and Appendix A, CEQA Checklist. Under NEPA, all impacts are discussed regardless of threshold amount, and they include mitigation measures where reasonable. Each section in Chapter 3 discusses the context and intensity of environmental impacts and mitigation measures, as required by NEPA.

In analyzing cumulative and secondary effects of the proposed project, the Council on Environmental Quality (CEQ) handbook entitled *Considering Cumulative Effects under the*

National Environmental Policy Act (CEQ, 1997) and the FHWA position paper entitled *Secondary and Cumulative Impact Assessment in the Highway Project Development Process* (FHWA, 1992) were followed. Three major steps, which are parallel with the environmental impact assessment process, were used in analyzing cumulative effects. These consist of (1) scoping, (2) defining the affected environment, and (3) determining the environmental consequences.

3.1.1 Technical Studies

Environmental analyses presented in this chapter are primarily based on a series of technical studies prepared for the 6th Street Viaduct Seismic Improvement Project. These studies consist of the following:

Air Quality Technical Report (Parsons, 2008a)
Archaeological Survey Report (BonTerra Consulting, 2008)
Community Impact Assessment (Parsons, 2008b)
Historic Property Survey Report (Parsons, 2007a)
Historical Resources Evaluation Report (Parsons, 2007b)
Hydrology and Hydraulics Report (Moffatt & Nichol, 2008)
Initial Site Assessment (Parsons, 2007c)
Natural Environment Study (BonTerra Consulting, 2009a)
Noise Study Report (Parsons, 2008d)
Paleontological Study (BonTerra Consulting, 2009b)
Relocation Impact Report, Draft (Paragon Partners, 2008)
Traffic Analysis Report (ACT Consulting Engineers, 2008)
Visual Impact Assessment (Parsons, 2008e)

The above technical studies are incorporated by reference and are available for review at the City of Los Angeles Bureau of Engineering (LABOE) office and Caltrans District 7 office.

3.1.2 Governing Laws, Regulations, and Standards

The analysis in this document assumes that, unless otherwise stated, the project would be designed, constructed, and operated following all applicable federal and state laws, regulations, ordinances, and formally adopted City standards (e.g., Los Angeles Municipal Code and Bureau of Engineering Standard Plans). Also, this analysis assumes that construction would follow the uniform practices established by the Southern California Chapter of the American Public Works Association (e.g., Standard Specifications for Public Works Construction and the Work Area Traffic Control Handbook) as specifically adapted by the City of Los Angeles (e.g., The City of Los Angeles Department of Public Works Additions and Amendments to the Standard Specifications for Public Works Construction [also known as "The Brown Book,"] formerly Standard Plan S-610).

3.1.3 Resources Considered but Determined to not be Relevant

The following environmental resources were considered but determined to not be relevant due to their absence from the project area. Consequently, there is no further discussion regarding these resources in this document.

Farmland/Timberland. The project site is located in a highly developed, urban area of Los Angeles with no farmland or agricultural resources within the project area and vicinity.

3.1.4 Resources Resulting in No Impacts

As part of the scoping and environmental analysis conducted for the project, the following environmental factors and resources were considered, but no potential for adverse impacts was identified. Consequently, there is no further discussion regarding these environmental factors in this document (see Appendix A, CEQA Checklist, for more information).

Growth. Growth within the project area and vicinity is controlled by the City of Los Angeles General Plan. The proposed project would retrofit or replace a seismically vulnerable viaduct, but it would not add traffic lanes/capacity; therefore, it is not considered growth inducing and would not directly or indirectly contribute to population growth.

Land use designations in the project area west of the Los Angeles River include *heavy industrial* (zoned M3), *open space* (zoned OS), and *public facilities* (zoned PF); land use designations in the project study area east of the river include *heavy industrial* (zoned M3), *light industrial* (zoned MR2), *residential multi-family* (zoned RD2), *open space* (zoned OS), *public facilities* (zoned PF), and *highway oriented commercial* (zoned C1). Based on field observations by the consultant team, no residential dwellings are located in or adjacent to the 6th Street Viaduct footprint. The proposed project would not require the acquisition or displacement of residential housing; therefore, it would not create a demand for additional housing. Under the replacement alternative, some manufacturing/commercial buildings located immediately adjacent to the viaduct footprint would need to be relocated, leaving some vacant land that might be available for redevelopment. Since this land is zoned for heavy industrial, redevelopment of the land for residential and/or mixed-use residential is not allowed unless it is rezoned by the City Planning Department. Future development decisions would be made through the planning process/ protocols set forth by the City of Los Angeles Planning Department and are beyond the scope of this project.

Energy. The proposed project would use fossil fuels for construction equipment operation during the construction period. This increased fuel consumption would be temporary and would cease at the end of the construction activity.

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3.2 Land Use and Planning

This section addresses potential impacts to existing and planned land uses within the project area that could result from implementation of the proposed project alternatives. The information presented in this section is excerpted from the Community Impact Assessment[19] prepared for this project.

3.2.1 Affected Environment

The proposed project is located within the City of Los Angeles, east of the downtown area within the Central City North and Boyle Heights Community Planning Districts. The land use analysis focused on the properties within the project limits and the surrounding area potentially impacted by project construction and operation.

3.2.1.1 Existing Land Use

The project is located within a fully developed, mixed-use urban setting surrounding a portion of the Los Angeles River (refer to Figure 1-2 in Chapter 1). The project is located at the boundary of the City of Los Angeles General Plan's Central City North and Boyle Heights Community Planning areas. Land uses along the north and south sides of the viaduct are predominantly industrial and commercial. Railroad corridors exist along the east and west banks of the river. On the west bank of the river, the two tracks closest to the river are owned by the Los Angeles County Metropolitan Transportation Authority (MTA) and used by the Southern California Regional Rail Authority (SCRRA) to operate Metrolink trains. The five tracks west of the MTA tracks are owned by Burlington Northern Santa Fe (BNSF), and the rest of the tracks are owned by MTA and used for the Metro Red Line. Amtrak and BNSF also operate trains on MTA's two tracks on the west bank. On the east bank, the two tracks closest to the river are owned by MTA, and the Union Pacific Railroad (UPRR) owns the rest of the tracks. UPRR also operates trains on MTA's tracks on the east side of the river.

The Los Angeles River, which extends beneath the viaduct in a north-south direction, is confined to a trapezoidal concrete-lined channel. Within the proposed project vicinity, four 230-kilovolt (kV) high-voltage transmission towers, owned by the Los Angeles Department of Water and Power (LADWP), are located on each bank of the river on the north and south sides of the viaduct.

Existing buildings/structures located within the viaduct footprint include the City Department of Public Works Maintenance Facility office (located beneath the viaduct on the west side of the Los Angeles River between Santa Fe Avenue and Imperial Street); a USACE tunnel (located

[19] Community Impact Assessment for 6th Street Viaduct Seismic Improvement Project. July 2008.

beneath the viaduct on the west side of the Los Angeles River between Santa Fe Avenue and the river), and buildings owned by Ventura Foods, Inc. (located underneath the viaduct on the east side of the Los Angeles River west of Mission Road).

3.2.1.2 Development Trend

The proposed project site is situated within the fully developed area of Downtown Los Angeles and the Boyle Heights community. Rehabilitation, reuse, and redevelopment activities in the downtown area are progressing very rapidly, while such activities in the Boyle Heights community are less apparent, which is evident from current property conditions in the vicinity. The area near the proposed project site west of the Los Angeles River, in the Arts District of downtown, has seen several adaptive reuse renovations of abandoned industrial buildings, which introduces residential uses to the primarily industrial district by converting the spaces into live/work units. Based on a review of ongoing and future foreseeable proposed projects within the area, many rehabilitation/reuse/redevelopment projects are proposed near the project study area, as summarized in Section 1.5 of Chapter 1.

3.2.1.3 Land Use Designation and Zoning

Land use designations in the project study area west of the Los Angeles River include *heavy industrial* (zoned M3)[20], *open space* (zoned OS)[21], and *public facilities* (zoned PF)[22] (see Figure 3.2-1 for land use designations and Figure 3.2-2 for zoning designations). Land use designations in the project study area east of the river include *heavy industrial* (zoned M3), *light industrial* (zoned MR2)[23], *residential multi-family* (zoned RD2)[24], *open space* (zoned OS), *public facilities* (zoned PF), and *highway oriented commercial* (zoned C1)[25]. Existing land uses on both sides of the river reflect the land use and zoning designations.

3.2.1.4 Coastal Zone

The project site is not located within the designated coastal zone area.

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[20] Heavy Industrial (M3): This zone allows for Light Industrial use (M2), any industrial l uses, nuisance type uses 500 ft from any other zone, No multiple residential uses.

[21] Open Space (OS): This zone allows for parks and recreation facilities, nature reserves, closed sanitary landfill sites, public water supply reservoirs, and water conservation area.

[22] Public Facilities (PF): This zone allows for agricultural uses, parking under freeways, fire and police stations, government buildings, public libraries, post offices, public health facilities, and public elementary and secondary schools.

[23] Restricted Light Industrial (MR2): This zone allows for restricted industrial use (zoned MR1), additional industrial uses, mortuaries, and animal keeping.

[24] Restricted Density Multiple Dwelling (RD2): This zone allows for two-family dwellings.

[25] Limited Commercial (C1): This zone allows for local retail stores greater than 100,000 square ft, offices or businesses, hotels, hospitals and/or clinics, parking areas, limited commercial uses (CR) except for churches, schools, museums, and multiple dwelling uses (R3).

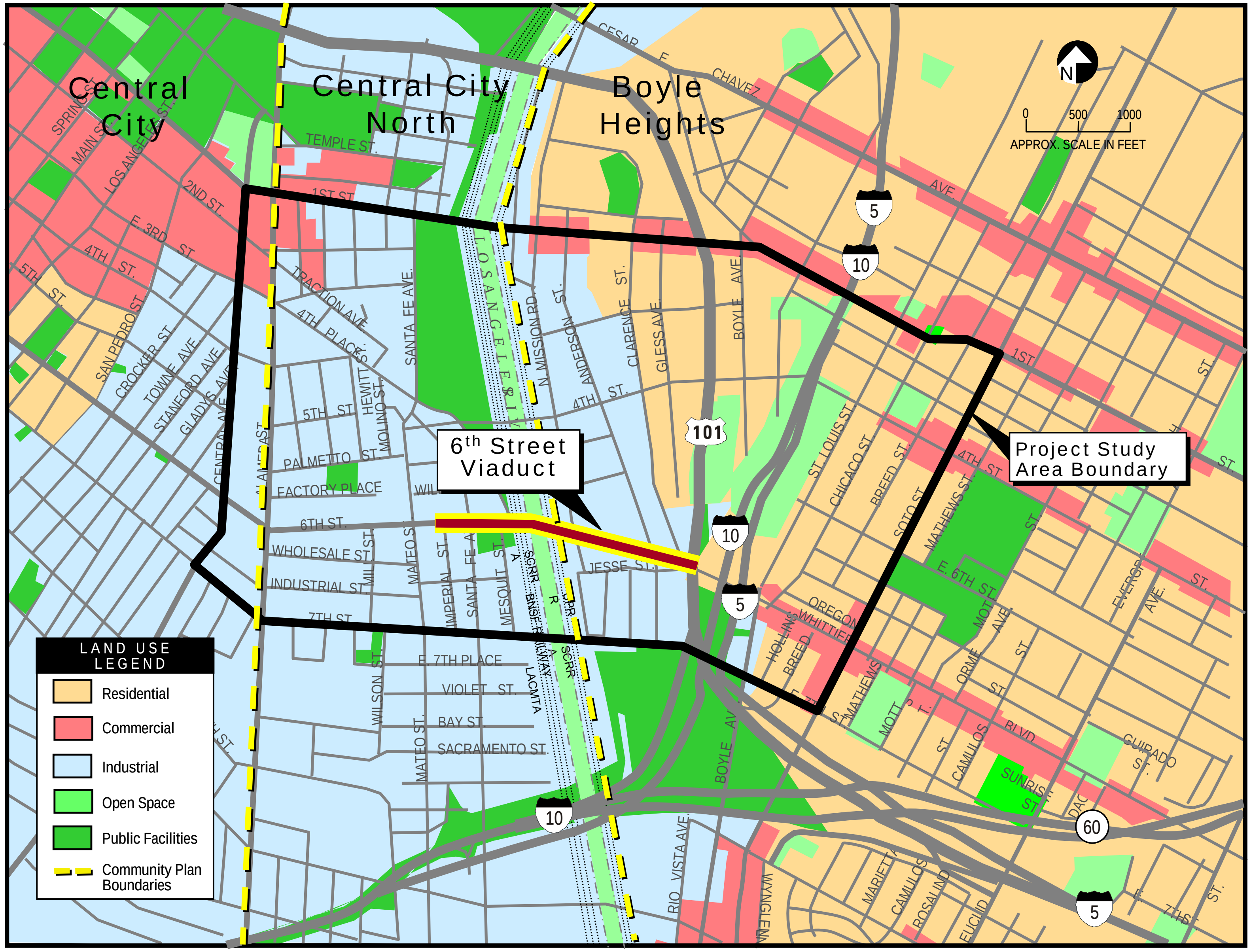

Figure 3.2-1 Community Planning Area Land Use Map

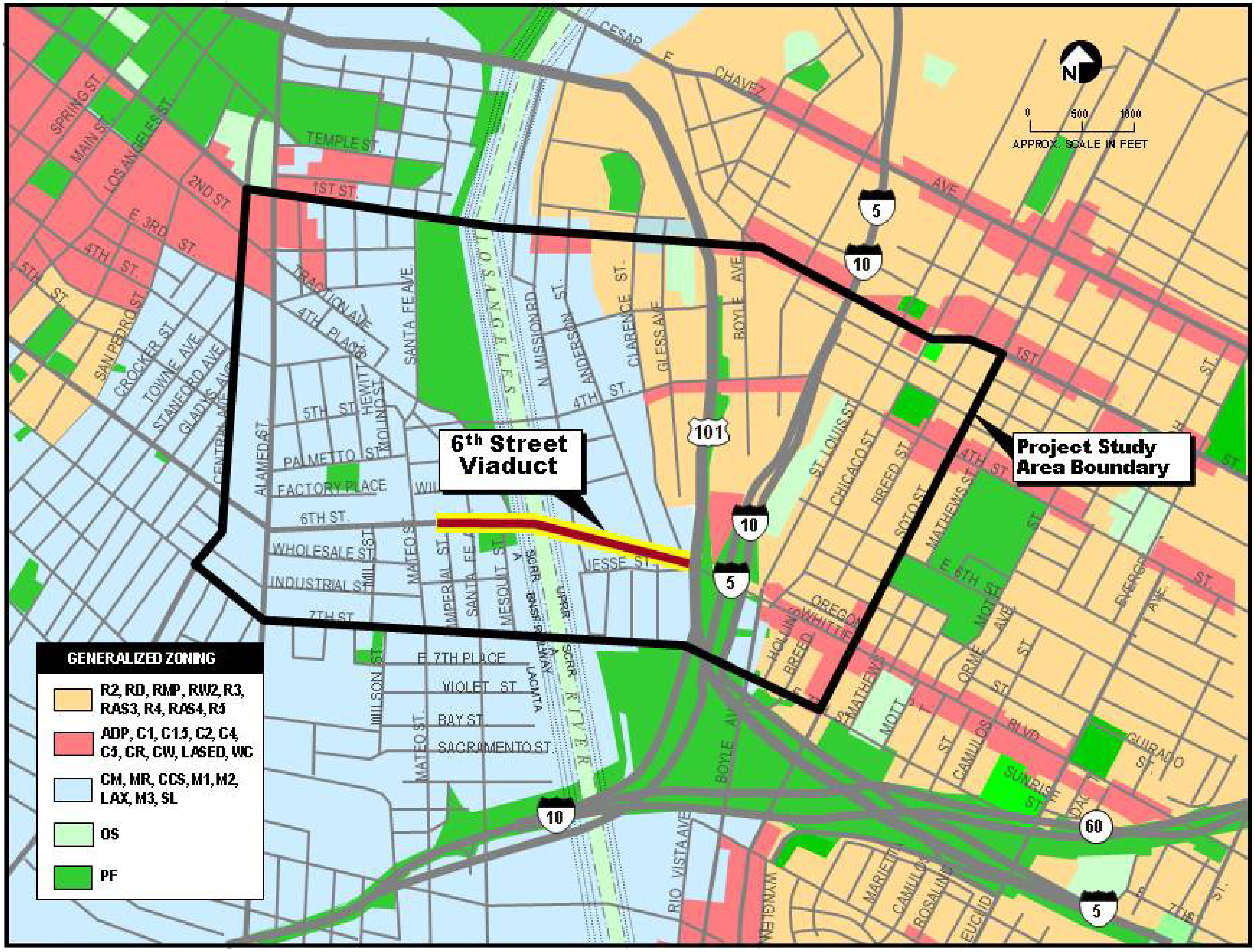

Figure 3.2-2 Zoning Designation Map

3.2.1.5 Parks and Recreational Facilities

No parks and recreational facilities exist within the vicinity of the proposed project site. The closest park to the project site is Hollenbeck Park, which is located approximately 0.6-mile east of the 6th Street Viaduct.

3.2.1.6 Wild and Scenic Rivers

Where the project site is located, the Los Angeles River is concrete-lined and is in the industrial development area. It is not designated a wild and scenic river.

3.2.1.7 Applicable Land Use Plans and Policies

A. City of Los Angeles General Plan

The City of Los Angeles' Citywide General Plan Framework Element establishes the broad overall policy and direction for the entire General Plan. It provides a citywide context and comprehensive long-range strategy to guide the update of the General Plan's other elements.

The City's 35 community plans collectively comprise the Land Use Element of the General Plan. The Department of City Planning has established the New Community Plan Program (NCPP) to study the land use plans for the 35 community plans to ensure that they are kept up-to-date to effectively guide growth. The aim of this update is to encourage sustainable growth patterns while balancing the unique character of individual communities. Infrastructure, design, transportation, and mobility issues are also being addressed in the update. Only the Boyle Heights Community Plan is currently under study and review by the Department of City Planning. Until the updated community plans are approved, all current plans are still valid.

In addition to the NCPP, the Department of City Planning is preparing an Infrastructure Systems Element, Public Facilities and Services Element, and a Historic Preservation and Cultural Resources Element, each of which could affect the proposed project's study area. The proposed project's study area includes portions of the Central City North and Boyle Heights Community Plans (see Figure 3.2-1). The Los Angeles River forms the boundary between these two community plan areas.

Central City North Community Plan

The Central City North Community Plan Area is adjacent to Downtown Los Angeles and is bound by the Los Angeles River to the east; the city of Vernon to the south; Alameda Street, Cesar Chavez Avenue, Sunset Boulevard, and Marview Avenue to the west; and Stadium Way, Lilac Terrace, and North Broadway to the north. It includes symbolic cultural centers for three prominent ethnic groups in the City of Los Angeles, encompassing Chinatown, parts of Little Tokyo, and the original Mexican pueblo.

The project area is located in one of the city's major industrial districts – the South Industrial Area. The South Industrial Area is located between Alameda Street and the Los Angeles River, and between 3rd Street and United States Highway 101 (US 101). Preservation of industrial land use designations is a primary objective of the Central City North Community Plan.

The project area is also located in the Artists-in-Residence (AIR) District, which is commonly referred to as the Arts District. The AIR District is located between Interstate 5 (I-5) and Interstate 10 (I-10) and between Alameda Street and the Los Angeles River. Although the largest concentration of artists is located outside of the project area between 1st Street and Palmetto Street and Alameda Street and the Los Angeles River, artists' residences and businesses may be encountered in the project area.

The Central City North Community Plan was amended in December 2000.[26] The Plan was developed in the context of promoting a vision of the Central City North area as a community that:

- Preserves and enhances the positive characteristics of existing residential neighborhoods while providing a variety of housing opportunities with compatible new housing.
- Improves the function, design, and economic vitality of the commercial corridors.
- Preserves and enhances the positive characteristics of existing uses that provide the foundation for community identity, such as scale, height, bulk, setbacks, and appearance.
- Maximizes the development opportunities of future transit systems while minimizing any adverse impacts.
- Plans the remaining commercial and industrial development opportunity sites for needed job-producing uses that will improve the economic and physical condition of the Central City North area.

Boyle Heights Community Plan

The Boyle Heights community, which is situated at the eastern boundary of the city, is surrounded by the city of Vernon to the south, the unincorporated community of East Los Angeles to the east, the communities of Lincoln Heights and El Sereno to the north, and the Los Angeles River to the west. Boyle Heights was developed as one of the first residential suburbs in Los Angeles when rail and rail-related uses began to expand and dominate the Los Angeles

[26] City of Los Angeles, 2000. Central City North Community Plan. December.

River corridor. Immigrants and residents employed by the railroads and related industrial sectors settled in the Boyle Heights area. Moreover, some of the first public housing projects were constructed in Boyle Heights.

The Boyle Heights Community Plan was amended in 1998.[27] The plan was developed with similar purposes as described above for the Central City North Community Plan.

City of Los Angeles Industrial Land Use Policy

In January 2008, the City of Los Angeles Planning Department released the findings of the Industrial Land Use Policy project (ILUP).[28] The ILUP, which is made up of Planning Department staff and City of Los Angeles Redevelopment Agency staff, gathered and analyzed information regarding the viability of the City's industrial districts, particularly those areas currently experiencing pressure to be converted to other uses. The ILUP includes the industrial districts within the project study area, including the Central City North-Alameda (west of the Los Angeles River) and Boyle Heights (east of the Los Angeles River) industrial areas, respectively. The west side of the proposed project is located within the ILUP designated Industrial Mixed Use District, areas that should remain predominantly industrial/employment use but that may support a limited amount of residential use according to the ILUP, and an Employment Protection District, where industrial zoning should be maintained and residential uses are inappropriate. Similarly, the east side of the proposed project falls within the area designated by the ILUP as Employment Protection District.

The recommendations of the ILUP establish guidance and short- and long-term direction, and identify needs for new land use and zoning code categories. The ILUP does not establish new land use plans or policies; current land use plans and policies contained in the General Plan and Redevelopment Plans for these areas are still valid.

B. Community Redevelopment Agency

The Community Redevelopment Agency of the City of Los Angeles (CRA/LA) has been Los Angeles' public partner in housing, commercial, neighborhood, and economic development for more than half a century. The CRA/LA is dedicated to revitalizing, refurbishing, and renewing economically underserved areas of Los Angeles. Since its creation in 1948, CRA/LA's main task is to lend a hand to investors willing to take risks for a more vibrant city, to neighborhood

[27] City of Los Angeles, 1998. Boyle Heights Community Plan. November.
[28] http://cityplanning.lacity.org/code_studies. Web site accessed by Pika Rosario on March 4, 2008.

residents with renewed aspirations for their communities, and to those in need who strive to take part in the city's growing prosperity.

The CRA/LA adopts comprehensive plans for redevelopment areas. These plans provide guidelines and strategies for removing physical and economic blight and provide a vision, goals, and timetables for generating growth and new opportunities. Redevelopment plans are created with political, business, and community participation. The plans are the roadmap for spurring growth, creating new housing, and improving the quality of life and general welfare of the people who live and work in and around redevelopment areas.

CRA/LA has two redevelopment projects in the project study area, consisting of the Central Industrial Redevelopment Project and the Adelante Eastside Redevelopment Project. The two redevelopment projects conform to the corresponding community plans described above and are in accordance with local codes and ordinances.

The Central Industrial Redevelopment Project, which is located in Downtown Los Angeles just east of the commercial center, covers approximately 738 acres and is generally bound by 3rd Street on the north, the Los Angeles River on the east, San Pedro Street on the west, and Washington Boulevard and I-10 on the south (Figure 3.2-3).[29] The Redevelopment Plan was adopted by the Los Angeles City Council on November 15, 2002. The redevelopment project aims for the revitalization and redevelopment of land to eliminate blight and remedy the conditions that caused it. The present priority project for the Central Industrial Redevelopment Project is the proposed Downtown Women's Center, which is located in the Renaissance Building at 434 S. San Pedro Street. The proposed project intends to provide public services and facilities necessary to address the needs of various social, medical, and economic problems of Central City residents, especially the Skid Row population.

The Adelante Eastside Redevelopment Project, which was adopted March 30, 1999, is located approximately 2 miles east of the downtown Central Business District. The approximately 2,200-acre industrial and commercial redevelopment project contains the areas south of Olympic Boulevard to the city limits of Vernon from the Los Angeles River to Indiana Street; North Main Street east to Valley Boulevard and Alhambra Avenue to the city limits of Alhambra; and all east-west commercial streets in Boyle Heights, such as Cesar Chavez Avenue, 1st Street, 4th Street, and Whittier Boulevard from the Los Angeles River to Indiana Street (Figure 3.2-4).[30]

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[29] Community Redevelopment Agency of Los Angeles. 2002. Redevelopment Plan for the Central Industrial Redevelopment Project. November.

[30] Community Redevelopment Agency of Los Angeles. 1999. Redevelopment Plan for the Adelante Eastside Redevelopment Project. March.

The principal thrust of the proposed project is the preservation of industrial and commercial uses within the community to promote a stable industrial base to provide jobs for the community, as well as enhancing the existing shopping areas to provide alternative commercial choices for residents. Currently, four priority proposed projects are within the Adelante Eastside Redevelopment Area: Sears Olympic Adaptive Reuse (southwest corner of Olympic Boulevard and Soto Street), Biomedical Tech Park (San Pablo and Zonal Streets, near the USC Health Sciences Campus Adelante Eastside), Metro Gold Line Eastside Extension (area bound by 6th Street, the Los Angeles River, and Cesar Chavez Avenue and Indiana Street), and Olympic Industrial Park Demonstration Project (bound by Olympic Boulevard on the north and Pico Boulevard on the south).

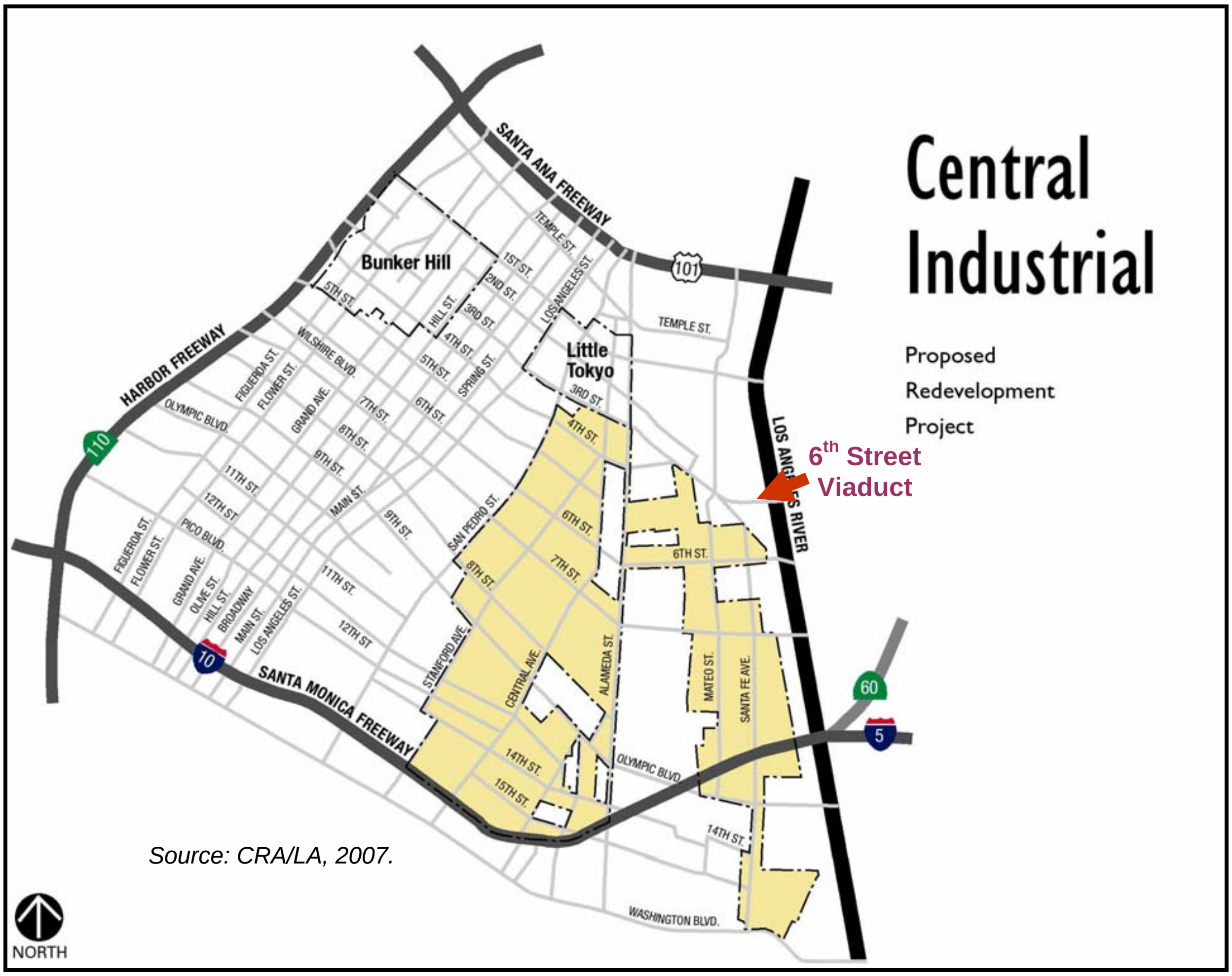

Figure 3.2-3 Central Industrial Redevelopment Project Area

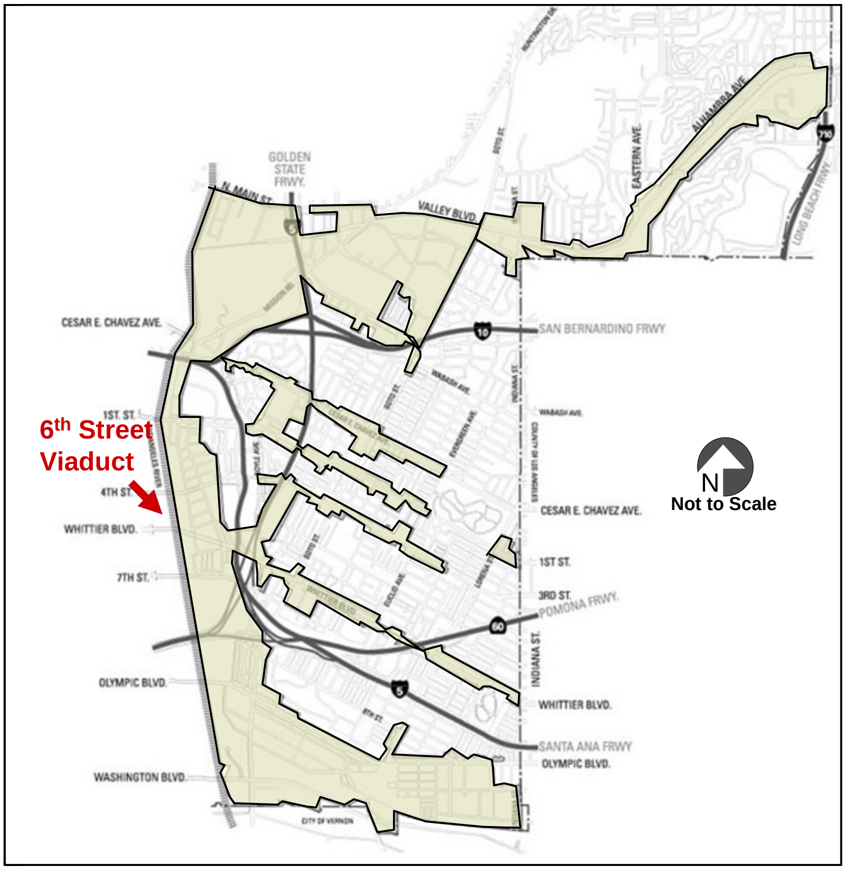

Figure 3.2-4 Adelante Eastside Redevelopment Project Area

Source: CRA/LA, 2007.

C. City of Los Angeles Bicycle Plan

The City of Los Angeles General Plan Transportation Element contains the Bicycle Plan for the city. The Bicycle Plan is currently under revision by the Planning Department and the mayor-appointed Bicycle Advisory Committee. The revised Bicycle Plan is expected to be completed in 2009. Revision of the plan includes developing new plans and policies for the region.

The current Bicycle Plan does not designate 6th Street in the project area as a bikeway; however, the proposed project does cross the Los Angeles River, which is designated as a Class I bikeway. The City of Los Angeles Bicycle Plan Policy 1.1.5[31] states that any bridge reconstruction or replacement, such as bridges over the Los Angeles River, on right-of-way (ROW) designated as a Citywide Bikeway be designed with adequate roadway to accommodate a bicycle facility. A City of Los Angeles Bicycle Committee member indicated at the public information meeting and at Community Advisory Committee (CAC) meetings for this project that the City Planning

[31] City of Los Angeles General Plan Transportation Element. 1999.

Department intends to designate the 6th Street Viaduct as a bikeway in the upcoming Bicycle Plan revision if the replacement alternative is selected.[32]

D. Los Angeles River Revitalization Master Plan

The Los Angeles River Revitalization Master Plan (LARRMP) is the conceptual framework to guide the revitalization of the Los Angeles River. The 32-mile-long and 1-mile-wide river planning area extends from Topanga Canyon east to River Glen and south to approximately Washington Boulevard. The plan was approved by the City Council in May 2007.

The LARRMP has specific goals for the revitalization of the river corridor, including:

- Establish guidelines for environmentally sensitive urban design, land use, and development for the Los Angeles River that will create economic development opportunities to enhance and improve river-adjacent communities; policies would include the provision of open space, housing, retail spaces, educational facilities, and places for other public institutions;
- Improve the environment, enhance water quality, and improve water resources and the ecological functioning of the river;
- Improve and restore natural native habitats, eradicate invasive non-native habitats, and provide links and connections to existing habitats;
- Provide and improve public access to the river;
- Provide significant recreation space and open space and new trails;
- Preserve and enhance the flood control features of the river; and
- Foster a growth in community awareness and pride in a revitalized Los Angeles River.

The project area lies within the "Downtown Industrial Opportunity Area," which is one of the five demonstration areas of the LARRMP (Figure 3.2-5).[33] There are currently two alternatives for development of the opportunity area: the DI-A and DI-B concepts. Both concepts designate 6th Street in the proposed project area as a Primary Arterial Green Street.[34] The alternatives also propose an expanded multi-use and bicycle trail on the western bank of the Los Angeles River, and a promenade along the eastern bank of the river, each having its own underpass beneath the 6th Street Viaduct. In addition, both alternatives provide pedestrian bridge access ramps from the west side of 6th Street north to the proposed expanded trail. Alternative DI-A designates the area

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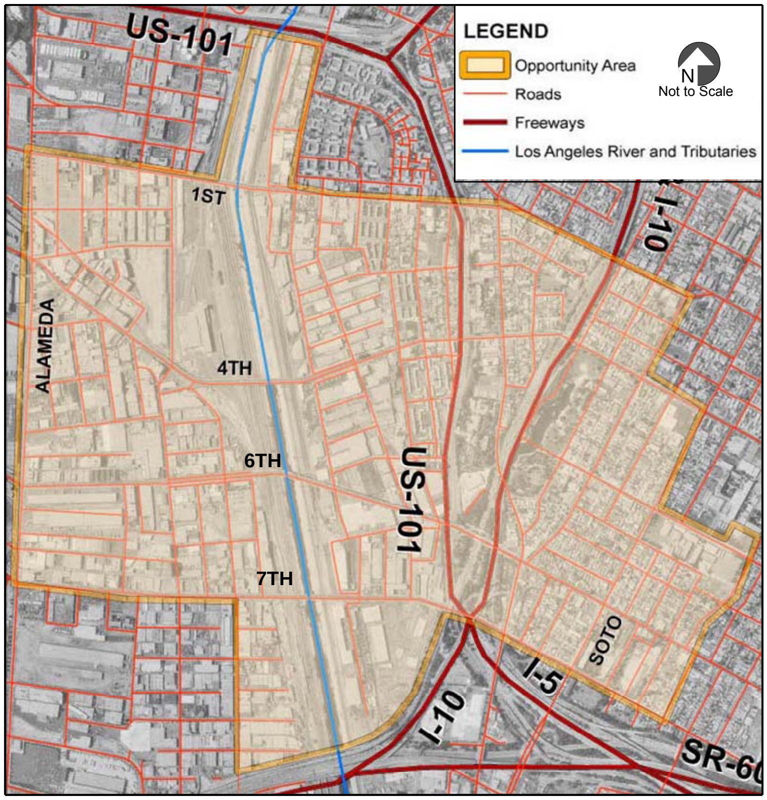
[32] Mowery, Michelle. Bicycle Committee, Los Angeles Department of Transportation. Information discussed at Project Information Meeting. January 2007.

[33] Tetra Tech, Inc., 2007. Programmatic EIR/Programmatic EIS for the Los Angeles River Revitalization Master Plan, Figures 2-24 and 2-25. January.

[34] Ibid.

east of the river north of 6th Street as a *Neighborhood Gateway*, while Alternative DI-B establishes this area as a *Regional Gateway*.



Source: Los Angeles River Revitalization Master Plan PEIR/EIS

Figure 3.2-5 Proposed Downtown Industrial Opportunity Area

E. Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the Metropolitan Planning Organization (MPO) for six southern California counties, including Imperial, Orange, Riverside, San Bernardino, Ventura, and Los Angeles. As such, it is responsible for preparing the Regional Transportation Plan (RTP), which provides the framework for all transportation system improvements planned for its jurisdiction. The RTP is one of several inputs used to develop the Regional Transportation Improvement Plan and State Transportation Improvement Program (RTIP and STIP). The 6th Street Viaduct Seismic Improvement Project is included in the 2008 RTIP, in which the project is programmed for $245 million over a 6-year period, Fiscal Years 2008/9 to 2013/14..

3.2.2 Environmental Consequences

3.2.2.1 Construction Impacts

There would be no temporary change to any existing zoning or land use within the project area.

Alternative 1 – No Action

No impacts to land use and planning would occur under the No Action Alternative.

Alternative 2 – Retrofit

Implementation of Alternative 2 would not require full closure of the viaduct or adjacent streets; however, temporary lane closures on the viaduct are likely to occur, and adjacent streets could experience episodes of increased congestion as a result of construction. Moreover, access to businesses situated adjacent to the viaduct could be restricted. Any such effects would be localized, temporary, and of short duration.

Alternative 3 – Replacement

Construction of the Replacement Alternative would require removal of the existing 6th Street Viaduct and several commercial and industrial buildings along the viaduct alignment. Land use conversion from industrial and commercial to public facility to accommodate construction of the viaduct to meet current safety standards would be unavoidable. Roadway obstruction from construction activities may limit the use of some properties located within the project vicinity. This impact would be localized and temporary. A Traffic Management Plan (TMP) would be developed to assist the remaining local businesses in continuing operation during the construction period. The TMP would identify and provide alternate traffic detour routes, pedestrian routes, and residential and commercial access routes to be used during the construction period. In addition, the City mandated Work Area Traffic Control Plan (WATCP) would be strictly implemented by the contractor during project construction.

3.2.2.2 Permanent Impacts

Alternative 1 – No Action

No impacts to land use and planning would occur under the No Action Alternative. However, the 6th Street Viaduct would not likely be designated as a bikeway under the revised Bicycle Plan because of the lack of shoulders on the existing viaduct (see Section 3.2.1.7.C).

Alternative 2 – Viaduct Retrofit

City of Los Angeles General Plan

The purpose of the proposed seismic improvement project is to preserve the 6th Street Viaduct as a viable east-west link between Downtown Los Angeles and the Boyle Heights community. Implementation of Alternative 2 would not require land use or zoning modifications at the proposed project site or its surrounding area. The proposed seismic retrofit project would not be in conflict with the Central City North Community Plan or Boyle Heights Community Plan since the two community plans outline development objectives based on the assumption that the 6th Street Viaduct is in place.

Implementation of Alternative 2 would require removal of two existing properties, including the City of Los Angeles Maintenance Facility, which is located in the area beneath the viaduct on the west side of the river, and the Ventura Foods, Inc., buildings located on the east side of the river. This limited acquisition would not substantially impact land use and planning within the Community Plan area.

Southern California Association of Governments

The proposed project is included in SCAG's adopted RTIP for fiscal year 2006/2007 - 2011/12 under the Los Angeles County State Highway section, Lump Sum category for bridge projects. All projects incorporated into the 2006 RTIP are consistent with current RTP policies, programs, and projects; therefore, no conformity issues would arise.

Community Redevelopment Agency

Implementation of Alternative 2 would benefit the two redevelopment projects in the long term by maintaining a seismically sound transportation link between the east and west sides of the river to support the surrounding communities and businesses.

City of Los Angeles Bicycle Plan

No permanent impacts to the City of Los Angeles Bicycle Plan would occur under this alternative; however, implementation of Alternative 2 would not provide the City with an opportunity to designate 6th Street along the 6th Street Viaduct as a bikeway (see Section 3.2.1.7.C).

Los Angeles River Revitalization Master Plan

Construction of Alternative 2 would be confined within the existing viaduct "footprint." A limited number of parcels would be acquired (see detailed information in Section 3.4). No surplus land would be available to support implementation of the LARRMP. However, the lack of project-derived surplus land under this alternative does not constitute an adverse impact to the LARRMP.

Alternative 3 – Viaduct Replacement

City of Los Angeles General Plan

Alternative 3 would preserve the 6th Street Viaduct as a viable east-west link between Downtown Los Angeles and the Boyle Heights community. Depending on the alternative alignment selected, additional land acquisition along the proposed alignment would be required to accommodate the wider viaduct. Property acquisitions would result in the loss of industrial buildings located adjacent to the viaduct (see Table 3.4.2 in Section 3.4 for more detailed information on ROW impacts). Among the three alignments considered, Alignment 3C would preserve the highest number of existing buildings on the east side of the river. The project area is within the designated Industrial Mixed Use District and Employment Protection District, as described in Section 3.2.1; therefore, removal of the industrial buildings and the potential loss of jobs of local workers would be in conflict with the Central City North Community Plan's objective.

Portions of all of the full parcels to be acquired would not be needed for the project. Availability of these surplus areas along the viaduct as a result of ROW acquisition would provide the opportunity for new development. During the project development phase, community members (through the CAC formed for this project – see detailed information in Chapter 5 of this report) expressed interest in new potential development opportunities in the vacated areas. Examples of development and land use opportunities raised by CAC members included adding more recreational areas adjacent to the new viaduct; making the viaduct a landmark destination; developing retail and gallery space; providing river access; and making the area around the viaduct a defensible space to facilitate the elimination of crime and homeless occupation. Although neither the Central City North Community Plan nor Boyle Heights Community Plan contain a plan for specific development around the viaduct, these opportunities could enhance the quality of life of those living in the community and the region.

City of Los Angeles Industrial Land Use Policy

The proposed project is located within the ILUP designated Industrial Mixed Use District, areas that should remain predominantly industrial/employment use but that may support a limited amount of residential use according to the ILUP, and an Employment Protection District, where industrial zoning should be maintained and residential uses are inappropriate. Similarly, the east side of the proposed project falls within the area designated by the ILUP as Employment Protection District. The loss of industrial and commercial uses and associated jobs would be inconsistent with the City of Los Angeles ILUP.

Southern California Association of Governments

As with Alternative 2, no conformity issues would arise since the proposed project is included in the 2008 RTIP.

Community Redevelopment Agency

Similar to Alternative 2, implementation of Alternative 3 would benefit the two redevelopment projects in the long term by maintaining the transportation link between the east and west sides of the river to support the surrounding communities and businesses. Depending on the alternative alignment selected, additional land acquisition along the proposed alignments would be required to accommodate the wider viaduct. These acquisitions would result in a loss of industrial buildings located adjacent to the viaduct (see Section 3.4 for more detailed information on ROW impacts). The loss of industrial and commercial uses and associated jobs would be inconsistent with the two redevelopment projects administered by CRA/LA.

City of Los Angeles Bicycle Plan

Implementation of any of the Alternative 3 alignments would provide an opportunity for the City to designate the 6th Street Viaduct as part of a bike route along 6th Street. Bikes would use the outside shoulders on the new wider roadway. The addition of a bikeway would be compatible with the City of Los Angeles Bicycle Plan Policy 1.1.5,[35] which states that any bridge reconstruction or replacement, such as bridges over the Los Angeles River, on ROW designated as a Citywide Bikeway should be designed with adequate roadway to accommodate a bicycle facility.

Los Angeles River Revitalization Master Plan

Implementation of Alternative 3 would require demolition of the existing viaduct. Depending on the alternative alignment selected, additional land acquisition along the proposed alignments would be required to accommodate the wider viaduct. These acquisitions would involve partial and full takes of several parcels and are likely to result in surplus land not used for the structure. Excess land made available by the vacation of select parcels could be reserved for future green project development compatible with LARRMP objectives. Potential examples of redevelopment opportunities include creating recreational green space and developing a commercial and/or cultural center around/under the new 6th Street Viaduct.

3.2.2.3 Cumulative Impacts

The Council on Environmental Quality (CEQ) defines cumulative effects 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 non-federal) or person undertakes such other actions (40 CFR 1508.7)."

The California Environmental Quality Act (CEQA) defines cumulative impacts as "two or more individual effects that, when considered together, are considerable or compound or increase other environmental impacts" (*Public Resources Code* [PRC] Section 15355). Individual effects may be changes resulting from a single project or a number of separate projects. Cumulative effects

[35] City of Los Angeles General Plan Transportation Element, 1999.

from several projects are the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable future projects. Section 15126.2(d) of the CEQA Guidelines requires that an EIR consider the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Causes of growth inducement might be the extension of urban services or transportation infrastructure to a previously unserved or underserved area, or the removal of major obstacles to development.

Geographical areas for analyzing cumulative impacts on land use consist of industrial and commercial land in the project area and elsewhere in the Central City North and Boyle Heights Community Plan areas.

Many development and redevelopment projects have occurred within Downtown Los Angeles. The most recent list of past, present, and future projects is provided in Chapter 2 of this EIR/EIS. The effects of these projects are considered together with the proposed project when analyzing cumulative impacts.

Alternative 1 – No Action

Since there would be no project with the No Action Alternative, there would be no cumulative impacts on land use or planning; however, the No Action Alternative would not resolve the seismic vulnerability of the existing structure caused by ongoing deterioration of the concrete from alkali silica reaction (ASR), and the cumulative effect would be further weakening of the structure.

Alternative 2 – Retrofit

Implementation of Alternative 2 would not require a revision to any of the adopted plans or policies at the local and regional levels. This alternative would promote public safety, and it would seismically strengthen the link between Downtown Los Angeles and the Boyle Heights community, which is compatible with current community plans. Implementation of this alternative would not generate land use changes that could be in conflict with long-term plans and policies; therefore, the Retrofit Alternative would have no adverse cumulative impacts on land use and planning.

Alternative 3 – Replacement

The project area is located within the CRA/LA redevelopment area where industrial uses are preserved; however, several industrial buildings within the project area are being converted to residential lofts. Implementation of Alternative 3 would result in the conversion of some existing commercial and industrial land uses to public facility land uses and would require a zoning change. The number of affected parcels depends on the alignment chosen, as discussed in

Section 3.4.3 of this Draft EIR/EIS. The land required for facility ROW for the wider replacement viaduct would be permanently converted to non-industrial land uses and is considered unavoidable under Alternative 3. The conversion of industrial land uses would conflict with the City of Los Angeles' industrial land use policies, which include the preservation of industrial land uses. This impact, along with the conversion of industrial land uses as part of the past, present, and reasonably foreseeable future projects, would constitute a cumulative, substantial adverse effect on industrial land uses.

Although implementation of Alternative 3 would have an adverse cumulative impact on land use and planning, as described above, it would provide the City with an opportunity to implement certain features proposed under the LARRMP. Land use and zoning changes associated with the LARRMP implementation would have to be considered and approved by the City of Los Angeles Planning Department independent from the proposed project.

3.2.2.4 Secondary Impacts

The CEQ defines secondary effects as those that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR 1508.8). Generally, these impacts are induced by the initial action. They comprise a wide variety of secondary effects, such as changes in land use, water quality, economic vitality, and population density.

Alternative 1 – No Action

No secondary impacts on land use and planning would occur as a result of the No Action Alternative implementation.

Alternative 2 – Retrofit

Implementation of Alternative 2 would require relocation of the City of Los Angeles Street Maintenance Facility, which is currently located west of the river beneath the viaduct. The maintenance facility could be relocated to the nearby area zoned as *Industrial* or *Commercial*. One of the candidate sites being considered by the City to house the maintenance facility is located on the parcel east of the railroad tracks on the east side of the river where Ventura Foods, Inc., is now located[36]. Relocating the maintenance facility to this location would not result in land use and zoning incompatibility. If the maintenance facility were to relocate elsewhere, then land use and zoning compatibility would need to be determined. Application for a land use or zoning amendment or a conditional use permit may be required. Potential secondary impacts of relocation cannot be determined because a specific site has not been identified.

[36] As of October 2008, Ventura Foods, Inc., has moved to the new location; the building is currently vacated.

Alternative 3 – Replacement

Implementation of Alternative 3 would also require permanent relocation of the City of Los Angeles Maintenance Facility, as well as several businesses located adjacent to the viaduct on both sides of the river. It is assumed that the affected businesses would relocate to areas that have compatible land use and zoning designations or they would apply for a conditional use permit. No land use and zoning impacts are anticipated.

3.2.3 Avoidance, Minimization, and Mitigation Measures

Alternative 1 – No Action

No mitigation is required under this alternative.

Alternative 2 – Retrofit

Since there would be no change to land use and zoning with the Retrofit Alternative, no mitigation is required.

Alternative 3 – Replacement

Removal of commercial and industrial uses near the existing viaduct could not be avoided if the Replacement Alternative were implemented; however, there would be an opportunity to redevelop the vacated areas where the existing buildings and viaduct would be removed into various uses based on planning decisions and public input. Future development decisions would be made through the planning process/protocols set forth by the City of Los Angeles Planning Department.

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3.3 Community Impacts – Community Character and Cohesion

Community cohesion is the degree to which residents have a "sense of belonging" to their neighborhood, a level of commitment to the community, or a strong attachment to neighbors, groups, and institutions, usually because of continued association over time. The information presented in this section is excerpted from the Community Impact Assessment prepared for this project.[37]

3.3.1 Regulatory Setting

The National Environmental Policy Act (NEPA) established that the federal government should use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 U.S.C. 4331[b][2]). In its implementation of NEPA (23 U.S.C. 109[h]), FHWA directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not considered a significant effect on the environment; however, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

3.3.2 Affected Environment

3.3.2.1 Study Area Definition

The project study area is located east of Downtown Los Angeles and is highly developed and urban/industrial in character. The geographical area identified for community impact assessment covers the area that would potentially be either directly or indirectly affected by the proposed project activities. The primary impact area consists of the area in the immediate vicinity of the 6th Street Viaduct, which includes business and commercial buildings along the front row next to the viaduct footprint. These properties would be subject to direct effects, such as property acquisition or disruption from construction activities. Secondary impact areas would be dispersed and include areas likely to experience increased vehicle movements associated with

[37] Community Impact Assessment for 6th Street Viaduct Seismic Improvement Project. July 2008.

construction-driven detour traffic. The secondary impact zone would be bound by 1st Street and 7th Street to the north and south, respectively, and Soto Street and Central Avenue to the east and west, respectively.

3.3.2.2 Community Characteristics

There are two neighborhoods within the project area – the Downtown Arts District on the western side of the proposed project and the community of Boyle Heights on the eastern side – with both exhibiting strong community cohesion and a strong sense of historical connection to the development of the City.

The Downtown Arts District

The Downtown Arts District, which is located within the South Industrial Area, is roughly bound by 1st Street and 7th Street, the Los Angeles River, and Alameda Street. The district has its roots in the mid 1970s, and it has the oldest and largest contiguous neighborhood of Artists-in-Residence (AIR) lofts in southern California. Several AIR loft buildings are in the area, including the Factory Place Lofts at 1308 Factory Place just northwest of the project site, Lofts 726 at 726 S. Santa Fe Avenue, and 2121 Lofts at 2121 E. 7th Place located south of the project site. All of the AIR lofts in the area were once industrial buildings that have been converted into live/work spaces through the Adaptive Reuse Ordinance of 1999. The largest concentration of AIR lofts is located in the northern portion of the district between 1st Street and 4th Street; however, there has been a recent surge of AIR projects in the southern portion of the district near the proposed project, as is evident by the five proposed adaptive-reuse projects currently in various stages of development.[38] Many of the AIR loft buildings offer residents amenities that foster community cohesion, including open galleries and rooftop spaces. The Arts District Business Improvement District (BID) plays a prominent role in encouraging and promoting community cohesion by organizing monthly art walks, weekly neighborhood walks, and a neighborhood watch program.

On April 27, 2002, the Downtown Los Angeles Neighborhood Council (DLANC) was certified as an approved City Neighborhood Council. Its mission is to unite the diverse communities of Downtown Los Angeles and to provide an innovative forum for all community stakeholders to contribute to a healthy, vibrant, and inclusive downtown. The DLANC is composed of three groups, including residents (i.e., renters and owners), business owners, and others (e.g., social service groups, artists, and laborers). It is served by 27 internal board members, and general board meetings are held monthly. The DLANC is very involved in issues that affect the downtown area.

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[38] Downtown Center Business Improvement District Web site (accessed November 2007).

The Boyle Heights Community

The Boyle Heights community is located east of the Los Angeles River. Boyle Heights was developed as one of the first residential suburbs in Los Angeles when the railroads were constructed along the Los Angeles River. It was initially settled by European immigrants and later by Mexican laborers employed by the railroads and related industrial sector. Some of the first City public housing projects were constructed in Boyle Heights, and much of the existing housing stock is in poor condition.[39] The community was segmented into four smaller areas and one larger area by the construction of four major freeways between 1940 and 1960. In addition, the Los Angeles River divides Boyle Heights from the downtown area. The bridges over the Los Angeles River, including the 6th Street Viaduct, have long served as a means of connecting Boyle Heights residents to downtown. Today, Boyle Heights is a predominantly Hispanic community.

Strong community cohesion in Boyle Heights is exemplified by the active citizen-participatory Boyle Heights Neighborhood Council (BHNC), which is divided into four quadrants – Quadrants 1, 2, 3, and 4 – covering the northeast, northwest, southeast, and southwest areas of Boyle Heights, respectively. Each quadrant has its own citizen members who meet monthly to discuss issues, proposed projects, and events in their respective communities. The 6th Street Viaduct lies within BHNC Quadrant 4, which is the largest quadrant. The sense of community cohesion in Boyle Heights is strengthened by the history shared by successive generations of residents living in the community where they were raised.

The 6th Street Viaduct has a unique role in fostering cohesion of the larger communities in the city because it has been part of the route of the Los Angeles Marathon since 2006 and the venue for *Festival de la Gente*, the latter being an annual festival celebrating the traditional Latino holiday *Dia de los Muertos*, the Day of the Dead. The festival, which is a major community event celebrating Latino culture, first started in 1999. In recent years, the festival has been sponsored by the member of the 14th Los Angeles City Council District in conjunction with the Speaker of the California Assembly, and the mayor, with additional support by private corporate sponsors. The festival is the nation's largest *Día de los Muertos* celebration and features local Hispanic artists and entertainers, and various food and crafts booths. It is held annually during the last week of October, one or two days before the Day of Dead. In 2006, more than 70,000 people attended the celebration.

3.3.2.3 Socioeconomic Characteristics

Socioeconomic and demographic data for the study area were drawn from the year 2000 census, supplemented by a business survey conducted for the proposed project. The three census tracts under study cover the proposed project site, its immediate surrounding area, and the area in the

[39] City of Los Angeles, 1998. Boyle Heights Community Plan. November.

vicinity that could be potentially affected by traffic detour routes during proposed project construction, consisting of tracts 2060.40, 2060.50, and 2046 (Figure 3.3-1).

Population Demographics

Year 2000 U.S. Census data from the three study census tracts were used to characterize population demographic characteristics of the proposed project area. The population of these census tracts is approximately 10,000 residents, which is approximately 0.3 percent of the population of the City of Los Angeles (Table 3.3-1). The percentages of working age (19 to 64) population within the study census tracts range from a low of 54 percent (Tract 2046) to a high of 66 percent (Tract 2060.50), which is similar to both the City and County of Los Angeles.

Table 3.3-2 presents the racial composition of the population in the study census tracts and the larger region. The study census tracts contain a higher percentage of Hispanic or Latino population (ranging from 61 to 97 percent) compared to the City and County of Los Angeles, which have approximately 45 percent Hispanic or Latino population. The percentage of white population within the census tracts under study is much lower than the City and County of Los Angeles. Based on this statistic, the study area is considered a predominantly minority community compared to the larger population within the County of Los Angeles.

Socioeconomic Demographics

According to Year 2000 U.S. Census data, 2,954 households are located within the study census tracts (see Table 3.3-3). The average household sizes in the three study census tracts (i.e., 2060.40, 2060.50, and 2046) of 2.8, 2.6, and 3.9 persons are essentially in the same range as the City and County of Los Angeles with 2.8 and 3.0 persons, respectively. The average family size in Tracts 2060.40 and 2060.50 of 3.8 persons and Tract 2046 of 4.2 persons is slightly higher than that of the City and County of Los Angeles at 3.6 persons.

As shown in Table 3.3-3, median annual household incomes within the three study census tracts range from $22,000 to $29,000. These numbers are much lower than the City and County of Los Angeles incomes of $36,000 and $42,000, respectively. The median annual family incomes for the study census tracts follow the same pattern as the household annual incomes.

Individual earnings in 1999 below the poverty level, which is defined as a minimum income level below which a person is officially considered to lack adequate subsistence and to be living in poverty, within the study census tracts were reported to be 33 to 37 percent, which is higher than that of the City of Los Angeles (22 percent) and the County of Los Angeles (18 percent). Family incomes below the poverty level within the study census tracts are reported at 32 percent (Tract 2060.40) and 33 percent (Tracts 2060.50, and 2046), which is higher than that of the City of Los Angeles (18 percent) and the County of Los Angeles (14 percent).

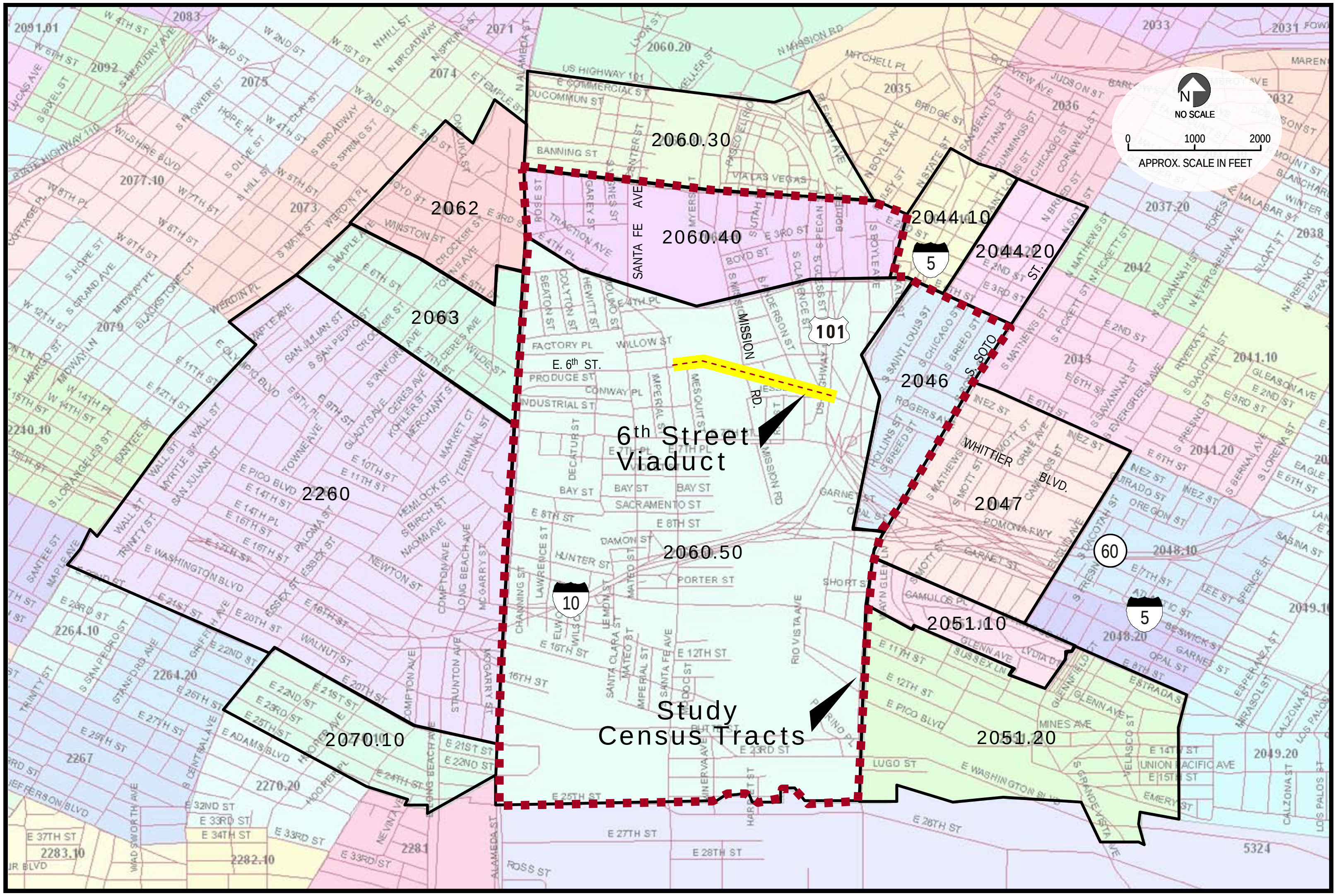

Figure 3.3-1 Census Tracts in the Vicinity of the 6th Street Viaduct Seismic Improvement Project

Table 3.3-1
Study Census Tract Population Demographics

Demographic	Tract 2060.40		Tract 2060.50		Tract 2046		City of Los Angeles		County of Los Angeles	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Population	3,391		2,552		4,083		3,694,834		9,519,338	
Population 19 or younger	1,050	31	588	23	1,494	37	1,087,223	29	2,936,713	31
Population 19 to 64	1,897	56	1,681	66	2,206	54	2,250,501	61	5,655,655	59
Population 65+	444	13	283	11	383	9	357,110	10	926,970	10

Source: U.S. Census, 2000.

Table 3.3-2
Racial Composition of Population in the Study Census Tracts

Demographic	Tract 2060.40		Tract 2060.50		Tract 2046		City of Los Angeles		County of Los Angeles	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Population	3,445		2,488		4,083		3,694,820		9,519,338	
White	267	8	527	21	53	1	1,099,188	30	2,959,614	31
Black or African American	120	3	242	10	10	0	401,986	11	901,472	9
American Indian and Alaska Native	13	0	3	0	5	0	8,897	0	25,609	0
Asian	441	13	170	7	40	1	364,850	10	1,124,569	12
Native Hawaiian and Other Pacific Islander	4	0	1	0	0	0	4,484	0	23,265	0
Some other race	4	0	2	0	5	0	9,065	0	19,935	0
Two or more races	32	1	29	1	18	0	87,277	2	222,661	2
Hispanic or Latino	2,564	74	1,514	61	3,952	97	1,719,073	47	4,242,213	45

Source: U.S. Census, 2000.

Table 3.3-3
Study Area Socioeconomic Characteristics

Demographic	Tract 2060.40		Tract 2060.50		Tract 2046		City of Los Angeles		County of Los Angeles	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Population	3,445		2,488		4,083		3,694,820		9,519,338	
In Labor Force over 16	1,451	42	1,176	47	1,277	31	1,690,316	46	4,312,264	45
Per Capita Income	$10,662		$15,941		$8,343		$20,671		$20,683	
Individual Earnings below Poverty Level	1,144	33	853	34	1,511	37	801,050	22	1,674,599	18
Total Families	622		336		865		807,039		2,154,311	
Average Family Size	3.8		3.8		4.2		3.6		3.6	
Median Family Income	$27,750		$27,083		$22,182		$39,942		$46,452	
Families below Poverty Level	202	32	111	33	284	33	147,516	18	311,226	14
Total Households	1,124		801		1,029		1,276,609		3,136,279	
Average Household Size	2.81		2.57		3.91		2.83		2.98	
Median Household Income	$22,143		$29,145		$21,875		$36,687		$42,189	

Source: U.S. Census, 2000.

The U.S. Department of Health and Human Services (HHS) establishes the poverty threshold on an annual basis. A family is considered "low-income" if its income is at or below the HHS poverty guidelines. The Year 1999 poverty threshold for an average family size of four was $16,700. Based on the HHS thresholds for poverty, the study area is not at the poverty level; however, considering the "needs-based" poverty threshold developed by the Los Angeles Alliance for a New Economy (LAANE), the working poor (i.e., a working poor family must have at least one member who reported income from work in the last year) in Los Angeles County is defined as individuals with a total family income below 200 percent of the federal poverty level.[40] The "need-based" poverty threshold was determined based on two criteria: the income levels at which families are still eligible for government anti-poverty programs, and the actual cost of living in Los Angeles County. Based on this study, the poverty threshold of the working population in Los Angeles County was $33,300 for a family of four in 1998. The study pointed out that during the 1990s, the number of poor families rose from 36 percent to 43 percent of the population in Los Angeles County, and accounted for 4.1 million residents according to the needs-based poverty threshold. Since the median annual household incomes within the three study census tracts range from $22,000 to $29,000, the study area population is considered low-income based on the "need-based" poverty threshold for Los Angeles County.

Unemployment Rate

Based on Year 2000 U.S. Census data, 12 percent of the population in the labor force within the study census tracts was unemployed at the time of the survey, which is higher than the City and County of Los Angeles unemployment of 8 to 9 percent (Table 3.3-4). Data in Table 3.3-4 also reveal that the workforce in the study census tracts use public transportation, walk, or bike to work at higher percentages than those in the City and County of Los Angeles as a whole.

The unemployment rates reported by the California Employment Development Department (October 2007) show lower unemployment rates for the population in the labor workforce for the County and City of Los Angeles at 5.2 and 5.7 percent, respectively (Table 3.3-5). Although the data were not reported by census tract, the unemployment rate of 7.8 percent reported for East Los Angeles is higher than the city and county numbers.

Housing Demographics

Based on Year 2000 U.S. Census housing characteristic data, 2,090 houses were located in the three study census tracts, which is approximately 0.16 percent of the number of houses reported for the City of Los Angeles (see Table 3-3-6). Most of the housing within the study census tracts was renter occupied (ranging from 78 percent in Tract 2046 to 95 percent in Tract 2060.50), which is much higher than the City and County of Los Angeles at 61 and 52 percent, respectively. Note that the

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[40] Moore, Paul, et al., 2000. *The Other Los Angeles: The Working Poor in the City of the 21st Century.* Los Angeles for A New Economy. August.

Table 3.3-4
Study Area Employment Data, Location of Work, and Means of Transportation to Work

Demographic	Tract 2060.40		Tract 2060.50		Tract 2046		City of Los Angeles		County of Los Angeles	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Population in the Labor Force	1,451		1,176		1,277		1,690,316		4,312,264	
Employed	1,296	89	1,038	88	1,110	87	1,532,074	91	3,953,415	92
Unemployed	155	11	138	12	167	13	156,578	9	354,347	8
Location of Work:										
Work in Place of Residence	709	55	592	57	610	55	943,489	62	1,382,500	35
Worked outside Place of Residence	571	44	407	39	431	39	551,406	36	2,402,195	61
Means of Transportation to Work:										
Car, Truck, or Van	889	69	649	63	710	64	1,203,143	79	3,296,964	83
Public Transportation	203	16	197	19	253	23	152,435	10	254,091	6
Walking, Bike, Motorcycle, Other Means	110	8	78	8	67	40	77,622	5	173,052	4
Worked at Home	78	6	75	7	11	1	61,695	4	134,643	3

Source: U.S. Census, 2000.

Table 3.3-5
Labor Force Data in Los Angeles County as of September 2007

Area Name	Labor Force	Employment	Unemployment	
			Number	Rate (%)
County of Los Angeles	4,974,500	4,717,200	257,300	5.2
City of Los Angeles	1,935,100	1,823,800	111,300	5.7
East Los Angeles Census Designated Place (unincorporated East Los Angeles)	49,600	46,000	3,600	7.2

Source: California Employment Development Department, 2007.

Table 3.3-6
Study Census Tract Population Demographics

Housing Demographic	Tract 2060.40		Tract 2060.50		Tract 2046		City of Los Angeles		County of Los Angeles	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	1,071		791		1,027		1,275,412		3,133,774	
Owner occupied	91	8	40	5	228	22	491,882	39	1,499,744	48
Renter occupied	980	92	751	95	799	78	783,530	61	1,634,030	52

Source: U.S. Census, 2000.

housing characteristic data clearly show a higher percentage of owner-occupied housing in the area east of the Los Angeles River than on the west side; however, the recent survey conducted by the Los Angeles Downtown Center Business Improvement District shows that more housing units in downtown Los Angeles were owned in 2006 (30.2 percent) than in 2004 (18.6 percent).[41] According to this report, the increase in owner-occupied housing may be the result of the inclusion of newly developed condominium properties that recently opened; however, this number represents the entire downtown area and may not be a representative number for the project study area.

3.3.3 Environmental Consequences

3.3.3.1 Construction Impacts

Impacts on community character and cohesion are addressed by how proposed projects are likely to affect the people, institutions, neighborhoods, service delivery organizations, and overall social and economic systems surrounding a proposed undertaking.

The proposed project would involve a prolonged period of construction for both the retrofit and replacement alternatives. Area residents would endure greater impacts resulting from construction activities as compared to the surrounding population; however, once construction is complete, traffic circulation would soon return to normal.

Alternative 1 – No Action

The No Action Alternative would result in no impacts to community character and cohesion.

Alternative 2 – Retrofit

Construction of Alternative 2 would require partial viaduct lane closures and street closures beneath and adjacent to the viaduct for the duration of construction (up to 2.5 years). Community disconnection could occur on a temporary basis during the construction period. Implementation of a mandatory Work Area Traffic Control Plan (WATCP), outlined in the Standard Specifications for Public Works Construction and the Work Area Traffic Control Handbook, adopted by the City, would minimize traffic-related impacts. Area residents would be able to continue their normal social activities and stay connected during the construction duration. No adverse effects to community character and cohesion are anticipated.

Alternative 3 – Replacement

Implementation of Alternative 3 would require complete closure of the 6th Street Viaduct for approximately 4 years. Some local streets beneath and adjacent to the viaduct would also be subject to closure. Depending on the alternative alignment selected, some businesses located

[41] The Los Angeles Downtown Center Business Improvement District, 2007. *The Downtown Los Angeles Market Report & 2006 Demographic Survey of New Downtown Residents. February.*

adjacent to the construction zone along the viaduct would be affected during demolition of the existing viaduct and construction of the new structure. The level of impacts could range from access disruption to temporary closure of the business. Similar to Alternative 2, construction-related traffic impacts would be minimized by implementation of a WATCP.

Traffic detours and delays would impact motorists previously using the 6th Street Viaduct and local nearby roadways. With the traffic detour plan in place, area residents would be able to continue their normal social activities and stay connected during the construction period. No adverse effects to community character and cohesion are anticipated.

The results of the noise study (see Section 3.16) reveal no substantial impacts to sensitive receptors (e.g., residences, schools, hospitals) from equipment operation and traffic detours within the proposed project's study area; however, manufacturing/commercial buildings located immediately adjacent to the 6th Street Viaduct and residents living adjacent to the detour and material hauling routes would experience noise impacts associated with construction activities, such as pile driving and equipment transport, on an occasional basis. This impact is temporary, but unavoidable.

3.3.3.2 Permanent Impacts

Alternative 1 – No Action

With the No Action Alternative, there is no proposed project; therefore, no impacts on neighborhoods and community character or cohesion would occur as long as the viaduct remains open for public use.

Alternative 2 – Retrofit

Implementation of the Retrofit Alternative would retain, albeit in an altered form, the historic viaduct and maintain the connection on 6th Street between the communities on the east side and Downtown Los Angeles for the life of the retrofitted viaduct. No impacts on neighborhoods and community character or cohesion would be expected to occur.

Alternative 3 – Replacement

Implementation of the Replacement Alternative would maintain the connection on 6th Street between the communities on the east side and Downtown Los Angeles for the long term. Furthermore, it would not create any new roadways that transect any community or obstruct the ongoing activities of the area neighborhoods; therefore, no impacts on neighborhoods or community cohesion would be expected to occur.

The Replacement Alternative would, however, impact community character because it would require demolition of the historic viaduct. Many Boyle Heights residents view the viaduct as a community landmark and an iconic symbol of the City of Los Angeles as a whole. Based on comments received during the public information meetings, Community Advisory Committee

(CAC) meetings, and scoping meetings, there are a range of preferences concerning proposed project implementation – some want the viaduct to remain in its original state with only retrofit performed on it; some want a replacement structure that replicates the existing viaduct; and some want a nicely designed, modern landmark viaduct that reflects well on the community.

Residents in the Arts District also view the viaduct as an important symbol of the City. The Arts District BID plays a prominent role in encouraging its community members to stay involved in the various activities organized within the district. The BID representatives also actively participated in planning meetings for the proposed project. Several of the residents within the Arts District who participated in the CAC meetings expressed that their preference would be to see the 6th Street Viaduct remain as a City icon and a place to visit. Several expressed concern about the potential impacts to properties on the north side of the viaduct that would cause the businesses to relocate.

3.3.3.3 Cumulative Impacts

No cumulative impacts on community character and cohesion have been identified with implementation of any of the proposed alternatives.

3.3.3.4 Secondary Impacts

No secondary impacts pertaining to community character and cohesion have been identified with implementation of any of the proposed alternatives.

3.3.4 Avoidance, Minimization, and Mitigation Measures

Alternative 1 – No Action

No mitigation would be required for the No Action Alternative.

Alternative 2 – Retrofit

The proposed project contractor would be required to initiate and continue a public information and notification program to keep area residents informed of the project construction schedule, traffic lane closure schedule, and the traffic detour plan. A WATCP, subject to the approval of the City of Los Angeles Department of Transportation (LADOT), would be developed to minimize traffic impacts near the construction site. The Traffic Management Plan (TMP) would be developed to identify and provide alternate traffic detour routes, construction materials hauling routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.

Alternative 3 – Replacement

Mitigation measures for Alternative 3 would be similar to Alternative 2 described above, with more frequent notices and follow-up to affected residents and business owners in the affected areas.

❖ ❖ ❖

3.4 Community Impacts – Relocations and Business Disruption

This section addresses impacts to the communities as a result of required right-of-way (ROW) acquisitions and project construction activities. The information presented in this section is excerpted from the Community Impact Assessment prepared for this project[42] and the Draft Relocation Impact Report[43].

3.4.1 Regulatory Setting

The Caltrans Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 CFR Part 24, as summarized below. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix D for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S.C. 2000d, *et seq.*), as summarized below.

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL 91-646)

Frequently referred to as the Uniform Relocation and Assistance Act or Uniform Act, this law provides uniform and equitable treatment of persons displaced from their homes or businesses by federally assisted programs. As implemented by the City of Los Angeles, "displaced persons" include any individual, family, corporation, partnership, or association required to move from real property or required to move personal property from real property acquired in part or in whole as the result of a written notice from the agency to vacate a property needed for a City project. Displacees may be entitled to moving cost reimbursements or replacement housing payments (i.e., purchase supplements, rental assistance, and down payments). The City's implementation protocols also provide for the acquisition of real property on a "fair market" basis, which permits displacees to obtain independent property appraisals and arbitration, if required.

Title VI – Civil Rights Act

Title VI of the 1964 Civil Rights Act provides one of the principle legal underpinnings for environmental justice. It states that "No person…shall, on the grounds of race, color, or national

[42] Community Impact Assessment for 6th Street Viaduct Seismic Improvement Project. July 2008.
[43] Draft Relocation Impact Statement for 6th Street Viaduct Seismic Improvement Project. May 2008.

origin, be excluded from participation in, or be denied benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Title VI prohibits recipients of federal funds from actions that reflect "intentional discrimination" or that exhibit "adverse disparate impact discrimination" on the basis of race, ethnicity, or national origin. Executive Order 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* effectively extended the provisions of Title VI to include minority and low-income populations (see Section 3.5.3 for analysis of potential environmental justice impacts) and required agencies to proactively develop strategies to:

- Identify activities to promote enforcement of all health and environmental statutes in areas with minority and low-income populations;
- Improve public participation by minority and low-income populations;
- Improve data collection and research related to the health and environment of minority and low-income populations; and
- Identify differential consumption patterns of natural resources by minority and low-income populations.

3.4.2 Affected Environment

Existing land uses within the project area are described in detail in Section 3.2.1. More detailed information about land ownership and business use activities is described in Section 3.4.3.2.

3.4.3 Environmental Consequences

3.4.3.1 Construction Impacts

To assess the ROW impacts as a result of the proposed project construction, the potentially affected properties around the viaduct corridor were first identified. A business survey was then conducted by the proposed project outreach team in September 2007 to learn about the nature of the businesses and operational requirements (see the survey form in Figure 3.4-1) of various businesses within the proximity of the proposed project corridor that have the potential to be affected by the proposed activities. The number of businesses that could be subject to partial or full displacement under each project alternative are summarized in Table 3.4-1 and graphically presented in Figure 3.4-2. A brief summary of property and business type, owner information, and potential specific impacts are presented in Table 3.4-2.

The following subsections describe potential impacts to various properties under each alternative based on the information summarized in Tables 3.4-1 and 3.4-2.

6TH STREET VIADUCT SEISMIC IMPROVEMENT PROJECT
BUSINESS SURVEY

FILL OUT THE FOLLOWING GENERAL BUSINESS INFORMATION.
Business ______________________
Address ______________________
City ______________________
State ______________ Zip __________

WHAT LANGUAGE DO YOU SPEAK? PLEASE SELECT ONE:
- ❑ English
- ❑ Spanish
- ❑ Other ________

WHAT IS THE NAME OF THE RESPONDENT?
Name of respondent ______________________

WHAT IS YOUR TITLE?
- ❑ Owner
- ❑ Manager
- ❑ Partner
- ❑ Foreman
- ❑ Supervisor
- ❑ Associate
- ❑ Other ______________

LIST THE FOLLOWING CONTACT INFORMATION:
Office ______________________
Mobile ______________________
Fax ______________________
Email ______________________

HOW LONG HAVE YOU OPERATED AT THIS LOCATION?
- ❑ Less than 1 YR
- ❑ 1 YR to 5 YR
- ❑ 5 YR to 10 YR
- ❑ More than 10 YR

WHAT IS YOUR PRIMARY INDUSTRY?
- ❑ Retail
- ❑ Manufacturing
- ❑ Construction
- ❑ Finance/Insurance/ Real Estate
- ❑ Transportation
- ❑ Public Utilities
- ❑ Wholesale Trades
- ❑ Government
- ❑ Not for Profit
- ❑ Entertainment
- ❑ Agricultural
- ❑ Other ________

BRIEFLY DESCRIBE YOUR OPERATIONS:
____
____

HOW MANY EMPLOYEES DO YOU HAVE?
- ❑ Less than 5
- ❑ 5 to 10
- ❑ 10 to 20
- ❑ 20 to 30
- ❑ More than 30

WHAT IS THE AVERAGE DISTANCE EMPLOYEES LIVE FROM WORK?
- ❑ Less than 1 mile
- ❑ 1 to 5 miles
- ❑ 5 to 10 miles
- ❑ More than 10 miles

BRIEFLY EXPLAIN ANY TRANSPORTATION NEEDS SPECIFIC TO YOUR EMPLOYEES (BICYCLES, BUS, PEDESTRIAN, ETC.).
____
____
____

PTG 6th St Business Ques_9-07.doc 1 of 2

6TH STREET VIADUCT SEISMIC IMPROVEMENT PROJECT
BUSINESS SURVEY

FROM WITHIN HOW MANY MILES DO YOU ATTRACT THE MAJORITY OF YOUR CUSTOMERS?
- ❑ 1 to 3 mile radius
- ❑ 3 to 5 mile radius
- ❑ More than 5 mile radius

WHICH BEST DESCRIBES YOUR OPERATING STATUS?
- ❑ Owner
- ❑ Tenant
- ❑ Subtenant
- ❑ Other ______________

DESCRIBE ANY SPECIAL MOVING/RELOCATION ISSUES YOU FEEL ARE UNIQUE TO YOUR BUSINESS (MACHINERY, EQUIPMENT, OVERSIZED MATERIALS, ETC.).
____
____
____

DO YOU REQUIRE ANY SPECIAL PERMITS, ZONING OR OTHER ENTITLEMENTS TO OPERATE YOUR BUSINESS? IF SO, PLEASE DESCRIBE:
____
____
____

DO YOU REQUIRE ANY OTHER SPECIAL NEEDS (ACCESS, BUILDING STRUCTURE, OR STORAGE) WE HAVE NOT DISCUSSED?
____
____
____

DESCRIBE YOUR PARKING NEEDS.
____
____
____

HOW MANY TRUCK TRIPS PER DAY DOES YOUR BUSINESS GENERATE AND WHAT HOURS?
____
____

IS YOUR BUSINESS A CORPORATION OR PARTNERSHIP OR INDIVIDUALLY OWNED? ______________

IF YOU ARE NOT THE OWNER OF THE PROPERTY, IS THE PROPERTY OWNER A CORPORATION, PARTNERSHIP OR INDIVIDUAL? ______________

IF YOU ARE NOT THE OWNER OF THE PROPERTY AND THE PROPERTY OWNER IS AN INDIVIDUAL, WHAT LANGUAGE DOES THE OWNER SPEAK? ________

ANY OTHER INFORMATION ABOUT YOUR BUSINESS THAT WE HAVE NOT DISCUSSED?
____
____
____

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Figure 3.4-1 Business Survey Form

Table 3.4-1
Summary of Potentially Affected Properties

Alternative Number	Alternative Description	Number of Parcels Potentially Affected	Number of Businesses Potentially Affected	Note
1	No Action	None	None	
2	Alternative 2 (Retrofit with "Heavy Steel Casings")	See note	2+	Impacts to the City Maintenance Facility on the west side of the river beneath the viaduct, and the Ventura Foods, Inc., building on the east side of the river.
3	Alternative 3 (Replacement Alignment A)	39	10	Major impacts to existing one-way service road north of the viaduct between Mateo Street and Santa Fe Avenue.
3	Alternative 3 (Replacement Alignment B)	43	12	Major impacts on existing one-way service road north of the viaduct between Mateo Street and Santa Fe Avenue; potential impacts to existing one-way service road south of the viaduct between Santa Fe Avenue and Mesquit Street.
3	Alternative 3 (Replacement Alignment C)	47	7	Major impacts to existing one-way service road north of the viaduct between Mateo Street and Santa Fe Avenue; only aerial ROW impact east of Mission Road.
Note: Number of potentially impacted parcels listed includes railroads, river, and publicly owned parcels.				

Source: Community Impact Assessment for 6th Street Viaduct Seismic Improvement Project, July 2008.

Alternative 1 – No Action

Since there would be no construction with the No Action Alternative, no ROW acquisition would be required under this alternative.

Alternative 2 – Retrofit

Construction of Alternative 2 would require partial viaduct lane closures and partial street closures beneath and adjacent to the viaduct for the duration of construction (up to 2.5 years). Businesses located adjacent to the construction zone along the viaduct frontage roads between Mateo Street and Mesquit Street would experience periodic traffic congestion and access diversion to business entrances facing the frontage roads as a result of construction activities. Access to businesses during business hours would be provided either by staging the construction activity or by using existing alternate entrances or newly created temporary access from adjacent streets.

Under this alternative, the City of Los Angeles Bureau of Street Service Maintenance Yard (Maintenance Facility) located within the City's ROW beneath the existing viaduct on the west side of the Los Angeles River (No. 5 on Figure 3.4-2) would need to be temporarily relocated or, at the City's option, would be permanently relocated. In addition, the Ventura Foods, Inc., buildings located on the east side of the river extending north and south of the viaduct (No. 12 on Figure 3.4-2) would need to be relocated. This particular land under the viaduct is owned by the City of Los Angeles and rented out to Ventura Foods, Inc. This area is being used for loading operations. Loss of this loading facility would prevent any business from operating which would require relocation of the business and property acquisition. As of October 2008, Ventura Foods, Inc., moved to a new location on a voluntary basis. The building is currently vacant. No impact to this business would occur.

There would be no business access issues east of Mission Road since there are no frontage roads or business entrances facing the viaduct. The right to compensation, if any, for denying access to the sole point of access to a business would be addressed in the appraisal of the property rights to be acquired. East of Mission Road, below surface easement and construction easements in which reconstruction of some bridge bent footings is required would be acquired in accordance with the Uniform Relocation Act, as currently amended. Construction-related traffic impacts would be minimized by implementation of a Work Area Traffic Control Plan (WATCP), as mandated by the City of Los Angeles Department of Transportation (LADOT).

Impacts to the operating railroads on both sides of the Los Angeles River (No. 8, 9, and 11) on Figure 3.4-2) are addressed in Section 3.6 of this Draft EIR/EIS (refer to Table 3.6-2). Impacts to operations of the commuter rail lines, anticipated shutdowns, detours, and commuter line schedule could not be accurately identified at this stage, but they would be addressed in the Railroad Agreements. Emphasis would be to perform maximum work during the work windows permitted by the railroad companies and to minimize any impact to commuter train schedules by detouring rail traffic on adjacent available tracks.

The businesses that use the space under the viaduct for parking would be temporarily affected by the construction activities. While impacts to particular areas for a prolonged period of time are not anticipated, access to some businesses may be temporarily altered or disrupted. Interference with access to private properties from City streets may be considered a damage issue and would be addressed in the appraisal of property rights to be acquired to determine the right to compensation. As a result, any such interference must be individually examined on its own merits and a determination made with regard to whether the level of interference triggers a right to compensation under state law.

The 6th Street Viaduct and adjacent areas are frequently used for movie production purposes. Roadway blockage and localized traffic congestion during the proposed project construction could disrupt these filming activities. The impacts could be minimized by providing advance notification of the construction schedule and roadway closure schedule so that production activities could be arranged accordingly.

AFFECTED PROPERTIES LEGEND

1. Stover Seed Company
2. Alexandra Furniture
3. Lucky Head & Un Deux Trios
4. Spilo Worldwide
5. LA Bureau of Street Services*
6. Army Corps of Engineers Ramp & Tunnel
7. Vacant Commercial Land
8. Various Railroads (Tracks)*
9. Various Railroads (Vacant Land)
10. Los Angeles River*
11. Various Railroads (Tracks)*
12. Ventura Foods, Inc.*
13. Ace Beverage, Inc. (Parking)*
14. Ace Beverage, Inc. (Parking & Bldg.)*
15. Senegram Holding (Alley, S.D., & Sewer Easement)*
16. Cal Fiber, Inc. (3B)
17. Variety Specialty Produce*
18. Shalom & Sons Wholesale Foods (3B)
19. Elady Company*
20. Jerry & Orit Kohen (Unknown Business) (3B)
21. Bell Craft Furniture, Inc.*
22. Peppard Brothers
23. Caltrans
24. Cal Hondo Freight Forwarder (3A, 3C)*
25. Glacier Cold Storage (3A, 3C)
26. Union Pacific Land Resources Company* (Alley, S.D. & Sewer Easement) (3A, 3C)
27. Fitusi Shalom Trust (Unknown Businesses) (3A, 3C)
28. Jairnimage, Inc. (3A, 3C)*
29. Eddie & Glass (Vacant Commercial Property) (3A, 3C)
30. Vacant Land (Clarence Sunrise Properties) (3A, 3C)
31. Long Term, Inc.
32. Lumary's Tire Service, Inc. (3B)

*Potentially Affected Properties under Alternative 2 - Retrofit

N
NO SCALE

LEGEND
12 AFFECTED PROPERTIES
PROJECT LIMITS

Figure 3.4-2
Potentially Affected Properties
Alignments 3A, 3B, & 3C, Except as Noted

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Table 3.4-2 Survey Information on Potentially Affected Nonresidential Properties in the Vicinity of the Project Area

Number Noted on Figure 3.4-1	Alignment Affecting Properties	Assessor's Parcel Number (APN/Address)	Parcel Owner	Type of Ownership	Establishment Located on Parcel	Type of Business and Size	Operating Status (Tenant or Owner)	Number of Occupants or Employees	Average Distance Employee Lives from Work	Special Need to Operate Business, including Parking	Relocation Issues Expressed	Type of Potential Impact
West of Los Angeles River – North; Mateo Street to Santa Fe Avenue												
1	3A, 3B, 3C	5164007020	Stover Seed Co.	Corporate owned	Stover Seed Co.	Wholesale distribution	Owner	20 to 30	More than 10-mile radius	Air quality permit for dust control. Employee parking in front of the building.	Needs access on 6th Street for loading and unloading trucks. Cannot operate if street is blocked.	Full acquisition; relocate
1	3A, 3B, 3C	5164007019	Stover Seed Co.	See above	See above	See above	See above	See above	See above	See above	See above	Full acquisition; relocate
2	3A, 3B, 3C	5164007018	Stover Seed Co.	See above	Alexandra Furniture	Furniture manufacturing	Tenant	Information not available	Information not available	Information not available	Survey form was not turned in	Full acquisition; relocate
3	3A, 3B, 3C	5164007017	Shorkend Colin & Beverly	Information not available	Lucky Head	Information not available	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in	Full acquisition; relocate
4	3A, 3B, 3C	5164007017	Shorkend Colin & Beverly	Information not available	Un Deux Trios	Clothing manufacturing	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in	Full acquisition; relocate
4	3A, 3B, 3C	5164007016	1435 E. Sixth LLC	Corporate owned	Spilo Worldwide	Wholesale cosmetics manufacturing	Tenant	No response	No response	No response	Cannot operate if road access is closed	Full acquisition; relocate
4	3A, 3B, 3C	5164007015	1435 E Sixth LLC	Corporate owned	Spilo Worldwide	Wholesale cosmetics manufacturing	Tenant	No response	No response	No response	See above	Full acquisition; relocate
5	3A, 3B, 3C	5164007024	Spilo Ann & Marc	Corporate owned	Spilo Worldwide	Wholesale cosmetics manufacturing	Owner	No response	No response	No response	See above	Full acquisition; relocate
5	2, 3A, 3B, 3C	No APN (Located under existing bridge)	City of Los Angeles	Public agency	Los Angeles Bureau of Street Services Shop	City street maintenance facility	Owner	20	Information not available	30 parking spaces under the bridge	City's facility	Relocate
West of Los Angeles River – North; Santa Fe Avenue to Los Angeles River												
31	3A, 3B, 3C	5164005002	Butterfield Trails, LP	Corporate owned	Long Term, Inc.	Film production	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in	Building and parking space; access to doors/gate on south side of property would be blocked. Frontage road may be blocked. Aerial easement needed for some bridge types Alignments 3A, 3B, 3C.
7	3A, 3B, 3C	5164004004	Chalmers Santa Fe LLC	Corporate owned	Vacant land	N/A	N/A	N/A	N/A	N/A	N/A	Vacant land; aerial easement on the north side of the viaduct needed.
8	2, 3A, 3B, 3C	5164004900	LACMTA	Public agency	MTA Tracks	Transit RR	Owner	N/A	N/A	N/A	N/A	Electrified tracks; aerial easement needed for Alignments 3A, 3B, 3C. Temporary closure of east track needed for Alternative 2.
8	2, 3A, 3B, 3C	5164004804	Amtrak/BNSF	Corporate owned	BNSF tracks	Railroad	Owner	N/A	N/A	N/A	N/A	Tracks; aerial easement needed for Alignment 3A, 3B, 3C. Temporary closure of west track (additional easement) needed for Alternative 2.
8	2, 3A, 3B, 3C	5164004901	SCRRA	Public agency	SCRRA Tracks	Transit RR	Owner	N/A	N/A	N/A	N/A	Tracks; aerial easement needed for Alignment 3A, 3B, 3C. Temporary closure of east track (additional easement) needed for Alternative 2.

Table 3.4-2 Survey Information on Potentially Affected Nonresidential Properties in the Vicinity of the Project Area

Number Noted on Figure 3.4-1	Alignment Affecting Properties	Assessor's Parcel Number (APN/Address)	Parcel Owner	Type of Ownership	Establishment Located on Parcel	Type of Business and Size	Operating Status (Tenant or Owner)	Number of Occupants or Employees	Average Distance Employee Lives from Work	Special Need to Operate Business, including Parking	Relocation Issues Expressed	Type of Potential Impact
10	2, 3A, 3B, 3C	5171014900	USACE/ LACFCD	Public agency	USACE (River)	Lined river	Owner	N/A	N/A	N/A	N/A	Riverbed/banks; aerial and surface easements needed for Alignments 3A, 3B, 3C; depending on bridge types, pier may be in the river. River concrete lining would be impacted by foundation construction.
6	2, 3A, 3B, 3C	No APN (USACE access ramp and tunnel)	City of Los Angeles	Public agency	USACE access ramp and tunnel	Access tunnel to river	Tenant	N/A	N/A	N/A	N/A	Ramp and tunnel are located within City ROW. Modifications to ramp and tunnel will be required for all alternatives.
West of Los Angeles River – South; Santa Fe Avenue to Los Angeles River												
32	3B	5164015001	Michael Lumary	Partnership	Lumary's Tire Service, Inc.	Truck tire retread plant	Owner	20 to 30	More than 10 miles	Business needs more than 29,500 square ft of space to operate. Large machinery on premises. Need complete access on 6th Street for unloading and loading tires.	Last tire retread plant in the City of Los Angeles. Closing or blocking 6th Street will completely disable operations. Some machinery is difficult to relocate.	Building; access to door on north side of the property will be blocked. Frontage road will be blocked preventing access to the door on frontage road side. Access to door will be blocked by bridge columns. Business has another access from Mesquit Street.
9	3A, 3B, 3C	5164016903	National Railroad Corp. Amtrak	Corporate owned	Vacant land	Transit railroad	Owner	N/A	N/A	N/A	N/A	Open area; aerial easement needed for Alignments 3A, 3B, 3C. Surface easement needed for Alignment 3B.
9	3A, 3B, 3C	5164016803	BNSF	Corporate owned	Vacant land	Railroad	Owner	N/A	N/A	N/A	N/A	Open area; aerial easement needed for Alignments 3A, 3B, 3C. Small surface easement required for Alignment 3B bridge foundation.
8	2, 3A, 3B, 3C	5164016906	LACMTA	Public agency	MTA tracks	Transit railroad	Owner	N/A	N/A	N/A	N/A	Electrified tracks; aerial easement needed for Alignments 3A, 3B, 3C. Temporary closure of east track needed for Alternative 2 (surface easement).
8	2, 3A, 3B, 3C	5164016806	PAR SBE	Corporate owned	Amtrak/BNSF	Railroad	Owner	N/A	N/A	N/A	N/A	Tracks; aerial easement needed for Alignments 3A, 3B, 3C. Temporary closure of west track needed for Alternative 2 (surface easement).
8	3A, 3B, 3C	5164016807	BNSF	Corporate owned	Amtrak/BNSF	Railroad	Owner	N/A	N/A	N/A	N/A	Tracks; aerial easement needed for Alignments 3A, 3B, 3C.
8	2, 3A, 3B, 3C	5164016909	LACMTA	Public agency	SCRRA	Transit railroad	Owner	N/A	N/A	N/A	N/A	Tracks; aerial easement needed for Alignments 3A, 3B, 3C. Temporary closure of east track needed for Alternative 2 (surface easement).

Table 3.4-2 Survey Information on Potentially Affected Nonresidential Properties in the Vicinity of the Project Area

Number Noted on Figure 3.4-1	Alignment Affecting Properties	Assessor's Parcel Number (APN/Address)	Parcel Owner	Type of Ownership	Establishment Located on Parcel	Type of Business and Size	Operating Status (Tenant or Owner)	Number of Occupants or Employees	Average Distance Employee Lives from Work	Special Need to Operate Business, including Parking	Relocation Issues Expressed	Type of Potential Impact
10	2, 3A, 3B, 3C	5171015900	USACE/ LACFCD	Public agency	USACE (River)	Lined river	Owner	N/A	N/A	N/A	N/A	Riverbed/banks; aerial and/or surface easement needed for Alignments 2, 3A, 3B, 3C; depending on bridge types, pier may be in the river. River concrete lining would be impacted by foundation construction.
East of Los Angeles River – North and South; Los Angeles River to Mission Road												
North Side of the Viaduct												
11	2, 3A, 3B, 3C	5171014901	SCRRA/ LACMTA	Public agency	SCRRA tracks	Transit railroad	Owner	N/A	N/A	N/A	N/A	Tracks; aerial and/or surface easement needed for Alignments 3A, 3B, 3C. Temporary closure of west track needed for Alternative 2 (surface easement).
11	3A, 3B, 3C	5171014808	UPRR	Corporate owned	UPRR tracks	Railroad	Owner	Information not available	Information not available	Information not available	Information not available	Tracks; aerial and/or surface easement needed for Alignments 3A, 3B, 3C.
11	2, 3A, 3B, 3C	5171014809	UPRR	Corporate owned	UPRR tracks	Railroad	Owner	Information not available	Information not available	Information not available	Information not available	Industry track, aerial and/or surface easement needed for Alignments 3A, 3B, 3C. Potential temporary closure of Ventura Foods, Inc., connection track. Surface easement for Alternative 2 and Alignment 3A.
12	2, 3A, 3B, 3C	5171014005 633 S. Mission Road	Wilsey Holsum Foods LLC	Corporate owned	Ventura Foods, Inc.	Food processing, manufacturing, distribution	Owner	Information not available	Information not available	Information not available	Building was vacated in October 2008. Company is moving to Ontario, CA. Did not submit survey.	Silo/building/paved storage yard; business cannot operate during demolition. Full relocation would be required under all alternatives.
South Side of the Viaduct												
11	2, 3A, 3C	5171015901	SCRRA/UPRR/ LACMTA	Corporate owned/railroad	SCRRA/UPRR tracks	Railroad	Owner	Information not available	Information not available	Information not available	Information not available	Tracks/industry track. Aerial easement needed for Alignments 3A and 3C. Potential temporary closure of SCRRA west track and Ventura Foods, Inc., connection track.
12	2, 3A, 3B, 3C	5171015001 633 S. Mission Road	Wilsey Holsum Foods LLC	Corporate owned	Ventura Foods, Inc.	Food processing, manufacturing, distribution	Owner	Information not available	Information not available	Information not available	Building was vacated in October 2008. Did not submit survey.	Buildings and parking. Surface and aerial easement needed for Alignment 3A. Aerial easement needed for Alignment 3C. Full acquisition may be required for Alignment 3B. Subsurface and temporary construction easement required for Alternative 2.

Table 3.4-2 Survey Information on Potentially Affected Nonresidential Properties in the Vicinity of the Project Area

Number Noted on Figure 3.4-1	Alignment Affecting Properties	Assessor's Parcel Number (APN/Address)	Parcel Owner	Type of Ownership	Establishment Located on Parcel	Type of Business and Size	Operating Status (Tenant or Owner)	Number of Occupants or Employees	Average Distance Employee Lives from Work	Special Need to Operate Business, including Parking	Relocation Issues Expressed	Type of Potential Impact
East of Los Angeles River – North; Mission Road to Anderson Street												
13	2, 3A, 3B, 3C	5171013001 600 S. Mission Road	Duesenberg Investment Co	Corporate owned	Ace Beverage, Inc.	Beverage distribution	Tenant	More than 30	More than 10-mile radius	Parking for large delivery trucks.	Company has more than 200 vehicles that are dispatched every day and stored at location.	Paved truck parking. Surface and aerial easement needed for Alignment 3A. Aerial easement needed for Alignment 3C. Full acquisition may be required for Alignment 3B. Subsurface and temporary construction easement required for Alternative 2.
14	2, 3A, 3B, 3C	5171013002 1600 E. 6th Street	Duesenberg Investment Co	Corporate owned	Ace Beverage, Inc.	Beverage distribution	Tenant	More than 30	More than 10-mile radius	Parking for large delivery trucks. Buildings used for storage. Have loading docks.	Company has more than 200 vehicles that are dispatched every day and stored at location.	Buildings and parking. Surface and aerial easement needed for Alignment 3A. Aerial easement needed for Alignment 3C. Full acquisition may be required for Alignment 3B. Subsurface and temporary construction easement required for Alternative 2.
15	3A, 3B, 3C	5171013003	Senegram Holdings	Corporate owned	Vacant land - alley	Information not available	Owner	Information not available	Needs loading docks located in front of the buildings	Alley is used for car parking for row of buildings along Anderson Street.	Needs loading docks located in front of building.	Paved alley: Surface and aerial easement needed for Alignments 3Aand 3B. Aerial easement needed for Alignment 3C.
17	2, 3A, 3B, 3C	5171012014 635 S. Anderson Street	Senegram Holdings	Corporate owned	Variety Specialties Produce	Produce distributor	Tenant	5 to 10	More than 10 miles	Six vehicles, including trucks. Need health department permit. Have permit from City to park under bridge.	Freezers and other equipment. Need tiled floors with drains.	Building. Surface easements and relocation needed for Alignments 3A and 3B. Aerial easement for Alignment 3C. Subsurface and temporary construction easement required for Alternative 2. A small portion of building may need to be cut and refaced.
17	2, 3A, 3B, 3B	5171012008 631 S. Anderson Street	Senegram Holdings	Corporate owned	Variety Specialties Produce	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.	Same as above.
16	3B	5171012007 and 5171012006 (south) 627 – 625 S. Anderson Street	Senegram Holdings	Corporate owned	Cal Fiber	Cal Fiber – Newspaper recycling and insulation for different products	Owner	5 to 10	More than 10 miles	All permits required by the City. Parking for 5 to 10 cars in front and back of building.	Extensive electrical machinery needed for operation of business. Machinery includes shredders, power unit, and ventilation that cover an entire side of the building.	Buildings and parking. Surface easement needed for Alignment 3B. Aerial easement needed for Alignment 3C. Cal Fiber business continues north in other two buildings. Relocation is required for Alignment 3B.
16	3B	5171012006 (north) 621 S. Anderson Street	Senegram Holdings	Corporate owned	Cal Fiber	Warehouse storage of raw materials and finished products	Owner and several tenants at same location	10 to 20	More than 10 miles	Parking for 5 to 10 cars in front and back of building.	Receives income from tenants and filming rental income.	Building. Aerial easement needed over small corner of the building for Alignment 3B.
16	-	5171012015 619 S. Anderson Street	Senegram Holdings	Corporate owned	Cal Fiber	Warehouse storage of raw materials and finished products	Owner and several tenants at same location	Less than 5	No response	Parking for 5 to 10 cars in front and back of building.	No response	No impact.
16	-	5171012015 618 S. Anderson Street	Senegram Holdings	Corporate owned	Cal Fiber	Warehouse storage of raw materials and finished products	Owner and several tenants at same location	10 to 20	More than 10 miles	Parking for 25 to 30 cars and trucks in back of building.	Left blank	No impact.

Table 3.4-2 Survey Information on Potentially Affected Nonresidential Properties in the Vicinity of the Project Area

Number Noted on Figure 3.4-1	Alignment Affecting Properties	Assessor's Parcel Number (APN/Address)	Parcel Owner	Type of Ownership	Establishment Located on Parcel	Type of Business and Size	Operating Status (Tenant or Owner)	Number of Occupants or Employees	Average Distance Employee Lives from Work	Special Need to Operate Business, including Parking	Relocation Issues Expressed	Type of Potential Impact
17	3A, 3B, 3C	5171012012	Flores Basillo & Noemi	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Open area/yard; full acquisition for Alignments 3A and 3B, aerial easement needed for Alignment 3C.
East of Los Angeles River – South; Mission Road to Anderson Street												
24	2, 3A, 3C	5171016010	Pacific Industrial Partners	Corporate owned	634 S. Mission Road Cal Hono Freight Forwarder Inc. (E)	Freight handling, consolidating of frozen and refrigerated products	Subtenant to Glacier Cold Storage	10 to 20	More than 10 miles	Parking lot is located directly under the bridge. 8 parking spaces available. Empty container holding.	Most of the operation takes place directly adjacent and under the bridge. Lot under the bridge is used to store large empty containers. No storage space if the bridge is closed.	Building and loading area; aerial easement needed for Alignments 3A and 3C. Subsurface and temporary construction easement required for Alternative 2.
25	2, 3A, 3C	5171016010	Pacific Industrial Partners	Corporate owned	Glacier Cold Storage	Cold storage	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in.	Building and yard area; aerial easement needed for Alignments 3A and 3C. Subsurface and temporary construction easement required for Alternative 2. A small portion of building may need to be cut and refaced.
26	2, 3A, 3C	5171016011	Union Pacific Land Resources Co	Corporate owned	Information not available	Vacant land	Information not available	Information not available	Information not available	Information not available	Information not available	Vacant land, alley used for parking by adjacent businesses. Aerial easement needed for Alignments 3A and 3C. Subsurface and temporary construction easement required for Alternative 2.
27	2, 3A, 3C	5171017008	Fitusi Shalom Trust	Corporate owned	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in.	Building, aerial easement needed for Alignments 3A and 3C. Subsurface and temporary construction easement required for Alternative 2.
East of Los Angeles River – North; Anderson Street to East Abutment												
18	3B	5171006019	Fitusi Shalom Trust	Corporate owned	Shalom and Sons Wholesale Foods	Information not available	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in.	Building, aerial easement needed for Alignment 3B.
19	3A, 3B, 3C	5171006018	J&W Holdings	Corporate owned	Elady Company (formerly Best Buy, Inc.)	Information not available	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in.	Loading dock/building. Full acquisition and relocation for Alignments 3A and 3B, aerial easement needed for Alignment 3C. Subsurface and temporary construction easement required for Alternative 2.
20	3B	5171005007	Jerry & Orit Kohen	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in.	Building; aerial easement needed for Alignment 3B.
21	3A, 3B	5171005008	Gustavo & Violeta Ulloa	Individually owned	Bell Craft Office Furniture, Inc. (E) 651-653 S. Clarence St.	Furniture manufacturer	Owner	10 to 20	More than 10 miles	AQMD spray booth permit, parking and loading are located in front of the building on the street	Need complete access to front of building to load and unload furniture	Building. Full acquisition and relocation for Alignments 3A and 3B. Aerial easement needed for Alignment 3C.

Table 3.4-2 Survey Information on Potentially Affected Nonresidential Properties in the Vicinity of the Project Area

Number Noted on Figure 3.4-1	Alignment Affecting Properties	Assessor's Parcel Number (APN/Address)	Parcel Owner	Type of Ownership	Establishment Located on Parcel	Type of Business and Size	Operating Status (Tenant or Owner)	Number of Occupants or Employees	Average Distance Employee Lives from Work	Special Need to Operate Business, including Parking	Relocation Issues Expressed	Type of Potential Impact
21	2, 3A, 3B, 3C	5171005009	Gustavo & Violeta Ulloa	See above	See above	See above	See above	See above	See above	See above	See above	Building. Full acquisition and relocation for Alignments 3A, 3B; aerial easement needed for Alignment 3C. Subsurface and temporary construction easement required for Alternative 2.
21	3A, 3B, 3C	5171005013	Gustavo & Violeta Ulloa	See above	See above	See above	See above	See above	See above	See above	See above	Storage yard area; full acquisition for Alignments 3A and 3B, aerial easement for Alignment 3C.
21	3A, 3B, 3C	5171005012	Rubel Raul	Information not available	Vacant land	N/A	N/A	N/A	N/A	N/A	N/A	Open space; full acquisition for Alternatives 3A and 3B, aerial easement needed for Alignment 3C.
22	3A, 3B, 3C	5171004017	William Peppard	Information not available	Peppard Brothers	Information not available	Information not available	Information not available	Information not available	Information not available	Survey form was not turned in.	Building; aerial easement needed for Alignments 3A, 3B, and 3C.
23	3A, 3B, 3C	No number	Caltrans	Public agency	Caltrans	Public agency	N/A	N/A	N/A	N/A	N/A	Aerial easement needed for Alignments 3A, 3B, and 3C.
East of Los Angeles River – South; Anderson Street to East Abutment												
28	2, 3A, 3C	5171017007	2974 Properties Inc	Corporate owned	Jaim Image, Inc.	Garment, silk screen and painting	Tenant	5 to 10	5 to 10 miles	Large storage for special requirements to set power lines, air lines, and gas lines. Five parking spaces are needed.	Large open space area is needed for ventilation and product storage.	Building; aerial easement needed for Alignments 3A and 3C. Subsurface and temporary construction easement required for Alternative 2.
28	3A, 3C	5171017800	Information not available	Information not available	(Rail Road?)	Vacant land	N/A	N/A	N/A	N/A	N/A	Rail track; aerial easement needed for Alignments 3A and 3C.
29	2, 3A, 3C	5171017005	Rubel Raul	Information not available	Vacant land	N/A	N/A	N/A	N/A	N/A	N/A	Vacant land; aerial easement needed for Alignments 3A and 3C. Subsurface and temporary construction easement required for Alternative 2.
29	3A, 3C	5171017006	Eddie & Glass	Information not available	Vacant building	N/A	N/A	N/A	N/A	N/A	N/A	Vacant building; aerial easement needed for Alignments 3A and 3C.
30	3A, 3B, 3C	5171019005	Clarence Sunrise Properties	Information not available	Parking area	N/A	N/A	N/A	N/A	N/A	N/A	Parking area; aerial easement needed for Alignments 3A and 3C.
23	3A, 3B, 3C	No Number	Caltrans	Public agency	Caltrans	Public agency	N/A	N/A	N/A	N/A	N/A	Sloping land east of Clarence Street. Aerial and surface easement needed for Alignments 3A, 3B, 3C.

Source: Survey conducted by Diverse Strategies for Organizing, Inc.

Alternative 3 – Replacement

Implementation of Alternative 3 would require complete closure of the 6th Street Viaduct for approximately 4 years. Some local streets beneath and adjacent to the viaduct would also be subject to partial or full closure.

The replacement alternative 3A, 3B, and 3C horizontal alignments follow the same project corridor length, and the only difference between them is that they slightly shift horizontally to the south or north, more noticeably on the east side of the river. Construction impacts to businesses would be identical for all three alignments, except as noted in this section.

Businesses located adjacent to the construction zone along the viaduct would be affected during demolition of the existing viaduct and construction of the new structure. Potential impacts to businesses located west of Mission Road would be identical for all three alignments. Businesses located adjacent to the construction zone along the viaduct frontage roads between Mateo Street and Mesquit Street would experience periodic traffic congestion and access diversion to business entrances facing the frontage roads as a result of construction activities. Access to businesses during business hours would be provided either by staging the construction activity or by using existing alternate entrances or newly created temporary access from adjacent streets. The City Maintenance Facility (No. 5 on Figure 3.4-2) would have to be relocated, and the Ventura Foods, Inc., property (No. 12 on Figure 3.4-2) would need to be acquired. No business access issues east of Mission Road would occur since there are no frontage roads or business entrances facing the viaduct. The right to compensation, if any, for denying access to the sole point of access to a business would be addressed in the appraisal of the property rights to be acquired.

Properties identified for permanent acquisition and businesses identified to be permanently relocated (see Table 3.4-2 and Figure 3.4-2) are considered not impacted by construction because they would be vacated before commencement of the construction activities. East of Mission Road, the viaduct deck for Alignments A and B would span over the corner of a few buildings, while Alignment C would cantilever over all of the existing buildings by up to 12 ft on the north and south sides. These properties would not need to be relocated under any alignment alternative; however, due to potential risk to personal safety during construction, businesses located adjacent to the construction zone may have to adjust their operations to avoid working in the proximity of the impacted area of the building. The property or business owners may have a right to compensation for such impacts. As a result, any such interference must be individually examined on its own merits and a determination made with regard to whether the level of interference triggers a right to compensation under state law.

As mentioned above, the viaduct and adjacent areas are frequently used for movie production purposes. Roadway blockage and localized traffic congestion during the proposed project construction could disrupt the filming activities occurring on a long-term (4-year) basis along the street network in the vicinity of the 6th Street Viaduct. The impacts could be minimized by providing advance notification of the construction schedule and roadway closure schedule so that production activities could be arranged accordingly. As the viaduct would be demolished with the replacement alternative, filming activities on, under, or immediately adjacent to the viaduct would not be possible until construction is completed. The impact is unavoidable.

3.4.3.2 Permanent Impacts

Alternative 1 – No Action

No relocation of residences or businesses would be required with the No Action Alternative. No impacts would occur.

Alternative 2 – Retrofit

No relocation of residences would be required with Alternative 2; however, the City Maintenance Facility and the Ventura Foods, Inc., property would need to be relocated. Since Ventura Foods, Inc., has moved its business out of the area, no impact would occur to its operations.

Alternative 2 would potentially reduce horizontal clearance between the rail tracks and retrofitted columns of the bridge, which may not be acceptable to the railroads. Permanent impacts for Alternative 2 are summarized in Tables 3.4-1 and 3.4-2. No permanent business access loss would occur under Alternative 2 for the remaining businesses.

Alternative 3 – Replacement

Residential Displacements

The area immediately surrounding the 6th Street Viaduct contains mostly industrial and commercial establishments. Based on present land use, no residential displacement would be required if any of the Alternative 3 alignments were implemented.

Nonresidential Displacements

The replacement alternative 3A, 3B, and 3C horizontal alignments follow the same corridor length, and the only difference between them is that they slightly shift horizontally to the south or north, more noticeably on the east side of the river. Permanent impacts to properties and businesses would be identical for all three alignments, except as noted in Tables 3.4-1 and 3.4-2. Alternative 3B, which swings the most to the north, would have maximum permanent impacts to properties and businesses, followed by Alternatives 3A and 3C. No permanent business access loss would occur under Alternatives 3A, 3B, or 3C for the remaining businesses. No permanent impact to the railroads and Los Angeles River operations would occur, except the footprint of the new viaduct would change and increase the easement over these properties.

3.4.3.3 Cumulative Impacts

Land acquisition for project construction is localized; no cumulative impacts on business disruption and relocation would occur. Cumulative impacts on the use of land were addressed in Section 3.2.2.3.

3.4.3.4 Secondary Impacts

Alternative 1 – No Action

No secondary impacts from relocations have been identified with implementation of the No Action Alternative.

Alternative 2 – Retrofit

Implementation of Alternative 2 would require relocation of the City Maintenance Facility, which is located beneath the viaduct west of the river, to a new location. The facility currently houses approximately 30 maintenance vehicles and an average of 20 people working on the premises daily. The facility also contains a truck wash station and 2 underground gasoline storage tanks (1,000- and 500-gallon capacity, respectively). The replacement site for this facility would have to be in an area designated for commercial, light, or heavy industrial uses due to the nature of facility operation. Relocating the facility to a new site would necessitate change in zoning and land use unless the destination site is currently zoned for public (P) use.

The City Maintenance Facility, which employs approximately 20 people, would likely be relocated to a nearby area; therefore, no effects to local employment are anticipated.

No employment information is available for Ventura Foods, Inc. (the facility owner did not return the business survey form), but it could be estimated to range from 20 to 30 people. As of October 2008, the former site of Ventura Foods, Inc., was vacant, and it is assumed that its operations have either relocated to another (out of project area) location or ceased; therefore, no impacts to employment due to the proposed project would occur to Ventura Foods, Inc.

Alternative 3 – Replacement

Secondary impacts derived from implementation of Alternative 3 would be similar to those described under Alternative 2 but magnified as Alternative 3 would involve the relocation of more businesses than the Retrofit Alternative. Depending on the type of businesses, relocating existing businesses to new sites that are in other than an industrial-designated area may cause secondary impacts due to land use/zoning incompatibility.

Based on preliminary survey data, more than 200 people are employed by potentially affected businesses in the proposed project area. These workers would experience job loss if:

- Employers are relocated to areas inaccessible to employees utilizing transportation resources available to them
- Employers elect to terminate operations
- Relocation is extended over a prolonged period and supplemental benefits are either unavailable or exhausted

While these effects would most likely be temporary, because workers would be expected to find other jobs, they would be significant.

These workers could experience employment suspension during the relocation of businesses; however, such effects would be expected to be temporary and extremely short term in cases when business owners are able to relocate their businesses to the nearby area where the former employees could be either retrained or rehired and are able to commute to work. If any business owners decide to close their businesses or relocate elsewhere, then the employment loss to local workers would be permanent. Based on the current unemployment rate of approximately 5 percent within the City and County of Los Angeles, displaced employees are likely to find new jobs within a reasonable period of time. The loss of income from unemployment by the workers would be partially offset by State unemployment benefits. The impact to local workers from potential job loss from relocation of their employers is unavoidable.

Secondary effects associated with temporary or permanent job loss could include loss of tax revenue, arising from the sale of goods and services, and increased public safety-net expenditures, such as unemployment compensation and welfare payments.

3.4.4 Avoidance, Minimization, and Mitigation Measures

Alternative 1 – No Action

No mitigation would be required for the No Action Alternative.

Alternative 2 – Retrofit

Extensive construction work would occur under the viaduct, requiring relocation of the City Maintenance Facility. Due to the 2.5 years of construction work, temporary relocation of the facility is not feasible. The City would relocate the facility to another location to accommodate the construction.

Partial or full acquisition of the property formally occupied by Ventura Foods, Inc., would be required to reserve the space for viaduct maintenance. The property, which is comprised of two parcels bifurcated by the existing viaduct's ROW, is currently vacant and offered for lease by its owner. Several buildings are present on the site, one of which extends beneath the viaduct on City ROW under terms of a revocable permit. The City is in the process of revoking this permit.

Alternative 3 – Replacement

Impacts to businesses and properties along the alignment corridors 3A, 3B, and 3C on the west side of the river are similar and could not be minimized by modification of the alignment. On the west side of the river, alignment corridor 3B would result in the greatest impacts to businesses and properties compared to alignment corridors 3B and 3C. Under each alignment corridor, the City would investigate the possibility of adjusting or modifying the proposed alignment to minimize impacts to business operations to the extent applicable. The City would also work with the potentially affected property owners to obtain the understanding of their respective operation needs and restrictions as part of the alignment refinement to minimize the impacts.

The Draft Relocation Impact Report (DRIR)[44] studied the possibilities of relocating nonresidential properties subject to displacement to similar sites within the surrounding area. The replacement area under study is generally bound by the CRA/LA Central Industrial Redevelopment Project, which is located within East Central Los Angeles adjacent to the project area on the west side of the Los Angeles River, and the Adelante Eastside Redevelopment Project, which is located on the east side of the river. Based on discussions with CRA/LA staff, the available area on the east side of the river is very limited for commercial/industrial uses.

The replacement study area is zoned for heavy industrial use (M3), and it is characterized by heavy and light industrial uses. It has good freeway access, but many surface routes were not designed for heavy truck traffic and are usually congested during business hours. Based on the DRIR, adequate resources appear to exist to relocate potentially affected businesses.

Based on information from local real estate agents, the supply of potential replacement sites in other Los Angeles industrial regions is expected to remain adequate. Considering the existing congestion on local streets and/or other limitations of potential local replacement sites due to the aged infrastructure, some businesses may choose to re-establish in newer development areas (e.g., established industrial parks), thus benefiting from enhanced access and other infrastructure. In addition, market trends may compel some of the businesses to relocate outside of the displacement area. Further detailed study would be required to investigate the specific nature of affected businesses and their relocation needs once the ROW acquisition requirements are confirmed.

[44] Draft Relocation Impact Report 6th Street Viaduct Seismic Improvement Project. June 2008.

All impacted property owners/businesses would receive fair market value for the project-required taking regardless of whether they are eligible for relocation benefits. Relocation assistance payments and counseling would be provided to persons and businesses subject to replacement in accordance with the Uniform Act. Based on the preliminary displacement study, properties are available for the affected businesses to move into within the CRA/LA Central Industrial Redevelopment Project area.

The City would work closely with businesses that are subject to partial acquisition to identify methods to minimize impacts to business operations as a result of the proposed project construction.

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3.5 Community Impacts – Environmental Justice

Potential environmental justice impacts are defined as those unavoidable adverse effects that would be disproportionately borne by minority and/or low-income populations. The information presented in this section is excerpted from the Community Impact Assessment prepared for this project.[45]

3.5.1 Regulatory Setting

All projects involving a federal action (i.e., funding, permit, or land) must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* which was 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.

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

Executive Order 12898

Executive Order 12898 focused attention on Title VI of the Civil Rights Act of 1964, which is a policy of the United States that prevents discrimination on the grounds of race, color, or national origin in connection with programs and activities receiving federal financial assistance, by providing that "each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Department of Transportation Order 5610.2

In support of Executive Order 12898, the United States Department of Transportation (DOT) issued an Order on Environmental Justice (DOT Order 5610.2) in 1997. This was followed by an FHWA Order on Environmental Justice (FHWA Order 6640.23), which was issued in 1998. The DOT Order declares the Agency's policy to promote the principles of environmental justice, as

[45] Community Impact Assessment for 6th Street Viaduct Seismic Improvement Project. July 2008.

embodied in the Executive Order, through the incorporation of those principles in all DOT programs, policies, and activities. The Order further states that this policy should be realized by fully considering environmental justice principles throughout the planning and decision-making process using the principles of the *National Environmental Policy Act, Title VI* of the *Civil Rights Act of 1964,* the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended,* the *Intermodal Surface Transportation Efficiency Act of 1991*, and other DOT statutes, regulations, and guidance that address infrastructure planning and decision making.

The DOT Order (5610.2) on Environmental Justice provides clear definitions of the four minority groups addressed by the Executive Order. These groups are:

1. Black – a person having origins in any of the black racial groups of Africa
2. Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
3. Asian American – a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands
4. American Indian and Alaskan Native – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition

The FHWA Order defines "low-income" as "a person whose household income is at or below the Department of Health and Human Services (HHS) poverty guidelines." The HHS poverty guidelines are used as eligibility criteria for the Community Services Block Grant Program and a number of other federal programs; however, a state or locality may adopt a higher threshold for defining low income if the higher threshold is not selectively implemented and is inclusive of all persons at or below the HHS poverty guidelines. The 1999 poverty threshold for an average family size of four was $16,700 (note that 1999 is used to be consistent with the census data 2000).

DOT further clarifies that neighborhood and community boundaries and impacts should be considered in planning, programming, and project development activities, whether there are minority or low-income populations involved or not. Most importantly, the public should always be involved in defining the affected "neighborhood" and "community" through the public-involvement process, since the identification or definition of neighborhood and community boundaries can be subjective.

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

Enacted in 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) placed additional emphasis on environmental stewardship, as well as consideration of environmental issues, as a part of metropolitan and statewide transportation planning, and the linking of planning and the environmental assessment process. Each of these aspects strengthens the linkages between planning and environmental protection and creates opportunities to examine the potential for environmental justice issues early on and throughout the project development process.

Federal-Aid Highway Act of 1970

This law established further basis for equitable treatment of communities affected by transportation projects. Agencies must assure that the adverse economic, social, and environmental effects of a federally supported highway project have been fully considered in developing the project, and that the final decisions on the project are made in the best overall public interest, taking into consideration the need for fast, safe, and efficient transportation; public services; and the costs of eliminating or minimizing such adverse effects.

Executive Order 13166 – Improving Access to Services for Persons with Limited English Proficiency

Executive Order 13166, which was issued by President Clinton in August 2000, requires federal agencies to "develop a system by which limited-English proficiency persons can meaningfully access…[federal] services [including participation in the project planning process] without unduly burdening the fundamental mission of the agency." Federal agency response to this order has included the provision for oral language assistance, translating vital documents in languages other than English, and training staff to serve non-English speakers. As it applies to the proposed project, the Executive Order requires that written materials and oral presentations prepared for public dissemination be made available to limited-English speakers and readers.

3.5.2 Affected Environment

Based on population demographic data presented in Section 3.3.2, the study area (Census Tracts 2060.40, 2060.50, and 2046) is considered a predominantly minority community compared to the larger population within Los Angeles County. Based on socioeconomic data described in Section 3.3.2, the study area population is also considered to be low income based on the "need-based" poverty threshold for Los Angeles County[46].

[46] Moore, Paul, *et al.*, 2000. *The Other Los Angeles: The Working Poor in the City of the 21st Century.* Los Angeles for A New Economy. August.

3.5.3 Environmental Consequences

3.5.3.1 Construction Impacts

A range of impacts from construction activities that were considered in the environmental justice analysis includes business and community disruption, minority-owned or low-income residential and business displacement, possible job loss of low-income workers, and traffic disruption and detour from construction activities resulting from closure of traffic lanes or the viaduct. Of these impacts, only traffic impact would be predominately borne by the near-construction-zone community, while the benefits of the completed project would be enjoyed by the entire region; thus, the proposed construction impacts would cause disproportionately high adverse effects on minority and low-income populations for both the retrofit and replacement alternatives.

Alternative 1 – No Action

No disproportionate impacts to minority or low-income populations would occur under the No Action Alternative.

Alternative 2 – Retrofit

The main objective of the proposed project is to ensure public safety for those who travel along the existing 6th Street Viaduct. Alternative 2 would cause some inconvenience to local residents and business owners within the project area and its vicinity over the duration of construction (up to 2.5 years) due to periodic lane closures, traffic congestion, and access restrictions. Although full closure of the viaduct may be necessary on an occasional basis, long-term detours are not anticipated. The project study area contains predominantly minority and low-income populations compared to the larger area within the City and County of Los Angeles. Construction would require partial lane closures on the 6th Street Viaduct. Residents and businesses in the area adjacent to the viaduct would experience impacts from traffic congestion resulting from occasional closures of traffic lanes near or on the viaduct.

No residences would require relocation as a result of proposed construction activities. One city facility (Maintenance Facility) would need to be relocated. As described in Section 3.4.3.4, this relocation is not expected to cause any loss of employment from relocation and is not anticipated to create an adverse impact to local workers.

Therefore, construction of Alternative 2 would cause disproportionately high adverse effects on minority and/or low-income populations living closer to the construction zone as per Executive Order 12898 regarding environmental justice.

Alternative 3 – Replacement

The study area is considered a predominantly minority community compared to the larger population within Los Angeles County, and the population is considered low income; therefore, the proposed construction of the Replacement Alternative would cause disproportionately high adverse effects on minority and/or low-income populations who live closer to the viaduct and the proposed detour routes as per Executive Order 12898 regarding environmental justice, as discussed in the following paragraphs.

The construction of Alternative 3 is estimated to take up to 4 years, and the viaduct would be fully closed during this time. As a result, traffic along the local street networks on both sides of the river would have to be rerouted away from the 6th Street Viaduct, which would increase the volume of motor vehicles on other streets within the project area (see Section 3.7 for a discussion of the detour routes and traffic impacts during construction). Residents living closer to the construction site, the detour routes, or the construction materials hauling routes would receive disproportionately high adverse effects from traffic congestion compared to the larger populations.

As indicated in Table 3.4-1, several businesses within the proposed project limits would need to be permanently relocated as a result of right-of-way (ROW) acquisition. Based on the results of the business survey (Table 3.4-2), owners of potentially affected properties are either public agency or privately owned businesses. None of the privately owned business owners identified themselves as being minority owners; therefore, environmental justice impacts are not anticipated.

Relocation of the businesses described above could also cause low-income and likely predominantly minority workers (note that accurate information regarding the racial composition of workers is not available) to lose their jobs. With the current economic downturn countrywide, these workers would bear some difficulty in finding new jobs locally without having to relocate or travel great distances.

Based on the Draft Relocation Impact Report[47] for this proposed project, there appears to be adequate space within the Community Redevelopment Agency of the City of Los Angeles (CRA/LA) Central Redevelopment Project area for potentially impacted businesses to relocate. The affected business owners would be offered relocation benefits to the extent allowed by law in accordance with the provisions of the Uniform Act.

Alternative 3 would not require any temporary or permanent residential displacements; therefore, no minority or low-income residents would be relocated.

[47] Draft Relocation Impact Report 6th Street Viaduct Seismic Improvement Project. June 2008.

3.5.3.2 Permanent Impacts

Alternative 1 – No Action

With the No Action Alternative, there would be no impacts to local residents or area business owners. Environmental justice impacts as a result of viaduct collapse and closure would be speculative and are not assessed as part of this EIR/EIS.

Alternative 2 – Retrofit

No disproportionately high and adverse effects on minority or low-income populations would occur on a permanent basis under Retrofit Alternative implementation.

Alternative 3 – Replacement

The project does not propose construction of additional traffic lanes on the viaduct; therefore, there would be no long-term (i.e., postconstruction) traffic volume increase to the Boyle Heights and downtown industrial area as a result of Alternative 3.[48] Although Alternative 3 proposes to construct a wider viaduct, this is to provide standard sidewalks, shoulders/bikeways, and a safety median. If built, the new viaduct and future redevelopment of the surplus land could add quality of life values to the local communities. This alternative could be considered to provide a higher benefit to area residents than the larger population.

Based on the above discussion and analysis, the proposed operation of the replacement viaduct (Alternative 3) would not cause disproportionately high and adverse effects on minority or low-income populations.

3.5.3.3 Cumulative Impacts

Alternative 1 – No Action

Implementation of the No Action Alternative would not cause disproportionately high and adverse effects on minority and/or low-income populations on a cumulative basis. No cumulative impacts would occur.

Alternative 2 – Retrofit

Implementation of the Retrofit Alternative would not cause disproportionately high and adverse effects on minority and/or low-income populations on a cumulative basis. No cumulative impacts would occur.

Alternative 3 – Replacement

Alternative 3 would replace the existing, seismically vulnerable, viaduct with a new structure built to current seismic codes. This would provide a cumulative public safety benefit to the

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[48] Traffic Analysis Report 6th Street Viaduct Seismic Improvement Project. December 2007.

community in combination with other seismic improvements to transportation infrastructure and buildings that have been made in the region. In addition, the new wider viaduct would provide improved vehicular, pedestrian, and bicycle travel, benefitting the nearby community as well as regional travelers. No cumulative impacts pertaining to environmental justice are anticipated.

3.5.3.4 Secondary Impacts

No secondary impacts pertaining to environmental justice have been identified with implementation of any of the proposed project alternatives.

3.5.4 Avoidance, Minimization, and Mitigation Measures

Alternative 1 – No Action

No mitigation is required under this alternative.

Alternative 2 – Retrofit

The following mitigation measures would be implemented to minimize disproportionately high and adverse impact to the area residents:

- The City of Los Angeles would develop a construction staging plan and TMP in close coordination with the members of the Downtown Construction Traffic Management Committee and with agencies or developers responsible for other planned projects in the immediate vicinity of the proposed project to minimize direct and cumulative construction impacts on the community. The TMP would also identify and provide alternate traffic detour routes, construction materials hauling routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.
- The construction contractor would be required to adhere to the requirements of existing rules and regulations set forth by the South Coast Air Quality Management District (SCAQMD), as outlined in Section 3.15.4 of this Draft EIR/EIS.
- The construction contractor would be required to implement equipment noise control and administrative measures outlined in Section 3.16.4 of this Draft EIR/EIS.

Alternative 3 – Replacement

In addition to the mitigation measures described under Alternative 2 above, the City would implement the following measures to further minimize impacts to the area residents as a result of Alternative 3 implementation.

- Implement mitigation measures proposed in Section 3.7.4 to minimize impacts at 2 of the 13 affected intersections. The rest of the impacted intersections could not be mitigated without causing further ROW impacts. These two mitigation measures consist of:
  - Install new traffic signals at the intersection of 4th Street and I-5 SB on-/off-ramps/ Gertrude Street, and connect to Los Angeles City ATSAC system.
  - Restripe to add an EB right-turn lane at the intersection of 4th Street and Soto Street.
- The City of Los Angeles would actively participate in the community planning process to redevelop the vacated area around the 6th Street Viaduct with consideration to provision of recreational, retail, cultural, or other amenities through the planning process.
- The City of Los Angeles would provide landscape and streetscape improvements to enhance the aesthetics of the affected intersections along the proposed detour routes.
- The City of Los Angeles would actively participate in implementation of the LARRMP to improve the area near the 6th Street Viaduct to the extent feasible, in accordance with the Greening Concept objectives set forth in the Master Plan.

In addition to the above mitigation measures, area residents and businesses would benefit in the long term from the new, seismically safe viaduct and potential greening/redevelopment opportunities on vacated land adjacent to and under the new wider viaduct. Figures 3.5-1 through 3.5-3 show the areas where existing buildings would be either partially or fully removed to provide ROW for the new viaduct construction. The surplus vacated areas could potentially be redeveloped with new facilities such as recreational, retail, and cultural amenities. Examples of redevelopment opportunities suggested by area residents during public outreach meetings for the proposed project included making the viaduct a landmark destination, connecting the bridge with the river, eliminating the homeless area underneath the viaduct, and providing more green space in the area. Implementation of such redevelopment around the viaduct would provide long-term benefits to local residents. The new viaduct would be designed to accommodate the future addition of elevators to afford access to river trails if they are developed by the City under the Los Angeles River Revitalization Master Plan (LARRMP). Access to the redevelopment areas around the new viaduct would also be available on local streets, such as Mateo Street and Santa Fe Avenue west of the river and Mission Road and Anderson Street east of the river.

It should be noted that land immediately adjacent to the 6th Street Viaduct is zoned for heavy industrial uses. Future redevelopment of the vacated land resulting from the proposed replacement alternative would have to go through the planning process established by the City of Los Angeles Planning Department. Impacts from potential redevelopment of the surplus vacant land are beyond the scope of this project.

LEGEND

Replacement Alignments Under Consideration

Potential Open Space from building removal; extent subject to adjustment during project design phase. (*preliminary information on potentially affected properties provided by Moffatt and Nichol*)

Note: Potential greening area also includes areas underneath the new viaduct structure.

Figure 3.5-1
Potential Open Space
Under Each Replacement Alternative

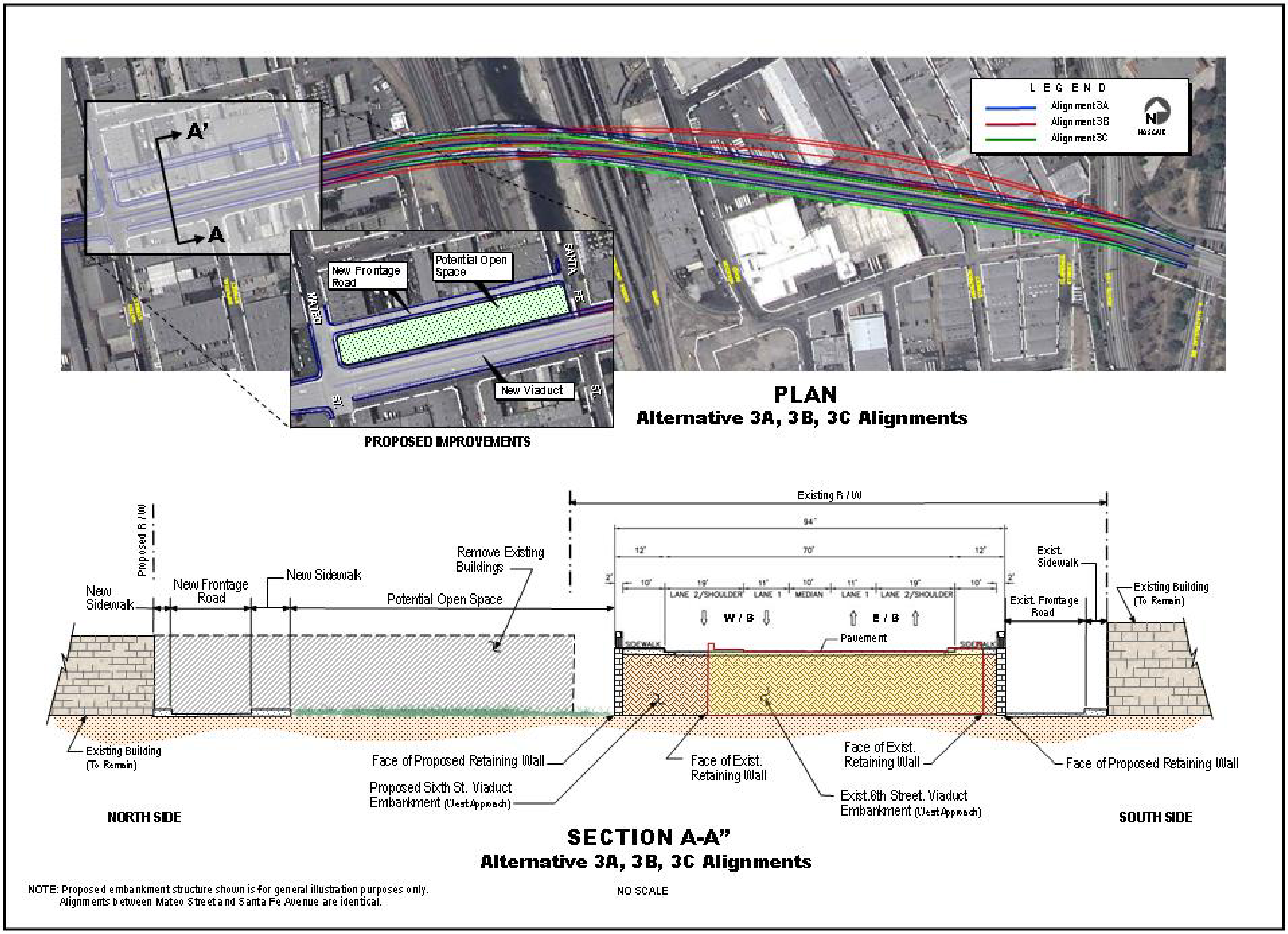
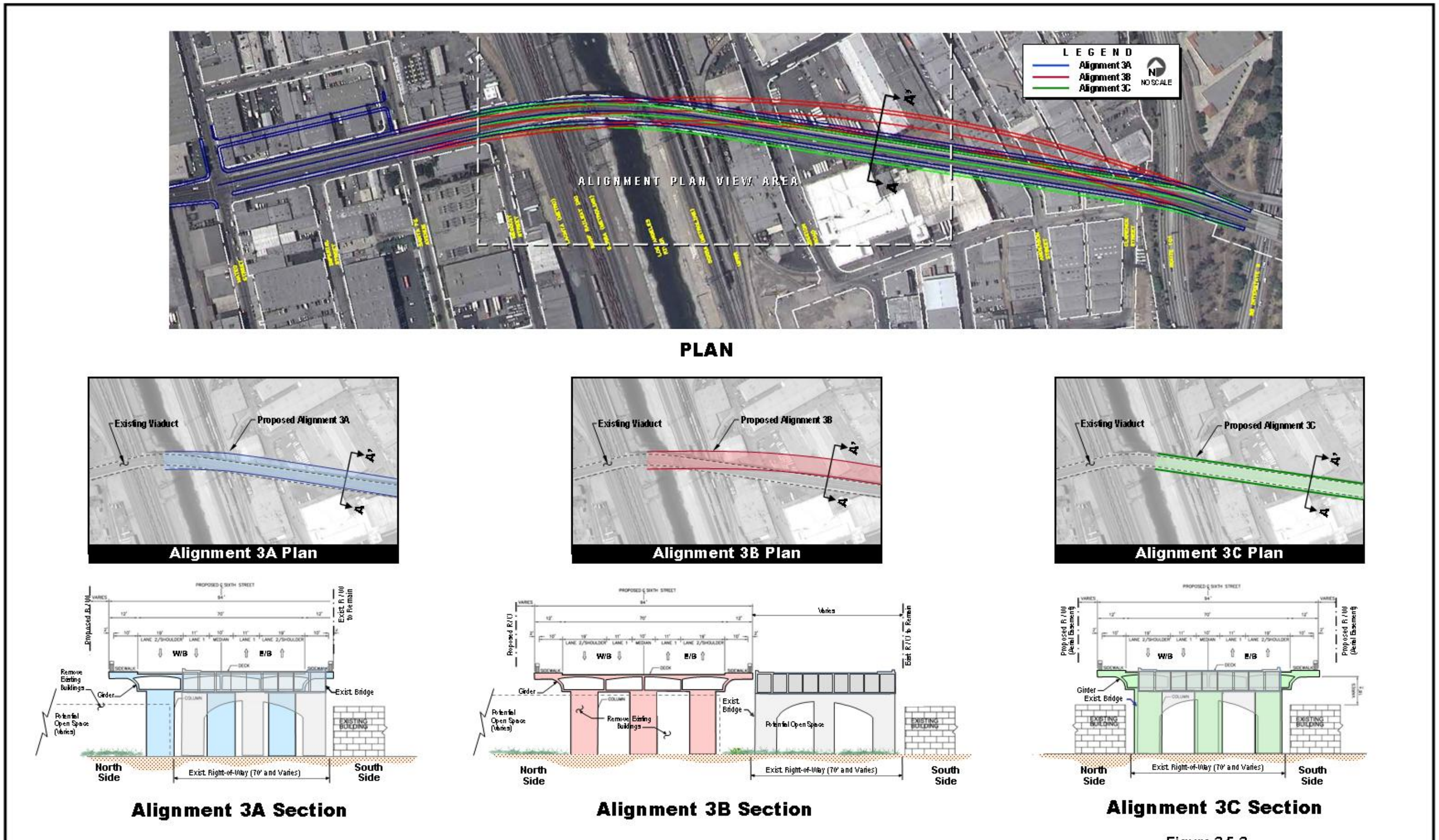


Figure 3.5-2 Typical Cross-Section of the Proposed New Viaduct – West Approach



NOTE: Proposed bridge structure shown is for general illustration purposes only. Actual structure will differ according to various bridge designs.

Figure 3.5-3
Generalized Cross-Section of the Proposed New Viaduct
East Side of the Los Angeles River

Where replacement or relocation is required, federally mandated relocation benefits would be provided to the affected residents and business owners in accordance with the Uniform Act. Property owners would receive fair and just compensation. All benefits and services would be provided equitably to all affected parties without regard to race, color, religion, age, national origin, and disability, as specified under Title VI of the Civil Rights Act of 1964.

Loss of employment would be partially offset by unemployment insurance.

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3.6 Utilities and Emergency Services

This section addresses potential impacts to public utilities and emergency services that would result from construction and operation of the proposed project. Public utilities include electricity, natural gas, water and wastewater facilities, storm drains, telecommunications, oil pipelines, and solid waste disposal. Emergency services include law enforcement, fire protection, and ambulance service. For each of the utilities and service systems discussed, existing infrastructure, levels of service, and capacity are described.

3.6.1 Affected Environment

The study area for utilities and emergency services impact assessment includes the area immediately adjacent to the 6th Street Viaduct and surrounding area that is likely to experience increased vehicle movements associated with construction-related detour traffic. The potentially affected area is generally bound by 1st Street to the north, 7th Street to the south, Central Avenue to the west, and Soto Street to the east.

3.6.1.1 Utilities

Electricity

The Los Angeles Department of Water and Power (LADWP) currently supplies electricity to the study area. LADWP owns and operates several overhead and underground transmission and distribution lines in the project area. One 230-kilovolt (kV) underground transmission line runs along the North Frontage Road and two 230-kV underground lines run along the South Frontage Road from Mateo Street to a substation yard on Santa Fe Avenue just south of South Frontage Road. LADWP poles located along the North and South Frontage Roads support 34.5-kV overhead electrical transmission lines from Mateo Street toward Santa Fe Avenue. Along both sides of the river embankment, four transmission towers are located within the vicinity of the 6th Street Viaduct, two each on the north and south sides of the viaduct (see Figure 1-3). The closest tower to the south is located on the east bank approximately 45 ft from the southern edge of the viaduct, and the closest tower on the north side is located on the west bank approximately 104 ft from the northern edge of the viaduct. In addition, electrical conduits and overhead lines run along the same alignment as the transmission lines, as well as along the streets that intersect the viaduct from Mateo Street to Clarence Street. The 6th Street Viaduct is also lined with lampposts owned by the City of Los Angeles (City).

Natural Gas

The Southern California Gas Company supplies natural gas to the project area. There are approximately 13 gas distribution pipelines within the project area, 3 of which are abandoned. The gas lines are owned and operated by the Southern California Gas Company. Two active lines run along the 6th Street Frontage Roads – a 6-inch line at the South Frontage Road and a 4-inch line at the North Frontage Road from Mateo Street to Santa Fe Avenue. The remaining gas lines in the project area are mostly located under the viaduct at the intersecting streets (i.e., Mateo Street, Imperial Street, Santa Fe Avenue, Mesquit Street, Mission Road, Anderson Street, and Clarence Street).

Water

LADWP provides domestic water to the project area. Three active water lines run along the Frontage Roads – an 8-inch line on the North Frontage Road and a 6-inch line and 8-inch line on the South Frontage Road, respectively. There is also a 6-inch abandoned water line along South Frontage Road. These four lines run from Mateo Street eastbound (EB) ending at the intersection with Mesquit Street. There is also an active 8-inch water line that runs from Clarence Street to the east and under the viaduct.

There are four additional active water lines that cross under the viaduct at the intersections with Santa Fe Avenue (8-inch line), Mission Road (8-inch line), Anderson Street (8-inch line), and Clarence Street (12-inch line).

Storm Drains

The City owns and operates the storm drain systems in the study area, and the United States Army Corp of Engineers (USACE) owns the Los Angeles River Channel. The stormwater flows generated in the study area ultimately discharge into the Los Angeles River. For the area under the viaduct and west of the Los Angeles River, two storm drain lines (15-inch-diameter and 36-inch-diameter) appear to collect locally generated flows. The 15-inch storm drain located at the corner of Mateo Road discharges into a 36-inch line, which is tributary to the 97-inch storm drain sewer No. 3. The 36-inch storm drain, which appears abandoned, runs from Mateo Street along the South Frontage Road toward a manhole east of Mesquit Street and west of the Los Angeles River, and finally discharges to the river channel.

The area north of the viaduct and east of the river channel is a mostly industrial area that is served by two major drain lines: a 30-inch line running north to south along Mission Road and a 42-inch line running along Clarence Street and discharging into a 62-inch trunk line at the intersection with Jesse Street. The 62-inch storm drain also collects the flows conveyed by two large pipes draining areas north of the viaduct and west of US 101.

Wastewater

The City of Los Angeles Bureau of Sanitation provides wastewater and sanitary sewer services for the project area. There are 10 active sewer lines within the project limits. An 8-inch line serves the North Frontage Road, and two 8-inch lines serve the South Frontage Road from Mateo

Street to Santa Fe Avenue prior to connecting to a 36-inch main sewer line at Santa Fe Avenue. There is also one 8-inch abandoned sewer line underneath the viaduct from Mateo Street to Santa Fe Avenue. Sewage flows generated by the industrial area north of the viaduct at Mission Road are transported via a large twin-concrete siphon conduit crossing under the Los Angeles River bed to the west bank of the river and continue to join the 36-inch main at Santa Fe Avenue. The project area east of the river channel at the intersection with Mission Road, Anderson Street, and Clarence Street includes large sewer pipes (60-inch, 10-inch, and 12-inch-diameter lines, respectively), all flowing in a southerly direction.

Telephone, Cable, and Fiber Optics

Multiple telephone, cable, and fiber-optic lines are located in the study area. These facilities run above and below the ground, along the viaduct sidewalk, and along South Frontage Road and Mesquit Street. The following companies own and operate telephone, cable, and/or fiber-optic lines in the project area.

- AT&T
- Bell System
- Western Union

Solid Waste

The City of Los Angeles Bureau of Sanitation provides curbside pickup for solid waste within the project study area. Regional planning for solid waste facilities in the area is under the jurisdiction of Los Angeles County, which is the local enforcement agency under integrated waste management laws. The Los Angeles County Sanitation District oversees the operation of landfills that would accept solid waste generated during construction of the proposed project. The County and City encourage source reduction and recycling objectives that meet or exceed the requirements of State Assembly Bill (AB) 939. AB 939 mandates a 50 percent reduction in waste volumes from 1990 levels by 2010. The Solid Waste Resources Citywide Recycling Division of the Bureau of Sanitation provides guidance for the recycling of construction and demolition debris. In addition, hazardous waste can be landfilled or recycled at several facilities throughout the state. Any hazardous waste generated within the study area is managed in accordance with federal and state requirements. The nearest landfill to the proposed project site is Puente Hills Landfill, which is located in the City of Industry. The newly opened Puente Hills Material Recovery Facility is at the same location and could be used for material recycling purposes.

Other

A USACE tunnel is located under the 6th Street Viaduct on the west side of the river. It provides access to the Los Angeles River from the frontage road on the south side of the viaduct at the

Santa Fe Avenue intersection. In addition, a drainage network placed underneath the concrete-lined Los Angeles River channel was built by USACE.

3.6.1.2 Railroads

Railroad corridors exist along the east and west banks of the river. On the west bank of the river, the two tracks closest to the river are owned by Southern California Regional Rail Authority (SCRRA) and are used primarily by Metrolink trains. The five tracks west of the SCRRA tracks are owned by Burlington Northern Santa Fe (BNSF), and the rest of the tracks are owned and operated by the Los Angeles County Metropolitan Transportation Authority (MTA). Amtrak also operates trains on a BNSF track and an MTA track on the west bank. On the east bank, the two tracks closest to the river are owned by SCRRA, while Metrolink and the Union Pacific Railroad (UPRR) use those tracks. The remainder of the ten tracks are owned by UPRR and utilized by UPRR and Ventura Foods Spur.

3.6.1.3 Emergency Services

The project study area is under the jurisdiction of the Los Angeles Police Department (LAPD) Central Bureau. The project area west of the Los Angeles River is served by the Central Area Community Police Station, which is located approximately 1-mile west of the proposed project. The project area east of the Los Angeles River is served by the Hollenbeck Community Police Station, which is located approximately 2 miles northeast of the project site.

The Los Angeles Fire Department (LAFD) provides fire protection and other emergency services throughout the project area. Two fire stations are located near the proposed project: LAFD #9, which is located approximately 1-mile west of the project site, and LAFD #25, which is located approximately 2 miles east of the project site.

Table 3.6-1 lists the locations of the police and fire stations serving the project area.

Table 3.6-1
Emergency Response Providers in the Project Study Area

Emergency Provider	Location
Central Community Police Station	251 E. 6th Street, Los Angeles, CA 90014
Hollenbeck Community Police Department	1936 E. 1st Street, Los Angeles, CA 90033
Los Angeles Fire Station #9	430 E. 7th Street, Los Angeles, CA 90014
Los Angeles Fire Station #25	2927 Whittier Boulevard, Los Angeles, CA 90023

Source: Community Impact Assessment (Parsons, 2008b).

3.6.2 Environmental Consequences

3.6.2.1 Construction Impacts

Alternative 1 – No Action

Under this alternative, there would be no construction activities on the viaduct or its vicinity; therefore, there would be no temporary impacts to utilities and emergency services within the project study area as long as the viaduct is in operation.

Alternative 2 – Retrofit

Utilities

Construction of Alternative 2 could result in temporary impacts to utilities, such as an increase in utility demand and solid waste volume. Construction activities would utilize machinery and tools that require more electrical power consumption than is currently used for the 6th Street Viaduct, local streets, and affected properties. This increase in electrical usage would be temporary, and the contractor would be able to tap into the City of Los Angeles' existing power grid or would generate power onsite. Construction activities for Alternative 2 would not cause a substantial increase in the existing demand for electricity or require the development of new sources.

Construction of Alternative 2 would involve foundation work that would require temporary relocation of many underground utility lines, such as sewer pipes and storm drain lines. The City of Los Angeles would work in close coordination with the utility providers to develop a relocation plan to minimize possible impacts and disruption to service utilities.

Construction of the Retrofit Alternative is not expected to result in a large amount of solid waste. No impacts to local solid waste facilities are anticipated.

Emergency Services

Construction of Alternative 2 would require some traffic lane closures on the viaduct and nearby roadways along the viaduct footprint, including the frontage roads on each side of the Los Angeles River. In addition, temporary closure of the viaduct may be required occasionally to accommodate construction activities. During the proposed project construction period, delays in emergency response time could occur due to roadway obstruction and partial roadway closure. A mandatory Work Area Traffic Control Plan (WATCP) outlined in the Standard Specifications for Public Works Construction and the Work Area Traffic Control Handbook, adopted by the City, would be implemented at the construction site and its vicinity. In addition, a Traffic Management Plan (TMP) would be prepared by the contractor to identify roadway closures and detour routes within the affected area during construction. All affected emergency routes would be identified in the TMP. The TMP would be reviewed and approved by LADOT before initiation of construction activities. The approved TMP, along with viaduct construction schedules, would be made available to LAPD and LAFD. All residents, businesses, and organizations within the affected area would also be notified in advance of the construction schedules, roadway closures, and detour routes as a safety precaution. The approved TMP would be strictly implemented during each phase of the project to avoid adverse impacts to emergency services within the area.

Railroads

Construction of Alternative 2 would result in potential periodic shutdown of some railroad tracks on each side of the river to modify existing bent columns and foundations, and to construct shear walls. Interruptions of railroad activity would be temporary and scheduled to accommodate their continuing use. Table 3.6-2 summarizes anticipated impacts to railroad operations due to the proposed construction activities. Bent 12 would be excluded from retrofitting because of the lack of room available for construction of the column encasement due to the proximity to the railroad tracks. Written construction agreements would be entered into with the railroad companies. Close coordination with the railroad owners to gain agreement on allowable work near the railroads during periods when they are not in operation and avoidance of track closures would minimize the impacts to railroad operations.

Table 3.6-2
Potential Impacts to Railroads under Retrofit Alternative

Railroad Facility	Existing Condition	Owner/Operator	Potential Impact
Railroad (West Bank)	First and second tracks starting from west side (both tracks are electrified Yard Tracks)	MTA	Potential periodic or long-term shut down of yard track #2 to modify existing Bent #11 columns, foundation, and add shear wall.
Railroad (West Bank)	Third through seventh tracks starting from west side. Most westerly track in this group of tracks is also used by Amtrak trains. Fourth and fifth tracks are primarily used as storage tracks. Sixth and seventh tracks are used as storage tracks and for yard train movements.	BNSF Railway	Potential periodic or long-term shut down of track #3 (also being used by Amtrak) to modify existing Bent #11 columns, foundation and add shear wall.
Railroad (West Bank)	Third track starting from west side.	Amtrak (operates on BNSF most westerly track)	Potential periodic or long-term shut down of track #3 (also being used by BNSF) to modify existing Bent #11 columns foundation, and add shear wall.
Railroad (West Bank)	Eighth and ninth tracks starting from west side are used primarily by Metrolink trains. BNSF is using these tracks for accessing the BNSF yard tracks.	SCRRA (Metrolink)	Potential periodic or long-term shut down of track #9 to modify existing west bank pier foundation and add shear wall.
Railroad (East Bank)	First and second tracks starting from west side are primarily used by Metrolink trains. UPRR is using these tracks for accessing the UPRR yard tracks and for some through train movements from the Los Angeles/Long Beach area destined for North Carolina or Seattle.	SCRRA (Metrolink)	Potential periodic or long-term shut down of track #1 to modify existing east bank pier foundation and add shear wall.

Table 3.6-2
Potential Impacts to Railroads under Retrofit Alternative

Railroad Facility	Existing Condition	Owner/Operator	Potential Impact
Railroad (East Bank)	Third through ninth track starting from west side, third and fourth tracks seems to be primarily used for local through movements of UPRR trains, fifth through eighth tracks are used as storage tracks, and ninth rack is collector track for various industry spurs.	UPRR	No impact (no retrofit is proposed for existing Bent # 12 located within UPRR tracks area).
Railroad (East Bank)	Tenth track (industry spur) starting from west side, north end of the track ends just below the southern portion of the existing bridge. This track primarily serves Ventura Foods, Inc.	UPRR/Ventura Foods Spur	Potential long-term shut down and removal of north end of the track #10 from west side (which serves Ventura Foods, Inc.) to modify existing Bent #13 columns foundation, and add shear wall.

Alternative 3 – Replacement

Utilities

Similar to Alternative 2, construction of Alternative 3 would result in temporary impacts to utilities, such as an increase in utility demand and solid waste volume, but to a greater extent due to the larger scope of construction work and construction area involved; however, temporary incremental impacts to local or regional energy supplies, or change in the efficiency of energy usage can be anticipated.

Construction of Alternative 3 would involve foundation work that would affect some underground utility lines. This impact could be minimized by locating the columns and foundations to avoid conflicts with utility lines where feasible, such as the tunnel, sewer lines, and overhead power transmission lines. Where avoidance is not possible, the City of Los Angeles would work in close coordination with the utility providers to develop a relocation plan to minimize possible impacts and disruption to service utilities. For example, construction of Bridge Concept 4 on any alignment alternative and Concept 5 on Alignment 3B would impact the existing sewer siphon located on the north side of the viaduct on the west side of the river. In addition, construction of the new viaduct would require reconstruction of some of the 45-ft section of USACE's river access tunnel.

Construction activities associated with Alternative 3 would require demolition of the existing viaduct, thus generating a large amount of solid waste (see Section 2.4.3.6). Solid waste that remains after recycling would be disposed of at appropriate landfills within the region. Any hazardous waste produced by construction activities would be properly handled and disposed of, as discussed in Section 3.14 – Hazardous Waste/Materials.

Emergency Services

Construction of Alternative 3 would require closure of the existing viaduct for up to 4 years, resulting in delays in emergency response time. The Contractor would work closely with LAPD and LAFD to notify them in advance of the proposed detour routes on the east and west sides of the Los Angeles River. In addition, implementation of the mandatory Work Area Traffic Control Plan (WATCP) and the Traffic Management Plan (TMP) to be developed for implementation, as described in Section 3.3.4, would seek to minimize the impacts to emergency services at locations in close proximity to the construction site.

Railroads

Construction of Alternative 3 would require demolition of the existing viaduct, including the columns in the railroad track area, and construction of falsework and new foundations. Construction of falsework and foundations could affect the railroad operations on both sides of the river; however, impacts to railroad operations under this alternative would be less than with the Retrofit Alternative since the new viaduct would be designed to span over the railroad tracks. Table 3.6-3 summarizes anticipated impacts to railroad operations due to the proposed construction activities. Written construction agreements would be negotiated with the railroad companies by the City and be binding upon the Contractor. Close coordination with the railroad owners to gain agreement on allowable work near the railroads during periods when they are not in operation and avoidance of track closures would minimize the impacts to railroad operations.

3.6.2.2 Permanent Impacts

Alternative 1 – No Action

No direct impacts to utilities and emergency services would occur within the study area under the No Action Alternative.

Alternative 2 – Retrofit

Utilities

Operation of Alternative 2 would not require a substantial increase in utility usage. No permanent impacts would occur.

Emergency Services

No fire or police facilities would be displaced for construction of the proposed project. The proposed project is not growth-inducing; therefore, it would not create a need for additional fire and police protection facilities. No permanent adverse impacts to fire and police protection would occur.

Table 3.6-3
Potential Impacts to Railroads under Replacement Alternative

Railroad Facility	Existing Condition	Owner/ Operator	Potential Impact		
			Alignment 3A	Alignment 3B	Alignment 3C
Railroad (West Bank)	First and second tracks starting from west side (both tracks are electrified Yard Tracks)	MTA	• During demolition and reconstruction, falsework and platform installation work would be done during railroad-approved work windows and in presence of a flagger assigned by MTA. • Demolition of existing Bent #11 would have to be performed during approved work windows on Track #2.	Same as Alignment 3A	Same as Alignment 3A
Railroad (West Bank)	Third through seventh tracks starting from west side. Most westerly track in this group of tracks is also used by AMTRAK trains. Fourth and fifth tracks are primarily used as storage tracks. Sixth and seventh tracks are used as storage tracks and for yard train movements.	BNSF Railway	• Loss of track #6 during demolition to support the platform falsework. • During demolition and reconstruction, falsework and platform installation work would be done during railroad-approved work windows and in presence of a flagger assigned by BNSF. • Demolition of existing Bent #11 would have to be performed during approved work windows on Track #3.	Same as Alignment 3A	Same as Alignment 3A
Railroad (West Bank)	Third track starting from west side	AMTRAK (operates on BNSF most westerly track)	• During demolition and reconstruction, falsework and platform installation work would be done during railroad-approved work windows and in presence of a flagger assigned by BNSF. • Demolition of existing Bent #11 would have to be performed during approved work windows on Track #3.	Same as Alignment 3A	Same as Alignment 3A
Railroad (West Bank)	Eighth and ninth tracks starting from west side are used primarily by Metrolink trains. BNSF is using these tracks for accessing the BNSF yard tracks.	SCRRA (Metrolink)	• During demolition and reconstruction, falsework and platform installation work would be done during railroad-approved work windows and in presence of a flagger assigned by SCRRA. • Shoring may be required to support track #9 during existing west pier foundation removal and during construction of new pier bent. • Battered piles may be required at the river bank pier foundations for Alternatives 3A1 and 3A3, extending below the railroad ROW. • Demolition of existing west bank Pier would have to be performed during approved work windows on Track #9.	Same as Alignment 3A	Same as Alignment 3A

Table 3.6-3
Potential Impacts to Railroads under Replacement Alternative

Railroad Facility	Existing Condition	Owner/ Operator	Potential Impact		
			Alignment 3A	Alignment 3B	Alignment 3C
Railroad (East Bank)	First and second tracks starting from west side are primarily used by Metrolink trains. UPRR is using these tracks for accessing the UPRR yard tracks and for some through train movements from Los Angeles/Long Beach area destined for North Carolina or Seattle.	SCRRA (Metrolink)	• During demolition and reconstruction, falsework and platform installation work would be done during railroad-approved work windows and in presence of a flagger assigned by SCRRA. • Shoring may be required to support track #1 from west side during existing east pier foundation removal and during construction of new pier bent. • Battered piles may be required at the river bank pier foundations extending below the railroad ROW. • Demolition of existing east bank Pier would have to be performed during approved work windows on Track #1.	Same as Alignment 3A	Same as Alignment 3A
Railroad (East Bank)	Third through ninth track starting from west side, Third and fourth tracks seem to be primarily used for local through movements of UPRR trains, fifth through eighth tracks are used as storage tracks, and ninth track is collector track for various industry spurs.	UPRR	• Loss of track #7 during demolition to support the platform falsework. • During demolition and reconstruction, falsework and platform installation work would be done during railroad-approved work windows and in presence of a flagger assigned by UPRR. • Demolition of existing Bent #12 would have to be performed during approved work windows on Tracks #4 and #5.	Same as Alignment 3A	Same as Alignment 3A
Railroad (East Bank)	Tenth track (industry spur) starting from west side, north end of the track ends just below the southern portion of the existing bridge. This track primarily serves Ventura Foods, Inc.	UPRR/Ventura Foods Spur	• During demolition and reconstruction, falsework and platform installation work would be done during railroad-approved work windows and in presence of a flagger assigned by UPRR. • Demolition of existing Bent #13 and reconstruction of new bent would require removal of the north end of track #10 from west side, which serves Ventura Foods, Inc.	Same as Alignment 3A	Same as Alignment 3A

Railroads

Construction of Alternative 2 would result in reducing horizontal clearance between the existing tracks and the retrofitted columns of the viaduct. The current horizontal clearance between the center of the tracks and the columns is approximately 8 ft, which is less than the current standard of 8.5 ft required by BNSF and 10 ft required by Metrolink. Implementation of the proposed heavy steel casing column retrofit would further reduce the horizontal clearance by approximately 1 ft. This impact is adverse and unavoidable.

Alternative 3 – Replacement

Utilities

Operation of Alternative 3 would not require an appreciable increase in utility usage. Although lighting levels may be increased above existing conditions due to the need to meet current lighting standards, the additional electricity required would not represent a substantial demand on local supplies when compared to the regional capacity provided by LADWP. No permanent impacts would occur.

Emergency Services

No fire or police facilities would be displaced for construction of the proposed project. The proposed project is not growth-inducing; therefore, it would not cause a need for additional fire and police protection facilities. No permanent adverse impacts to fire and police protection would occur.

Railroads

Once construction of the proposed project is completed, except for routine maintenance of the viaduct, no impacts to railroad operations are anticipated.

3.6.2.3 Cumulative Impacts

Alternative 1 – No Action

No cumulative impacts on utility service facilities, emergency services, or railroads would occur with the No Action Alternative.

Alternative 2 – Retrofit

Although many service utilities would be affected by the construction activities, they are confined within the area adjacent to the existing viaduct footprint. Once they are relocated or reconstructed, no cumulative effects to other service utilities, emergency services, or railroads would occur.

Alternative 3 – Replacement

Although many service utilities and railroads would be affected by the construction activities, they are located only within the project construction area. Once they are relocated or reconstructed, no cumulative effects to other service utilities and railroads would occur; however, impacts to emergency services under the replacement alternative would occur to a larger area covering the detour routes on each side of the river during the construction period due to the required viaduct closure.

3.6.2.4 Secondary Impacts

Alternative 1 – No Action

No secondary impacts on utility service facilities, emergency services, or railroads would occur with the No Action Alternative.

Alternative 2 – Retrofit

Once construction is complete, no secondary impacts on utility service facilities, emergency services, or railroads would occur with the implementation of Alternative 2.

Alternative 3 – Replacement

Once construction is complete, no secondary impacts on utility service facilities, emergency services, or railroads would occur with the implementation of Alternative 2.

3.6.3 Avoidance, Minimization, and Compensation Measures

Alternative 1 – No Action

No mitigation is required under this alternative.

Alternative 2 – Retrofit

The proposed project would be designed to avoid adverse effects to existing service utilities, emergency services, and railroad operations. Bent 12 would not be retrofitted due to the limited room available for construction. The requirement for close coordination with the utility service providers in advance of the construction activities to relocate affected utilities is one component of the Standard Specifications. Temporary impacts to emergency services within the project area would be minimized by implementation of the WATCP, mandated by the City, and the provision of advance notice to emergency service providers of the construction schedule, especially the scheduled traffic lane closures that could happen occasionally.

Written construction agreements would be entered into with the railroad companies. Close coordination with the railroads' owners or operators to work on the railroad during the period when the railroad is not in operation and to avoid track closures would minimize the impacts to railroad operations.

No measures are available to mitigate the reduction in horizontal railroad clearance if Alternative 2 is implemented.

Alternative 3 – Replacement

Impacts to utility services and railroads would be mitigated in a similar fashion as that described under Alternative 2. Impacts to emergency services within the affected area (i.e., project vicinity and detour routes) would be minimized by implementation of the City-mandated WATCP, the TMP that would outline the detour routes, and the provision of advance notice to emergency service providers of construction schedule closures of the viaduct. In addition, the affected intersections along the detour routes would be mitigated as determined practicable by LADOT, as discussed in Section 3.7 – Traffic and Transportation/Pedestrian Facilities.

In compliance with AB 939, a demolition waste recycling program would be developed to reduce the amount of waste to be disposed of in local landfills. The program would be developed by the City prior to initiation of construction, and it would be implemented by the Contractor during demolition activities.

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3.7 Traffic and Transportation/Pedestrian Facilities

This section addresses potential impacts to vehicular traffic and circulation associated with implementation of the proposed project. The traffic and circulation impact analysis is based on the results of a traffic study conducted for the project.[49]

3.7.1 Regulatory Setting

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

Caltrans is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

3.7.2 Affected Environment

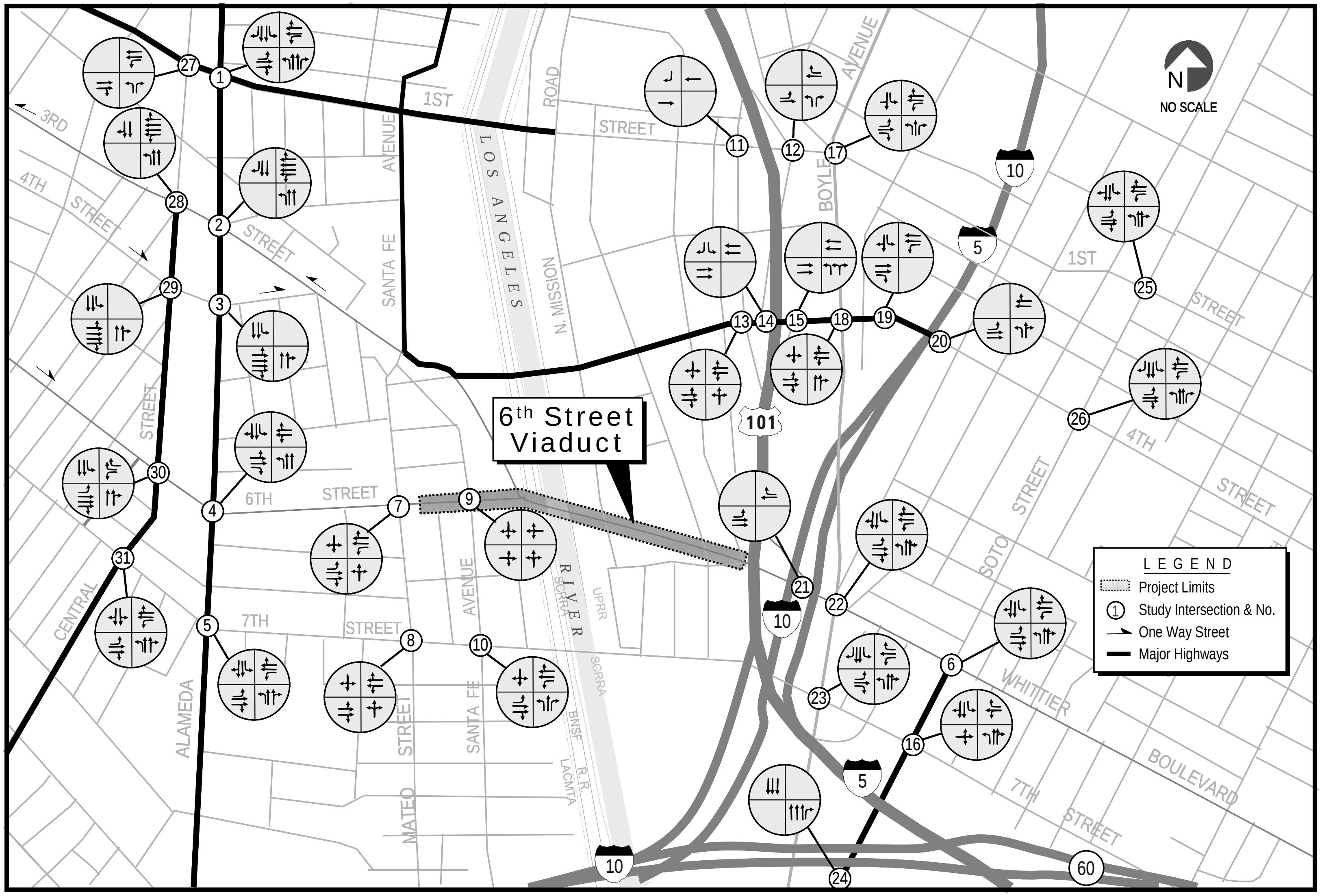
3.7.2.1 Study Area Definition

The 6th Street Viaduct provides a major link between downtown Los Angeles and various communities on the east side of the Los Angeles River. In the project vicinity, 6th Street/Whittier Boulevard is directly connected to four major north-south streets – Central Avenue and Alameda Street located to the west of the viaduct and Boyle Avenue and Soto Street located to the east. Sixth Street is connected to US 101 through a northbound (NB) on-ramp immediately east of the project limit. The area surrounding the project area is fully developed with residential, commercial, and industrial buildings. Figure 3.7-1 shows the project area and surrounding roadway and intersection system.

3.7.2.2 Existing Roadway System

Classifications and descriptions of the existing roadways within the study area, as defined by the Los Angeles Department of Transportation (LADOT), are summarized below.

[49] Traffic Analysis Report for 6th Street Viaduct Seismic Improvement Project. December 2007.



Source: Modified from Traffic Analysis Report, (ACT Consultant, 2007)

Figure 3.7-1 Traffic Study Intersections and Existing Lane Configurations

East-West Streets

1^{st} Street – First Street is designated as a Major Highway west of the Los Angeles River and a Secondary Highway east of the river. It has two lanes in each direction, except at certain sections between Mission Road and US 101 that were striped to one lane in each direction due to ongoing construction activities, and left-turn pockets at most signalized intersections. First Street is the northern boundary of the project study area. The posted speed on 1^{st} Street is 25 miles per hour (mph). The 1^{st} Street Viaduct spans over the Union Pacific Railroad (UPRR), the Los Angeles River, and the Burlington Northern Santa Fe (BNSF) Railway facilities. The 1^{st} Street Viaduct and Street Widening Project is currently under construction in combination with the Gold Line Eastside Extension light rail transit line. Sections of the street were restriped to one lane in each direction, and intersection approach lanes were also reduced during construction. The 1^{st} Street construction work will be completed by 2010.

4^{th} Street – Within the project study area, 4^{th} Street is designated as a Major Highway between I-5 and Santa Fe Avenue. It is a Secondary Highway west of Santa Fe Avenue and east of I-5. Fourth Street has two lanes in each direction and a median lane allowing left turns during off-peak hours. The median lane operates as a reversible lane during peak periods. It provides an additional westbound (WB) through lane during the morning peak period and is reversed in the eastbound (EB) direction during the afternoon peak period. Fourth Street becomes a WB one-way street west of the intersection with 3^{rd} Street. The posted speed on 4^{th} Street is 35 mph. Within the project study area, 4^{th} Street carries more traffic than all three other east-west streets combined. The 4^{th} Street Viaduct spans over the MTA and UPRR tracks, the Los Angeles River, and the MTA and BNSF tracks.

6^{th} Street – Sixth Street is designated as a Secondary Highway within the project study area. It becomes Whittier Boulevard east of I-5. Sixth Street has two lanes in each direction and left-turn pockets at most signalized intersections. The posted speed on 6^{th} Street is 35 mph. The 6^{th} Street Viaduct spans over Santa Fe Avenue, the MTA and UPRR tracks, the Los Angeles River, the MTA and BNSF tracks, and US 101.

7^{th} Street – Seventh Street is a Secondary Highway within the project study area. It has two lanes in each direction and left-turn pockets at most signalized intersections. It is the southern boundary of the project study area. The posted speed on 7^{th} Street is 35 mph. The 7^{th} Street Viaduct spans over the MTA and UPRR tracks, the Los Angeles River, and the MTA and BNSF tracks.

North-South Streets

Central Avenue – Central Avenue is designated as a Major Highway, except for the segment north of 3rd Street, which becomes a Secondary Highway. It has two lanes in each direction and left-turn pockets at most signalized intersections. It is the western boundary of the project study area. The posted speed on Central Avenue is 35 mph. It is connected to the four east-west streets within the study area with signalized intersections.

Alameda Street – Alameda Street is designated as a Major Highway with two lanes in each direction and left-turn pockets at most signalized intersections. The posted speed on Alameda Street is 35 mph. It intersects with the four east-west streets within the study area with signalized intersections.

Mateo Street – Mateo Street is designated as a Secondary Highway with one lane in each direction. It is connected to 6th Street and 7th Street with signalized intersections and terminates at Santa Fe Avenue before crossing under the 4th Street Viaduct. Mateo Street is the first intersection with the 6th Street Viaduct west of the Los Angeles River. The posted speed on Mateo Street is 30 mph. It serves the warehouses and businesses in the area.

Santa Fe Avenue – Santa Fe Avenue is designated as a Secondary Highway south of 4th Street and becomes a Major Highway north of 4th Street. It has two lanes in each direction. It traverses under the viaducts of 1st Street, 4th Street, and 6th Street, and it connects with 7th Street via a signalized intersection. This street provides access to warehouses and light industrial land uses in the area. The posted speed on Santa Fe Avenue is 30 mph.

Boyle Avenue – Boyle Avenue is designated as a Secondary Highway with one lane in each direction and a central left-turn lane. It is connected to the four east-west streets within the study area with signalized intersections. The posted speed is 35 mph.

Soto Street – Soto Street is designated as a Major Highway south of 6th Street (Whittier Boulevard) and a Secondary Highway north of Whittier Boulevard. It has two lanes in each direction and left-turn pockets at most signalized intersections. Soto Street is the eastern boundary of the project study area. It intersects with the four east-west streets within the study area via signalized intersections. The posted speed on Soto Street is 35 mph.

Traffic Study Intersections

The traffic study analyzed 31 intersections, including several freeway on- and off-ramps. Intersection locations and control types are listed in Table 3.7-1.

Table 3.7-1
Studied Intersections

No.	Intersection	Control Type
1	1st Street and Alameda Street	Signal
2	3rd Street and Alameda Street	Signal
3	4th Street and Alameda Street	Signal
4	6th Street and Alameda Street	Signal
5	7th Street and Alameda Street	Signal
6	Whittier Boulevard and Soto Street	Signal
7	6th Street and Mateo Street	Signal
8	7th Street and Mateo Street	Signal
9	6th Street (Frontage Road) and Santa Fe Avenue	Signal
10	7th Street and Santa Fe Avenue	Signal
11	1st Street and US 101 SB Off-Ramps	Stop Sign
12	1st Street and US 101 NB On-/Off-Ramps	Signal
13	4th Street - Pecan Street/US 101 SB On-Ramp	Stop Sign
14	4th Street and US 101 SB Off-Ramp	Stop Sign
15	4th Street and US 101 NB Off-Ramp	Signal
16	7th Street and Soto Street	Signal
17	1st Street and Boyle Avenue	Signal
18	4th Street and Boyle Avenue	Signal
19	4th Street and I-5 SB On-/Off-Ramps/Gertrude Street	Stop Sign
20	4th Street and I-5 NB On-/Off-Ramps/Cummings Street	Signal
21	Whittier Boulevard and US 101 NB On-Ramp	Stop Sign
22	Whittier Boulevard and Boyle Avenue	Signal
23	7th Street and Boyle Avenue	Signal
24	SR 60 EB On-Ramp and Soto Street	No Control
25	1st Street and Soto Street	Signal
26	4th Street and Soto Street	Signal
27	1st Street and Central Avenue	Signal
28	3rd Street and Central Avenue	Signal
29	4th Street and Central Avenue	Signal
30	6th Street and Central Avenue	Signal
31	7th Street and Central Avenue	Signal

Notes:
NB = Northbound SB = Southbound EB = Eastbound

Source: Traffic Analysis Report (ACT Consulting Engineers, 2007).

3.7.2.3 Existing Traffic Volumes

Existing (2007) traffic volumes were defined based on traffic counts conducted in December 2006 and May 2007. Daily traffic volumes and vehicle classification counts were conducted on selected streets. Average Daily Traffic (ADT) for all roadway segments within the project study area in terms of annual average value (AADT) is summarized in Table 3.7-2. The AADT for segments without daily traffic counts was estimated using the base year (2000) volumes provided by the Southern California Association of Governments (SCAG). The SCAG volumes were projected to 2007 volumes using a compound growth rate of 1 percent per year.

3.7.2.4 Existing Intersection Level of Service

The efficiency of traffic operations on a transportation facility is measured in terms of Level of Service (LOS). Street intersections, as the critical location of surface transportation systems, are normally selected to describe traffic performance. LOS is a measure of average operating conditions at intersections during an hour. It is based on turn movement traffic volumes from each street approach (V), traffic handling capacity of each street approach per traffic control at each street approach (C), and the volume-to-capacity (V/C) ratio determined by dividing the volume of the traffic handled by the intersection during the hour by the total capacity (i.e., the maximum traffic volume that the intersection is capable of handling during an hour). LOS ranges from A to F, with A representing excellent (free-flow) conditions and F representing congestion. Intersections with a vehicular volume at or near its capacity experience greater congestion and longer vehicle delays than intersections with a smaller vehicular volume to available capacity. Table 3.7-3 describes the LOS concept and the operating conditions expected under each LOS for signalized intersections.

Level of service (LOS) was calculated for the study intersections using the CalcaDB Model, which is a spreadsheet developed by LADOT using the CMA Circular 212 method. Capacity per lane was set at 1,500 vehicles at signalized intersections and 1,200 vehicles at non-signalized intersections. The LADOT allows a reduction of 0.100 in vehicles per capacity (V/C) for intersections connected to the LADOT Automated Traffic Surveillance and Control (ATSAC) System. All of the signalized intersections studied are part of the ATSAC system; therefore, they were subject to the 0.100 V/C reduction for each CMA run.

Table 3.7-2
Existing Average Daily Traffic Volumes and Vehicle Classifications

Street	Segment and Intersection #	AADT	Truck AADT	% Truck	AM Peak Hour – Truck				PM Peak Hour – Truck			
					EB		WB		EB		WB	
					Med Truck	Heavy Truck	Med Truck	Heavy Truck	Med Truck	Heavy Truck	Med Truck	Heavy Truck
6th Street	Soto (6) to Boyle (22)	14,900	894	6	13	8	43	29	38	26	15	10
	Boyle (22) to US 101 NB on-ramp (21)	13,260	796	6	8	5	47	31	33	22	15	10
	US 101 NB on-ramp (21) to Mateo (7)	13,220	793	6	10	7	45	30	35	23	13	9
	Mateo (7) to Alameda (4)	12,290	737	6	12	8	36	24	33	22	11	7
	Alameda (4) to Central (30)	12,340	740	6	15	10	35	23	31	20	14	9
1st Street	Soto (25) to Boyle (17)	10,880	544	5	8	5	20	13	20	13	13	9
	Boyle (17) to US 101 NB on-/off-ramps (12)	10,420	521	5	9	6	19	13	19	13	12	8
	US 101 NB on-/off-ramps (12) to SB on-/off-ramps (11)	12,470	624	5	9	6	40	27	19	13	18	12
	US 101 SB on-/off-ramps (11) to Alameda (1)	12,690	635	5	30	20	41	27	20	13	18	12
	Alameda (1) to Central (27)	21,420	1,071	5	13	9	29	20	32	21	33	22
4th Street	Soto (26) to I-5 NB on-/off-ramps/ Cummings (20)	27,520	1,376	5	14	10	59	39	32	22	50	34
	I-5 NB on-/off-ramps/Cummings (20) to SB on-/off-ramps (19)	21,050	1,053	5	18	12	37	25	50	33	13	9
	I-5 SB on-/off-ramps (19) to Boyle (18)	17,780	889	5	15	10	44	29	45	30	8	6
	Boyle (18) to US 101 NB off-ramp (15)	17,470	874	5	11	8	48	32	39	26	14	9
	US 101 NB off-ramp (15) to SB off-ramp (14)	17,840	892	5	10	7	77	52	31	21	22	15
	US 101 SB off-ramp (14) to Pecan/US 101 SB on-ramp (13)	17,680	884	5	8	5	75	50	30	20	23	15
	Pecan/US 101 SB on-ramp (13) to Alameda (2)	23,850	1,193	5	12	8	72	48	52	34	20	13
	Alameda to Central, EB: (29) to (3), WB: (2) to (28)	25,770	1,289	5	11	8	71	47	50	33	27	18
7th Street	Soto (16) to Boyle (23)	12,170	730	6	9	6	26	18	14	9	30	20
	Boyle (23) to Santa Fe (10)	11,280	677	6	16	11	22	15	31	21	10	6
	Santa Fe (10) to Mateo (8)	13,460	808	6	14	9	33	22	34	23	14	9
	Mateo (8) to Alameda (5)	13,470	808	6	19	13	32	22	31	21	18	12
	Alameda (5) to Central (31)	12,730	764	6	16	11	33	22	27	18	18	12

Table 3.7-2
Existing Average Daily Traffic Volumes and Vehicle Classifications

Street	Segment and Intersection #	AADT	Truck AADT	% Truck	AM Peak Hour – Truck NB Med Truck	AM NB Heavy Truck	AM SB Med Truck	AM SB Heavy Truck	PM Peak Hour – Truck NB Med Truck	PM NB Heavy Truck	PM SB Med Truck	PM SB Heavy Truck
Central Avenue	1st Street (27) to 3rd Street (28)	6,530	392	6	11	7	12	8	14	10	9	6
	3rd Street (28) to 4th Street (29)	9,010	541	6	12	8	15	10	20	13	12	8
	4th Street (29) to 6th Street (30)	12,890	773	6	30	20	16	11	35	23	12	8
	6th Street (30) to 7th Street (31)	12,440	746	6	17	12	31	21	23	15	22	15
Alameda Street	1st Street (1) to 3rd Street (2)	19,340	967	5	27	18	27	18	30	20	28	19
	3rd Street (2) to 4th Street (3)	19,730	987	5	26	17	27	18	33	22	26	17
	4th Street (3) to 6th Street (4)	20,210	1,011	5	26	17	29	20	31	21	29	20
	6th Street (4) to 7th Street (5)	21,370	1,069	5	27	18	34	23	33	22	31	21
Mateo Street	6th Street (7) to 7th Street (8)	2,730	300	11	11	7	11	8	9	6	9	6
Santa Fe Avenue	6th Street/Frontage Road (9) to 7th Street (10)	6,170	679	11	26	17	13	9	23	15	18	12
Boyle Avenue	1st Street (17) to 4th Street (18)	9,190	368	4	11	8	11	7	12	8	10	7
	4th Street (18) to 6th Street (22)	12,770	511	4	14	9	10	6	20	13	11	7
	6th Street (22) to 7th Street (23)	14,190	568	4	13	8	15	10	20	13	14	10
Soto Street	1st Street (25) to 4th Street (26)	27,280	1,364	5	32	21	29	19	55	37	27	18
	4th Street (26) to 6th Street/Whittier (6)	29,740	1,487	5	20	13	47	31	32	21	57	38
	6th Street/Whittier (6) to 7th Street (16)	15,960	798	5	23	15	24	16	29	19	19	13
	7th Street (16) to SR 60 EB on-ramp (24)	23,150	1,158	5	41	27	24	16	50	33	20	13

Notes: AADT = Annual Average Daily Traffic; NB = Northbound; SB: Southbound; EB = Eastbound

Source: Traffic Analysis Report (ACT Consulting Engineers, 2007).

Table 3.7-3
Intersection Level of Service (LOS) Definitions

LOS	Interpretation	Volume/Capacity Ratio
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.000-0.6000
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized, and traffic queues start to form.	0.601-0.700
C	Good operation. Occasionally backups may develop behind turning vehicles. Most drivers feel somewhat restricted	0.701-0.800
D	Fair operation. There are no long-standing traffic queues. This level is typically associated with peak traffic periods.	0.801-0.900
E	Poor operation. Some long-standing vehicular queues develop on critical approaches.	0.901-1.000
F	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movements of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop-and-go type traffic flow.	Over 1.000

Source: Highway Capacity Manual, Special Report 209. Transportation Research Board, Washington, D.C. 1997.

Existing LOS determined by the CMA method are summarized in Table 3.7-4. Existing peak-hour LOS are shown in Figure 3.7-2.

It should be noted that except for several intersections along 4th Street, most of the intersections within the project study area are concurrently operating at LOS A or B during the morning and afternoon peak hours. Existing LOS F condition, defined by LADOT as FAILURE, occurs at the following locations:

- 1st Street/US 101 Southbound (SB) Off-Ramp, AM peak hour
- 4th Street/Pecan Street, AM peak hour
- 4th Street/US 101 SB Off-Ramp, AM peak hour
- 4th Street/US 101 NB Off-Ramp, AM peak hour
- 4th Street/Soto Street, AM and PM peak hours

3.7.2.5 Future Year (2035) Traffic Forcast

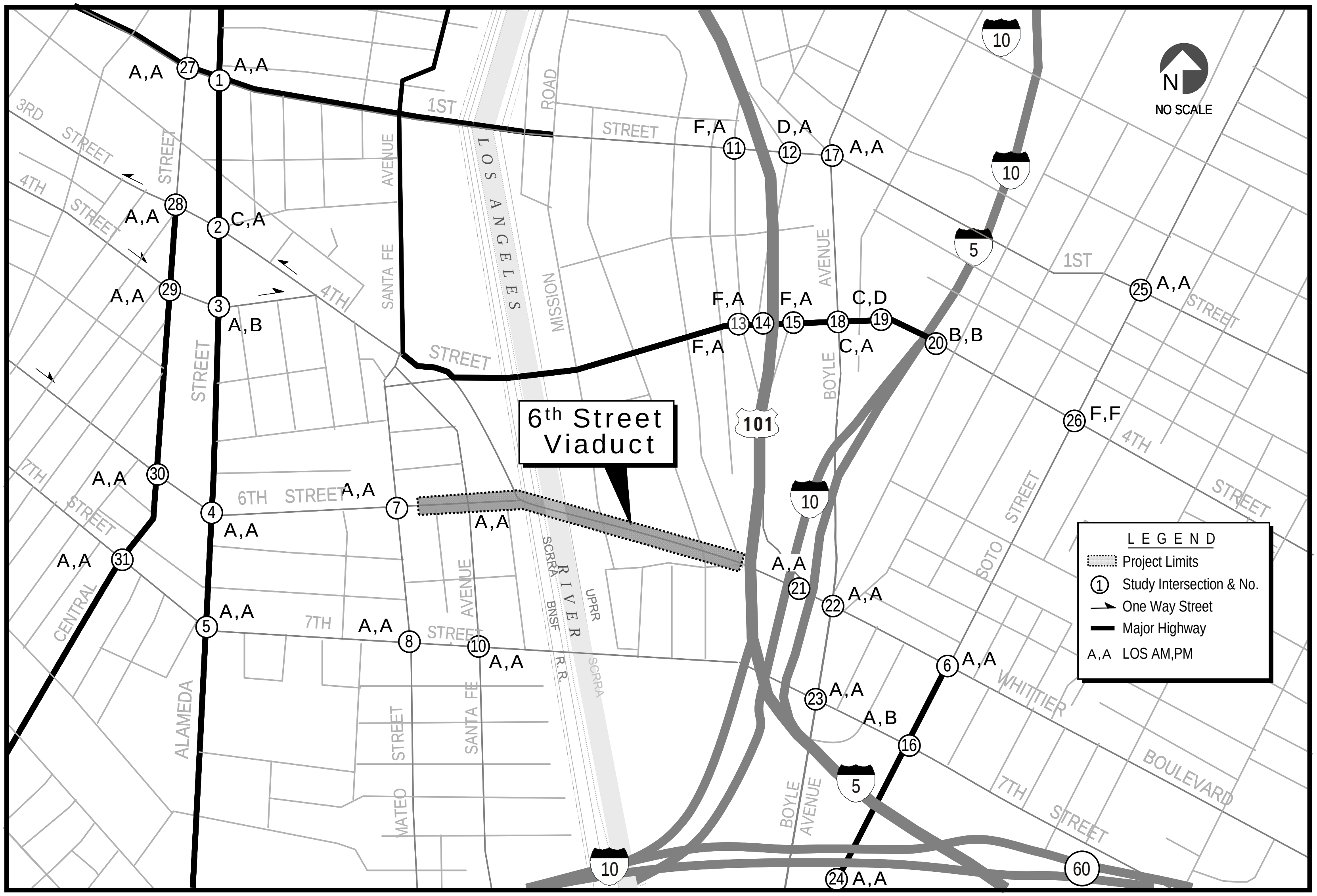
The traffic study predicted traffic volume and LOS for the year 2035 to cover the 20-year design life. Since the project would not increase traffic volume capacity, year 2035 traffic volume under the No Action and build alternatives would be the same.

Future year traffic volumes were derived from traffic model outputs provided by SCAG. The SCAG model covered all of the Major and Secondary Highways in the traffic study area for this proposed project. Maps in Geographic Information System (GIS) format and databases for 2000 (base year) and 2030 were provided by SCAG. The databases include directional volumes for ADT volumes, morning peak period, and afternoon peak period for each link (street segment) within the study area.

Table 3.7-4
Existing Level of Service of Study Intersections

No.	Intersection	AM		PM	
		LOS	V/C	LOS	V/C
1	1st Street and Alameda Street	A	0.537	A	0.529
2	3rd Street and Alameda Street	C	0.706	A	0.411
3	4th Street and Alameda Street	A	0.290	B	0.652
4	6th Street and Alameda Street	A	0.528	A	0.513
5	7th Street and Alameda Street	A	0.566	A	0.578
6	Whittier Boulevard and Soto Street	A	0.549	A	0.572
7	6th Street and Mateo Street	A	0.319	A	0.288
8	7th Street and Mateo Street	A	0.248	A	0.296
9	6th Street (Frontage Road) and Santa Fe Avenue	A	0.141	A	0.102
10	7th Street and Santa Fe Avenue	A	0.403	A	0.476
11	1st Street and US 101 SB Off-Ramps	F	1.133	A	0.547
12	1st Street and US 101 NB On-/Off-Ramps	D	0.815	A	0.388
13	4th Street - Pecan Street/US 101 SB On-Ramp	F	1.037	A	0.541
14	4th Street and US 101 SB Off-Ramp	F	1.047	A	0.451
15	4th Street and US 101 NB Off-Ramp	F	0.109	A	0.422
16	7th Street and Soto Street	A	0.557	B	0.670
17	1st Street and Boyle Avenue	A	0.361	A	0.537
18	4th Street and Boyle Avenue	C	0.718	A	0.595
19	4th Street and I-5 SB On-/Off-Ramps/Gertrude Street	C	0.731	D	0.870
20	4th Street and I-5 NB On-/Off-Ramps/Cummings Street	B	0.670	B	0.647
21	Whittier Boulevard and US 101 NB On-Ramp	A	0.534	A	0.281
22	Whittier Boulevard and Boyle Avenue	A	0.551	A	0.487
23	7th Street and Boyle Avenue	A	0.339	A	0.334
24	SR 60 EB On-Ramp and Soto Street	A	0.218	A	0.286
25	1st Street and Soto Street	A	0.408	A	0.485
26	4th Street and Soto Street	F	0.102	F	0.142
27	1st Street and Central Avenue	A	0.258	A	0.445
28	3rd Street and Central Avenue	A	0.380	A	0.162
29	4th Street and Central Avenue	A	0.082	A	0.391
30	6th Street and Central Avenue	A	0.337	A	0.395
31	7th Street and Central Avenue	A	0.443	A	0.353
Notes: NB = Northbound; SB: Southbound; EB = Eastbound					

Source: Traffic Analysis Report (ACT Consulting Engineers, 2007).



Source: Modified from Traffic Analysis Report, (ACT Consultant, 2007)

Figure 3.7-2 Existing Level of Service (2007)

Year 2030 traffic volumes were projected to Future Year 2035 using growth rates derived from Year 2000 and 2030 data. These growth rates are link specific and range from 0.1 to 1.4 percent; the higher growth rates were generally observed on directions with relatively low Year 2000 volumes. The peak period data provided by SCAG included volumes for 3 consecutive hours in the AM peak period and 4 hours during the PM peak period. For the purpose of intersection capacity analysis, the peak-period volumes were converted to peak-hour volumes by using the factor of 0.38 for the AM peak period and 0.28 for the PM peak period; these factors were provided by SCAG.

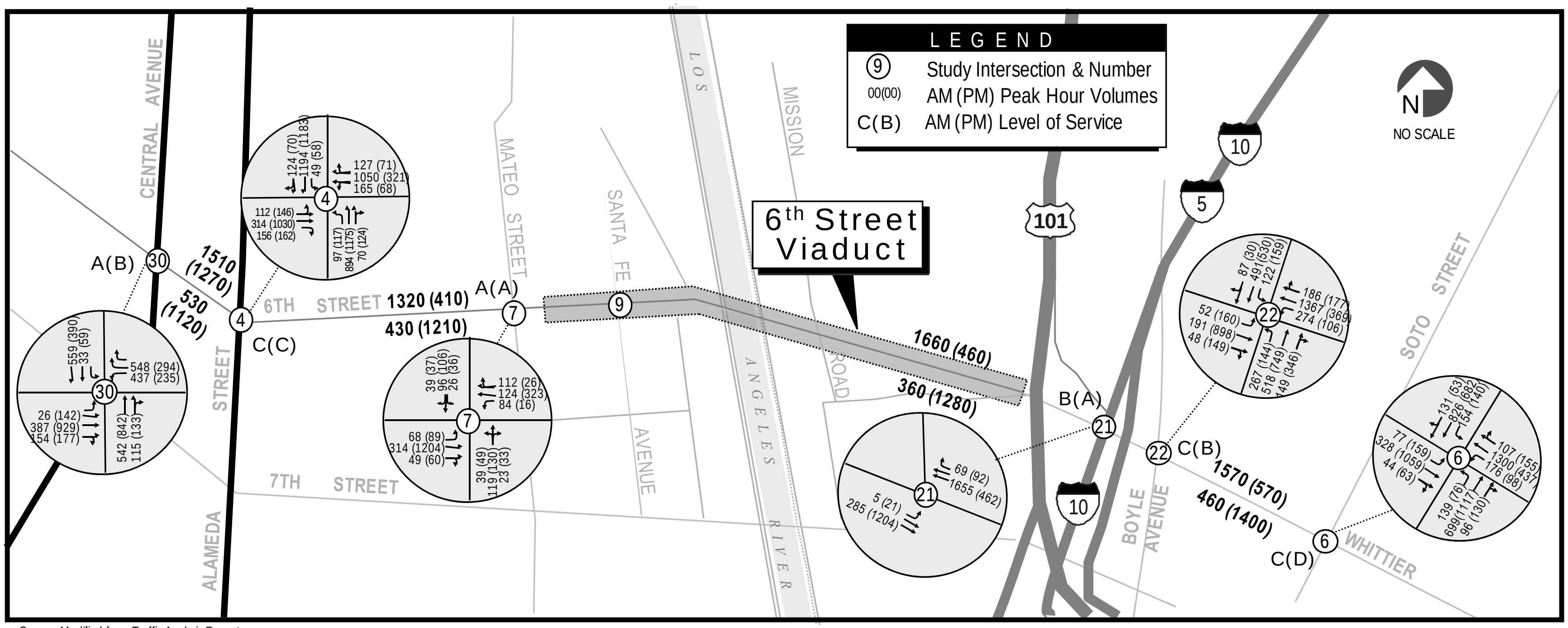
Figure 3.7-3 shows the projected 2035 ADT and AM and PM peak-hour volumes, respectively, and the estimated LOS at intersections. The peak-hour turning movements at intersections were derived from the directional peak-hour volumes using the existing turning movement patterns. It was assumed that vehicle classification would remain the same as the existing condition shown in Table 3.7-2.

3.7.2.6 Transit, Truck, Parking, and Pedestrian Conditions

Existing Transit Service – The MTA operates two bus services on the 6th Street Viaduct: Route 18 and Route 720. Neither line has stops on the viaduct. Westbound buses stop at the southwest corner of Whittier Boulevard and Mott Street, and EB buses stop at the northwest corner of 6th Street and Alameda Street. Route 720 is a Metro Rapid Service that runs between the communities of Commerce and Santa Monica via Whittier Boulevard, 6th Street, and Wilshire Boulevard; there are no local stops along the 6th Street Viaduct.

Existing Truck Conditions – Table 3.7-2 documents truck percentages at various intersections along 6th Street within the study area. Based on the data shown in Table 3.7-2, truck use on the 6th Street Viaduct is on an average of 6 percent, with the higher number of trucks traveling WB during the AM peak hours and EB during the PM peak hours.

Existing Parking Conditions – Parking is not permitted on the 6th Street Viaduct. Curb parking is available under the 6th Street Viaduct on the cross streets of Santa Fe Avenue, Mission Road, Anderson Street, and Clarence Street. The City of Los Angeles Street Maintenance Facility is located beneath the 6th Street Viaduct between Imperial Street and Santa Fe Avenue. Empty spaces underneath the viaduct on both sides of the river are also used by nearby businesses for parking. Privately owned parking spaces are available at most businesses and residences located to the northeast. Existing parking enforcement on the 6th Street Viaduct and near the viaduct is shown in Figure 3.7-4 and summarized in Table 3.7-5.



Source: Modified from Traffic Analysis Report, (ACT Consultant, 2007)

Figure 3.7-3 2035 Traffic Volumes and Level of Service

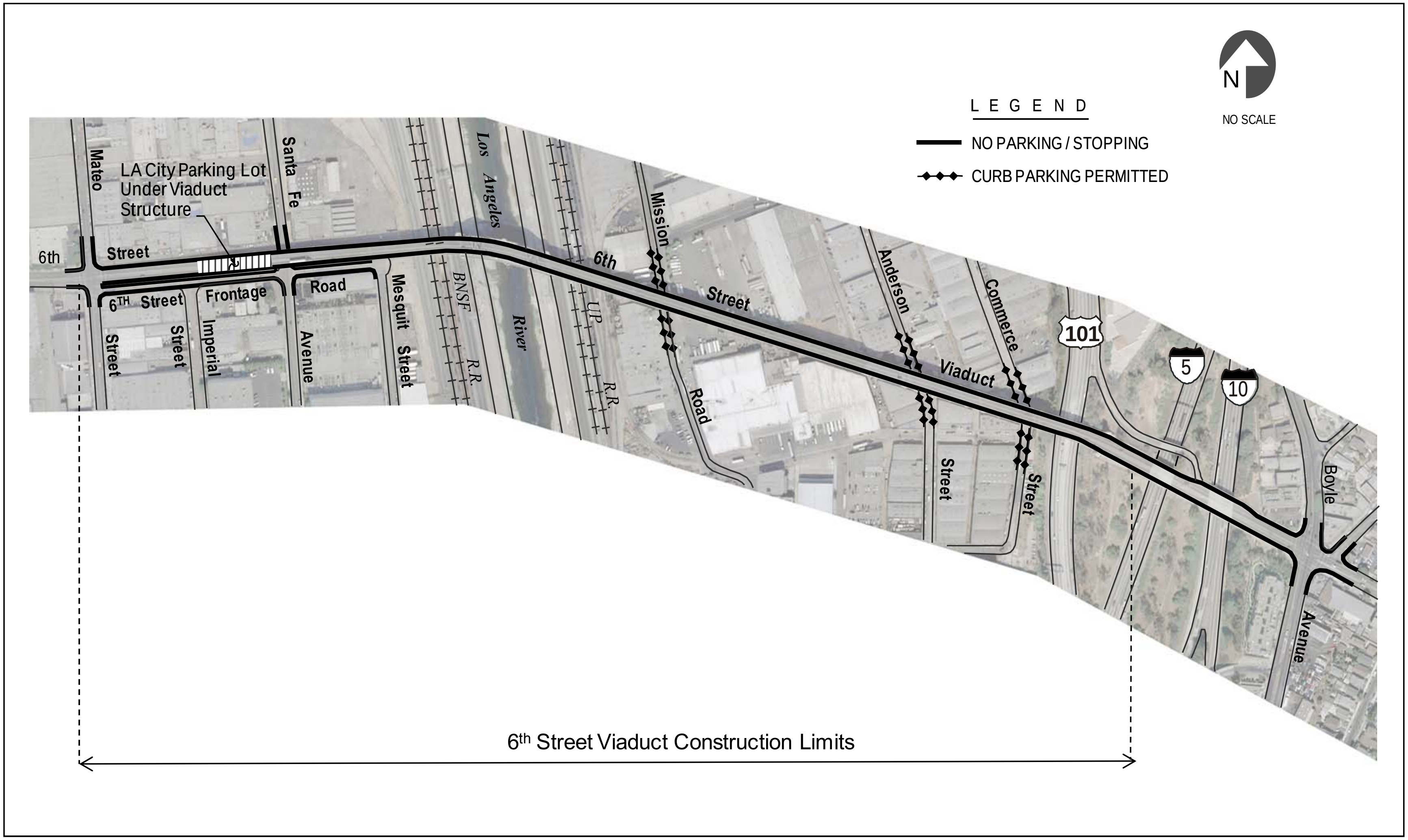


Figure 3.7-4 Parking within 6th Street Viaduct Construction Limits

Table 3.7-5
Existing Parking Enforcement in the Project Area

Location	Parking Enforcement
6th Street Viaduct between Mateo Street and Boyle Avenue	No stopping any time
6th Street (Frontage Roads) between Mateo Street and Mesquit Street	No parking any time
Santa Fe Avenue underneath 6th Street Viaduct	No parking any time
Mission Road underneath 6th Street Viaduct	Curb parking permitted
Anderson Street underneath 6th Street Viaduct	Curb parking permitted
Clarence Street underneath 6th Street Viaduct	Curb parking permitted
Space underneath 6th Street Viaduct between Imperial and Santa Fe Avenue	City of Los Angeles, Street Maintenance Parking Lot

Source: Traffic Analysis Report (ACT Consulting Engineers, 2007).

Existing Pedestrian Facilities – A 5-ft-wide raised walkway exists on each side of the 6th Street Viaduct. Based on several observations, pedestrian traffic on the 6th Street Viaduct is low to moderate. The segment of 6th Street between Boyle Avenue and Mateo Street is elevated without cross street access for a distance of approximately 4,300 ft. The distance is discouraging to normal pedestrian activities. Another reason for the low pedestrian volume is that there is no major pedestrian destination at the east and west ends of the segment. Occasional pedestrians on the viaduct are not likely to be regular commuters.

The construction area below the 6th Street Viaduct is adjacent to industrial buildings. No commercial stores or food services are located within the vicinity of the viaduct. Pedestrian traffic consists mainly of workers traveling to the industrial buildings. Existing pedestrian volumes are not significant because the area is not currently served directly by buses, and the workers mainly commute by passenger cars.

Bicycle Facility – The City of Los Angeles Bicycle Plan[50] does not currently designate 6th Street in the proposed project area as a bikeway. Bicyclists now use sidewalks or traffic lanes on the viaduct. There is no designated bikeway along any local street network within the vicinity of the 6th Street Viaduct on either side of the Los Angeles River.

3.7.3 Environmental Consequences

3.7.3.1 Construction Impacts

Alternative 1 – No Action

Since there would be no construction activities with this alternative, there would be no impacts to traffic circulation, pedestrian walkways, parking, and transit service within the project area.

[50] City of Los Angeles General Plan Transportation Element, 1999.

Alternative 2 – Retrofit

Traffic and Circulation

Implementation of Alternative 2 would not require full closure of the viaduct or adjacent streets; however, temporary lane closures on the viaduct would be likely to occur, and adjacent streets could experience episodes of increased congestion as a result of construction. Moreover, access to businesses situated adjacent to the viaduct could be restricted. Any such effects would be highly localized and temporary during the construction period.

Parking

Implementation of Alternative 2 would result in obstruction of parking spaces within the area under the viaduct and its immediate vicinity. Although the impact would occur only during the construction period, businesses who are dependent on the use of these parking spaces could find it difficult to operate during the 2.5-year construction period. Loss of parking spaces underneath the viaduct and its adjacent area would constitute an adverse impact to nearby businesses; however, it should be noted that the parking spaces under the viaduct are either used without authorization or under revocable permits issued by the City of Los Angeles. The permits are subject to revocation at any time at the pleasure of the City. The City would choose not to renew the permit if construction of the Retrofit Alternative is undertaken.

Pedestrian Traffic

Occasional temporary traffic lane and sidewalk closures may be required on the viaduct and in areas beneath and adjacent to the viaduct during the retrofit construction to permit safe operation of equipment and transport of materials. These activities would cause some disruption to pedestrian traffic; however, no substantial impacts are anticipated with the provision of detour pedestrian walkways.

Bicycle Facility

During project construction, bicyclists may not be allowed to use the viaduct from time to time for safety reasons. They would have to use the 4th Street or 7th Street viaducts to travel from one side of the river to the other.

Public Transit

Occasional temporary lane closures would likely be required during the retrofit construction. Bus users may experience some 10- to 15-minute rush-hour travel delays along the 6th Street Viaduct as a result of the lane closures. The impacts are not considered substantial.

Alternative 3 – Replacement

Traffic Detour and Delay

Construction of Alternative 3 would require full closure of the 6th Street Viaduct for up to 4 years (2011 to 2014). Traffic detours would occur along the street network east and west of the river due to the closure of the viaduct (see Figures 3.7-5 and 3.7-6). Traffic heading west to east to cross the Los Angeles River via the 6th Street Viaduct would be diverted at Central Avenue and Alameda Street to cross the river via the 4th Street Viaduct or 7th Street Viaduct. Traffic heading east to west to cross the Los Angeles River via the 6th Street Viaduct would be diverted at Soto Street to cross the river via the 4th Street Viaduct or 7th Street Viaduct. In addition, the 6th Street frontage roads on both sides of the viaduct would need to be vacated if Alternative 3 is constructed, causing obstruction to the operations of adjacent businesses that are not subject to relocation but depend on the frontage roadways for access.

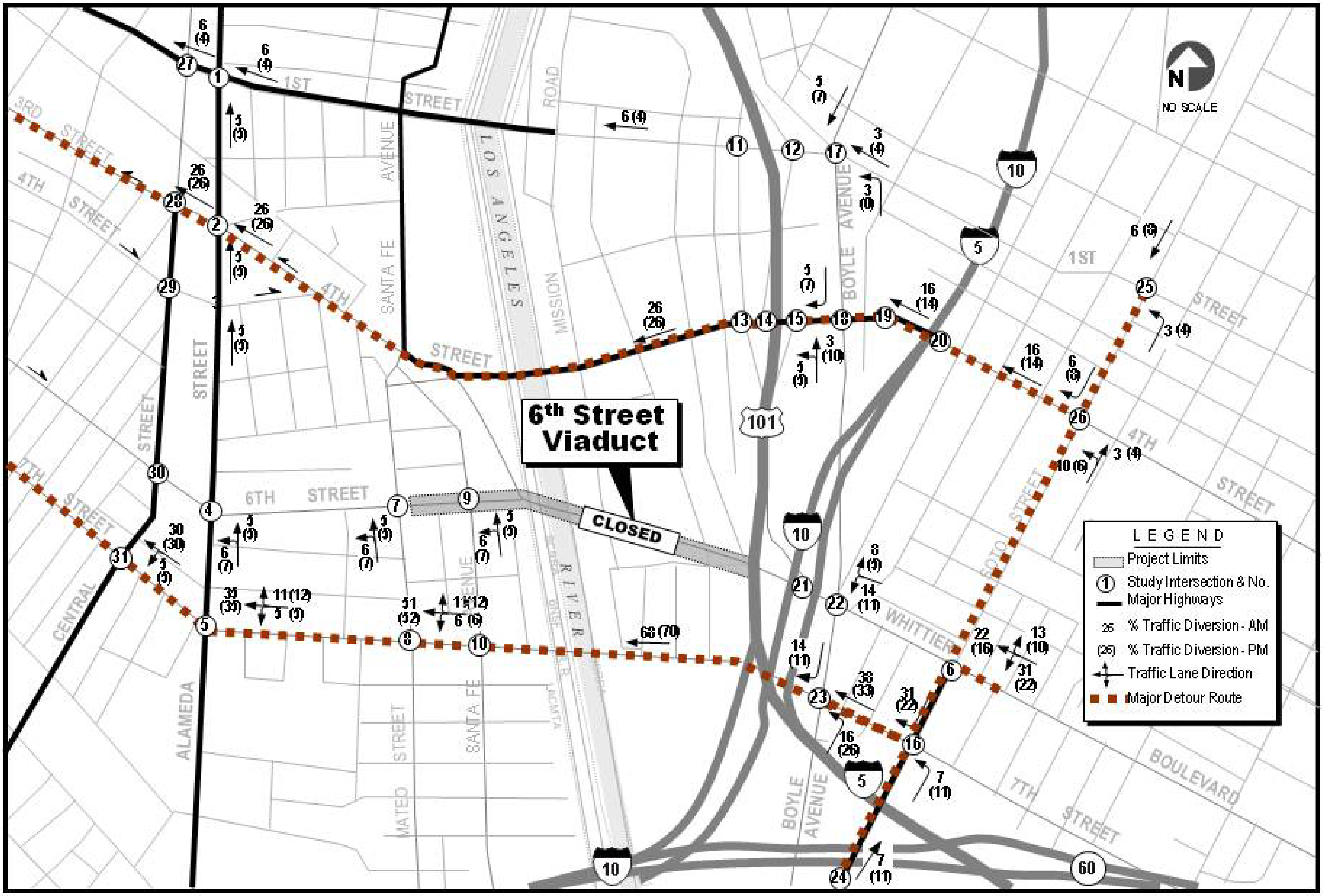
A traffic study was conducted to determine the level of impacts during the anticipated 4 years of construction with the viaduct closed.[51] 2014 is the year used for analysis to represent the 4-year construction period (from 2011-2014) when the viaduct would be closed. It is assumed to be the worst-case construction year with the highest traffic volume based on 1 percent per year natural growth plus additional volumes from other related proposed projects. In assessing the traffic impacts of the with and without proposed project scenarios, the level of significance under CEQA is determined by comparing the increase in V/C value in accordance with the LADOT intersection criteria as follows:

Intersection V/C Ratio with Projected Traffic	Significant Increase in V/C Ratio
0.000-0.700 (LOS A or B)	<0.060
0.701-0.800 (LOS C)	<0.040
0.801-0.900 (LOS D)	<0.020
0.901 or greater (LOS E or F)	<0.010

Table 3.7-6 shows the LOS at various study intersections in 2014 based on the traffic operational analysis with and without the detour required for closure of the 6th Street Viaduct. According to Table 3.7-6, the LOS at 13 intersections would be adversely impacted in either the AM or PM peak hour by the detoured traffic (as summarized in Table 3.7-7). The locations of the impacted intersections are denoted in Figure 3.7-7.

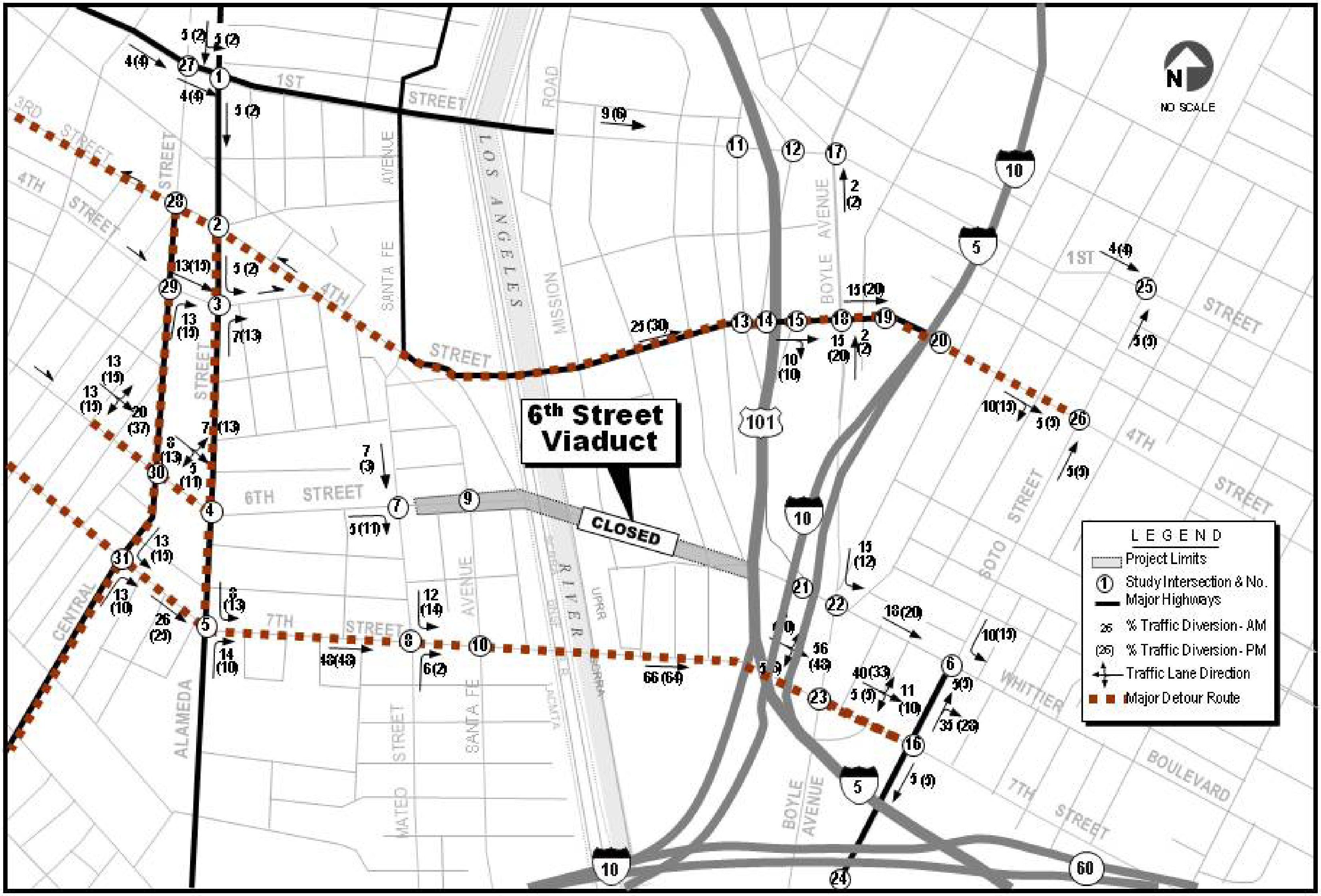
The traffic study further investigated measures to mitigate the impacts at the affected intersections either by signal timing or lane reconfiguration. The investigation revealed that only 2 out of 13 impacted intersections could be mitigated without causing further ROW impacts to the localized area, as shown in Table 3.7-8.

[51] Traffic Analysis Report 6th Street Viaduct Seismic Improvement Project. December 2007.



Source: Modified from Traffic Analysis Report (ACT Consultant 2007)

Figure 3.7-5 Traffic Diversion Distribution – AM / PM Peak Hour (From East to West of LA River)



Source: Modified from Traffic Analysis Report (ACT Consultant, 2007)

Figure 3.7-6 Traffic Diversion Distribution – AM / PM Peak Hour (From West to East of LA River)

Table 3.7-6
Summary of Level of Service and Significant Impact Parameters

Intersection	Construction Year (2014) without Project (Viaduct Open)				Construction Year (2014) with Project (Viaduct Closed)				Significant Impact (CEQA)			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	Differ-ential V/C	Yes/ No	Differ-ential V/C	Yes/ No
1st Street/Alameda (1)	0.604	B	0.638	B	0.609	B	0.653	B	0.005	No	0.015	No
3rd Street/Alameda (2)	0.653	B	0.431	A	0.706	C	0.440	A	0.053	Yes	0.009	No
4th Street/Alameda (3)	0.294	A	0.629	B	0.304	A	0.679	B	0.010	No	0.050	No
6th Street/Alameda (4)	0.580	A	0.569	A	0.391	A	0.446	A	-0.189	No	-0.124	No
7th Street/Alameda (5)	0.619	B	0.630	B	0.748	C	0.796	C	0.129	Yes	0.166	Yes
Whittier Boulevard/ South Soto Street (6)	0.613	B	0.635	B	0.660	B	0.706	C	0.048	No	0.071	Yes
6th Street/Mateo Street (7)	0.351	A	0.316	A	0.046	A	0.032	A	-0.304	No	-0.284	No
7th Street/Mateo Street (8)	0.284	A	0.303	A	0.512	A	0.470	A	0.229	No	0.167	No
6th Street/Santa Fe (9)	0.159	A	0.117	A	0.159	A	0.117	A	0.000	No	0.000	No
7th Street/Santa Fe (10)	0.444	A	0.582	A	0.685	B	0.816	D	0.241	No	0.235	Yes
1st Street/US 101 SB Off-Ramps (11)	0.672	B	0.302	A	0.706	C	0.328	A	0.034	No	0.026	No
1st Street/US 101 NB On-/Off-Ramps (12)	0.760	C	0.289	A	0.787	C	0.294	A	0.027	No	0.005	No
4th Street – Pecan Street/US 101 SB On-Ramp (13)	0.801	D	0.412	A	0.898	D	0.499	A	0.097	Yes	0.087	No
4th Street/US 101 SB Off-Ramp (14)	0.787	C	0.366	A	0.885	D	0.421	A	0.097	Yes	0.055	No
4th Street/US 101 NB Off-Ramp (15)	1.059	F	0.399	A	1.137	F	0.469	A	0.078	Yes	0.070	No
7th Street/South Soto Street (16)	0.605	B	0.725	C	0.712	C	0.826	D	0.107	Yes	0.101	Yes
1st Street/Boyle Avenue (17)	0.402	A	0.605	B	0.437	A	0.640	B	0.035	No	0.035	No
4th Street/Boyle Avenue (18)	0.804	D	0.669	B	0.899	D	0.771	C	0.095	Yes	0.102	Yes
4th Street and I-5 SB On-/Off-Ramps/ Gertrude Street (19)	0.719	C	1.040	F	0.809	D	1.127	F	0.090	Yes	0.087	Yes
4th Street and I-5 NB On-/Off-Ramps/ Cummings Street (20)	0.801	D	0.755	C	0.877	D	0.773	C	0.076	Yes	0.018	No
Whittier Boulevard/ US 101 NB On-Ramp (21)	0.564	A	0.062	A	0.046	A	0.062	A	-0.518	No	0.000	No
Whittier Boulevard/ Boyle Avenue (22)	0.598	A	0.530	A	0.426	A	0.401	A	-0.172	No	-0.129	No
7th Street/Boyle Avenue (23)	0.371	A	0.365	A	0.836	D	0.645	B	0.465	Yes	0.280	No

Table 3.7-6
Summary of Level of Service and Significant Impact Parameters

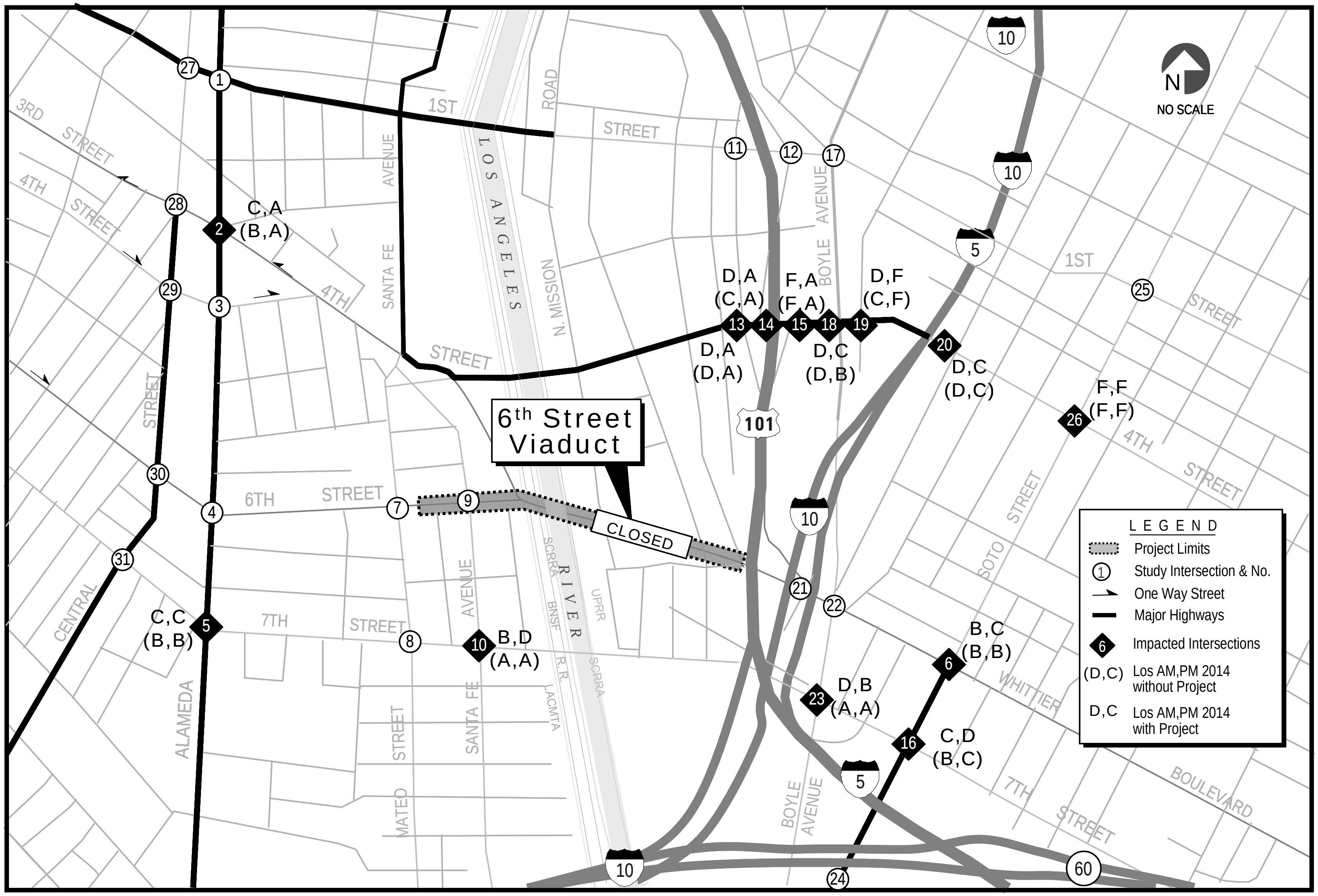
Intersection	Construction Year (2014) without Project (Viaduct Open)				Construction Year (2014) with Project (Viaduct Closed)				Significant Impact (CEQA)			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	Differ-ential V/C	Yes/ No	Differ-ential V/C	Yes/ No
SR 60 EB On-Ramp/ Soto Street (24)	0.254	A	0.329	A	0.254	A	0.329	A	0.000	No	0.000	No
1st Street/Soto Street (25)	0.451	A	0.532	A	0.478	A	0.533	A	0.027	No	0.001	No
4th Street/South Soto Street (26)	1.115	F	1.542	F	1.205	F	1.591	F	0.090	Yes	0.048	Yes
1st Street/Central Avenue (27)	0.290	A	0.486	A	0.233	A	0.466	A	-0.057	No	-0.020	No
3rd Street/Central Avenue (28)	0.415	A	0.181	A	0.401	A	0.143	A	-0.013	No	-0.037	No
4th Street/Central Avenue (29)	0.095	A	0.426	A	0.089	A	0.408	A	-0.006	No	-0.019	No
6th Street/Central Avenue (30)	0.388	A	0.475	A	0.162	A	0.361	A	-0.227	No	-0.114	No
7th Street/Central Avenue (31)	0.483	A	0.413	A	0.516	A	0.401	A	0.033	No	-0.012	No
Notes: NB = Northbound; SB: Southbound; EB = Eastbound												

Source: Traffic Analysis Report (ACT Consulting Engineers, 2007).

Table 3.7-7
Summary of Impacted Intersections

Intersection		LOS with Detour	
		AM	PM
2	3rd Street and Alameda Street	C	A
5	7th Street and Alameda Street	C	C
6	Whittier Boulevard and Soto Street	B	C
10	7th Street and Santa Fe Avenue	B	D
13	4th Street-Pecan Street/US 101 SB On-Ramp	D	A
14	4th Street and US 101 SB Off-Ramp	D	A
15	4th Street and US 101 NB Off-Ramp	F	A
16	7th Street and Soto Street	C	D
18	4th Street and Boyle Avenue	D	C
19	4th Street and I-5 SB On-/Off-Ramps/Gertrude Street	D	F
20	4th Street and I-5 NB On-/Off-Ramps/Cummings Street	D	C
23	7th Street and Boyle Avenue	D	B
26	4th Street and Soto Street	F	F
EB – eastbound; LOS – level of service; NB – northbound; ROW – right-of-way; SB – southbound; WB – westbound			

Source: Traffic Analysis Report (ACT Consulting Engineers, 2007).



Source: Modified from Traffic Analysis Report, (ACT Consultant, 2007)

Figure 3.7-7 Impacted Intersections During Project Construction (2014)

Table 3.7-8
Potential Mitigation Measures at Impacted Intersections

Intersection		Proposed Mitigation Identified in Traffic Analysis
2	3rd Street and Alameda Street	Re-stripe existing one-way WB roadway from 4 WB through lanes to 5 lanes, extending from Alameda Street to Central Avenue. Implementation of this mitigation would impact (eliminate) up to 25 parking stalls along the south side of 3rd Street.
5	7th Street and Alameda Street	Widen 7th Street by 12 ft on the north and south sides, extending to 500 ft on each side of Alameda Street to provide an additional through lane at the EB and WB approaches to the intersection. Implementation of this mitigation would likely impact 24,000 square ft of private property.
6	Whittier Boulevard and Soto Street	Widen Soto Street by 12 ft along the east side to provide a protected NB right-turn lane and a second SB left-turn lane. Implementation of this mitigation would likely impact 6,000 square ft of private property.
10	7th Street and Santa Fe Avenue	Widen the 7th Street EB approach by 12 ft to provide a third through lane. Widen 7th Street east of Santa Fe Avenue by 300 ft to provide adequate tapering distance from 3 to 2 lanes. Implementation of this mitigation would likely impact 6,000 square ft of private property.
13	4th Street-Pecan Street/ US 101 SB On-Ramp	Widen the 4th Street WB approach by 12 ft to provide an additional WB lane. The US 101 overcrossing structure and 4th Street west of the ramp along the north side would have to be widened. Implementation of this mitigation would likely impact private property frontage and buildings for a distance of 300 ft.
14	4th Street and US 101 SB Off-Ramp	Same as Intersection Mitigation No. 13.
15	4th Street and US 101 NB Off-Ramp	Option 1: Widen the 4th Street WB approach by 12 ft to provide an additional WB lane and widen the US 101 overcrossing structure to accommodate the additional through lane. Implementation of this mitigation would likely impact 6,000 square ft of private property. Option 2: Widen the US 101 NB off-ramp to provide 2 NB left-turn lanes and a right-turn pocket. Implementation of this mitigation would impact Caltrans ROW.
16	7th Street and Soto Street	Option 1: Widen the west side of Soto Street to provide a second SB left-turn lane. Implementation of this mitigation would likely impact 7,000 square ft of private property. Option 2: Widen the south side of 7th Street to provide a new EB left-turn lane. Implementation of this mitigation would likely impact 7,000 square ft of private property.
18	4th Street and Boyle Avenue	Widen 4th Street by 12 ft on the north and south sides to provide an additional through lane at the EB and WB approach to the Boyle Avenue intersection. Implementation of this mitigation would likely impact 24,000 square ft of private property.
19	4th Street and I-5 SB On-/Off-Ramps/ Gertrude Street	Install new traffic signals and connect to Los Angeles City ATSAC system.
20	4th Street and I-5 NB On-/Off-Ramps/ Cummings Street	Widen the 4th Street WB approach by 12 ft to provide an additional WB lane and widen the roadway below the I-5 undercrossing structure west of the ramp to accommodate an additional through lane. Implementation of this mitigation would likely impact 4,000 square ft of private property and Caltrans ROW.
23	7th Street and Boyle Avenue	Widen 7th Street between Hollins Street and Boyle Avenue to add a second WB through lane. Remove traffic island and re-stripe to eliminate SB free right turn to accommodate an additional WB lane. Implementation of this mitigation would likely impact 170 ft of private property frontage.
26	4th Street and Soto Street	Restripe to add an EB right-turn lane.
EB – eastbound; LOS – level of service; NB – northbound; ROW – right-of-way; SB – southbound; WB – westbound		

Parking

During demolition and construction activities, several roadways adjacent to the viaduct would be occasionally or continuously blocked, which would result in the loss of existing on-street parking. Based on the preliminary investigation, the following parking areas could be eliminated during the construction period:

- City of Los Angeles, Street Maintenance Parking Lot – 30 parking spaces
- Vacant spaces underneath the viaduct on both sides of the river, which are used by local businesses to park automobiles and trucks. These areas are not designated as public parking lots.
- Mission Road On-Street Parking – 8 spaces
- Anderson Street On-Street Parking – 8 spaces
- Clarence Street On-Street Parking – 8 spaces

Since the City Maintenance Facility would be relocated with this alternative, there would be no impact from the loss of parking for this facility. The temporary loss of public parking spaces would create some inconvenience to residents, business owners, and visitors in the area from having to park on adjacent streets and walking to destinations. The Traffic Management Plan (TMP) would be developed to facilitate continuous roadway and pedestrian access to businesses and private parking lots within the project limits.

Pedestrian Traffic

During the construction period, the 6th Street Viaduct would be closed for public use. Pedestrians using sidewalks on the existing 6th Street Viaduct would be diverted to use the nearest east-west crossing at 7th Street. The detour of pedestrian traffic would result in an additional walking distance of approximately 2,000 ft (0.4-mile).

Due to construction activities, north-south pedestrian movements underneath the 6th Street Viaduct would likely be impacted at Santa Fe Avenue west of the Los Angeles River and at Mission Road, Anderson Street, and Clarence Street east of the Los Angeles River.

Bicycle Use

During project construction, bicyclists would have to use the 4th Street or 7th Street viaducts to travel from one side of the river to the other.

Public Transit

Closure of the 6th Street Viaduct would obstruct bus operation (Route 18 and Route 720) along the viaduct. It is likely that the transit routes would be detoured to 7th Street. The detour of buses to the 7th Street Viaduct would result in approximately 0.4-mile of additional travel distance, which would add 5 to 10 minutes of travel time depending on traffic conditions.

The detour of buses would not impact bus stop locations or passenger service since there are no bus stops along 6th Street between Alameda Street and Soto Street. For WB buses, it is likely that the bus would travel along Whittier Boulevard passing the last bus stop at the southwest corner of Whittier Boulevard and Mott Street before turning south onto Soto Street to cross the Los Angeles River via the 7th Street Viaduct. For EB buses, the bus would travel along 6th Street and turn south onto Alameda Street to travel across the Los Angeles River via the 7th Street Viaduct.

3.7.3.2 Permanent Impacts

Alternative 1 – No Action

Implementation of Alternative 1 would not result in any permanent impacts on traffic circulation, parking, pedestrian traffic, and public transit; however, current seismic and design deficiencies on the viaduct would not be corrected.

Alternative 2 – Retrofit

Impacts under the Retrofit Alternative would be similar to that described under the No Action Alternative.

Alternative 3 – Replacement

Year 2035 Traffic

Implementation of Alternative 3 would not result in a traffic capacity increase; thus, traffic volumes during the future design year 2035 would be a result of the normal growth and other development projects that may occur in future years. The 2035 traffic forecast was presented earlier in Section 3.7.2.

Parking

Implementation of Alternative 3 would result in the loss of all parking spaces underneath the viaduct (i.e., City Maintenance Office and other empty spaces) and those along Mission Road, Anderson Street, and Clarence Street. On-street parking would be restored after construction is completed, depending on whether the area near the viaduct would be redeveloped for other uses. Since the City Maintenance Office would be subject to relocation, there would be no impact from the loss of parking for this use. If businesses that would lose their private parking spaces are not able to remain in operation, those parcels would be acquired and the businesses relocated. The impact of the loss of parking would be unavoidable.

Pedestrian Traffic

The proposed project would improve study area pedestrian facilities. Standard 10-ft-wide sidewalks would be extended along both sides of the viaduct as part of Alternative 3. The viaduct design would be in compliance with ADA requirements. No long-term adverse impacts to pedestrian traffic would occur. Depending on the final design selected, belvederes or pedestrian viewing platforms may also be provided. These improvements would be beneficial to area residents.

Bicycle Use

The current Bicycle Plan does not designate 6th Street in the project area as a bikeway; however, the proposed project does cross the Los Angeles River, which is designated as a Class I bikeway. The City of Los Angeles Bicycle Plan Policy 1.1.5[52] states that any bridge reconstruction or replacement, such as bridges over the Los Angeles River, on right-of-way (ROW) designated as a Citywide Bikeway be designed with adequate roadway to accommodate a bicycle facility. A City of Los Angeles Bicycle Committee member indicated at the public information meeting and at Community Advisory Committee (CAC) meetings for this project that the City Planning Department intends to designate the 6th Street Viaduct as a bikeway in the upcoming Bicycle Plan revision if the replacement alternative is selected.

Implementation of any of the Alternative 3 alignments would provide the opportunity for the City to designate the 6th Street Viaduct as part of a bike route along 6th Street. Bikes would use the outside shoulders on the new wider roadway. This would be a benefit for bicyclists.

Public Transit

Once the viaduct is reopened, all transit routes and bus stops along 6th Street in the project area would be reinstated. No long-term impacts are anticipated.

3.7.3.3 Cumulative Impacts

The Traffic Study[53] prepared for this proposed project has accounted for the general traffic growth and various known future foreseeable projects within the proposed project vicinity. No cumulative impacts are foreseen because the proposed project would not increase traffic volumes or induce traffic-generating development.

3.7.3.4 Secondary Impacts

Alternative 1 – No Action

No secondary impacts have been identified under this alternative.

Alternative 2 – Retrofit

Under this alternative, the City Maintenance Facility would have to be relocated. Since the Ventura Foods, Inc., buildings are vacant, no relocation would be required. Relocation of the

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[52] City of Los Angeles General Plan Transportation Element. 1999.

[53] Traffic Analysis Report for 6th Street Viaduct Seismic Improvement Project. December 2007.

City Maintenance Facility could induce various traffic impacts proximate to the replacement area. Although this secondary impact cannot be accurately analyzed until the exact location is identified, it is assumed that the facility would be relocated to the area with compatible land use and zoning with adequate infrastructure to handle additional traffic to be generated by the facility; therefore, secondary impacts on traffic and transportation would not be expected to be substantial.

Alternative 3 – Replacement

Under this alternative, the City Maintenance Facility and several affected businesses would have to be relocated. Relocation of the affected businesses within the project area could create traffic impacts at and near selected replacement areas. Although this secondary impact cannot be accurately analyzed until the exact locations are identified, it is assumed that the affected businesses would be relocated to areas with compatible land use and zoning with adequate infrastructure to handle additional traffic to be generated from their operations; therefore, secondary impacts on traffic and transportation would not be expected to be substantial.

3.7.4 Avoidance, Minimization, and Compensation Measures

Alternative 1 – No Action

No mitigation measures are required.

Alternative 2 – Retrofit

During the construction period, the City would continue its public outreach activities to keep area residents and businesses informed of the proposed project schedule and progress. The City-mandated Work Area Traffic Control Plan (WATCP) would be strictly implemented to minimize traffic impacts within the immediate vicinity of the construction site. In addition, a TMP would be developed to identify temporary traffic detour routes, pedestrian routes, and residential and commercial access routes to be used as needed during the construction period.

For the loss of private parking, property owners would receive compensation through the ROW acquisition process.

Loss of on-street public parking during the construction period is unavoidable because the City has the right to revoke on-street public parking privileges for City-related projects as needed.

Alternative 3 – Replacement

During the construction period, the City would continue its public outreach activities to keep area residents and businesses informed of the proposed project schedule and progress. A TMP would be developed to minimize area traffic impacts due to the required closures of the 6th Street Viaduct and some local streets and frontage roads adjacent to the viaduct. Local residents, businesses, and emergency service providers would be informed in advance of the construction schedule and traffic detour routes as outlined in Figures 3.7-5 and 3.7-6. In addition, a traffic staging plan, as outlined in Section 2.4.3.9 of this Draft EIR/EIS document, would be implemented to minimize localized traffic impacts within the construction site vicinity.

Intersections to be impacted by traffic detours could be mitigated by implementing the measures outlined in Table 3.7-8; however, based on the results of the Traffic Study, only 3 out of 13 measures could be implemented without resulting in some consequential ROW impacts to the nearby area. These intersections include Intersections 2, 19, 26 (see Figure 3.7-7); however implementation of mitigation measures at Intersection 2 would result in a loss of 25 curbside parking spaces. Since it is not a policy of LADOT to implement mitigation measures that would cause further ROW impacts, only measures 19 and 26 would be implemented, including:

- Install new traffic signals at the intersection of 4th Street and I-5 SB On-/Off-Ramps/ Gertrude Street, and connect to Los Angeles City ATSAC system.
- Restripe to add an EB right-turn lane at the intersection of 4th Street and Soto Street.

The impacts at other intersections are therefore unavoidable.

For the loss of private parking, property owners would receive compensation through the ROW acquisition process.

Loss of on-street public parking during the construction period is unavoidable because the City has the right to revoke on-street public parking privileges for City-related projects as needed.

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3.8 Visual/Aesthetics

This section addresses potential visual and aesthetic impacts associated with the proposed project based on the results of the visual impact assessment prepared for this project.[54] The visual analysis was prepared consistent with methodologies established by FHWA's Visual Impact Assessment for Highway Projects.[55] This methodology divides the views into landscape or character units that have distinct, but not necessarily homogenous, visual appearance. Typical views, called key viewpoints, are selected for each unit to represent the views to/from the project. The view of the motorist is also considered as a separate character unit.

Existing and proposed visual quality, both from specific viewpoints, as well as for general landscape units, is evaluated based on three criteria – vividness, intactness, and unity:

- Vividness: the memorability of the components of a view as they combine to form striking or distinctive patterns in the landscape. This can include the prominence of a structure or feature as viewed against other elements, or the interplay of the different elements that create a striking view.
- Intactness: The integrity of visual order in the view and its freedom from visual encroachment. Both natural and man-made environments may be encroached upon by elements that detract from the overall composition of the view. The removal of elements may also have the same effect.
- Unity: the visual coherence and composition of the landscape viewed to form a harmonious visual pattern. Manmade environments with no visual relation to natural landform or landcover patterns display a lack of unity.

3.8.1 Regulatory Setting

NEPA establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* and culturally pleasing surroundings (42 U.S.C. 4331[b][2]; emphasis added). To further emphasize this point, FHWA, in its implementation of NEPA (23 U.S.C. 109[h]), directs that final decisions regarding projects are made in the best overall public interest, taking into account adverse environmental impacts including, among others, the destruction or disruption of aesthetic values.

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[54] Visual Impact Assessment for 6th Street Viaduct Improvement Project. August 2008.
[55] USDOT, 1981. United States Department of Transportation, Federal Highway Administration, Office of Environmental Policy, *Visual Impact Assessment for Highway Projects,* U.S. Department of Transportation, Washington D.C. March.

Likewise, CEQA establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities." (PRC Section 21001[b]; emphasis added).

Applicable local policies that provide aesthetic guidelines within the project area include:

- The Central City North Community Plan (2000), which includes an objective that encourages the preservation and enhancement of the varied and distinctive character of the community and its landmarks.
- The Boyle Heights Community Plan (1998), which states that the unique character of community streets should be maintained and enhanced by improved design characteristics, such as street trees, landscaped median strips, traffic islands, and special paving.

A local planning endeavor that may ultimately affect the aesthetics of the project area is the City of Los Angeles River Revitalization Master Plan (LARRMP). The LARRMP has completed the environmental review and approval process, and it will be implemented in coordination with other projects in the corridor or as separate stand-alone projects as funding allows.

3.8.2 Affected Environment

The proposed project is located within a heavily urbanized area on the east side of Downtown Los Angeles, connecting the Boyle Heights neighborhood east of the Los Angeles River with the Central City North community to the west.

3.8.2.1 Setting

The 6th Street Viaduct crosses US 101 on its eastern edge, and then it crosses over a mix of rail yards, industrial buildings, and the concrete-lined Los Angeles River The area is highly industrialized, particularly the areas immediately around the viaduct, although a few residential areas are located farther away from the structure.

Native vegetation and landscaping are largely absent from the areas around and underneath the viaduct, except for vegetation associated with the highways. This vegetation appears to consist of landscape plantings with volunteer species, including acacia, eucalyptus, and fan palms. The topography of the area appears relatively flat within the rail/river corridor, except for the river channel itself. Areas to the east have more topographic character, and the two freeways sit lower in the landscape than the surrounding areas.

No Scenic Routes are located within or near the project area. The viaduct was determined eligible for listing in the National Register of Historic Places (NRHP) under Criteria A and C for its association with the Los Angeles River bridge program and its extraordinary Streamline

Moderne steel and reinforced concrete design. It was also determined eligible as a contributor to a thematic group of 118 “Historic Highway Arch and Other Bridges in California.” Because the viaduct has been determined eligible for listing in the NRHP, it is also listed in the California Register of Historical Resources (CRHR).

3.8.2.2 Viewshed and Viewer Sensitivity

A viewshed is the area normally visible from an observer’s viewpoint location, including the screening effects of any vegetation or structures. Limits of a viewshed are defined as the visual limits of the views to or from the proposed project. The viewshed includes the locations of viewers likely to be affected by visual changes brought about by the project features. For this project, the viewshed includes the portions of the city that have views to the bridge. The area of this viewshed is highly dependent on the topography of adjacent areas, as well as the height of the buildings, with high rises having potential views even though they are some distance from the project site.

The sensitivities of different types of viewers vary depending upon their activity and their awareness of and familiarity with the surrounding environment. The following describes the comparative sensitivity of the various types of viewers in decreasing order of sensitivity.

- **Residents:** Residents, particularly those with views of the project from their homes, would be most sensitive to change because of the relative permanency of their viewing experience.
- **Business Owners, Employees, and Customers:** Owners, employees, and customers of retail, industrial, and professional establishments within the project area would be considered sensitive viewers because they have frequent opportunities to experience the views from their workplaces and routinely visit on-street activity areas. These views can be fleeting or lengthy in duration.
- **Pedestrians:** Pedestrians, both on the bridge or on a street with views to the bridge, would be considered sensitive viewers, as they would be directly within the viewshed and would have lengthy exposure to views.
- **Regular Motorists:** Regular motorists would be those who live in the community or who commute through the corridor on a regular basis and are familiar with the surrounding views; however, their sensitivity to these views would be less than that of a pedestrian, as their passage through the project area is quicker and their attention is focused on road conditions.
- **Occasional Motorists:** Occasional motorists are typically nonresident, noncommuter tourists. Tourists would most likely be heading west toward downtown after exiting US 101. They would only have views of the project area from the roadway.

3.8.2.3 Visual Resources and Visual Quality at Key Viewpoints

The 6th Street Viaduct corridor study area can be divided into seven landscape units, which are described below, and can be seen in Figure 3.8-1. Nearly all of the landscape units are bisected by the 6th Street Viaduct, which crosses above the groundplane units.

- **Western Warehouse Landscape Unit:** This landscape unit, comprising the western portion of the project area, is dominated by warehouses and industrial development. The area is densely developed, very urban, and has little vegetation or open space.
- **River-Rail Corridor Landscape Unit:** This landscape unit is in the heart of the project area. It is made up of the channelized Los Angeles River and numerous railroad tracks, which are owned by MTA, BNSF, and UPRR, along the west and east banks of the river.
- **Eastern Warehouse Landscape Unit:** The landscape unit is made up of warehouses and industrial buildings. It is similar in character and development patterns to the Western Warehouse Landscape Unit.
- **Interstate Corridor Landscape Unit:** This landscape unit is at the eastern edge of the project area and consists of two freeway undercrossings – US 101 and I-5. Most of the views within this unit are from US 101, since landscaping and topography limit the views from I-5.
- **High-Rise Residential Landscape Unit:** This landscape unit is found in the northeast quadrant of the project area in the Boyle Heights neighborhood. It is made up of a mix of commercial and multi-story apartments (east side of US 101). Views to the project area can be found from the western façades of the buildings.
- **Multi-Family Residential Landscape Unit:** Between the Eastern Warehouse Landscape Unit and the Interstate Corridor Landscape Unit is the Multi-Family Residential Landscape Unit, which is composed of a single complex of two-story units. The entrance to the complex is off Clarence Street. Views to the project are primarily along Clarence Street from the entrance and, obliquely, from units fronting Clarence Street.
- **6th Street Corridor Landscape Unit:** This landscape unit addresses the views along 6th Street as the viaduct crosses mostly above the other landscape units.

Key viewpoints of the visual resources were established within these landscape units. Key viewpoints were chosen based on the view experienced most frequently by a sensitive viewer group. This was done to determine the extent of visual effects on a resource or view resulting from the project based on the viewer's response to the change in visual quality. In addition to the landscape units, Figure 3.8-1 shows the location and direction of the key viewpoints analyzed. The key viewpoints for the visual analysis are:

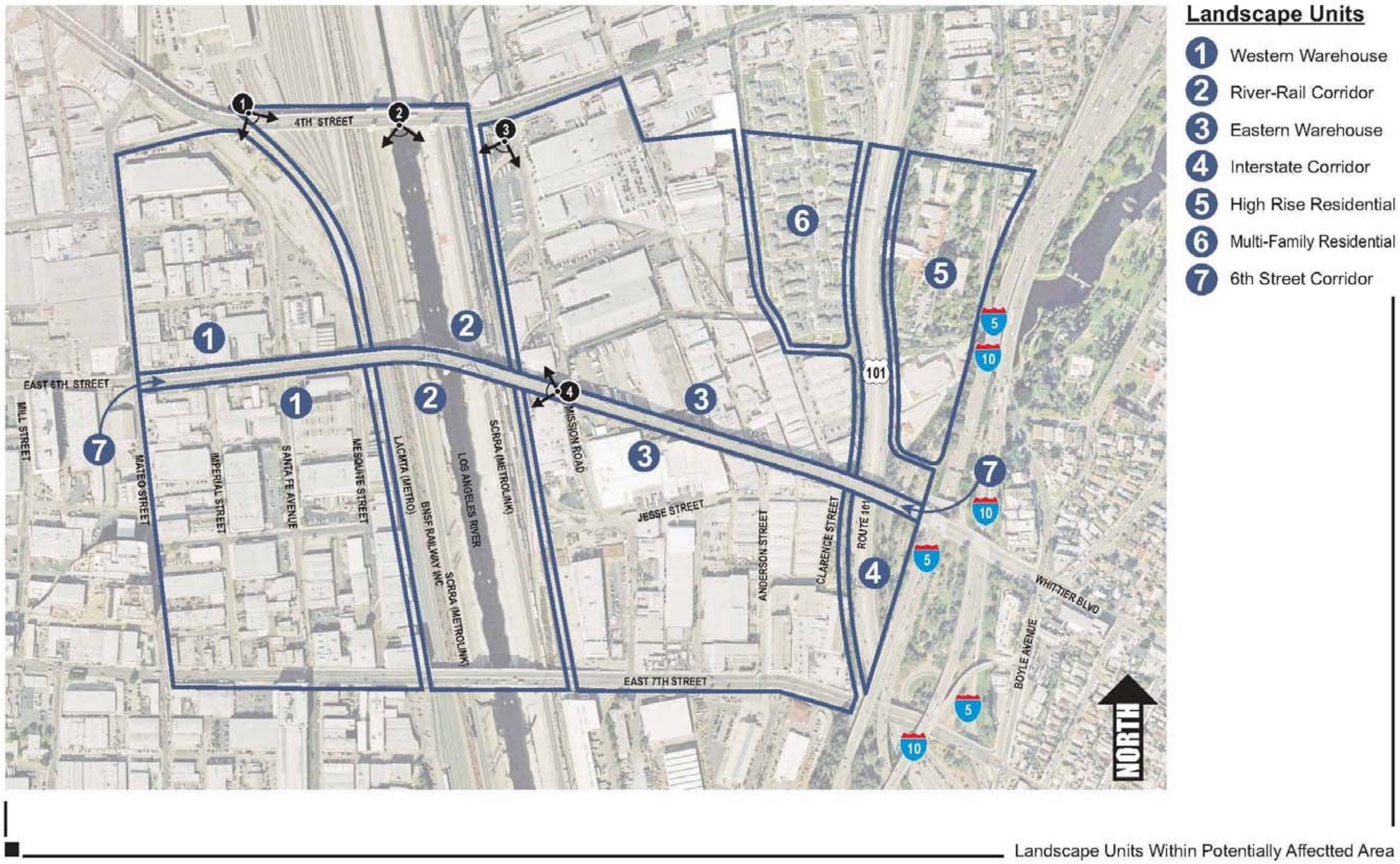


Figure 3.8-1 Key Viewpoint Locations

- **Viewpoint 1 within the River-Rail Corridor Landscape Unit:** This view is from the 4th Street Viaduct looking towards the center span and eastern portion of the 6th Street Viaduct. The view is from the perspective of a pedestrian on 4th Street. The existing visual character is of a heavily industrialized area of low visual quality, with low vividness, intactness, and unity. The bridge itself has a high visual quality due to its vividness within the landscape.
- **Viewpoint 2 within the River-Rail Corridor Landscape Unit:** This viewpoint is from the center of the 4th Street Viaduct looking towards the center span and western portion of the 6th Street Viaduct. The view is from the perspective of a pedestrian on 4th Street. The existing visual character is of a heavily industrialized area of low visual quality, with low vividness, intactness and unity. The viaduct itself has a high visual quality due to its vividness within the landscape.
- **Viewpoint 3 within the Eastern Warehouse Landscape Unit:** This view is from the 4th Street Viaduct at the western edge of the landscape unit looking to the 6th Street Viaduct. The existing visual character is of a heavily industrialized area of low visual quality, with low vividness, intactness, and unity. The viaduct itself has a high visual quality due to its vividness within the landscape.
- **Viewpoint 4 within the 6th Street Corridor Landscape Unit:** This viewpoint looks toward the center span of the 6th Street Viaduct from the roadway. The view is from the perspective of the WB motorist. The character of the existing view is highlighted by the main-span elements (i.e., railing, light fixtures, and arches), along with the background view of the downtown skyline. The main-span elements increase the visual quality of the view due to their vividness and proximity to the viewer; however, the elements outside of the bridge (i.e., power transmission lines, adjacent industrial buildings, rail lines, and concrete channel) detract from the view, lowering the unity and intactness, as well as the vividness of the view. Overall, the view has a moderate to moderately low quality.

3.8.3 Environmental Consequences

3.8.3.1 Construction Impacts

For purposes of this analysis, temporary impacts are defined as those impacts that would be in effect only during demolition and construction of the 6th Street Viaduct. These impacts are only temporary and would cease on completion of the project.

Alternative 1 – No Action

No impacts to visual resources over the baseline condition would occur under the No Action Alternative.

Alternative 2 – Retrofit

Active Demolition and Construction: Demolition and construction activities generate visual and aesthetic images that are generally disruptive to the status quo and may be undesirable or offensive to some affected individuals or groups. The presence and operation of construction equipment, such as heavy trucks, cranes, or excavators, may be experienced as disruptive or out of context. Construction-generated fumes and dust generate visual as well as air quality impacts.

Construction Staging Areas: Two locations have been identified as candidates for use as construction staging areas. Two construction yards are anticipated for the project – one to the southeast at Mission Road and Jesse Street abutting the railroad corridor, and the other to the northwest at Santa Fe Avenue and Willow Street near the railroad switching yard. The first location may not be used because the cultural resources study identified an archaeological site within the proposed area; hence, the area would be protected (see Section 3.9 – Cultural Resources). The second location is currently open space/parking lots, and they would presumably be returned to open space/parking after completion of the project. Impacts of the staging facilities would be considered as low due to the small areas of these sites and their locations adjacent to railroad corridors and industrial uses. Overall, due to the temporary nature of these effects, they are not considered substantial.

Alternative 3 – Replacement

Active Demolition and Construction: Depending on the alignment chosen, building removals and property clearings associated with that alternative are anticipated, and there would be many open lots adjacent to the structure as it was being constructed. Two outcomes can be anticipated for these areas. The first is that the vacated land could be redeveloped to be compatible with the features proposed as part of the LARRMP. The second option is that given the land costs in the area, these open lots could be reconfigured and resold for new businesses.

Construction Staging Areas: The impact description is similar to Alternative 2 discussed above.

3.8.3.2 Permanent Impacts

The visual impact of project alternatives is determined by assessing the visual resource change due to the project and predicting viewer response to that change. Visual resource change is the total change in visual character and visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the existing visual character of the landscape. The second step is to compare the visual quality of the existing resources with the projected visual quality after the project is constructed. Viewer response to the changes is the sum of viewer exposure and viewer sensitivity to the project, as previously described. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to react negatively to the change.

Alternative 1 – No Action

With this alternative, the structure would remain in its current configuration and at its current rate of deterioration. Continued inspections and maintenance would occur, and the span would remain open to traffic as long as it is safe; however, it can be expected that at some point the alkali silica reaction (ASR) deterioration would reach a point where the viaduct would be unsafe for traffic and eventually unsafe for the community around the viaduct, or there would be a major earthquake causing it to collapse and the span would have to be torn down. As long as the viaduct remains standing, the No Action Alternative would have no visual impact.

Alternative 2 – Retrofit

Retrofitting the columns and other improvements to the existing viaduct would leave much of the viaduct visually similar to the existing span; however many of these components would appear larger than the existing elements, which may also change the visual proportions of the structure. For example, the columns would appear more massive than they appear now (see example simulation in Figure 3.8-2). The infill walls would add a new visual component to portions of the viaduct where there are not already infill walls between the column bents. These changes would likely go unnoticed by the general public over the long-term.

Proposed changes, although not radical, would be most noticeable in the Eastern and Western Warehouse Landscape Units. These two units border the viaduct and have many roads that cross under the span. In addition, the viewer groups in this area are made up of business owners and employees who see the viaduct daily. The railings and light fixtures would not be replaced under this alternative, preserving the existing views for travelers on the viaduct. Viewers within the River-Rail Corridor Landscape Unit would have quick views as their train passes the viaduct, but they would not likely notice the changes.

The improvements to the viaduct would not likely change the overall visual quality of any of the associated landscape units. The new finish and color on the overall bridge associated with the new coatings would clean up the viaduct, temporarily removing graffiti and unifying the image of the bridge in the landscape. This would cause an increase in the vividness of the structure, but it would not affect an overall change within the context of the surrounding environment. Because of the retrofit elements, it is possible that the bridge would no longer be eligible for listing in the NRHP as a historic structure; however, the scenic resource (the viaduct) would remain and would appear similar to the existing landmark from a distance.

Existing View

View after Retrofitting (Note that columns in background would be similarly retrofitted.)

Figure 3.8-2 Artist Rendering of Viaduct Retrofit

Alternative 3 – Replacement

With this alternative, 5 different bridge types were identified for design consideration, along with 3 different alignments, allowing for 15 different combinations of sub-alternatives. The following discussion provides an analysis of the general effects of the different alignments on the visual environment. Following that is an assessment of bridge types and their effect on the visual environment of the area.

Bridge/Viaduct Alignments

Several alignment alternatives have been considered, but three were identified for further design consideration. This analysis looks at the effects of each of the alignments on the visual character of the landscape.

Alignment 3A: This alignment closely follows the existing viaduct; however, because of the wider viaduct replacement structure, the north side of the viaduct footprint would extend further to the north, while the south side of the footprint would remain essentially at the same location except for the segment of the alignment over the Los Angeles River, which would be shifted slightly to the south to improve the horizontal curve radius and provide better design speeds and stopping sight distances.

The realignment would require removal of several buildings that abut the northern edge of the existing structure. A row of buildings north of the structure between Mateo Street and Santa Fe Avenue, west of the river crossing, would be removed, as would several buildings east of the river crossing, particularly between Jesse and Clarence Streets.

From the ground level, the new open space created by clearing these properties would be seen by travelers on local streets and from any nearby businesses. Removal of the buildings would open up the views to the new structure since many of the existing buildings are close to the existing viaduct. On 6th Street, the building removals would not be noticeable to the drivers because the bridge railing would block out most of the views to the immediate area. Pedestrians looking over the railing would see the open areas.

Alignment 3B: With this alignment alternative, the new structure would swing much more to the north, especially between the tie-in at the US 101 crossing to the eastern edge of the river crossing. At the river crossing, the alignment would swing south of existing. Between Santa Fe Avenue and Mateo Street, the alignment would follow the existing viaduct footprint, with the widening occurring to the north. In plan view, the new alignment cuts a long arc through the landscape.

This alignment would remove considerably more of the existing buildings east of the river crossing than Alignment 3A. One or more buildings between Clarence Street and the railroad tracks north of the existing alignment would be removed by the proposed project with this alignment. West of the river, Alignment 3B is nearly the same as Alignment 3A, so the anticipated impacts would be similar.

At ground level, the cleared properties, plus the removal of the existing viaduct, would create a long linear open space around the new viaduct structure. Views to this new structure would be more open along the cross streets than the current configuration allows. Views from the new viaduct would be very similar to those described for Alignment 3A.

Alignment 3C: This alignment would keep the same basic centerline as the existing east of the river crossing. The new structure would be wider on the north and south sides, and it would be cantilevered to minimize building removals. At the river crossing, the radius would be 'flattened,' moving the bridge slightly south. West of the river crossing, the wider structure would be aligned to the north as in the previous two alignment alternatives. With this alternative, property acquisition and clearing would primarily be associated with the row of buildings on the north side of the structure between Mateo Street and Santa Fe Avenue. Because this alternative most closely follows the existing alignment, there would be little impact to the views on the ground on the east side of the river.

Replacement Bridge Types

Working through a Community Advisory Committee (CAC), 18 bridge types were studied by the project team for replacement of the center (main) span – from a replication of the existing design to cable-stayed type structures. On each side of this center span are the viaduct approaches, which would be designed sympathetically to the selected bridge type. Out of this process, five bridge type alternatives were advanced for further design consideration. The five bridge types are:

- Type 1. Reproduction of the existing structure (replication) (see Figure 3.8-3)
- Type 2. Haunched cast-in-place prestressed concrete box girder with steel tied arch pedestrian bridge on each side of the roadway span (see Figure 3.8-4)
- Type 3. Steel half through arch with four corner pylons (see Figure 3.8-5)
- Type 4. Extradosed concrete box girder with dual pylons (cable-stay bridge with two spans) (see Figure 3.8-6)
- Type 5. Extradosed concrete box girder with single pylon (cable-stay bridge with seven spans) (see Figure 3.8-7)

Each of the designs carried forward for evaluation would expand the viaduct's current width from 66 ft to approximately 94 ft. Photo simulations for each of the replacement bridge designs, along with a description of each type and its effects on the visual environment are presented on the following pages. These simulations represent the anticipated views from Key Viewpoint 3.

Existing View from Key Viewpoint 3

Note: Bridge color subject to change during the design phase.

Proposed View from Key Viewpoint 3

Figure 3.8-3 Bridge Type 1: Replication

Existing View from Key Viewpoint 3

Proposed View from Key Viewpoint 3

Figure 3.8-4 Bridge Type 2: Haunched Box Girder with Parallel Steel Tied Arches

Existing View from Key Viewpoint 3

Proposed View from Key Viewpoint 3

Figure 3.8-5 Bridge Type 3: Steel Half-Through Arch

Existing View from Key Viewpoint 3

Proposed View from Key Viewpoint 3

Figure 3.8-6 Bridge Type 4: Extradosed Concrete Box with Dual Pylons (Two-Span Cable-Stay Bridge)

Existing View from Key Viewpoint 3

Proposed View from Key Viewpoint 3

Figure 3.8-7 Bridge Type 5: Extradosed Concrete Box Girder with Single Pylon (Cable-Stay Bridge with Seven Spans)

Simulation at Key Viewpoints

Simulations for each of the key viewpoints were developed to demonstrate the potential effect of the viaduct replacement from several vantage points. These are discussed below.

Key Viewpoints 1 and 2

The photograph for Key Viewpoint 1 was taken looking southeast from the 4th Street Viaduct over the rail yard to the 6th Street Viaduct center span and portions of the Eastern Warehouse Landscape Unit. The photograph for Key Viewpoint 2 was taken in the River-Rail Landscape Unit looking southwest from the 4th Street Viaduct to the center span and western portion of the 6th Street Viaduct.

The existing visual character from both of these viewpoints is of a heavily industrialized area of low visual quality, with low vividness, intactness, and unity. The bridge itself has a high visual quality due to its vividness within the landscape. The new viaduct type selected to replace the existing structure would change the current visible features within the project area. In the case of the reproduction alternative (Bridge Type 1) shown in the simulations (Figures 3.8-8 and 3.8-9), "new" elements would include the reintroduced center-span monuments and end monuments at each of the four corners of the main span bridge (these were removed from the existing bridge in the 1950s for public safety). The new bridge rails would be slightly taller than those of the existing structure, but from this distance, that change would be unnoticeable. In addition, the new viaduct would have longer spans outside the main span. The purpose of the longer spans is to be able to completely span the railroad tracks on both sides of the river. The effect of longer spans would change the balance and proportion from the existing viaduct. The viaduct would be visually similar when viewed from the 6th Street roadway, but the existing "goose-neck" street light fixtures would be removed and replaced with a system that more closely replicates the original design.

Specific visual changes would be dependent on the design of the new viaduct structure; however, it can be assumed that the visual character of the viaduct would remain the same or possibly be increased with each of the proposed replacement bridge types because the new structure designs create an equally memorable structure in the landscape. The character of the surrounding land use, however, would remain the same. The project would require the removal of some existing buildings north of the viaduct, which would have the effect of creating some open space where none currently exists; the extent of this is dependent on the alignment selected. This land could either be left as open space within the community or sold and new businesses constructed. If left open, views to the new structure would increase, and the open space could improve the existing visual quality of the surrounding landscape units.

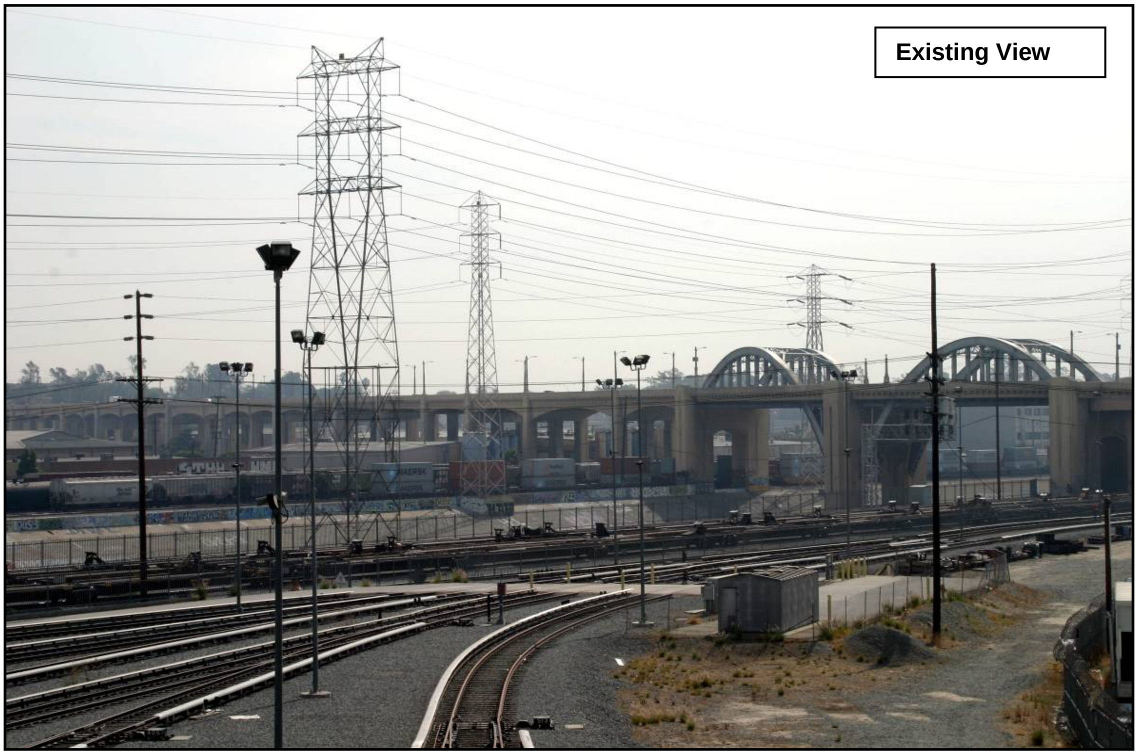


Figure 3.8-8 Viewpoint 1: Bridge Type 1 – Replication on Alignment 'B' Looking Southeast

Figure 3.8-9 Viewpoint 2: Bridge Type 1 – Replication on Alignment 'B' Looking Southwest

It is not anticipated that any of the proposed structures would result in a significant visual impact from Key Viewpoints 1 and 2. Each of the proposed structures and alignments would create a prominent element within the viewshed and serve the same visual purpose as the existing structure – that of a memorable counterpoint to the industrial character of the surrounding land uses. In the case of the replication concept (Bridge Type 1), the visual character of the viaduct would still be modified from the existing by restoration of previously removed architectural elements, and the fact that the structure would be new.

An additional change to note between the replicated viaduct compared to the existing structure is that the replacement viaduct would have longer spans on the east and west sides of the main span. The current structure has columns set within the railyards on each side of the river, which conflict with the railroad operations. To rectify this, the new viaduct has been designed to span the railyards, creating longer spans on each side of the relatively short spans over the river. The remaining spans of the viaduct will also be longer. The longer spans would change the balance and proportions (between span to column) found in the current structure, with its equally spaced columns throughout the structure, to one in which the center spans would appear much shorter relative to the overall viaduct structure.

Residents and local business employees would most likely notice the changes in the visual environment from the replacement of the structure. Pedestrians on the 4th Street Viaduct would have clear views of the new structure, and commuters would have a partial view to full view depending on the height of their vehicle in relation to the height of the railing. Those who regularly use the 4th Street Viaduct, such as residents, business employees, and commuters, would most likely notice changes to the visual environment caused by the structure replacement; however, awareness of a changed structure would quickly diminish, and the new facility would become a familiar component within the overall viewshed.

Key Viewpoint 3

Simulations from this key viewpoint can be seen in Figures 3.8-3 to 3.8-7 under the discussion of the proposed bridge types.

Key Viewpoint 4

The photograph for this key viewpoint was taken facing west on the 6th Street Viaduct, towards Downtown Los Angeles, and represents the view of the WB traveler on 6th Street.

The character of the existing view is highlighted by the main-span elements (i.e., railing, light fixtures, and arches), along with the background view of the downtown skyline. The main-span elements increase the visual quality of the view due to their vividness and proximity to the viewer; however, the elements outside of the bridge (i.e., power transmission lines, adjacent industrial buildings, rail lines, and concrete channel) detract from the view, lowering the unity and intactness, as well as the vividness of the view. Overall, the view has a moderate to moderately low quality. Visual simulation of this viewpoint was performed for three representative bridge types: Type 1 – replication; Type 2 – arches (representing Bridge Types 2 and 3); and Type 5 – extradosed (representing Bridge Types 4 and 5), respectively, as described below.

Bridge Type 1 – Replication (Figure 3.8-10) would be a replica of the existing bridge; most of the "new" elements would appear similar to the existing. The new railings would be slightly higher than the current, and the monuments at the center span and the archway tie-in points would reflect their former height and mass. As previously discussed, the arrangement of columns would differ from the existing by spacing the columns farther apart beginning at the railyards and continuing to each end of the viaduct, which would alter the balance and proportions found in the existing structure. The roadway would also be wider than existing to accommodate the wider outside lanes and center median.

Bridge Type 2 – Parallel Tied Arches (Figure 3.8-11) includes a pair of arches on each side of the new bridge. The monuments at each of the four corners of the archways would be less massive than what would be included in the replication alternative. Other bridge elements (e.g., lights and railing) would be new. The roadway would also be wider than existing.

Bridge Type 5 – Extradosed with Single Center Pylon (Figure 3.8-12) has a series of six pylons with cables located in the raised median of the new viaduct. The new structure would be wider than the existing, but in this alternative, no outside elements, such as monuments or belvederes, would be located along the outside edge of the structure. The pylons and cables would present a more modern image than the current steel truss arches.

While the changes to the visual character resulting from Bridge Type 1 – Replication would be minor at the center span, the effect of the longer spans on each side of the main span would alter the proportions and balance of the bridge and, therefore, the overall composition created by the main span and the equally proportioned remaining spans found on the existing viaduct. Other changes between the replication and the existing structure are related to the wider cross section and the elements that have been reintroduced (i.e., monuments and historic light standards). The visual quality of the structure would be expected to decrease slightly due to the changes to the proportions and balance in the replicated structure; however, the overall visual quality for the project area would not be expected to change.

A new Bridge Type 2 would present a different visual character or experience than the existing, and the arch units on each side would be somewhat taller than the existing; however, the bridge components (i.e., steel arch, concrete monuments) are similar in character to the existing.

Figure 3.8-10 Viewpoint 4: Bridge Type 1 – Replication

Figure 3.8-11 Viewpoint 4: Bridge Type 2 – Parallel Steel Tied Arches

Figures 3.8-12 Viewpoint 18: Bridge Type 5 – Extradosed with Single Pylon

The resulting vividness of the structure would still be high with a memorable structure. The intactness and unity would remain the same.

A Type 5 Bridge would differ greatly from the design of the existing structure. In place of the arches, there would be a series of cables and concrete pylons. The new design would be no less memorable, so the vividness of the new structure would not differ from the existing, but the character would be different. The unity and intactness of the view would remain the same as existing.

Those user groups (i.e., local residents, business employees and owners, and daily commuters) who have more frequent contact with the existing viaduct would be most likely to notice the subtle changes associated with the new replacement, but the overall response to Bridge Type 1 would be anticipated to be positive for travelers on 6th Street.

For Bridge Types 2 and 5, residents, local business employees, and commuters on the bridge would be most likely to notice the changes in the visual environment because of their familiarity with the views to the existing structure. Some of these viewers could be expected to miss the historic feel of the old bridge, while others could be equally excited by the new bridge design. Overall, since the new bridge design would still provide a memorable crossing point on the viaduct, the anticipated viewer response is expected to be positive.

While each alternative type, including the replication of the structure, would be expected to alter the existing views to varying degrees depending on the alternative selected, the most notable visual impact would be from the replacement of a historic structure with a new structure of different design, or appearance in the case of the replicated structure. However, each of the designs analyzed maintains the vividness (memorability), unity, and intactness experienced with the current viaduct structure.

3.8.3.3 Cumulative Impacts

Alternative 1 – No Action

Since there would be no change to the existing visual resources, there would be no cumulative impacts under this alternative.

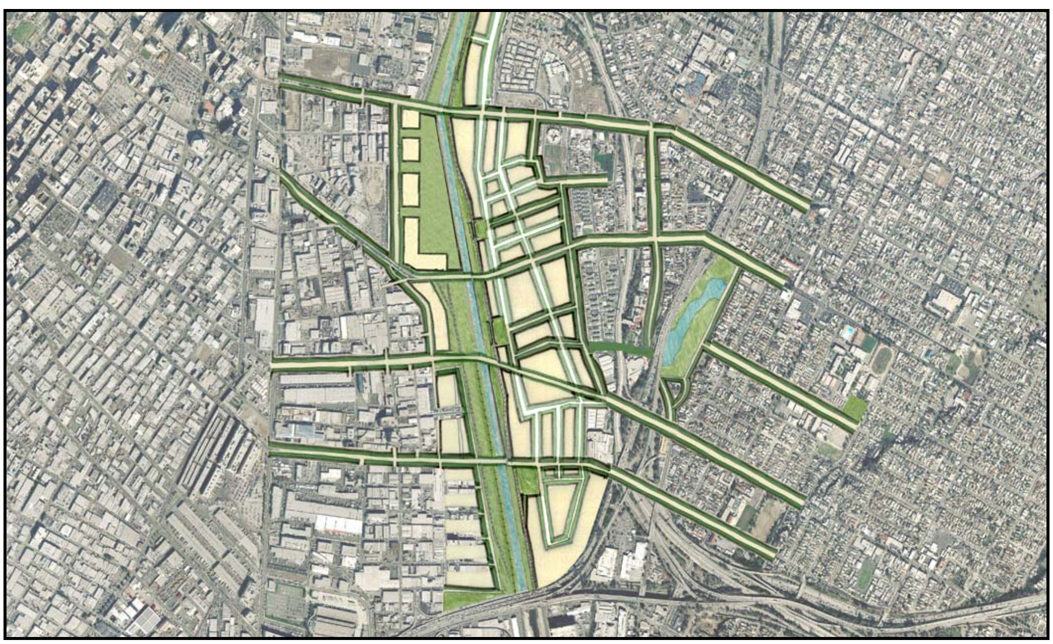
Alternative 2 – Retrofit

Although the proposed retrofit scheme would alter the historic fabric of the 6th Street Viaduct, the iconic structure of the viaduct would still remain. Many of the other historic bridges that span the Los Angeles River have been or are in the planning stages for improvements. The City would continue routine maintenance and more substantial safety and functional improvements. With close coordination with relevant agencies concerning the monumental bridges within the City of Los Angeles, such as the City of Los Angeles Office of Historic Resources, Cultural Heritage Commission, and the State Historic Preservation Officer (SHPO), cumulative impacts on visual resources would be minimized.

Alternative 3 – Replacement

Under this alternative, the existing iconic structure of the 6th Street Viaduct would be removed and replaced with a new structure that would not be considered historic in contrast to the remaining 11 monumental bridges spanning over the Los Angeles River; however, the new structure could soon become a new icon to the City of Los Angeles and nearby communities. Many of the other historic bridges that span the river have been or are in the planning stages for improvements – most recently 1st Street, which is currently being widened. However, the other bridges do not have the ASR condition that afflicts the 6th Street Viaduct, so it is not anticipated that replacement will be needed for the foreseeable future for any of these other bridges; therefore, no adverse effects to surrounding visual resources on a cumulative basis are anticipated.

The largest potential for change in the visual quality of the area lies with the LARRMP. Currently, the plan is not fully funded for implementation; however, if the Master Plan elements were added in this stretch of the river, then the green space and recreational amenities created would have a positive impact on the visual quality of the area (Figure 3.8-13). If portions of the Greening Concept move forward with the project, these would add to the positive impact of the river revitalization by extending the open space into the surrounding communities on both sides of the river and incorporating the monumental Los Angeles River bridges in the overall design.



Source: Los Angeles River Revitalization Master Plan.

Figure 3.8-13 Los Angeles River Revitalization Master Plan: Connections with the Project Area

3.8.3.4 Secondary Impacts

No secondary impacts on visual resources have been identified in the Visual Impact Assessment Technical Report[56] prepared for this project.

3.8.4 Avoidance, Minimization, and Compensation Measures

To address potential adverse visual impacts to the proposed project area and community concerns over the change in the visual appearance of the bridge within the community, the following actions are recommended. With implementation of these mitigation measures, the visual impacts can be reduced, and the project would not result in a substantial change in overall visual quality for the area.

Alternative 1 – No Action

No specific mitigation measures are recommended.

Alternative 2 – Retrofit

No specific mitigation measures are recommended.

Alternative 3 – Replacement

The following measures would help avoid, minimize, and mitigate impacts associated with visual resources.

- Work with the community through a Context-Sensitive Solution (CSS) process to develop Aesthetic and Urban Design Guidelines for the new structure through a formalized process that allows community input. This process began with formation of the Community Advisory Committee (CAC). The process would continue throughout the environmental review process.
- Evaluate the benefit to the community of preserving open space created by the proposed project. Work with the community and other stakeholders, including City agencies, on developing the Greening Concept to include open space and park amenities within the community.
- Provide connections between the community and the future LARRMP features as part of the project design, either through incorporation of the Greening Concept or through provisions in the viaduct design for future connections to the river corridor.
- Develop bridge architecture to create a Community/City Gateway, including possible bridge monuments with decorative lighting, parapet wall treatments, decorative fencing/railing and lighting, and abutment/ wing walls, to increase the memorability and announce the presence of the bridge.

[56] Visual Impact Assessment for 6th Street Viaduct Improvement Project. August 2008.

- Texturize and color slope paving and other smooth surfaces to deter graffiti and enhance the bridge aesthetics.
- Apply architectural detailing to the retaining walls, including textures, colors, and patterns. Include caps that would provide shadow lines.

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3.9 Cultural Resources

This section addresses potential impacts associated with archaeological and historic architectural resources within the designated Area of Potential Effects (APE). The information is excerpted from the Historic Property Survey Report (HPSR)[57], which contains two technical reports, including the Archaeological Survey Report (ASR)[58] and the Historical Resources Evaluation Report (HRER)[59].

3.9.1 Regulatory Setting

"Cultural resources," as used in this document, refers to all historic architectural and archaeological resources, regardless of significance. The following laws and regulations deal with cultural resources.

The National Historic Preservation Act of 1966 (NHPA), as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the ACHP, FHWA, State Historic Preservation Officer (SHPO), and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations (36 CFR 800) streamlining the Section 106 process and delegating certain responsibilities to Caltrans. FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties may also be subject to Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from significant historic sites. See Appendix B for the Draft Section 4(f) Evaluation for the proposed project.

Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources (CRHR). PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet NRHP listing criteria. It further

[57] Historic Property Survey Report for 6th Street Viaduct Seismic Improvement Project. October 2007.
[58] Archaeological Survey Report for 6th Street Viaduct Seismic Improvement Project. August 2008.
[59] Historical Resources Evaluation Report for 6th Street Viaduct Seismic Improvement Project. October 2007.

specifically requires the Department to inventory state-owned structures in its ROWs. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the National Register or are registered or eligible for registration as California Historical Landmarks

3.9.2 Affected Environment

A study to identify potential historic properties in the APE of the project and to evaluate the eligibility of any identified properties for inclusion in the NRHP was conducted in October 2007. An Historic Property Survey Report (HPSR) and Historical Resources Evaluation Report (HRER) were prepared in accordance with the Section 106 PA. A total of 145 parcels were surveyed within the area of potential effects (APE) for the preparation of the HRER. Of the 145 parcels, 3 properties – the Iron Mountain/1340 E. 6th Street building, the Union Pacific Railroad (UPRR), and the 6th Street Viaduct – were previously evaluated for historic significance. The Iron Mountain/1340 E. 6th Street building was previously determined not eligible for listing in the NRHP. The UPRR was previously determined eligible for listing in the NRHP; however, the SHPO did not concur with the finding (see Section 3.9.2.5). The 6th Street Viaduct was also proposed as a contributor to a potential NRHP-eligible "City of Los Angeles Monumental Bridges" historic district, which is a group of 29 bridges located within the City of Los Angeles[60]; however, SHPO never concurred with that recommendation. The HPSR identified one archaeological resource (site 19-003683, described below), and the remaining 140 parcels were determined exempt from review under Attachment 4 of the Section 106 PA; therefore, one historic architectural resource and one historic-era archaeological resource would be affected by the proposed undertaking.

During the Draft EIR/EIS preparation, Section 106 consultation with SHPO under the PA was initiated by Caltrans' professionally qualified staff (PQS), as required by PRC 5024.5, on September 9, 2008. An HPSR, with supporting HRER and ASR, was submitted to the SHPO for review on September 9, 2008. No response was received within 30 days, and the SHPO's concurrence on the HPSR was assumed on November 12, 2008, which is in compliance with PRC 5024.5.

3.9.2.1 Historical Architectural APE

The historic architectural APE was defined to include the area directly affected by construction and construction staging, as well as the parcels/buildings immediately adjacent to the construction limits. Land uses within the historic architectural APE consist of industrial and

[60] JRP Historic Consulting for Caltrans, May 2004.

commercial properties. An intensive pedestrian-survey by architectural historians during May, June, and July 2007 determined that there were 145 parcels within the APE requiring examination for potential historical significance. Upon further investigation, it was found that 32 of these parcels contained historic-era built resources (properties that pre-date 1957). One historic-era structure, the 6th Street Viaduct (Bridge #53C-1880), was previously determined eligible for inclusion in the NRHP, as well as the CRHR under CEQA.

3.9.2.2 Archaeological APE

The archaeological APE included all areas that would be subjected to subsurface ground disturbance under both build alternatives. The areas near the existing and proposed viaduct footings are those subject to extensive ground disturbance. Other areas within the archaeological APE, including the building demolition areas, would be subject to shallow subsurface disturbance.

3.9.2.3 Research Methods

A cultural resources records search of the APE and the surrounding 1-mile radius was conducted on April 30, 2006, by staff at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton. The SCCIC is the designated repository of the California Historical Resources Information System (CHRIS) and houses records concerning archaeological and historic resources and associated studies in Los Angeles County. During the records search, the following sources were consulted:

- National Register of Historic Places (NRHP)
- California Register of Historical Resources (CRHR)
- California Historic Resources Inventory (CHRI)
- California Historical Landmarks (CHL)
- California Points of Historical Interest (CPHI)
- Archaeological Determinations of Eligibility
- Archaeological site records
- Maps depicting site locations
- Historic USGS *Pasadena* 15’ Topographic Quadrangle of 1896
- Historic USGS *Pasadena* 15’ Topographic Quadrangle of 1900
- Historic USGS *Los Angeles* 6’ Topographic Quadrangle of 1928
- Cultural resource studies and reports that covered areas within 1-mile of the APE

Seventy-three (73) historic architectural and archaeological resources surveys for other projects have previously been conducted within a 1-mile radius of the archaeological APE. Thirteen (13) of these studies include portions of the APE and covered approximately 90 percent of the proposed project. The records search revealed that 13 previously recorded archaeological resources and 54 historic architectural resources were identified within a 1-mile radius of the project APE. Of the 13 archaeological resources identified within the 1-mile search radius, only one resource, designated site 19-003683, is located within the proposed project's APE.

As part of the background research, the Native American Heritage Commission (NAHC) was contacted to request information on any known Native American cultural resources and for names of Native American individuals/organizations that may have knowledge of cultural resources in the project area. The NAHC responded on April 2, 2007, stating that their search of sacred land files revealed no indication of the presence of Native American sacred lands in the immediate project area; however, they also recommended that other Native American individuals/organizations be contacted to verify the findings of the NAHC. Notification letters were sent to the following Native American tribes on June 15, 2007:

- Ti'At Society
- Gabrielino Tongva Indians of California Tribal Council
- Gabrielino/Tongva Council/Gabrielino Tongva Nation
- Gabrielino/Tongva Tribal Council
- Tongva Ancestral Territorial Tribal Nation
- Fernando Tataviam Band of Mission Indians
- Los Angeles City/County Native American Indian Commission

Information regarding cultural resources was also sought from local government agencies, historical societies, and historic preservation groups. Letters were sent by U.S. Mail on June 1, 2007, to local government agencies and local historic preservation and historic preservation advocacy groups/societies requesting information on potential historic resources in the area of the proposed 6th Street Viaduct Seismic Improvement Project, including:

- United State Army Corps of Engineers (USACE), District Planning Section
- City of Los Angeles, Office of Historical Resources, Department of City Planning
- Los Angeles Conservancy
- Historical Society of Southern California
- California Historical Society
- American Society of Civil Engineers
- Boyle Heights Historical Society
- Chinese Historical Society of Southern California
- Jewish Historical Society of Southern California
- Los Angeles Railroad Heritage Foundation
- Society of Architectural Historians, Southern California Chapter

Comments received ranged from requests for additional research to requests for additional consideration regarding the project alternative selection.

Other outlets for public involvement included public information meetings, stakeholder group meetings, Community Advisory Committee (CAC) meetings, and public scoping meetings. Refer to Attachment 2 in the HPSR prepared for this project for additional information, copies of all notices, and responses to comments received.

3.9.2.4 Archaeological Resource Findings

An archaeological field survey of the APE, using a combination of pedestrian and "windshield" techniques, was conducted by qualified archaeologists on May 21, 2007. Most of the APE is within existing roadways and/or adjacent to the banks of the Los Angeles River and has been subjected to extensive disturbance. The survey resulted in the relocation of site 19-003683, though visibility was obscured by the presence of road gravels and cargo containers. The site, consisting of historic period domestic refuse, is located within the southern APE parcel.

Furthermore, the long historic use of the area increases the likelihood of finding additional buried historic-era cultural resources as a result of excavations undertaken in association with project construction. The presence of historic-era cultural resources and the proximity of Native American cultural resources, as revealed through the NAHC search of the Sacred Lands Database and consultation with representatives of the Native American community, indicates a moderate to high likelihood that historic-era and/or Native American cultural resources may be encountered as a result of project construction.

Per 36 CFR 800.4(c)1 and the Section 106 PA, Stipulation VIII.C,2 [Caltrans PA 2003:4]), the previously identified cultural resource site (19-003683) present within the APE requires evaluation to determine NRHP eligibility and by extension eligibility for the CRHR, should it be subject to impacts from the project. However, per the Caltrans PA Stipulation VIII.C.3 (Caltrans 2003:4), "If archaeological properties within an undertaking's APE are protected from any potential effects by establishment and effective enforcement of an Environmentally Sensitive Area (ESA), as described in Attachment 5 to this Agreement, the signatories agree that Caltrans may consider such properties to be NRHP eligible for the purposes of that undertaking without conducting subsurface testing or surface collection. …" In light of these factors, it was recommended by Caltrans to the SHPO that the area in and directly adjacent to archaeological site 19-003683 be placed in an ESA, and that the site be considered eligible for the NRHP and CRHR. The establishment of an ESA Action Plan would require fencing off the area from construction activities, monitoring by a qualified archaeologist and a Native American monitor during ground-disturbing activities, and training for construction workers; therefore, the area within the defined site limits would be protected from use as a construction staging area.

Under Caltrans guidelines, cultural resources should be avoided whenever possible. Given the moderate to high potential to encounter buried archaeological resources during ground disturbance, archaeological and Native American monitoring is warranted in areas where ground disturbance would occur. A cultural resources monitoring plan, which would include Native American consultation, would be developed prior to and implemented during ground-disturbing activities associated with the project.

If cultural resources are encountered, they would be treated as “Post Review Discoveries” under 36 CFR 800.13(b)(2) and conditions outlined in the Caltrans Environmental Handbook, Volume 2, Chapter 2, Section 2-4.4. General recommendations with regard to the identification and evaluation of previously undiscovered cultural resources within the project APE suggest that if previously identified cultural materials (e.g., stone artifacts, dark ashy soils or burned rocks, or old glass, metal, or ceramic artifacts) are unearthed during construction, then it is Caltrans’ policy that work in that location should be halted in that area until a qualified archaeologist can assess the nature and significance of the find. Further disturbance in the area of the discovery is to be approved only by Caltrans and City of Los Angeles staff. Additional archaeological survey would be needed if project limits are extended beyond the present survey limits.

In accordance with 14 CCR Section 15064.5(e), in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the Los Angeles County Coroner must be notified of the discovery (California Health and Safety Code Section 7050.5), and all activities in the immediate area of the find must cease until appropriate and lawful measures have been implemented. If the coroner determines that the remains are not recent and of Native American origin, then the coroner will notify the NAHC in Sacramento within 24 hours to determine the Most Likely Descendent (MLD) for the area. The designated MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98.

3.9.2.5 Historic Architectural Resource Findings

A total of 145 parcels were surveyed for the preparation of the Historic Resources Evaluation Report (HRER). Of those 145 parcels, one property was previously determined ineligible for listing in the NRHP, one property was determined eligible for listing in the NRHP but the SHPO did not concur with the finding, and one property was determined eligible for listing in the NRHP as an individual resource and as a contributor to an NRHP-eligible historic district. The remaining 140 parcels were determined exempt from review under Attachment 4 of the Section 106 PA.

The 6th Street Viaduct was found to be eligible for the NRHP under Criteria A and C on October 19, 1986. Its eligibility under Criteria A and C is for its association with the Los Angeles River bridge program and its extraordinary Streamline Moderne design using steel and reinforced concrete. Its period of significance is from 1933, when it was completed, until 1957 (50-year cut-off), and its significance is at the state level. The 6th Street Viaduct was also determined eligible for listing in the NRHP as a contributor to a thematic group of 118 “Historic Arch and Other Bridges in California” (SHPO letter to Caltrans, Reply to FHWA 860919Z, no date). In addition, the 6th Street Viaduct was determined to be a City of Los Angeles Historic-Cultural Monument (HCM) in January 2008, along with 12 other city bridges.

Of the Los Angeles River bridges, the 6th Street Viaduct was the last of the viaducts to be designed and constructed and was by far the most comprehensive of the group. The 6th Street Viaduct is classified as a steel arch, and its largest spans are twin 150-ft steel through arches. The remainder of the structure, the total span of which is 3,546 ft, is comprised of T-girder spans. Called the “best expression of the modern phase” of the 25-year bridge building program, the viaduct is also “the last and grandest of the group.[61]” The viaduct project was begun in 1926 when the City Council voted to acquire property, and the following year, adopted the name “6th Street Viaduct.” The 6th Street Viaduct, which is the “longest and largest of the bridges spanning the Los Angeles River,” was officially opened on June 16, 1933, at a cost of $2,383,271[62].

Though the viaduct has been altered over the course of time, as described in the HRER[63], the alterations have not affected the integrity or ability of the 6th Street Viaduct to convey its historic significance. It retains integrity of its location, design, setting, materials, workmanship, feeling, and association. The distinctive design, while modestly altered by the reduction in central pylon height, infilling of walls between columns, and construction of facilities beneath the bridge, remains recognizable. Although the original setting of the 6th Street Viaduct has been modified by channelization of the river and other changes over the past 64 years, it is still distinguishable to its original surroundings. The unique materials of the 6th Street Viaduct, including its dressed concrete and painted steel arches, remain intact. The workmanship, including the board-formed reinforced concrete, steel rivets, and welds, remains evident. The feeling of the viaduct, or the quality that the historic property has in evoking its aesthetic and sense of a past period of time, is still present, whether traveling on the 6th Street Viaduct or viewing it from a distance. The direct link between the viaduct and the limited number of river crossings, in part for which it is significant, remains. Thus, the viaduct has an integral association with the construction of 12 significant Los Angeles River bridges.

[61] Historical Resources Evaluation Report for 6th Street Viaduct Seismic Improvement Project. October 2007.
[62] Ibid.
[63] Ibid.

The boundaries of the historic property include the entire bridge: its abutments, bents and piers, all approaches, the deck, all handrails, streetlight standards and luminaires, the United States Army Corps of Engineers (USACE) tunnel, the steel and concrete arches, the spandrels, and the areas below the decks that contain bridge-related structures.

3.9.2.6 Criteria of Adverse Effect

Impacts to historic properties are determined based on the definition of effect contained within 36 CFR Part 800: "*Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." An adverse effect occurs "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative."[64] Examples of adverse effects may include, but are not limited to, the following:

i. Physical destruction of or damage to all or part of the property;
ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines;
iii. Removal of property from its historic location;
iv. Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance;
v. Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
vi. Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
vii. Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.[65]

[64] 36 CFR 800.5(a)(1).
[65] 36 CFR 800.5(a)(2)(i through vii).

3.9.3 Environmental Consequences

3.9.3.1 Construction Impacts

Alternative 1– No Action

The No Action Alternative proposes no changes or construction on the 6th Street Viaduct or the surrounding area. The 6th Street Viaduct would be maintained and inspected by the City of Los Angeles. Thus, there would be no impacts to historic properties under this alternative, resulting in a finding of no historic property affected pursuant to the definition of adverse effect contained within 36 CFR Part 800.

Alternative 2 – Retrofit

Archaeological resource 19-003683 is located within the project APE as a candidate area for construction equipment staging; however, the defined site limits would be protected from potential impacts through the establishment of an Environmentally Sensitive Area (ESA) Action Plan. The ESA Action Plan would establish a construction monitoring program, require training of construction workers, and stipulate the archaeology site and adjacent area be fenced off to prevent construction activities from occurring on this site. In addition, given the moderate to high archaeological sensitivity of the project area, there is the potential to encounter buried archaeological materials during ground disturbance; therefore, archaeological and Native American monitoring is warranted. Through implementation of the ESA Action Plan, construction impacts would be avoided and/or mitigated, resulting in a finding of no adverse effect pursuant to the definition of adverse effect contained within 36 CFR Part 800.

Alternative 2 would result in an adverse effect as defined by CFR Part 800.5(a)(2), and would result in construction impacts.

Alternative 3 – Replacement

Impacts to archeological resources and historic properties as a result of Alternative 3 construction are similar to Alternative 2.

3.9.3.2 Permanent Impacts

Alternative 1 – No Action

Under the No Action Alternative, no ground disturbance would occur; therefore, archaeological resource 19-003683 would not be affected. Alternative 1 would not result in a permanent impact on the archaeological resource and would result in a finding of no historic property affected pursuant to the definition of adverse effect contained within 36 CFR Part 800.

Under this alternative, the viaduct would not be seismically retrofitted. The City would provide ongoing maintenance and inspection to the viaduct. Therefore, this alternative would result in a finding of no historic property affected pursuant to the definition of adverse effect contained within 36 CFR Part 800.

Alternative 2 – Retrofit

Archaeological resource 19-003683 would be protected from permanent impacts through the establishment of an ESA Action Plan, including archaeological and Native American monitoring during ground-disturbing activities. Therefore, Alternative 2 would not result in a permanent impact on the archaeological resource, and the alternative would result in a finding of no historic property affected pursuant to the definition of adverse effect contained within 36 CFR Part 800.

Under Alternative 2, the viaduct's columns would be retrofitted by encasing them with steel, and infill walls would be constructed between selected columns. In addition, new foundations, grade beams, retrofitting of bent caps, and closure of some expansion joints in the superstructure would be constructed in combination with the column retrofits.

The Retrofit Alternative would alter and/or destroy the historic materials, features, and spatial relationships that characterize the viaduct. Encasing the columns with steel would increase the size of the columns, and infill walls would be constructed between the columns. In addition, construction of new foundations, grade beams, retrofitting of bent caps, and closure of some expansion joints would alter the spatial relationship of the historic features of the viaduct and the historic character of the viaduct through the introduction of new structural and visual elements, and it would result in an adverse effect on a historic property pursuant to the definition of adverse effect contained within 36 CFR Part 800.

Implementation of Alternative 2 would also result in the use of a Section 4(f) historic site. The Draft Section 4(f) Evaluation is provided in Appendix B of this EIR/EIS document.

Alternative 3 – Replacement

This proposed alternative would demolish the 6th Street Viaduct to build a new structure. The existing viaduct would be replaced with one of five bridge concept designs on one of three alternative alignments under consideration. Implementation of Alternative 3 would result in the physical destruction of the historic property, and it would result in a finding of adverse effect on a historic property pursuant to the definition of adverse effect contained within 36 CFR Part 800.

In addition, implementation of Alternative 3 would result in the use of a Section 4(f) historic site. The Draft Section 4(f) Evaluation is provided in Appendix B of this Draft EIR/EIS document.

3.9.3.3 Cumulative Impacts

Alternative 1 – No Action

The No Action Alternative proposes no changes to the 6th Street Viaduct or the surrounding area; thus, there would be no cumulative impacts to historic properties under this alternative.

Alternative 2 – Retrofit

The LABOE Bridge Improvement Program is in the process of improving several deficient bridges within the city; most of them are the monumental bridges. Impacts to archaeological resources of each individual bridge would be limited to the project construction area; however, improvement to other bridges under the program, including other known related projects within the city, could result in cumulative effects to archaeological resources within the city.

The 6th Street Viaduct is an individual historic property and is also a contributor to the Historic Highway Arch and Other Bridges in California NRHP-eligible historic district. Implementation of Alternative 2 could result in the 6th Street Viaduct losing its NRHP eligibility and would affect the overall integrity of the Historic Highway Arch and Other Bridges in California NRHP-eligible historic district; however, since the viaduct structure would still exist, the signature elements of the bridge, such as the pylon and main spans, would still remain. The City Council could decide to leave the 6th Street Viaduct on the HCM list if Alternative 2 were implemented.

Alternative 3 – Replacement

Impacts to archaeological resources as a result of Alternative 3 implementation are similar to Alternative 2 but to a larger extent because the historic 6th Street Viaduct would be physically removed.

As stated above, the 6th Street Viaduct is an individual historic property and is a contributor to an NRHP-eligible historic district. Demolition of the 6th Street Viaduct would result in the 6th Street Viaduct losing its NRHP eligibility and would affect the overall integrity of the Historic Highway Arch and Other Bridges in California NRHP-eligible historic district. Therefore, Alternative 3 would adversely affect the integrity of the NRHP-eligible historic district on a cumulative basis and would result in a finding of adverse effect on a historic property pursuant to the definition of adverse effect contained within 36 CFR Part 800.

3.9.3.4 Secondary Impacts

No secondary impacts have been identified under any of the alternatives analyzed in this Draft EIR/EIS.

3.9.4 Avoidance, Minimization, Rectification, Reduction, and Compensation Measures

Alternative 1 – No Action

No mitigation is required.

Alternative 2 – Retrofit

The following mitigation measures would be implemented to minimize impacts to archaeological resources.

- An ESA Action Plan, which would include archaeological and Native American monitoring, would be developed prior to and implemented during ground-disturbing activities associated with the project.
- A qualified archaeological monitor to be present at the site during ground-disturbing activities would be provided. In the event buried cultural resources are encountered during construction, construction would be halted and the discovery area isolated and secured until the archaeologist finishes evaluating the nature and significance of the find.
- A Native American monitor(s) to be present at the site during ground-disturbing activities would be provided.
- If human remains are discovered, then the County coroner must be notified as soon as is reasonably possible (CEQA Section 15064.5). There should be no further site disturbance where the remains were found. If the remains are Native American, then the coroner is responsible for contacting the NAHC within 24 hours. The Commission, pursuant to Section 5097.98 of the PRC, should immediately notify those persons it believes to be the MLDs of the human remains. Treatment of the remains would be dependent on the views of the MLD.

Pertaining to impacts to the historic architectural resource, Caltrans and the City would consult with the SHPO regarding the effects of the proposed project on the 6th Street Viaduct and potential measures to resolve adverse effects prior to construction. A Memorandum of Agreement (MOA) for this proposed project, which would include stipulations and measures to resolve the adverse effect, would be prepared. The MOA would address the preferred alternative, which has not been determined at this time.

In this regard, the 6th Street Viaduct was previously recorded as part of the Historic American Engineering Record (HAER) program in 1996. Prior to any viaduct demolition or construction activities, Caltrans and the City would contact the National Park Service (NPS) Historic American Buildings Survey (HABS)/HAER program to determine the degree of additional recordation required for the property beyond that provided in 1996 (HAER No. CA-176). Unless otherwise agreed to by the NPS HABS/HAER, Caltrans and the City would ensure that all documentation is completed and accepted by HABS/HAER before the viaduct is altered or demolished.

It is anticipated that the following measures could resolve the adverse effects on the 6th Street Viaduct pursuant to 36 CFR Part 800, as incorporated in an MOA with the SHPO and other consulting parties. The MOA would address the preferred alternative, which has not been determined at this time. Potential mitigation measures could include the following:

- The City would incorporate all applicable Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68) into the design of retrofitting components.
- The City would install two new freestanding informative permanent metal plaques or signage at both ends of the bridge at public locations that provide a brief history of the bridge, its engineering features and characteristics, and the reasons it was replaced. Additionally, the City would install two Cultural Heritage plaques at the end of each bridge on the interior bridge rails in accordance with the City of Los Angeles' Cultural Heritage Monument program.
- The 6th Street Viaduct was previously recorded as part of the HAER program in 1996. Prior to any viaduct demolition or construction activities, Caltrans and the City would contact the NPS HABS/HAER program to determine the degree of additional recordation required for the property beyond that provided in 1996 (HAER No. CA-176). Unless otherwise agreed to by the NPS HABS/HAER, Caltrans and the City would ensure that all documentation is completed and accepted by HABS/HAER before the viaduct is altered or demolished.

Alternative 3 – Replacement

Mitigation measures under this alternative would be the same as with Alternative 2 for archaeological resources.

Pertaining to impacts to the historic architectural resource, Caltrans and the City would consult with the SHPO regarding the effects of the proposed project on the 6th Street Viaduct and potential measures to resolve adverse effects prior to demolition of the existing structure. An MOA for this proposed project, which would include stipulations and measures to resolve the adverse effect, would be prepared. The MOA would address the preferred alternative, which has not been determined at this time. Potential mitigation measures could include the following:

- The City would install two new free-standing informative permanent metal plaques or signage at both ends of the bridge at public locations that provide a brief history of the bridge, its engineering features and characteristics, and the reasons it was replaced. Additionally, the City would install two Cultural Heritage plaques at the end of each bridge on the interior bridge rails in accordance with the City of Los Angeles' Cultural Heritage Monument program.

- The 6th Street Viaduct was previously recorded as part of the HAER program in 1996. Prior to any viaduct demolition or construction activities, Caltrans and the City would contact the NPS HABS/HAER program to determine the degree of additional recordation required for the property beyond that provided in 1996 (HAER No. CA-176). Unless otherwise agreed to by the NPS HABS/HAER, Caltrans and the City would ensure that all documentation is completed and accepted by HABS/HAER before the viaduct is altered or demolished.
- The City would produce a documentary (motion picture or video) that addresses the history of the Los Angeles River Monument bridges, and their importance and use within the history of the City of Los Angeles. The motion picture or video would be of broadcast quality, of sufficient length for a standard 2-hour program, and would be made available to local broadcast stations, public access channels in the local cable systems, and requesting schools/ libraries; one copy would be submitted to the Caltrans Transportation Library in Sacramento.
- The City would produce and publish a book on the Historic Los Angeles River Bridges that addresses the history of the monumental concrete bridges of Los Angeles and this bridge's place in that history. The book would be similar to the "Historic Highway Bridges of California" published by Caltrans and would include high-quality black-and-white photos of the Los Angeles River Bridges, historic photographs or drawings, as appropriate, and text describing each bridge's location, year built, builder, bridge type, significant character-defining features, and its historic significance.

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3.10 Hydrology and Floodplains

This section addresses potential impacts to stormwater drainage systems and floodplains that could result from implementation of the proposed project. The information presented in this section is excerpted from the Hydrology/Hydraulics Report[66] and Location Hydraulic Study[67] prepared as part of this project.

3.10.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

To comply, the following must be analyzed:

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

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

3.10.2 Affected Environment

3.10.2.1 Overall Hydrologic Conditions

The proposed project is located within the Los Angeles River Basin in hydrologic subarea 405.15 (Figure 3.10-1). The watershed contributes flow to the Los Angeles River Basin. The basin covers an area of approximately 830 square miles, with its upper reach (approximately 200 square miles) covered by forest and open space and the lower portion made up of highly developed industrial, commercial, and residential land uses. The river is approximately 50 miles long and collects stormwater runoff from the watershed, some outcropping groundwater located within the Glendale Narrows, and tertiary treated effluent from wastewater treatment plants. The

[66] Hydrology/Hydraulics Report for 6th Street Viaduct Seismic Improvement Project. September 2008.
[67] Location Hydraulic Study for 6th Street Viaduct Seismic Improvement Project. March 2009.

river is paved with a concrete lining along the lower reach of the basin and outlets into the Queensway Bay in the Los Angeles/Long Beach Harbor.

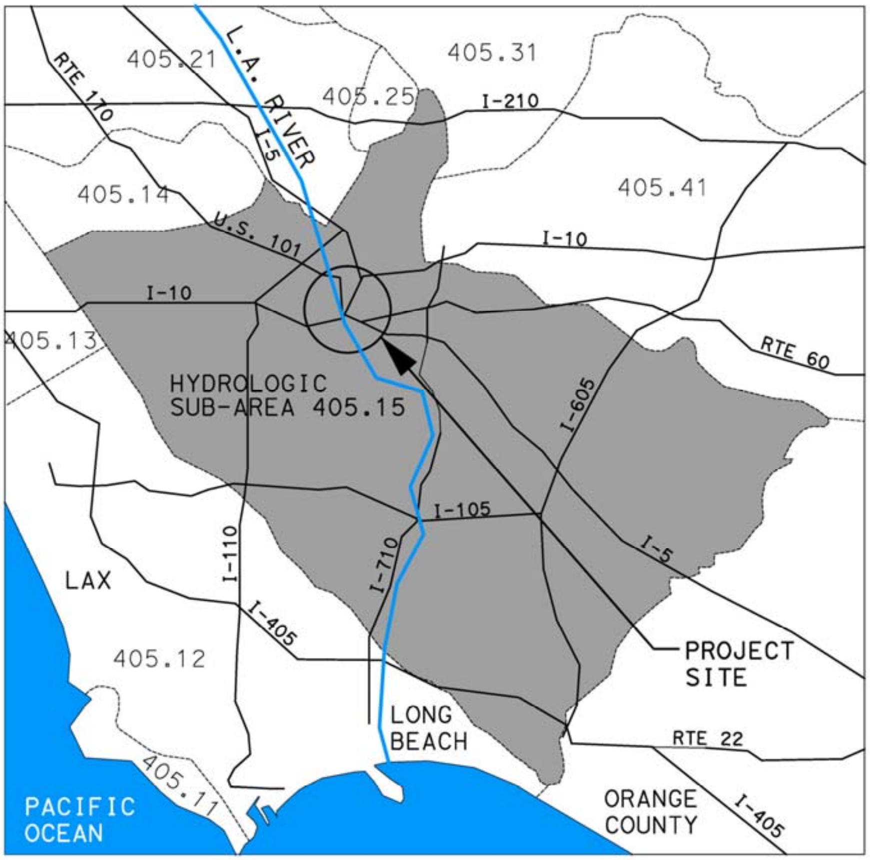


Figure 3.10-1 Watershed Map – Hydrologic Subarea 405.15

The climate for this region is generally dry in summer with mild, wet winters. The average annual rainfall for Los Angeles is approximately 15.5 inches, with most precipitation occurring during the winter months between November and March. The project, as a whole, would have very little impact on the existing drainage system. The main focus of this project will be to drain the proposed viaduct deck and address water quality issues generated from a new viaduct structure.

The project is located in a heavily urbanized land-use area zoned commercial and industrial. A very high percentage of the surrounding project area is impervious, consisting primarily of buildings and paved surfaces. The only substantial pervious areas are the rail yards on each bank of the river and a few small areas of unimproved land adjacent to and beneath the existing viaduct on the east side of the river. The small amount of pervious land that does exist has moderate infiltration rates when thoroughly wetted and consists chiefly of moderately well to well-drained sandy loam. Site topography ranges from 250 ft to 300 ft above mean sea level throughout the 4,000-ft project alignment.

3.10.2.2 Existing Drainage System

The existing project site, which includes the local streets below the viaduct, is drained by several separate storm drain systems. The area surrounding the viaduct site is drained by three primary drainage subareas. The first subarea (Subarea A) is located west of the Los Angeles River and extends south to 7th Street. The second subarea (Subarea B) is located east of the Los Angeles River and drains the area primarily northeast of 6th Street and west of Anderson Street. The third area (Subarea C) drains approximately the eastern third of the project north and south of 6th Street and west of US 101.

Subarea A covers a large area west of Mateo Street and collects a smaller area north and south of 6th Street east of the Los Angeles River. In addition to this area, it also drains all of the viaduct runoff from Mateo Street east to US 101. This subarea is drained by a 97-inch-diameter storm drain flowing west on 6th Street and then turning south onto Mateo Street. The storm drain outlets into the west bank of the Los Angeles River on the south side of 7th Street.

Subarea B lies on the east bank of the Los Angeles River and drains an industrial area north of 6th Street bound by the Union Pacific Railroad (UPRR) yard on the west and Anderson Street on the east. A 30-inch-diameter storm drain flows south on Mission Road collecting stormwater on the east/west streets north of 6th Street. It then changes direction on Jesse Street, where it discharges into the river.

Subarea C includes a 62-inch-diameter city storm drain. It collects runoff from subarea C and also bypasses runoff from a small upstream watershed that extends east beyond US 101. As shown in Figure 3.10-2, a 45-inch-diameter storm drain outlets into the 62-inch drain. In addition to collecting stormwater from a small watershed east of US 101, the 45-inch drain was also designed with the intent to empty Hollenbeck Lake, which is located east of US 101. The storm drain runs through the intersection of Jesse Street and Clarence Street. The storm drain discharges into the Los Angeles River at 7th Street. As shown in Figure 3.10-2, a 138-inch-diameter Los Angeles County storm drain runs parallel to the 62-inch storm drain and discharges to the Los Angeles River at the south side of 7th Street. This large storm drain collects stormwater from a small watershed between 6th Street and 7th Street and a large watershed east of US 101.

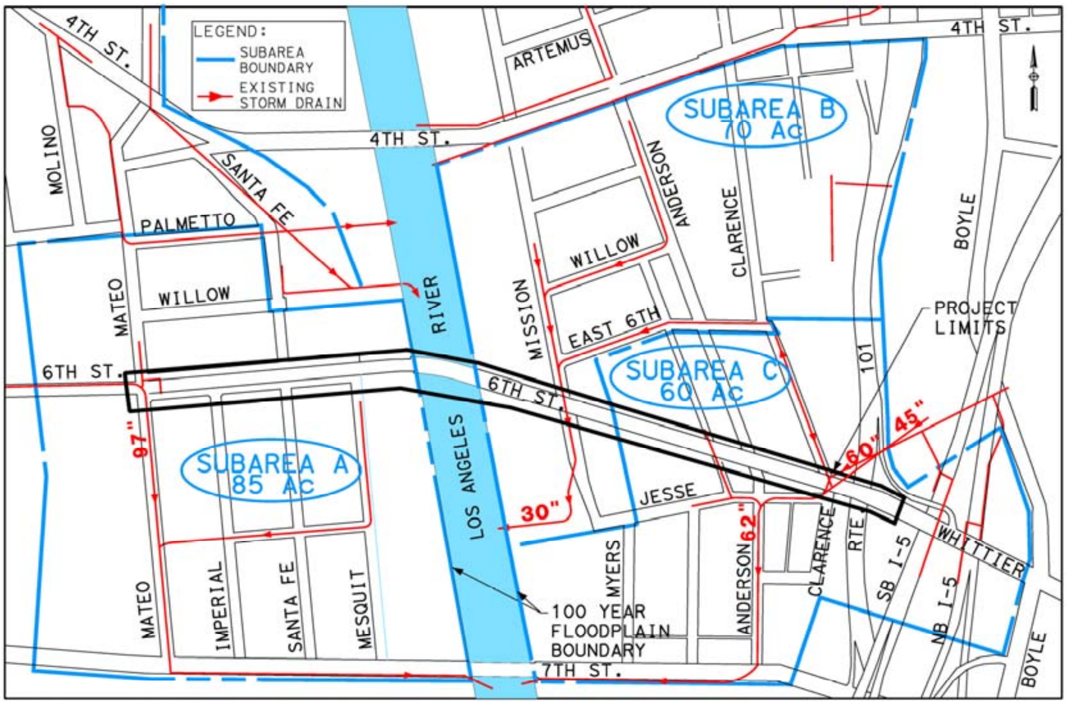


Figure 3.10-2 Subarea Map and Local Storm Drain Systems

It should be noted that Subareas A and C lie downstream of a larger subarea. Only portions of these subareas are shown that directly contribute flow to the associated storm drain that passes through the project site to the outfall. A summary of existing storm drain flows is presented in Table 3.10-1.

Table 3.10-1
Existing Storm Drain Flow Summary

Subarea	Area* (Acre)	Existing Outfall Pipe Size (inches)	Existing Pipe Capacity** (cfs)	Subarea Flow Rate (cfs)	Project Flow Rate*** (cfs)
A	85	97	296	83	4
B	21	30	25	20	3
C	71	62	138	69	3

Notes:
cfs = cubic feet per second
* Downstream area of reach subarea contributing to outfall
** Capacity based on pipe geometry and flowing full (no Hydrologic Study done)
*** Viaduct deck only; however, the flow is also included in subarea flow rate shown in Column 5.

Source: Hydrology/Hydraulics Report, Moffatt & Nichol, 2008.

3.10.2.3 Proposed Drainage System

Viaduct Runoff Management

In the existing condition, all runoff of the viaduct flows by gutter and is collected at Mateo Street. The viaduct was originally designed with drainage openings on the deck to allow stormwater to reach the ground level; however, these openings were sealed approximately 10 years ago during the bridge deck resurfacing. This current condition has created excessive runoff concentration during a major storm event, causing clogging at the inlets located at Mateo Street. The pipe size leading to the 97-inch-diameter storm drain on Mateo Street is a 36-inch-diameter pipe and has a design flow full capacity of 42 cubic feet per second (cfs).

It is proposed that the new viaduct structure would collect runoff approximately every 500 ft and direct it to ground level at convenient bent locations, where it could be collected and treated for water quality prior to being discharged into the local storm drain system. This approach would be consistent with current design practice and allow the runoff to be handled more efficiently.

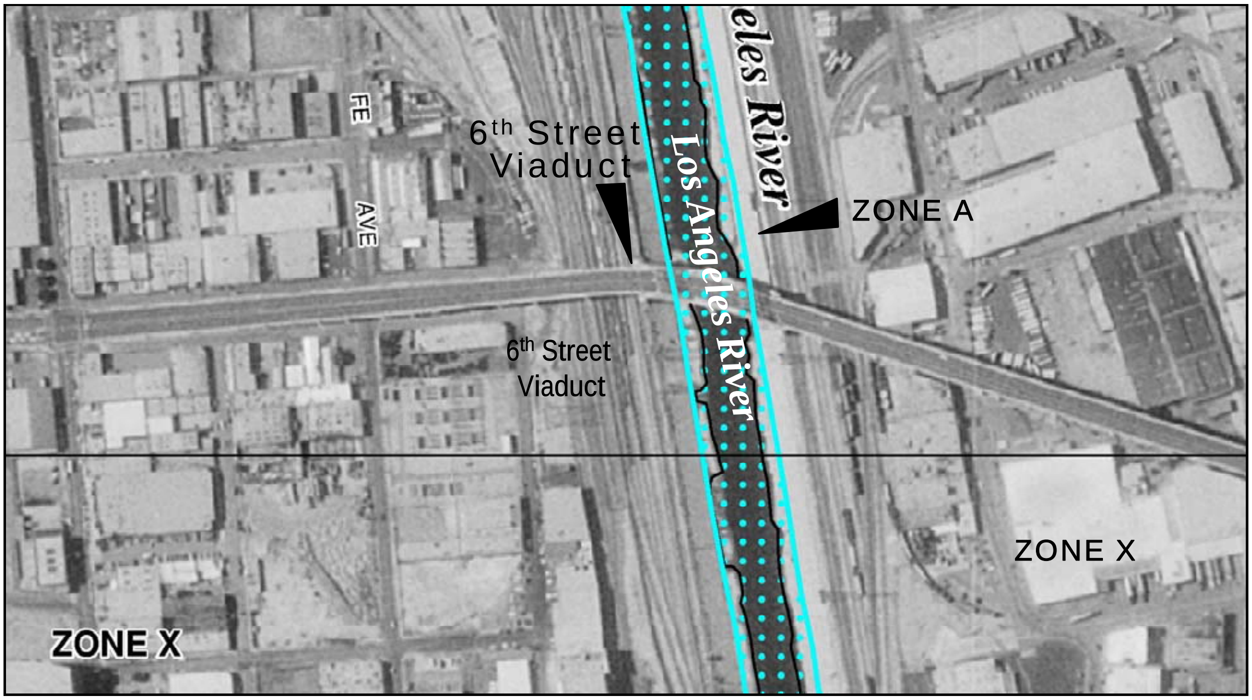
For draining the viaduct deck, it is estimated that approximately 7 deck/roadway drains on each side would be required for collecting onsite runoff along the full length of the viaduct. These would preferably be located at or near proposed viaduct bents or piers to allow conveyance through pipe outlets integrated into the columns. West of the river, new curb inlets (with vortex separators) located at Mateo Street would be utilized to collect and treat runoff prior to discharge into the existing storm drain. East of the river, the deck drains would outlet to an area that drains to a catch basin located east of the Los Angeles River east floodwall, Mission Road, and an alley east of Anderson Street and Clarence Street. This runoff would then be routed to the offsite storm drains via either extended detention basins or biofiltration swales. The proposed viaduct would intercept flow on the order of 5 cfs to the west of the river (in drainage area A) and 6 cfs to the east of the river (in drainage areas B and C).

Local Street Drainage System Modification

The main purpose of the proposed project is to seismically improve the deteriorating viaduct structure. Much of the work involved would be done in and around the existing grade of the local streets. It is not the intent of the proposed project to reconstruct existing utility and infrastructure elements unless there is direct damage as a result of project construction. Due to right-of-way constraints, the existing outfall storm drains would not be modified as part of this project. If replacement is found to be necessary due to conflict with other utilities, then the goal would be to replace the item with the same material and size as the original.

3.10.2.4 Floodplain

The project site is included on the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map. It is in the Community of the City of Los Angeles. The Map Number is 06037C1636F, with an effective date of September 26, 2008. The Los Angeles River is a floodway shaded in color in the following floodplain map, which is cropped from the FEMA floodplain map 06037C1636F, and flood flows are confined within the levees. The remaining areas of the project site are located in Zone X, which are areas determined to be outside of the 500-year floodplain (Figure 3.10-3).



Source: FEMA Flood Insurance Rate Map, 2008.

Figure 3.10-3 Floodplain Map

3.10.3 Environmental Consequences

3.10.3.1 Construction Impacts

Alternative 1 – No Action

Since there would be no change to the environment, no impacts to hydrology and floodplains would occur under the No Action Alternative.

Alternative 2 – Retrofit

Storm Drain System

Construction activities for the Retrofit Alternative would be confined within the existing viaduct footprint. No impact to the storm drain capacity would occur as a result of construction activities.

Floodplain

The stretch of the Los Angeles River at the 6th Street Viaduct is concrete lined, as shown in Figure 3.10-4.

Figure 3.10-4 Main Span of Center River Pier

To evaluate the impact to the river channel, an HEC-RAS hydraulic model developed by the United States Army Corps of Engineers (USACE) as part of the Los Angeles County Drainage Analysis (LACDA) was used to predict the baseline condition. The design discharge for this stretch of the Los Angeles River is 104,000 cfs,[68] which is determined by USACE based on risk and economical benefit analyses. The design discharge is higher than a 100-year storm event. The modeling results indicate that the design water level immediately upstream of the viaduct is 253.49 ft above the mean sea level (MSL) and that at the downstream edge of the bridge it is 242.82 ft. Based on the results of the model, it can be concluded that the pier of the 6th Street Viaduct restricts the flood flow and causes more than 10 ft of water surface backup upstream of the bridge under the existing condition.

Construction of the Retrofit Alternative would not result in center pier removal or extension. The USACE does not allow any construction work within the channel during the rainy season from October 15 through April 15; therefore, construction activities, including the use of falsework, would be limited to the dry weather season when the channel flow is very low. The minimum channel capacity conveyance would be preserved during construction, allowing the summer dry weather flow to pass through unobstructed. No impacts to flood flow due to construction activities are anticipated.

[68] USACE, Los Angeles District. July 2005. Los Angeles County Drainage Area, Upper Los Angeles River and Tujunga Wash, HEC-RAS Hydraulic Models.

Alternative 3 – Replacement

Storm Drain System

Under this alternative the viaduct would be demolished and replaced. The construction period would take up to 4 years. The affected construction area is fully built; thus, no increase in runoff flow is expected. Construction-created nuisance flows would be diverted into detention basins to be treated before discharging into the river or existing storm drain systems. Construction site sheet flows would be retained with sandbags and silk fences to prevent construction runoff.

Floodplain

Construction of the Replacement Alternative would require demolition of the existing viaduct and construction of the new structure. Three out of the proposed five bridge concepts would have the center pier similar to the existing viaduct; these are Bridge Concept 1 (Replication) and Bridge Concepts 4 and 5 (Extradosed Concrete Box Girder). The USACE does not allow any construction work within the channel during the rainy season from October 15 through April 15; therefore, construction activities, including use of falsework, would be limited to the dry weather season when the channel flow is very low. The minimum channel capacity conveyance would be preserved during construction, allowing the summer dry weather flow to pass through unobstructed. No impacts to flood flow due to construction activities are anticipated.

3.10.3.2 Permanent Impacts

Alternative 1 – No Action

Since there would be no change to the environment, no permanent impacts to hydrology and floodplains would occur under the No Action Alternative.

Alternative 2 – Retrofit

Storm Drain System

The proposed Retrofit Alternative would not result in additional impervious area on and around the viaduct. In addition, the viaduct would not be widened under this alternative. Since the existing area around the viaduct has been built out, no additional stormwater would occur with implementation of the Retrofit Alternative. No additional effects to the existing storm drain system are anticipated; however, the excessive runoff from the viaduct during major storm events would continue to occur.

Floodplain

The Retrofit Alternative would not widen the main span of the viaduct; thus, there would be no extension to the center river pier. In addition, the Retrofit Alternative would not result in additional volume of stormwater runoff discharging to the Los Angeles River; therefore, no impacts to river flow and floodplains would occur.

The project site is included on the FEMA Flood Insurance Rate Map. The Los Angeles River flood flows are confined within the levees. The remaining areas of the project site are located in Zone X, which are areas determined to be outside of the 500-year floodplain. The Retrofit Alternative would not have a longitudinal encroachment in the Los Angeles River floodplain. The Retrofit Alternative would not create any risk to the current flood flow within the Los Angeles River. The Retrofit Alternative would not impact natural and beneficial floodplain values within the project area. The proposed action would not support any incompatible floodplain development within the City.

Alternative 3 – Replacement

Storm Drain System

The proposed new viaduct structure would have a wider roadway and sidewalk cross section, thereby intercepting a proportional increase in runoff on the viaduct deck. The new viaduct structure would be designed to adequately collect and route stormwater runoff on the viaduct to a stormwater treatment system prior to discharging to the river.

Since the area around the viaduct has been built out and approximately 95 percent of the area is impervious area, construction of the proposed new viaduct would not substantially increase the amount of imperviousness of the affected area. No impacts to the existing storm drain system capacity are anticipated.

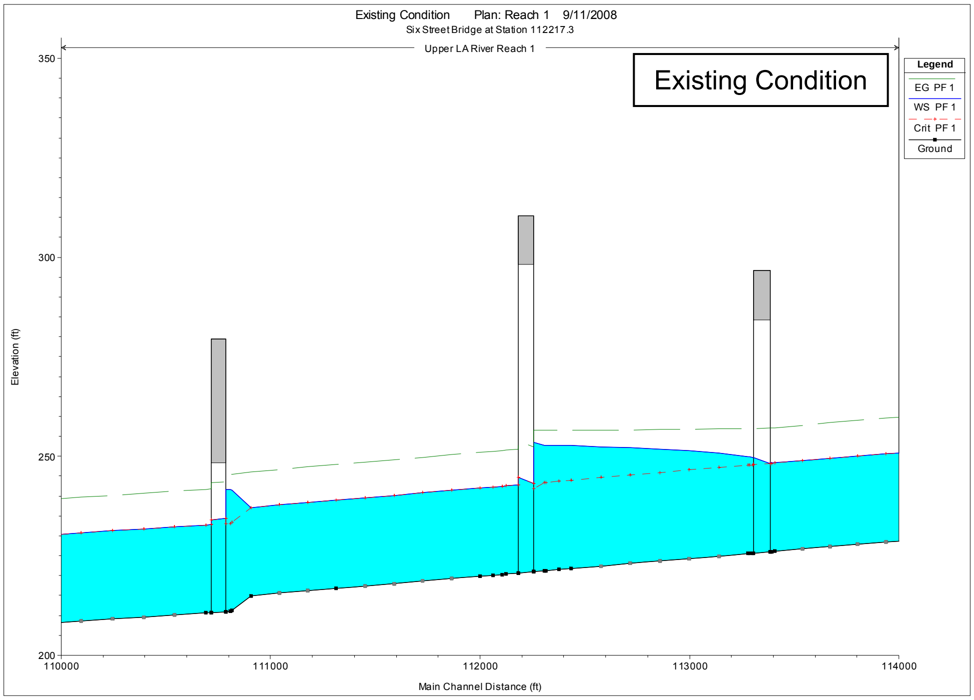
Note that construction of the new wider viaduct would require the removal of several buildings adjacent to the viaduct. Removal of the buildings could result in more open space if the remaining space is retained as open space. Under this circumstance, more pervious area would be created. No impacts to the existing storm drain system capacity are anticipated.

Floodplains

Hydraulic Analysis

The 6th Street Viaduct currently restricts the flood flow and causes more than 10 ft of water surface backup upstream of the viaduct under the existing conditions (see Figure 3.10-5, Existing Condition). The HEC-RAS model setup for the existing condition was further modified to reflect the proposed bridge configuration and dimensions. As mentioned earlier, three out of the proposed five bridge concepts would have the center pier similar to the existing viaduct (Bridge Concept 1 [Replication] and Bridge Concepts 4 and 5 [Extradosed Concrete Box Girder]). Based on the preliminary design of the proposed bridge concepts, these concepts would have a smaller center pier, but a slightly wider bridge deck. An HEC-RAS modeling run under the design flow condition was performed. The modeling results indicate that the water level immediately upstream of the bridge is 251.24 ft, which is approximately 2.2 ft lower than the existing condition water level of 253.49 ft. The water level immediately downstream of the bridge is 242.69 ft, which is also slightly lower than the water level of 242.82 ft under the existing condition (see Figure 3.10-5, Post

Condition). Overall, the proposed Replacement Alternative would reduce the flow restriction and reduce water surface backup upstream of the bridge by 2.2 ft; therefore, the impact of the proposed bridge to the stretch of the Los Angeles River floodplains at the 6th Street Viaduct is beneficial.



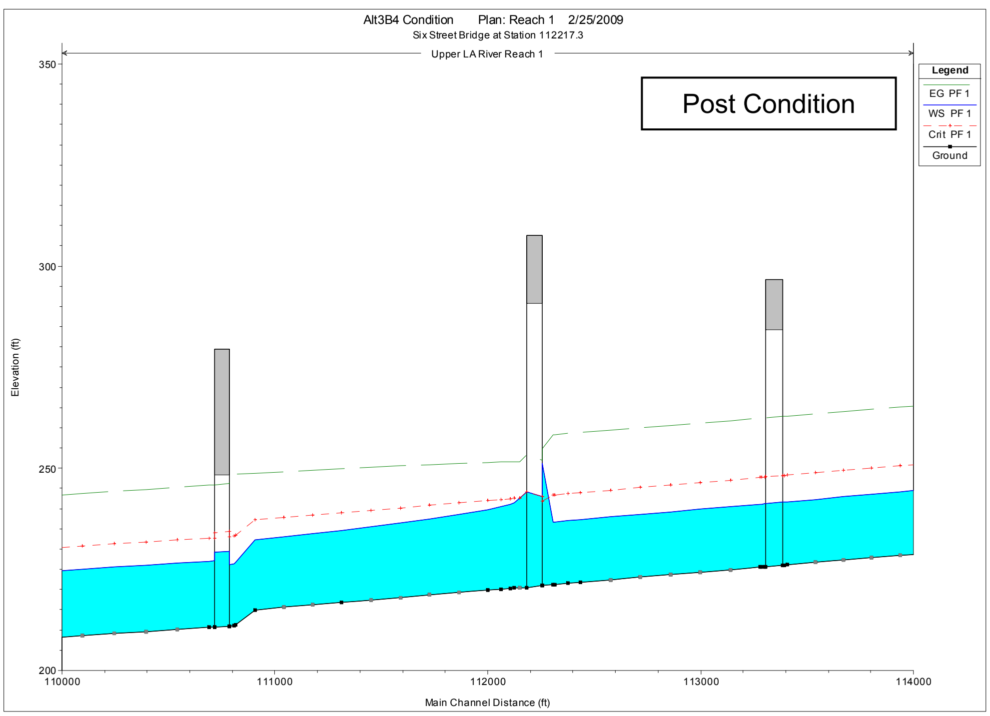


Figure 3.10-5 Water Surface Profile near 6th Street Viaduct

Risk Assessment

The project site is included on the FEMA Flood Insurance Rate Map. The Los Angeles River flood flows are confined within the levees. The remaining areas of the project site are located in Zone X, which are areas determined to be outside of the 500-year floodplain. Encroachment is defined by FEMA as “construction, placement of fill, or similar alternation of topography in the floodplain that reduces the area available to convey floodwaters,” and by FHWA as “an action within the base floodplain.” The Los Angeles River is a major floodway; the floodplain values of the Los Angeles River would benefit from the proposed project. The reduced size of the center pier and eliminated abutments located near each top of bank would increase flood flow conveyance and reduce the water surface backup upstream of the viaduct.

The modeling results indicate that the water surface elevation both upstream and downstream of the viaduct would be reduced with the proposed new viaduct compared to the existing viaduct.

In addition to the above, the Replacement Alternative would not have a longitudinal encroachment in the Los Angeles River. The proposed action would not create any risk to the current flood flow within the Los Angeles River. The Replacement Alternative would not impact natural and beneficial floodplain values within the project area. Finally, the proposed action would not support incompatible floodplain development within the City.

3.10.3.3 Cumulative Impacts

No cumulative impacts would occur.

3.10.3.4 Secondary Impacts

No secondary impacts to hydrology and floodplains were identified.

3.10.4 Avoidance, Minimization, and Compensation Measures

The center pier in the river would be either eliminated or replaced with a pier that has the same or smaller in size. Since no adverse impacts to the river hydraulics and stormwater systems would occur as a result of this proposed project, no mitigation is required. All construction-related work in the riverbed would be performed during the dry season to avoid any potential impacts to the river hydraulics. Furthermore, construction site best management practices (BMPs) would be implemented to collect all construction-related nuisance water discharges.

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3.11 Water Quality and Stormwater Runoff

This section addresses potential impacts associated with water quality that could result from implementation of the proposed project. The information presented in this section is excerpted from the Hydrology/Hydraulics Report prepared for this project by a registered engineer.[69]

3.11.1 Regulatory Setting

Section 401 of the Clean Water Act (CWA) requires water quality certification from the State Water Resources Control Board (SWRCB) or from a Regional Water Quality Control Board (RWQCB) when the project requires a CWA Section 404 permit. Section 404 of the CWA requires a permit from the U.S. Army Corps of Engineers (USACE) to discharge dredged or fill material into waters of the United States.

Along with CWA Section 401, CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutants into waters of the United States. The U.S. Environmental Protection Agency (EPA) has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The SWRCB has developed and issued a statewide NPDES permit to regulate stormwater discharges from all Caltrans activities on its highways and facilities. Caltrans construction projects are regulated under the statewide permit, and projects performed by other entities on Caltrans right-of-way (encroachments) are regulated by the SWRCB's Statewide General Construction Permit. All construction projects more than 1-acre require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. Caltrans activities less than 1-acre require a Water Pollution Control Program.

3.11.2 Affected Environment

The proposed project is located within the Los Angeles River Basin in hydrologic subarea 405.15. The basin covers an area of approximately 830 square miles. See the description of the affected environment in Section 3.10.2 above.

The proposed project lies within the City and County of Los Angeles and is regulated by the RWQCB Los Angeles Region. In addition, the Los Angeles County Department of Public Works

[69] Hydrology/Hydraulics Report for 6th Street Viaduct Seismic Improvement Project. September 2008.

(LACDPW) regulates a Standard Urban Stormwater Mitigation Plan (SUSMP). This plan requires that various best management practices (BMPs) be implemented in an effort to help remove unwanted pollutants and trash from entering the existing storm drain systems.

The 6th Street Viaduct is located in the Upper Los Angeles River Reach 1, which extends from the downstream end at Stewart and Gary Road to the upstream end at Letcher Drive – Blimp Street. Existing designated beneficial uses for the Los Angeles River Reach 1, which are designated by the RWQCB, include Municipal and Domestic Supply, Industrial, Water Contact Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat. Designated beneficial uses for groundwater in this hydrologic unit include Municipal and Domestic Supply, Agricultural Supply, Industrial Service, and Industrial Process Supply. Table 3.11-1 summarizes some of the pollutants of concern in this reach of the Los Angeles River by source and their relative importance with regard to source control and treatment.

Table 3.11-1
Los Angeles River Reach 1 Pollutants of Concern

Pollutant	Source	Priority
Ammonia	Nonpoint/Point	High
High Coliform Count	Nonpoint/Point	High
Lead	Nonpoint/Point	High
Nutrients (Algae)	Nonpoint/Point	High
Odors	Nonpoint/Point	High
Oil	Nonpoint/Point	Low
Scum/Foam-unnatural	Nonpoint/Point	High
Trash	Nonpoint/Point	High

Source: Hydrology/Hydraulics Report, Moffatt & Nichol, 2008.

The RWQCB Los Angeles Region has set water quality objectives, which are presented in the Basin Plan for the Coastal Watersheds of Los Angeles County. Currently, water quality objectives for the Los Angeles River (between Figueroa Street and the Los Angeles River Estuary) are 1,500 milligrams per liter (mg/L) total dissolved solids (TDS), 150 mg/L chloride, 8 mg/L nitrogen, and 350 mg/L sulfate. Water quality objectives set forth for the Central Groundwater Basin are 700 mg/L TDS, 250 mg/L sulfate, 150 mg/L chloride, and 1 mg/L boron. This section of the Los Angeles River has been listed as an impaired water body for nitrate, pH, and scum in accordance with the most recently posted 303(d) list. Note that the project area does not fall within a "significant ecological area" as defined by the Los Angeles County Department of Regional Planning.

3.11.3 Environmental Consequences

3.11.3.1 Construction Impacts

Alternative 1 – No Action

No construction impacts to water quality would occur under the No Action Alternative.

Alternative 2 – Retrofit

The major pollutant expected from construction sites is erosion related, where sediment-laden water flows into storm drains. The proposed project covers an area of more than 1-acre; therefore, an NPDES Permit for stormwater discharges associated with construction activities would have to be obtained. Since the project is situated within the City of Los Angeles, it would gain coverage under the County of Los Angeles' General NPDES Permit for stormwater discharge associated with construction activities, in which the City is one of the co-permits. An SWPPP and Monitoring Program would be prepared and implemented prior to construction activities. The SWPPP would include erosion and sediment control; non-stormwater management; postconstruction stormwater management; waste management and disposal; maintenance, inspection, and repair of BMPs; employee training to perform inspections of the BMPs at the construction site; and a sampling and analysis plan for contaminated storm runoff. The SWPPP would describe structural and non-structural BMPs to minimize or eliminate the potential for spills and leakage of construction materials and erosion of disturbed areas by water and wind.

Table 3.11-2 lists various temporary BMPs that would be used to treat stormwater runoff during demolition and construction periods prior to discharging to the surrounding storm drain system.

Table 3.11-2
Proposed Temporary BMPs

Series Designation	Category
SC-20…	Non-Stormwater Management
SC-30…	Vehicle and Equipment Management
SC-50	Over Water Activities
SC-60	General Stormwater Management
SC-70…	Municipal Field Program BMPs

Source: Hydrology/ Hydraulics Report, Moffatt & Nichol, 2008.

Since the viaduct would be constructed over a waterway, special BMPs to minimize debris deposition into the river would be considered for implementation. These BMPs could include the following:

- Limit demolition and construction of the portions of the viaduct located over the river to the dry season (April to October).

- Employ non-shattering methods for demolition activities (e.g., wrecking balls would not be acceptable).
- Place platforms under/adjacent to the viaduct to collect debris.
- Provide watertight curbs or toe-boards on the viaduct to contain spills and prevent materials, tools, and debris from falling from the viaduct.
- Secure all materials on the viaduct to prevent discharges into the channel via wind.
- Use attachments on equipment, such as backhoes, to catch debris from small demolition operations.
- Stockpile accumulated debris and waste generated from demolition away from the channel.
- Isolate work areas within the channel from the river flow using sheet piling, k-rails, or other methods of isolation.
- Use drip pans during equipment operation, maintenance, cleaning, fueling, and storage for spill prevention. Place drip pans under all vehicles and equipment placed on the viaduct when expected to be idle for more than 1-hour.
- Keep equipment used in the channel leak-free.
- Direct water from concrete curing and finishing operations away from inlets and watercourses to collection areas for dewatering.
- Convey groundwater discharge from dewatering operations for pile installation into an acceptable sediment containment bin or basin. Test and treat the contained water prior to discharge as per requirements set forth by the RWQCB.

Alternative 3 – Replacement

Impacts to water quality pertaining to stormwater runoff under this alternative would be similar to Alternative 2 with a larger area of impact; however, implementation of the temporary BMPs listed above during the construction period would minimize water quality impacts from stormwater runoff.

3.11.3.2 Permanent Impacts

Alternative 1 – No Action

Since there would be no change to the environment, no permanent impacts to water quality would occur under the No Action Alternative.

Alternative 2 – Retrofit

Under this alternative, there would be no change to the viaduct and its vicinity after the construction is completed. Since there would be no permanent treatment BMPs installed under this alternative, as under the No Action Alternative, all stormwater runoff from the viaduct would be directly discharged to the river without being treated at the BMP devices.

Alternative 3 – Replacement

Pollutants generated from streets, highways, and freeways that could be contained in stormwater runoff and reach the surface water body include heavy metals from vehicle exhaust, organic compounds (including petroleum hydrocarbons and rubber), windblown sediments, trash and debris, and oil and grease. Since the new viaduct under each alignment alternative would be wider than the existing viaduct, it would capture a higher volume of runoff during the storm event. The new viaduct would be designed to capture all of the anticipated runoff for treatment at the permanent BMPs that would be installed within the vicinity of the viaduct prior to discharging to the Los Angeles River. Permanent treatment BMPs evaluated for the project alternative include detention basins, biofiltration swales, and storm drain inserts (specifically vortex separators). These BMPs would be sized and installed to meet County and City of Los Angeles guidelines. With the BMPs in place, no adverse impacts to surface water quality because of stormwater runoff are anticipated.

3.11.3.3 Cumulative Impacts

Stormwater runoff occurring during the construction and operation of the viaduct under any of the alternatives considered would be localized and confined within the site during construction and within the viaduct area after the construction is complete. No cumulative impacts pertaining to stormwater runoff would occur.

3.11.3.4 Secondary Impacts

No secondary impacts have been identified.

3.11.4 Avoidance, Minimization, and Compensation Measures

Alternative 1 – No Action

No mitigation is required.

Alternative 2 – Retrofit

With implementation of the SWPPP and respective BMPs required by current regulations, as mentioned in Section 3.11.3, no additional mitigation is required.

Alternative 3 – Replacement

With implementation of the SWPPP and respective BMPs required by current regulations, as mentioned in Sections 3.11.3, additional no mitigation is required.

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3.12 Geology/Soils/Seismicity

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic hazard concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Caltrans' Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE) from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

The geologic and geotechnical conditions and subsequent conclusions presented in this section are based on the review of relevant geologic and geotechnical reports prepared for the site and the surrounding area, along with the geotechnical data collected and analyzed in the Draft Foundation Report[70] prepared for this project during the preliminary design phase.

3.12.1 Affected Environment

3.12.1.1 Regional Geology

The project site is located at the northern margin of the Los Angeles Basin. The basin, lying between the Transverse and Peninsular Ranges of southern California, is bound to the north by the Hollywood and Santa Monica Faults, to the east by the Puente Hills and Santa Ana Mountains, and to the southwest by the Pacific Ocean. The Los Angeles Basin is a northwest-trending structural depression filled with Tertiary and Cretaceous age sedimentary formations and capped with Pleistocene and Holocene age alluvium. Currently, the tectonic regime is one of regional crustal compression oriented in a north-northeast direction, as indicated by geological structure, earthquakes, and land and space geodetic surveys.

3.12.1.2 Site Geology

The project area is underlain by non-indurated Quaternary age alluvial deposits of silt, sand, and gravel. The regional geologic map by Dibblee (1989) designates two Surficial units at the site: (1) Qg – youngest alluvium, active stream channel deposits of gravel, sand, and silt (less than 1,000 years old); and (2) Qa – Holocene alluvium, unconsolidated floodplain deposits of silt, sand, and gravel (1,000 to 10,000 years old).

[70] Draft Foundation Report for Improvement of 6th Street Viaduct over Los Angeles River and U.S. Highway 101. August 2008.

During geotechnical investigations for the proposed project, the depth of alluvium was found to vary from approximately 20 ft in the river channel to 80 ft at the west abutment. The alluvium is mostly sand with silt and is brown, olive-brown, and yellow-brown in color. Within the Qg unit, gravels are generally 1 to 2 inches in diameter with rare boulders in excess of 10 inches in diameter.

Underlying the alluvium are the marine upper Pico Member (Tfsc) and Repetto Member of the Pliocene-age Fernando Formation (Tfr) (Dibblee referred to this as the Wheelerian Stage of the Fernando Formation). The Pico Member is made of sand with silt and gravel and is brown, olive-brown, and yellow-brown in color. The Repetto Member is made of dense to hard, dark gray to blue-gray, moderately to poorly bedded, silt, clay, silt with sand, and fine- to medium-grained sand. The Pico and Repetto Members also contain trace shell fragments and pea gravel with a slight to strong hydrogen sulfide (rotten egg) odor.

Precise depth of the Fernando Formation at this location is unknown; however, based on information from nearby oil wells, the depth is believed to be approximately 3,000 ft. Total depth of tertiary sedimentary units at this location is approximately 10,000 ft. Cretaceous age crystalline bedrock underlies the sedimentary units.

3.12.1.3 Seismicity

The project site is located within a seismically active region. Several active faults that could produce significant shaking are located near the site. Surface rupture at the project site is not anticipated because the site is not located within an Alquist-Priolo Special Study Zone.[71] Significant faults near the site include the Elysian Park Seismic Zone, Newport Inglewood-Rose Canyon/E, Malibu Coast-Santa Monica-Hollywood-Raymond, Verdugo, Eagle Rock, and Whittier-Elsinore Faults, according to the Caltrans Seismic Hazard Map prepared by Caltrans in 1996. The Elysian Park Seismic Zone, with an epicentral distance of approximately 0.2-mile away on the Caltrans Seismic Hazard Map (MCE moment magnitude [M_m] = 7.0), is the controlling fault at the project site. The Elysian Park Seismic Zone is a reverse-thrust type of fault. Using the Caltrans Seismic Hazard Map, the peak bedrock acceleration at the site was estimated to be 0.7 acceleration due to gravity (g).

It should be noted that Caltrans is currently working on a revised seismic hazard map, which may include the Puente Hills Blind Thrust Fault, which is still being studied. The California Geological Survey (CGS) fault database (updated in 2003) used in the EQFAULT and EQFRISK programs redefined the Elysian Park Seismic Zone as the Upper Elysian Park Blind Thrust Fault (MCE = 6.4) and the Puente Hills Blind Thrust Fault (MCE = 7.1). According to the CGS fault

[71] CDMG. 2007. California Division of Mines and Geology. Special Publication 42, Fault Rupture hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps. Interim Revision.

database, the subsurface rupture surfaces of these two faults are located approximately 2.7 and 3.4 miles from the project site, respectively. This corresponds to an epicentral distance of 0.2-mile and a rupture surface depth of approximately 3.5 miles for the Puente Hills Blind Thrust Fault, and an epicentral distance of 2.4 miles and a rupture surface depth of approximately 1.3 miles for the Upper Elysian Park Blind Thrust Fault. The fault geometry indicated in the CGS database for the Puente Hills Blind Thrust Fault agrees with the geometry based on seismic reflection profiles, oil well data, and analysis of seismicity for the Puente Hills Blind Thrust System presented in the Bulletin of the Seismological Society of America)[72]. Analyses using EQFAULT and the attenuation equation by Sadigh *et al.* (1997) [73] indicated that the Puente Hills Blind Thrust Fault is the controlling fault at the project site and can generate a peak bedrock acceleration (PBA) of 0.61 g, and a peak ground acceleration (PGA) of 0.53 g; however, this is based on an MCE = 7.1 for the Puente Hills Blind Thrust Fault. Discussions with Caltrans indicate that the MCE for the Puente Hills Blind Thrust Fault will be designated as 7.3. Re-analyzing the Puente Hills Blind Thrust Fault, with the attenuation equation by Sadigh *et al.,* an MCE of 7.3, and a distance-to-rupture surface of 3.4 miles, it was determined that the PBA and PGA will be 0.64 g and 0.55 g, respectively. Rounding to the nearest tenth, per Caltrans guidelines, results in a recommended PBA of 0.7 g and PGA of 0.6 g.

3.12.1.4 Groundwater Conditions

Several drillings at the project site were undertaken in the past. In 1931, during a City investigation, groundwater was encountered at a depth of 35 ft below ground surface (bgs) (elevation 217.0 ft) west of the river near the West River Pier; at 15 ft bgs (elevation 211.0 ft) below the channel invert near the Center River Pier; and at 35 ft bgs (elevation 218 ft) east of the river near the East River Pier. The groundwater table was either not encountered or not recorded for the other borings performed.

During a City General Services investigation (1993), groundwater was encountered at a depth of 22 ft bgs (elevation 228.0 ft) east of the river near Bent 36; however, groundwater was not encountered in the other three borings performed on the east side of the river. The report concluded that a localized perched condition is likely to represent the groundwater conditions in the area.

During investigation by EMI in 2005[74], groundwater was encountered at a depth of 65.5 ft bgs (elevation 188.2 ft) west of the river near Bent 9; at 20.5 ft bgs (elevation 203.7 ft) below the

[72] Shaw, J.H., *et al.* 2002. "Puente Hills Blind-Thrust System, Los Angeles, California". *Bulletin of the Seismological Society of America*. Vol. 92. pp. 2946-2960.
[73] Sadigh, K., *et al.* 1997. *Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data, Seismological Research Letters*. Vol. 68, No. 1.
[74] Earth Mechanic, Inc. (EMI). 2005. *Draft Geotechnical Report, 6th Street Viaduct over the Los Angeles River (Bridge No. 53C-1880), Los Angeles, California.* Prepared for PBS&J. October 14.

channel invert near the Center River Pier; and between 53.5 and 56.3 ft bgs (elevation 196.0 and 197.1 ft) east of the river between Bents 16 and 34.

During the current investigation for the proposed project, groundwater was encountered at a depth of 62.0 ft bgs (elevation 189.0 ft mean sea level [msl]) between Bents 5 and 6; at 55.7 ft bgs (elevation 193.3 ft msl) at Bent 14; and at 61.2 ft bgs (elevation 188.8 ft msl) between Bents 20 and 21.

Based on the *Seismic Hazard Zone Report 029* for the Los Angeles 7.5-Minute Quadrangle prepared by the California Division of Mines and Geology (CDMG) in 1998, the historically highest groundwater within the project site is approximately 120 ft bgs. According to the existing boring information, the groundwater table was encountered at much shallower depths; therefore, the groundwater level encountered within the channel during the City investigation (1931) (15 ft bgs or elevation 211.0 ft) was assumed to be the design groundwater depth.

Groundwater notably might fluctuate due to seasonal variation, nearby construction, irrigation, or numerous other man-made and natural influences.

3.12.1.5 Liquefaction Potential

Liquefaction is a seismic phenomenon in which loose, saturated, fine-grained granular soils behave like a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: (1) shallow groundwater, (2) low-density sandy soils, and (3) high-intensity ground motion. Studies indicate that saturated, loose and medium-dense, near-surface cohesionless soils exhibit the highest liquefaction potential; while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential. Effects of liquefaction on level ground include sand boils, settlement, and bearing capacity failures below structural foundations.

All previous geotechnical reports reviewed as part of the Foundation Report preparation stated that liquefaction potential at the bridge site is considered low due to the relatively deep groundwater table and dense to very dense granular soils encountered at the site; however, these reports all considered peak bedrock accelerations in the 0.4- to 0.7-g range, and most likely the groundwater table elevations that were encountered during the investigations (if any). Preliminary liquefaction analyses were performed using borings from the previous and current investigations, along with the revised seismic parameters and groundwater table elevation. Based on recent liquefaction analysis results for the proposed project, the subsurface soils indicated a low potential for liquefaction at the project location. This agrees with the CDMG *Seismic*

Hazard Zones Map of the Los Angeles Quadrangle[75]. This map indicates that the project site is not located in an area where historical occurrence of liquefaction, or local geological, geotechnical, and groundwater conditions indicate a potential for permanent ground displacements such that mitigation would be required.

3.12.2 Environmental Consequences

3.12.2.1 Construction Impacts

Construction activities would not induce any geologic hazards pertaining to ground rupture or ground motion.

3.12.2.2 Permanent Impacts

The project site is located within a seismically active area and is subject to ground rupture and ground shaking. Preliminary liquefaction analysis results for the subsurface soils indicate a low potential for liquefaction at the project location.

Alternative 1 – No Action

With the No Action Alternative, there would be no impacts on geology and soils; however, a risk of the viaduct collapsing during a major earthquake remains high.

Alternative 2 – Retrofit

Under this alternative, the existing viaduct would be retrofitted by steel casings and infill walls at various columns and bents that are moderately to severely damaged, as described in Section 2.4.2. Note that the retrofit design would only be for the prevention of collapse under the design seismic event, and the damaged viaduct would likely have to be replaced after a major earthquake.

The retrofit design life expectancy (i.e., the period of time that a bridge is expected to be in operation) to prevent seismic collapse is approximately 30 years. The actual life will depend on several factors, including exposed conditions of the structure to the environment, quality of materials, design and construction, and level of maintenance performed and the continuous deterioration of material due to ASR; therefore, the Retrofit Alternative would minimize the potential for collapse of the 6th Street Viaduct under the design seismic event for approximately 30 years, thus preventing the potential loss of lives and properties.

Alternative 3 – Replacement

Under this alternative, the existing viaduct would be replaced by a new structure that would be designed to meet Caltrans seismic design criteria. Implementation of this alternative would

[75] CDMG, 1999. California Division of Mines and Geology. *Seismic Hazard Zones Map of the Los Angeles Quadrangle.*

minimize the potential to collapse and would likely have repairable damage under the design seismic event for approximately 75 years.

3.12.2.3 Cumulative Impacts

Seismically induced impacts are localized and would not result in any cumulative impact under any alternative implementation.

3.12.2.4 Secondary Impacts

No secondary impacts were identified.

3.12.3 Avoidance, Minimization, and Compensation Measures

Alternative 1 – No Action

The 6th Street Viaduct is subject to collapse under moderate to strong seismic events. The City and Caltrans would continue routine inspection and maintenance of the viaduct until it is determined unsafe for public use due to advanced ASR deterioration or the viaduct collapsed in a major earthquake. No mitigation measures would be required.

Alternative 2 – Retrofit

To avoid potential adverse impacts to public safety due to the possible collapse of the viaduct under major seismic events, the City and Caltrans would have to perform an increased level of inspection and maintenance of the viaduct to ensure that the retrofitted features properly function as expected. The expected life of this alternative is 30 years and would likely require action in the future for replacement. No mitigation measures would be required.

Alternative 3 – Replacement

In general, the viaduct would be designed to meet current Caltrans seismic design criteria. Once the viaduct is open for public use, the City and Caltrans would perform regular inspection and maintenance per the standard requirements. No mitigation measures would be required.

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3.13 Paleontology

This section presents an overview of the efforts conducted to identify and evaluate the potential for impacts caused by the proposed project on significant paleontological resources. The information presented in this section is excerpted from the Paleontological Identification Report[76] conducted for this project.

3.13.1 Regulatory Setting

Paleontology is the study of life in past geologic time based on fossil plants and animals. Many federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. (e.g., Antiquities Act of 1906 [16 U.S.C. 431-433]; Federal-Aid Highway Act of 1935 [20 U.S.C. 78]). Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA), the California Code of Regulations (CCR), Title 14, Division 3, Chapter 1, Sections 4307 and 4309, and PRC Section 5097.5.

3.13.2 Affected Environment

3.13.2.1 Paleontological APE

The paleontological study area includes all locations that would be subjected to subsurface ground disturbance under both build alternatives of the proposed project. The paleontological study area is the same as the project construction area. The areas near the existing viaduct footings are those subject to extensive ground disturbance. Other areas within the paleontological study area, including building demolition, would be subject to shallow subsurface disturbance.

3.13.2.2 Research Methods

The following tasks were conducted to compile stratigraphic and paleontologic resource inventories of the 6th Street Viaduct study area by rock unit:

- Reviewed surficial geologic maps covering the study area and vicinity to determine the underlying fossil-bearing rock units and their respective areal distribution therein.
- Conducted an archival search at the Natural History Museum of Los Angeles County, Vertebrate Paleontology Department, to document the occurrence of any previously recorded fossil site and the types of fossil remains from each of these rock units in and near the study area.

[76] Paleontological Identification Report. July 2008.

- Reviewed published and unpublished geologic paleontologic literature for additional information on these and other fossil sites from the same rock units in and near the study area.

No field survey was conducted because the study area is fully developed.

3.13.2.3 Findings

While no paleontological sites have been found in the study area, paleontological sites have been found in nearby sites. The older alluvium has yielded fossilized bones and teeth at many fossil sites in the Downtown Los Angeles vicinity. Because of these fossil occurrences, the older alluvium is classified as being of high importance because of its demonstrated high potential for containing scientifically important fossil remains that might be exposed by earth-moving activities.

The younger alluvium has also yielded fossilized bones and teeth at many fossil sites in Downtown Los Angeles and its immediate vicinity. Several remains have been found at sites within a 1.6-mile radius of the study area. Mammoth remains have been found as shallow as 8 ft below previous grade. Holocene plant remains more than 5,000 years in age were encountered at depths as shallow as 20 ft below previous grade. Horse remains have been found at a depth of 43 ft below previous grade. Because of these fossil occurrences, the younger alluvium is classified as being of high importance at depths greater than approximately 5 ft below current grade because of its demonstrated high potential for containing scientifically important fossil remains that might be exposed by earth-moving activities. The younger alluvium is classified as being of low importance at depths less than 5 ft below current grade. Accordingly, any remains found at such shallow depths would likely be too young to be considered fossilized or scientifically important.

3.13.3 Environmental Consequences

Alternative 1 – No Action

No impacts to paleontological resources would occur under this alternative.

Alternative 2 – Retrofit

Excavation and other earth-moving activities associated with retrofit construction might result in the loss of paleontological resources. These losses might include (1) an undetermined number of unrecorded fossil sites in the older alluvium and, at depths greater than 5 ft below current grade, the younger alluvium; (2) scientifically important fossil remains; (3) associated fossil specimen data and corresponding geologic and geographic site data; and (4) the fossil-bearing strata.

Alternative 3 – Replacement

Impacts to paleontological resources would be the same as Alternative 2.

3.13.4 Avoidance, Minimization, Rectification, Reduction, and Compensation Measures

Implementation of the following mitigation measures would minimize potential impacts to paleontological resources during earth-moving activities.

- A qualified Principle Paleontologist would be retained prior to the start of construction to develop and implement a Paleontological Mitigation Plan (PMP). The PMP would include obtaining a written storage agreement with a recognized museum repository; presenting preconstruction meeting instructions for construction personnel on environmental awareness; instructions on fossil remains handling requirements for archiving; archival requirements for remains prior to transfer to the repository for permanent storage and maintenance; instructions on fossil remains handling requirements; a discussion of bulk sample requirements of fine-grained sediment from fossiliferous or potentially fossiliferous strata; and preparation of a report summarizing the findings of the work conducted under the PMP.
- A Paleontological Monitor would be onsite on a full-time basis to inspect new exposures created by earth-moving activities in areas underlain by the older alluvium and at depths greater than 5 ft below current grade for the younger alluvium.
- If fossil remains are discovered, then earth-moving activities at the fossil site would be halted or diverted temporarily to allow the monitor to recover the fossil remains.

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3.14 Hazardous Waste/Materials

Hazardous materials are generally substances that, by their nature and reactivity, have the capacity for causing harm or health hazards during normal exposure or an accidental release or mishap. They are characterized as being toxic, corrosive, flammable, reactive, an irritant, or a strong sensitizer. The term "hazardous substances" encompasses chemicals regulated by both U.S. Department of Transportation (DOT) "hazardous materials" regulations and the U.S. Environmental Protection Agency's (EPA) "hazardous waste" regulations, including emergency response. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment.

This subsection discusses potential human health hazards due to exposure to existing and possible future sources of hazardous materials and wastes because of project construction and operation.

3.14.1 Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use.

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

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

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

Hazardous waste in California is regulated primarily under the authority of the federal RCRA and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

3.14.2 Affected Environment

An Initial Site Assessment[77] (ISA) covering the project study area was prepared in October 2005, and selected sites were reassessed in January 2007. The ISA was prepared in accordance with American Society for Testing and Materials (ASTM) E-1527-00 guidelines and Caltrans *Project Development Procedures Manual*. The scope of the ISA included site reconnaissance; historical research related to use, storage, disposal, or release of hazardous materials or petroleum hydrocarbons; review of environmental databases; and report of findings.

Following the Phase I study, a site investigation covering the proposed project alignment was conducted in early 2008. [78] A summary of findings is presented below.

3.14.2.1 Review of TrackInfo Services Environmental FirstSearch (EFS) Report

There are 183 sites within ASTM 1527-00 Standard search distances from the project site that have been identified in the environmental databases. These results are summarized in Table 3.14-1. Several facilities are listed in multiple databases. Only one Recognized Environmental Condition (REC) was identified for the project. REC means "the presence or likely presence of hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property."

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[77] Initial Site Assessment for 6th Street Viaduct Seismic Improvement Project. February 2007.
[78] Site Investigation Report for 6th Street Viaduct Improvement Project over Los Angeles River and U.S. 101. July 2008.

Table 3.14-1
Summary of Environmental Database Search Results

Database	Search Radius	Onsite	Within 1/8-Mile	Within 1/4-Mile	Within 1/2-Mile	Greater than 1/2-Mile	Not Mapped	Total
NPL	1.00	0	0	0	0	0	0	0
CERCLIS	0.50	0	0	0	0	--	0	0
NFRAP	0.12	0	1	--	--	--	0	1
RCRA TSD	0.50	0	0	0	0	--	0	0
RCRA COR	1.00	0	0	0	0	1	0	1
RCRA GEN	0.25	2	13	10	--	--	1	26
RCRA NLR	0.12	0	4	--	--	--	0	4
ERNS	0.12	0	0	--	--	--	1	1
NPDES	0.25	0	0	0	--	--	0	0
FINDS	0.25	1	24	12	--	--	1	38
TRIS	0.25	0	6	2	--	--	0	8
State Sites	1.00	0	1	0	5	5	2	13
Spills – 1990	0.12	0	1	--	--	--	0	1
SWL	0.50	2	0	0	2	--	1	5
Permits	0.25	0	0	0	--	--	0	0
Other	0.25	0	0	1	--	--	0	1
REG UST/AST	0.25	0	30	30	--	--	0	60
Leaking UST	0.50	1	2	2	7	--	0	12
Nuclear Permits	0.50	0	0	0	0	--	0	0
Federal Wells	0.50	0	0	0	0	--	0	0
HMIRS	0.12	0	0	--	--	--	2	2
NCDB	0.25	0	0	0	--	--	0	0
PADS	0.25	0	0	0	--	--	0	0
Soils	0.25	2	1	0	--	--	0	3
FIMAP	0.50	5	0	2	0	--	0	7
TOTAL:	--	13	83	59	14	6	8	183

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Information Systems
ERNS: Emergency Response and Notification System
FIMAP: Fire Insurance Map
FINDS: Facility Index System
HMIRS: Hazardous Material Incident Report System
NCDB: National Compliance Database System
NFRAP: No Further Remedial Action Planned
NPDES: National Pollutant Discharge Elimination System
NPL: National Priorities List
PADS: Polychlorinated Biphenyls Activity Data System
RCRA COR: Resource Conservation and Recovery Corrective Action Site
RCRA GEN: Resource Conservation and Recovery Generators
RCRA NLR: Resource Conservation and Recovery Sites
RCRA TSD: Resource Conservation and Recovery Treatment, Disposal, and Storage Site
REG UST/AST: Registered Underground Storage Tank/Aboveground Storage Tank
SWL: solid waste landfill
TRIS: Toxic Release Inventory System
UST: underground storage tank

Source: Initial Site Assessment for 6th Street Viaduct Seismic Improvement Project. February 2007c.

The REC for the project is the BASF Corporation/Sun Chemical facility, located at 500 S. Santa Fe Avenue, Los Angeles, California, 90013, approximately 0.25-mile north of the intersection of the 6th Street Viaduct and Santa Fe Avenue on the west side of the Los Angeles River (see Figure 3.14-1). This facility was identified in 6 different databases. This site consists of 2 land parcels totaling approximately 2.68 acres of land. Historically, the site has been used for chemical or paint manufacturing. The site was formerly under the oversight of the California RWQCB. The California RWQCB has overseen the site investigation and remediation since approximately 1986. Previous sampling activities have confirmed soil and groundwater contamination. Contaminants of concern identified in the groundwater and soil include benzene, 1,1-dichlorethane, 1,1-dichlorethene, 4-methyl-2-pentanone (MIBK), toluene, and total xylene. The toluene and xylene appear to be primarily located within the groundwater beneath the northern portion of the site, whereas the MIBK has been identified in the groundwater along the southwest corner of the site and may extend beyond the site boundary.

Figure 3.14-1 Location of Identified REC

3.14.2.2 Review of Sanborn Maps

A search of Sanborn® fire insurance maps was conducted for the project site as part of the ISA. Coverage was found for the following years: 1906, 1921, 1949, 1950, 1953, 1954, 1959, 1960, 1967, and 1970. A total of 21 maps were identified for the project area; however, only 17 maps included applicable data.

In 1906, the property on the east side of the Los Angeles River was primarily used for lumber storage. Almost half of the property on the west side of the Los Angeles River was unoccupied.

A church, a soap company, and other small manufacturing companies were identified on the west side of the Los Angeles River.

In 1921, on the east side of the Los Angeles River, a concrete pipe company and a machine shop were located adjacent to the north of the project property. Further north of the project site, a locomotive repair facility was operational. Within the project site, a junkyard; lumber company; two small manufacturing companies; and belting, packing, and hose manufacturer were identified.

In 1949, the entire project site area on the east side of the Los Angeles River was occupied by manufacturing businesses including, but not limited to, cabinetry, food supplies, wood truss, furniture and upholstery, gypsum tile manufacturing, steel fence, laundry supplies, paint, rubber goods, and paper products.

In 1950, on the west side of the Los Angeles River, a larger portion of the project site was being used as machinery storage yards. A large bakery was identified. A few small manufacturing businesses, sandblasting areas, and auto garages were identified.

From 1950 until 1960, few changes were observed on the west side of the Los Angeles River from the 1959 map. One bakery was replaced by a metal fabricating company, and a new sheet metal shop was identified.

By 1967, the biscuit company building was converted to a parking lot; otherwise, the area remained primarily manufacturing businesses.

In 1970, on the east side of the Los Angeles River, wood truss and post companies were identified within the project area. Several other manufacturing businesses were also identified, including the large K-C Products Company and California Stuffed Toys & Cal-Fiber Company. A large refrigerating company is located at the corner of Myers Street and Jesse Street. The rest of the businesses identified were primarily small manufacturing businesses and food products businesses. On the west side of the Los Angeles River, most of the businesses were the same as they were in 1967. The area continues to be largely manufacturing businesses.

3.14.2.3 Site Reconnaissance

Site reconnaissance was conducted as part of the ISA. Based on available information, hazardous substances are expected to have been used at the subject site. During the site reconnaissance, obvious indications of hazardous substances were observed in the project site. Hazardous substance containers or unidentified substance containers were observed at the subject site. Several facilities within the survey area have hazard placards located on the buildings. Chemicals with serious and severe health hazards are present at these facilities. Access to these sites is restricted.

Based on available information, equipment and materials possibly containing polychlorinated biphenyls (PCBs) are suspected to have been used at the subject site. During the site reconnaissance, several power line poles were observed to have transformers. Several transformers have not been tested for PCBs; therefore, these transformers must be considered to contain PCBs until tests prove otherwise. No other equipment or materials possibly containing PCBs were observed.

Based on available information, asbestos-containing materials (ACMs) are expected to have been used at the subject site. A review of the historical aerial photographs indicates that several of the buildings within the survey area were built prior to 1928. As a result, ACMs are likely to be present in materials in the buildings; therefore, there is the potential for residual ACMs to be present in and around this site. No other instances of ACMs were observed in the project site.

During the site reconnaissance, several instances of solid waste were observed at the site. Shopping carts, mattresses, blankets, and other materials associated with homeless persons were observed under the viaduct and in the adjacent streets and alleyways. Evidence of dumping was observed inside the fenced area of the property located at the corner of Palmetto Street and Santa Fe Avenue. Based on available information, no portion of the project site is or was designated as a solid waste disposal site.

During the site reconnaissance and after a review of the historical aerial photographs, several of the buildings within the survey area appear to be built prior to 1928; therefore, there is a high probability of lead-based paint (LBP) in the buildings. As a result, there is the potential for residual LBP to be present in and around this site. Aerially deposited lead (ADL) is common in the immediate vicinity of freeways and highways. Since the project site is adjacent to US 101 and two Interstates (I-5 and I-10), the probability of ADL on the project site is high.

3.14.2.4 Site Investigation

Based on the findings of the ISA, a preliminary site investigation was conducted in 2008[79] to identify the potential impacts associated with hazardous waste and materials. A detailed site investigation will be conducted at the final engineering design phase, once a preferred alternative is selected. The preliminary site investigation consisted of collecting soil samples from 10 locations and groundwater samples from 4 locations along the proposed alignment under study, as summarized in Table 3.14-2 (see Figure 3.14-2). The soil samples were collected mostly from depths ranging from approximately 5 ft to a maximum of 70 ft below ground surface (bgs). Samples were analyzed for California Code of Regulations (CCR) Title 22 metals, total petroleum hydrocarbon (TPH) as gasoline and diesel, pH, volatile organic compounds (VOCs),

[79] Site Investigation Report for 6th Street Viaduct Improvement Project over Los Angeles River and U.S. 101, July 2008.

and semivolatile organic compounds (SVOCs). The detailed sample collection locations and analytical results can be found in the Site Investigation Report[80].

Table 3.14-2
Summary of Locations and Sampling Depths

Borehole ID No.	Borehole Location	Sampling Depths (feet)
B-01	Southwest corner of 6th Street Viaduct and Mateo Street	5,10,15
B-02	Southwest corner of 6th Street Viaduct and Mateo Street	5,10,15
B-03	Northwest of 6th Street Viaduct between Mateo Street and Santa Fe Avenue	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70
B-04	Southwest of 6th Street Viaduct between Imperial Street and Santa Fe Avenue	5,10,15
B-05	Northwest of 6th Street Viaduct between Santa Fe Avenue and Mesquit Street	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60
B-06	East of Mesquit Street and west of Metrolink underneath 6th Street Viaduct	5,10,15
B-07	East of Los Angeles River and west of Mission Road	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55
B-08	East of Mission Road and underneath 6th Street Viaduct	5,10,15
B-09	East of Mission Road and west of Anderson Street	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55
B-11	Southeast corner of 6th Street Viaduct east of Boyle Avenue	5,10,15

Source: Site Investigation Report, CH2M Hill, 2008.

The results of the laboratory analysis of soil and groundwater samples are summarized below.

- **<u>Metals:</u>** Low levels of metals were found in all 74 soil samples analyzed. Only one soil sample (B-02-5) had total lead concentrations that exceeded the total threshold limit concentration (TTLC) criteria. Deeper samples at the same location all reported low lead concentrations that were below the TTLC criteria. It appears that the soil sample where such a high lead concentration was encountered is an isolated case. The same soil sample also reported exceedance for lead and arsenic above the industrial preliminary remediation goal (PRG) criteria. None of the remaining detected metal concentrations were above any of the screening criteria.

  Low levels of metals were also detected in all five groundwater samples analyzed. The detected concentrations for most of the metals (i.e., arsenic, cadmium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) exceeded the National Pollutant Discharge Elimination System (NPDES) permit requirements.

[80] Ibid.

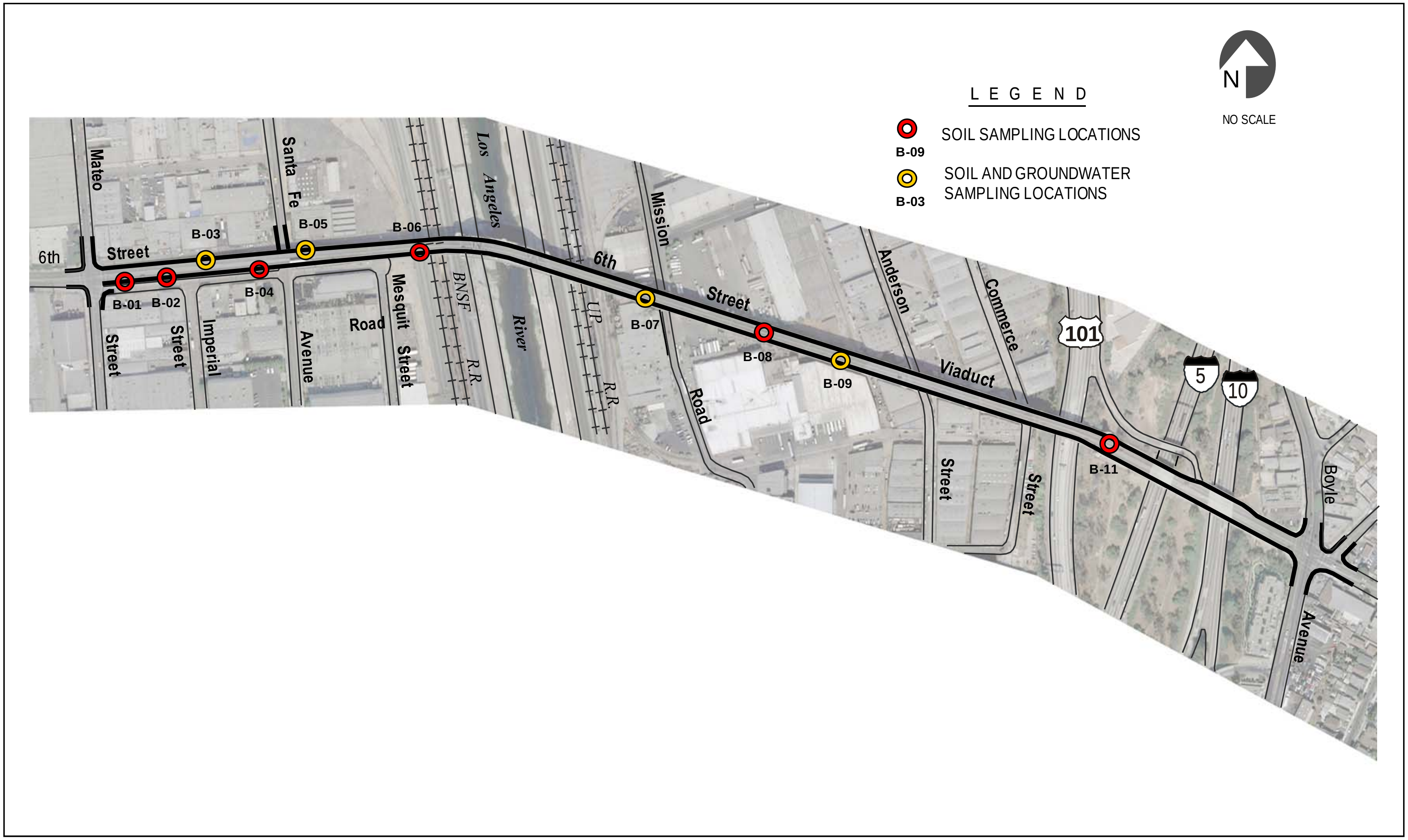

Figure 3.14-2 Sampling Locations

- **<u>TPH-gas:</u>** Low levels of TPH-gas (0.65-milligram per kilogram [mg/kg] to 8.3 mg/kg) were detected in 5 out of 74 soil samples analyzed. Low to high concentrations of TPH-diesel (7.5 mg/kg to 14,000 mg/kg at 5 ft bgs) were detected in 20 samples.

  TPH-gas and diesel were detected in only one (B-05-GW-1) out of five groundwater samples analyzed at concentrations of 7,100 micrograms per liter (µg/L) and 4,900 µg/L, respectively.

- **<u>TPH-diesel:</u>** Seventy-four (74) soil samples were analyzed for TPH-diesel. Concentrations of detected TPH-diesel oil ranged from 7.5 mg/kg in sample B-31-10 (duplicate of B-11-10) to 14,000 mg/kg in sample B-06-5. Most of the detected concentrations were at the 5-ft-depth samples.

  Only one out of five groundwater samples analyzed for TPH-diesel was reported to have concentrations above the laboratory reporting limit. TPH-diesel was detected in B-05-GW-1 at a concentration of 4,900 µg/L.

- **<u>VOCs:</u>** Low VOC analytes were detected in 7 out of 74 soil samples analyzed for VOCs. None of the detected concentrations exceeded any screening criteria.

  Only three out of five groundwater samples (B-04-GW-1, B-05-GW-1, and B-08-GW-1) analyzed for VOCs were reported to have detectable concentrations of VOCs. The concentration of the VOC 1,1-dichloroethane exceeded the NPDES permit requirement in both samples where it was detected (B-04-GW-1 and B-05-GW-1).

- **<u>SVOCs:</u>** No SVOCs were detected in any of the 74 soil and 5 groundwater samples collected at the site.

3.14.3 Environmental Consequences

3.14.3.1 Construction Impacts

Alternative – No Action

There would be no construction impacts associated with hazardous wastes/materials under the No Action Alternative.

Alternative 2 – Retrofit

<u>Hazardous Waste Facilities</u>

Based on the review of the environmental databases, site reconnaissance, and historical research, there are a number of hazardous waste sites within the required search distances of the proposed project limits (see Table 3.14-1). Based on the nature and status of the listings, most of these sites are not considered recognized environmental conditions for the proposed project.

The BASF Corporation/Sun Chemical facility, which is located at 500 S. Santa Fe Avenue, Los Angeles, California, 90013, is considered an REC for the proposed project that could cause groundwater contamination within the proposed project area. Results of the Site Investigation revealed potential metal, TPH-diesel, and VOC contamination in a few samples of soil and groundwater at the project site. Soil and groundwater analysis would be required prior to any soil disposal and groundwater dewatering activities to ensure proper handling and disposal of contaminated soil and groundwater. Costs associated with contaminated soil and groundwater remediation and disposal are estimated at $6 million.

Aerially Deposited Lead

Construction of Alternative 2 could involve limited excavation of exposed surface soil adjacent to paved areas within the project limits. Since most of the retrofitted area would be confined only within the existing viaduct footprint, which is totally paved, ADL-contaminated soil is not likely to occur; therefore, ADL testing would not be required.

ACM and LBP Coatings

The viaduct and appurtenances may have ACM in the form of coatings, insulation, and/or expansion joint compounds and LBP coatings. The buildings along both sides of 6th Street may contain ACMs and LBP. Impacts from demolition of the buildings (i.e., City Maintenance Facility and Ventura Foods, Inc.) could present a health hazard if the ACMs are removed in a way that generates airborne fibers. Asbestos-containing material (ACM) and LBP surveys of the buildings scheduled for demolition would be conducted. The contractor's compliance with South Coast Air Quality Management District (SCAQMD) Rule 1403 notification and removal processes in carrying out the demolition activities would mitigate the impacts. In addition, disposal of ACMs would comply with Regional Water Quality Control Board (RWQCB) requirements. Costs associated with ACM and LBP removal and disposal for Alternative 2 implementation are estimated at $0.4 million.

Alternative 3 – Replacement

Hazardous Waste Facilities

As mentioned in the above section, results of the Site Investigation revealed potential metal, TPH-diesel, and VOC contamination in portions of soil and groundwater at the project site. Soil and groundwater analysis would be required prior to any soil disposal and groundwater dewatering activities to ensure proper handling and disposal of contaminated soil and groundwater. Costs associated with contaminated soil and groundwater remediation and disposal for any alignment under Alternative 3 are estimated at $2.7 million.

Aerially Deposited Lead

Construction of Alternative 3 would cover the area near US 101, which contains exposed soil. Soils in this area may contain ADL generated by motor vehicle exhaust; hence, it would be tested for ADL according to applicable standard hazardous material testing guidelines prior to commencement of the construction activities. In addition to testing for the presence of ADL, the contractor would be required to manage all excavated soils in accordance with all pertinent laws and regulations. Costs associated with ADL sampling and disposal for any alignment under Alternative 3 are included under the cost for contaminated soils and groundwater remediation above.

ACM and LBP Coatings

The viaduct and appurtenances may have ACM in the form of coatings, insulation, and/or expansion joint compounds and LBP coatings. The buildings along both sides of 6th Street may contain ACMs and LBP. Impacts from demolition of the viaduct and buildings could present a health hazard if the ACMs are removed in a way that generates airborne fibers. Asbestos-containing material (ACM) and LBP surveys of the buildings scheduled for demolition would be conducted. The contractor's compliance with SCAQMD Rule 1403 notification and removal processes in carrying out the demolition activities would mitigate the impacts. In addition, disposal of ACMs would comply with RWQCB requirements. Costs associated with ACM and LBP removal and disposal for any alignment under Alternative 3 are estimated at $0.8 million.

3.14.3.2 Permanent Impacts

Alternative 1 – No Action

There would be no permanent impacts associated with hazardous wastes/materials under the No Action Alternative.

Alternative 2 – Retrofit

Once construction is complete, there would be no permanent impacts associated with hazardous materials and wastes as a result of the implementation of Alternative 2.

Alternative 3 – Replacement

Once construction is complete, there would be no permanent impacts associated with hazardous materials and wastes as a result of the implementation of Alternative 3.

3.14.3.3 Cumulative Impacts

Impacts associated with hazardous materials and wastes are localized. No cumulative impacts are anticipated for any alternative under consideration.

3.14.3.4 Secondary Impacts

No secondary impacts associated with hazardous materials and wastes were identified.

3.14.4 Avoidance, Minimization, and Compensation Measures

Alternative 1 – No Action

No mitigation is required.

Alternative 2 – Retrofit

Impacts related to hazardous wastes/materials during demolition and construction of the project would be minimized by implementation of the following measures.

- Conduct soil profiling while handling soil at the project site during construction. If the soil contains contaminant concentrations that meet the definition of hazardous materials, then the contractor would be required to adhere to City Standard Specifications (known as the Greenbook), which address the management of various hazardous materials and wastes and that are consistent with the federal and state of California requirements pertaining to hazardous materials and wastes management.
- Conduct a survey to screen for ACMs and LBP prior to demolition activities. If ACMs are found, then the contractor would comply with SCAQMD Rule 1403 notification and removal processes.
- Obtain an NPDES permit for wastewater discharge if there is a potential for dewatering activities at the project site during construction.
- Dispose of any hazardous materials or wastes encountered before or during the demolition stage of the project according to current regulatory guidelines.

Alternative 3 – Replacement

In addition to the measures outlined under Alternative 2, soils within the project site near US 101 shall be tested for ADL prior to any excavation activities. If the soil contains ADL concentrations exceeding the current regulatory requirements, then the contractor must handle and dispose of the contaminated soil in accordance with the regulatory requirements.

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3.15 Air Quality

This section addresses the potential impacts to regional and local air quality associated with implementation of the proposed project. Air quality impacts were evaluated for short-term construction emissions and long-term operational emissions of the proposed project. Detailed analytical methodology and data input and output information can be found in the Air Quality Technical Report[81] prepared for this project.

The 6th Street Viaduct is located in Los Angeles, within the South Coast Air Basin (SCAB or Basin), which is an approximately 6,745-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The SCAB includes all of Orange County; Los Angeles County, with the exception of the Antelope Valley; and the non-desert portions of Riverside and San Bernardino counties. Its terrain and geographical location determine the distinctive climate of the Basin, as the Basin is a coastal plain with connecting broad valleys and low hills. Elevations range from sea level to more than 11,000 ft above msl. The South Coast Air Quality Management District (SCAQMD) has jurisdiction over air quality issues within the SCAB. While the SCAB has some of the most unhealthful air quality in the nation, air quality within the basin continues to show improvement.

Many statutes, regulations, plans, and policies have been adopted that address air quality issues. The project site and vicinity are subject to air quality regulations developed and implemented at the federal, state, and local levels. Plans, policies, and regulations that are relevant to the proposed project are discussed in the following sections.

3.15.1 Regulatory Setting

The federal Clean Air Act (CAA), as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act (CCAA) of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called national ambient air quality standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3,) particulate matters (PM), lead (Pb), and sulfur dioxide (SO_2).

Under the 1990 CAA Amendments (CAAAs), the Department of Transpiration (DOT) cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to the State Implementation Plan (SIP) for achieving the goals of the CAA

[81] Parsons, 2008a. *Air Quality Technical Report for 6th Street Viaduct Seismic Improvement Project.* September.

requirements. Conformity with the CAA takes place on two levels – first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional-level conformity in California is concerned with how well the region is meeting the standards set for CO, NO_2, O_3, and PM. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTPs) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the CAA are met. If the conformity analysis is successful, then the regional planning organization, such as the Southern California Association of Governments (SCAG), which is the federally designated Metropolitan Planning Organization (MPO) responsible for transportation planning in the SCAB, and the appropriate federal agencies, such as FHWA, make the determination that the RTP is in conformity with the SIP for achieving the goals of the CAA. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project level also requires "hot spot" analysis if an area is "nonattainment" or "maintenance" for CO and/or PM. A region is a "nonattainment" area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called "maintenance" areas. "Hot spot" analysis is essentially the same, for technical purposes, as CO or PM analysis performed for NEPA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in "nonattainment" areas the project must not cause any increase in the number and severity of violations. If a known CO or PM violation is located in the project vicinity, then the project must include measures to reduce or eliminate the existing violation(s) as well.

3.15.2 Affected Environment

An air quality analysis was performed for the proposed project Alternative 3 to represent the worst-case scenario. Detailed methodologies, input and output data, and analytical results were presented in the *Air Quality Technical Report for 6th Street Viaduct Seismic Improvement Project,* which was reviewed and concurred by Caltrans' technical specialist in December 2008.

3.15.2.1 Climate/Meteorology

The project site is located in the City of Los Angeles within the SCAB. The southern California region lies in a semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. Warm, dry summers, low precipitation, and mild winters characterize the overall climate in the SCAB. In the project area, the average daily winter temperature is 56 degrees Fahrenheit (^{o}F) (13.3 degrees Celsius [^{o}C]), and the average daily summer temperature is 74 ^{o}F (23.3 ^{o}C). More than two-thirds of the annual rainfall occurs from December through March, with 93 percent occurring between November and April. The mean annual precipitation in the Los Angeles Civic Center area over a 93-year period (1914-2007) was 14.8 inches. In nearly all months of the year, evaporation exceeds precipitation.

Topography is a major factor influencing wind direction over the project area. The predominant easterly daily winds in the Central Los Angeles area have an average speed ranging between 5.3 and 7 miles per hour (mph). There is little seasonal variability in this pattern. Occasionally during autumn and winter, "Santa Ana" conditions develop from a high-pressure zone to the east to bring dry, high-velocity winds from the deserts over Cajon Pass to the coastal region. These winds, which gust to more than 80 mph, can reduce relative humidity to below 10 percent.

The SCAB experiences frequent temperature inversions (i.e., increasing air temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, which allows vertical mixing with the lower layer. This phenomenon is observed in the mid to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by mid morning.

The greatest air pollution impacts throughout the Basin occur from June to September. This condition is generally attributed to the large amount of pollutant emissions, increased sunshine, light winds, and shallow vertical atmospheric mixing. This frequently reduces pollutant dispersion, thus causing elevated air pollution levels. Pollutant concentrations in the Basin vary with location, season, and time of day. Ozone concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Basin and adjacent desert. Over the past 30 years, substantial progress has been made in reducing air pollution levels in the SCAB.

3.15.2.2 Criteria Pollutants

The CARB and SCAQMD maintain a network of more than 38 air quality monitoring stations throughout the SCAB to effectively monitor 38 source receptor areas (SRA) in the region. The proposed project site is located in SRA number 1, Central Los Angeles County. The nearest air monitoring station to the project site is the North Main Street monitoring station, which is located at 1630 North Main Street, approximately 2 miles north of the project site. All criteria pollutants are monitored at this station (i.e., O_3, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$). Table 3.15-1 presents ambient air quality data recorded at this station for the past 4 years.

Table 3.15-1
Criteria Air Pollutants Data Summary
(North Main Street Monitoring Station)

Pollutant	Averaging Time	Standard	2003	2004	2005	2006
Ozone (O_3)	1-Hour	Maximum Concentration (ppm)	0.15	0.11	0.12	0.11
		Days > CAAQS (0.09 ppm)	11	7	2	8
	8-Hour	Maximum Concentration (ppm)	0.09	0.09	0.10	0.08
		Days > NAAQS (0.08 ppm)	2	1	1	0
		Days > CAAQS (0.07 ppm) [a]	-	-	-	1
Particulate Matter (PM_{10})	24-Hour	Maximum Concentration ($\mu g/m^3$)	81	72	70	59
		Days > CAAQS (50 $\mu g/m^3$)	36	30	18	18
		Days > NAAQS (150 $\mu g/m^3$)	0	0	0	0
	Annual	National Annual Average (50 $\mu g/m^3$)[b]	35	33	30	30
		State Annual Average (20 $\mu g/m^3$)[b]	34	33	29	30
Particulate Matter ($PM_{2.5}$)	24-Hour	Maximum Concentration ($\mu g/m^3$)	84	60	74	46
		Days > NAAQS (65 $\mu g/m^3$)	4 [c]	0	2	0
		3-year Average 98th Percentile ($\mu g/m^3$)[c]	58	56	55	48
	Annual	AAM (15.0 $\mu g/m^3$)	21.4	18.6	17.8	15.6
Carbon Monoxide (CO)	1-Hour	Maximum Concentration (ppm)	5.5	4.2	3.9	3.5
		Days > CAAQS (20 ppm)	0	0	0	0
		Days > NAAQS (35 ppm)	0	0	0	0
	8-Hour	Maximum Concentration (ppm)	4.5	3.2	3.1	2.7
		Days > CAAQS (9.0 ppm)	0	0	0	0
Nitrogen Dioxide (NO_2)	1-hour	Maximum Concentration (ppm)	0.16	0.16	0.13	0.11
		Days > NAAQS (9 ppm)	0	0	0	0
		Days > CAAQS (0.25 ppm)	0	0	0	0
	Annual	AAM (0.053 ppm)	0.033	0.034	0.027	0.029
Sulfur Dioxide (SO_2)	24-hour	Maximum Concentration (ppm)	0.005	0.015	0.010	0.006
		Days > CAAQS (0.04 ppm)	0	0	0	0
		Days > NAAQS (0.14 ppm)	0	0	0	0
	Annual	AAM (0.03 ppm)	0.002	0.003	0.002	0.002

AAM – Annual Arithmetic Mean; $\mu g/m^3$ – micrograms per cubic meter; ppm – parts per million;
CAAQS – California ambient air quality standards; NAAQS – National ambient air quality standards

[a] The new California 8-hour-average O_3 standard was adopted by CARB on April 28, 2005; therefore, the exceedance statistics are not applicable before this date.

[b] State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

[c] Attainment condition for $PM_{2.5}$ is that the 3-year average of the 98th percentile of 24-hour concentrations at each monitor within an area must not exceed 65 $\mu g/m^3$.

Source: EPA Web site: http://www.epa.gov/air/data/; and CARB Web site: http://www.arb.ca.gov/adam/

As Table 3.15-1 shows, exceedances of the California standards were recorded at the North Main Street station for O_3 (1-hour, California standard), PM_{10} (24-hour and annual), and $PM_{2.5}$ (24-hour and annual) on one or more occasions from 2003 through 2006. The national standards were exceeded only for $PM_{2.5}$ (24-hour and annual). No exceedances of either the state or national standards were recorded for SO_2, NO_2, or CO.

3.15.2.3 Toxic Air Contaminants

Toxic air contaminants (TACs) consist of compounds that include metals, minerals, soot, and hydrocarbon-based chemicals. There are hundreds of different types of air toxics with varying degrees of toxicity. Sources of TACs include industrial processes, such as petroleum refining and chrome-plating operations; commercial operations, such as gasoline stations and dry cleaners; and motor vehicle exhaust. TACs are a concern in the SCAB because of the large number of mobile sources and industrial facilities throughout the basin.

California regulates TACs through its Air Toxics Program, which is mandated in Chapter 3.5 of the Health and Safety Code – *Toxic Air Contaminants,* and Part 6 – *Air Toxics Hot Spots Information and Assessment* (H&SC Sections 39660 *et seq*. and 44300 *et seq*., respectively).

The regulatory approach used in controlling TAC levels relies on a quantitative risk assessment process rather than ambient air conditions to determine allowable emission levels from the source. In addition, for carcinogenic air pollutants, there is no safe concentration in the atmosphere. Local concentrations can pose a health risk and are termed “toxic hot spots.”

The most comprehensive study on air toxics in the SCAB is the Multiple Air Toxics Exposure Study (MATES-II, March 2000), which was conducted by SCAQMD. The monitoring program measured more than 30 air toxics, including gaseous and particulate TACs. The monitoring study was accompanied by a computer modeling study in which SCAQMD estimated the risk of cancer from breathing toxic air pollution throughout the region, based on emissions and weather data. MATES-II found that the maximum cancer risk in the region from carcinogenic air pollutants ranged from approximately 1,100 in a million to 1,750 in a million, with an average regional risk of approximately 1,400 in a million. The higher risk levels were found in the urban core areas in south central Los Angeles County, in Wilmington adjacent to the San Pedro Bay Ports, and near freeways. Overall, the study showed that airborne diesel particulate matter (DPM) contributed approximately 70 percent of the cancer risk. Mobile sources accounted for approximately 90 percent of the cancer risk, and industries and other stationary sources accounted for the remaining 10 percent.

In January 2008, a draft study report of MATES-III became available for a 90-day public review and comment. The study is a follow up to MATES-II and focuses on the carcinogenic risk from exposure to air toxics. The Draft MATES-III Report was revised after the public review period; the revised document, Draft Final MATES-III Report, was released in July 2008. The results of MATES-III indicate the following:

- The general trend is down for air toxics levels;

- The overall average lifetime risk from toxic air contaminants in the Basin is estimated to be approximately 1,200 per million (compared with 1,400 per million Basin-wide lifetime cancer risk as estimated by MATES-II);
- Mobile source toxics account for 94 percent of risk; and
- Diesel accounts for 84 percent of air toxics risk.

Based on the finding that DPM is a significant contributor to cancer risk in the region, SCAQMD has approved fleet rules to limit diesel exhaust emitted by municipal vehicle fleets, trash trucks, street sweepers, taxis, and buses in the region. That rule is one of many measures outlined in a comprehensive plan to reduce toxic air pollution from mobile and stationary sources. Other programs to reduce diesel emissions include SCAQMD grant programs for the conversion of diesel equipment to alternative fuels.

3.15.2.4 Asbestos

According to the California Division of Mines and Geology (CDMG), the proposed project location is not in an area of naturally occurring asbestos. Naturally occurring asbestos (NOA) areas are identified based on the type of rock found in the area. Asbestos-containing rocks found in California are ultramafic rocks, including serpentine rocks. These types of rocks are found only in the Catalina Island portion of Los Angeles County, and they are not present in the project area.

3.15.2.5 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the demographic characteristics of occupants and users and the activities involved. Sensitive receptors include residential areas, hospitals, elder-care facilities, rehabilitation centers, elementary schools, daycare centers, and parks.

Residential areas are considered sensitive to air pollution because residents, including children and the elderly, tend to be at home for extended periods of time, resulting in sustained exposure to pollutants. Existing land uses immediately adjacent to the north, south, and west of the project alignment are industrial or commercial. No residential properties are located along the 6th Street Viaduct corridor (see Figure 3.15-1), and none of the adjacent buildings are known to be used for residential purposes. The closest residences to the project site are located approximately 600 ft northeast of the proposed project's eastern limit (near E. 6th Street and Clarence Street). Other potentially sensitive uses in the more distant area include schools, religious institutions, and hospitals. Figure 3.15-1 shows the locations of sensitive receptors and the representative Monitoring Station.

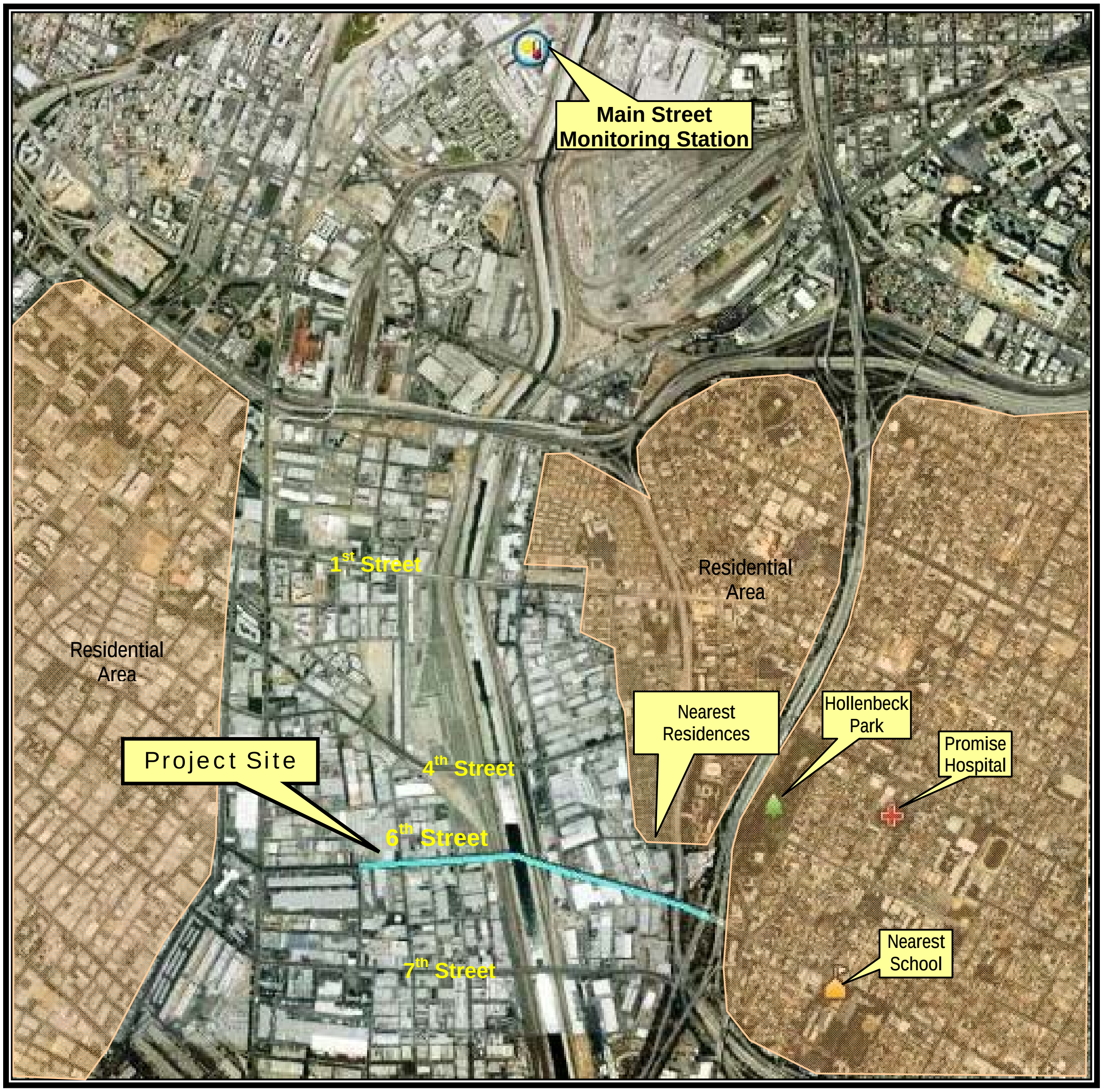

Figure 3.15-1 Sensitive Receptors and Monitoring Station Locations

3.15.3 Environmental Consequences

3.15.3.1 Regional Air Quality Conformity

Transportation Conformity Rule

The CAA mandates that the state submit and implement an SIP for each criteria pollutant that violates the applicable NAAQS. These plans must include pollution control measures that demonstrate how the standards will be met. Conformity to the SIP is defined under the 1990 CAAAs as conformity with the plan's purpose in eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of these standards. The U.S. Environmental Protection Agency (EPA) has two types of SIP conformity guidelines: transportation conformity rules that apply to transportation plans and projects, and general conformity rules that apply to all other federal actions.

The Transportation Conformity Rule, as defined in 40 CFR Parts 51 and 93, was established by EPA and the DOT on November 30, 1993, to implement the Federal CAA conformity provisions. The CAA Amendments of 1990 require that transportation plans, programs, and projects that are funded by or approved under Title 23 U.S.C. or the Federal Transit Act, conform to state or federal air quality plans for achieving NAAQS. The SCAG is the federally designated Metropolitan Planning Organization (MPO) responsible for transportation planning in the SCAB. The transportation conformity process establishes the major connection between transportation planning and emission reductions from transportation sources. In addition, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 (revised in 1998 as TEA-21) linked compliance with conformity requirements to continued FHWA and Federal Transit Administration (FTA) funding of transportation plans, programs, and projects. These requirements were not changed with enactment of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) on August 10, 2005. Conformity with the CAA takes place on both regional and local levels.

Regional Conformity Determination

Regional conformity was demonstrated following the Caltrans Conformity Flowchart that is included in the Caltrans Standard Environmental Report document outlines.[82] In determining whether a project conforms to an approved air quality plan, agencies must use current emission estimates based on the most recent population, employment, travel, and congestion estimates determined by an area's MPO. The MPOs are required to develop and maintain long-range plans and programs, such as 20-year RTP and 4-year (or longer) Regional Transportation Improvement Programs (RTIP) that set out transportation policies and programs for the region. A conforming

[82] Caltrans Web site: http://www.dot.ca.gov/ser/vol1/sec3/physical/ch11air/chap11.htm# Ch11ReportContent

RTIP model outcome projects that the regulated pollutants will be reduced to acceptable levels within time frames that meet the NAAQS.

SCAG is the MPO for the project region and is responsible for developing the RTP and RTIP for the region, including Los Angeles, Orange, San Bernardino, Riverside, Imperial, and Ventura counties. The 2008 RTP was found to conform by SCAG on May 8, 2008, and FHWA and FTA adopted the air quality conformity finding on June 5, 2008.

The proposed project was determined to be "not regionally significant" by SCAG in response to the Notice of Preparation (NOP) for the Environmental Impact Report in June 2006. Pursuant to Federal Conformity Regulations [specifically, 40 CFR 93.105 (c)(1)(i)], a description of the proposed project was submitted by the City to SCAG for an intergovernmental review and comment (SCAG Clearinghouse No. I 20070475 6th Street Viaduct Seismic Improvement Project). The results of the review were provided in a letter dated August 13, 2007, to Mr. Wallace Stokes of the City of Los Angeles Bureau of Engineering. The following paragraph, quoted directly from the letter, is the result of SCAG's review:

> "*We have reviewed the 6th Street Viaduct Seismic Improvement Project, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). Therefore, the proposed Project does not warrant comments at this time.*"

Furthermore, the proposed project is in SCAG's *2008 RTP – Making the Connections* within the "Los Angeles County Strategic Plan Projects List" with ID *U1A0805*. The 2008 RTP was found to conform by SCAG on May 8, 2008, and FHWA and FTA adopted the air quality conformity finding on June 5, 2008.

The project is also listed in the Final 2008 RTIP, Page 48, on the Los Angeles Local Highway Projects list, under the conformity category "exempt" as follows:

- LA0G104; Bridge No. 53C1880,53, Sixth Street, Over Los Angeles River, E Santa ana FWY. LSSRP Seismic bridge replacement.

The 2008 RTIP was federally approved on November 17, 2008. The design concept and scope of the proposed project is consistent with the project description in the Final 2008 RTIP and the assumptions in SCAG's regional emission analysis. As such, the project will not interfere with timely implementation of all Transportation Control Measures (TCMs) identified in the currently approved SIP. Because the proposed project is included in the list of projects exempt from the requirement to demonstrate conformity by the RTIP, the regional emissions contemplated by the Plan would not change due to implementation of the proposed project.

3.15.3.2 Project-Level Conformity

National Ambient Air Quality Standards

Basic elements of the federal CAA include NAAQS for criteria air pollutants, hazardous air pollutants (HAPs) emission standards, state attainment plans, motor vehicle emissions standards, stationary source emission standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions.

The NAAQS have two tiers: primary standards to protect public health and secondary standards to prevent environmental degradation (e.g., damage to vegetation and property, visibility impairment). The CAA mandates that the state submit and implement a SIP for areas not meeting the NAAQS. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 Amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require a demonstration of reasonable progress toward attainment and incorporation of additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA that are most applicable to the proposed project include Title I (Nonattainment Provisions) and Title II (Mobile Source Provisions).

Title I of the CAA identifies attainment, nonattainment, and unclassifiable areas with regard to the criteria pollutants, and it sets deadlines for all areas to reach attainment for the following criteria pollutants: O_3, NO_2, SO_2, particulates less than 10 microns in diameter (PM_{10}), CO, and Pb. The NAAQS were amended in July 1997 to include the 8-hour O_3 standard and an NAAQS for fine particulates less than 2.5 microns in diameter ($PM_{2.5}$).

Title II of the CAA contains many provisions with regard to mobile sources, including motor vehicle emission standards (e.g., new tailpipe emissions standards for cars and trucks and nitrogen oxides [NO_x] standards for heavy-duty vehicles), fuel standards (e.g., requirements for reformulated gasoline), and a program for cleaner fleet vehicles.

The EPA reviews the most up-to-date scientific information and the existing ambient standard for each pollutant every 5 years and obtains advice from the Clean Air Scientific Advisory Committee on each review. Based on these, EPA applies consideration to revise NAAQS accordingly. The NAAQS for particulate matter were amended in September 2006 to strengthen the 24-hour $PM_{2.5}$ standard. EPA had revised the O_3 standard in 1997, setting the 8-hour standard at 0.08 parts per million (ppm). On March 12, 2008, EPA strengthened the 8-hour O_3 NAAQS based on new scientific evidence about the effects of ground-level O_3 on public health and the environment. The new standard (primary and secondary) is 0.075 ppm. Furthermore, based on new scientific studies and several health risk assessment results, EPA revised the lead NAAQS to provide increased protection for children and other at-risk populations against adverse health effects, most notably including neurological effects in children. The revised standard level is 0.15 micrograms per cubic meter ($\mu g/m^3$) over a period of 3 months. The final rule was signed on October 15, 2008. The area designation/ classification based on the new standard will become effective within 2 years (i.e., March 2010), and attainment demonstration SIPs will be due by 2013. The standards for all criteria pollutants are presented in Table 3.15-2; health effects that result from exposure to these pollutants are shown in Table 3.15-3. Nonattainment designations are categorized by EPA into seven levels of severity: basic, marginal, moderate, serious, severe-15[83], severe-17, and extreme. The SCAB is currently classified as a nonattainment area for O_3 and fine particulates (PM_{10} and $PM_{2.5}$). Based on 1990 CAAA, the SCAB nonattainment designations are as follows: nonattainment for $PM_{2.5}$, requiring attainment by 2015; and "severe-17" for 8-hour O_3, requiring attainment with the 0.08 ppm standard by 2021 (the former 1-hour O_3 standard was revoked by EPA on June 15, 2005; thus, it is no longer in effect for the state of California). The SCAB was in "serious nonattainment" status for PM_{10} until 2006. The Basin met the PM_{10} standards at all stations except for western Riverside, where the annual PM_{10} standard was not met as of 2006. The annual standard was revoked by EPA in December 2006 due to a lack of evidence linking health problems to long-term exposure to coarse particulate pollution. The 24-hour PM_{10} standard is retained at its existing value. Currently, the Basin meets the 24-hour average federal standard, and the only days that exceed the standard are associated with high wind natural events or exceptional events, such as wildfires.

For CO, attainment demonstrations were previously submitted to EPA in 1992, 1994, and 1997 to bring the SCAB into attainment with the federal standard in 2000. In 2001, the CO standard was exceeded in the SCAB on 3 days, thus leaving the basin in nonattainment status. At that time, a request to EPA for an extension of the attainment date to 2002 was planned to be included in the revision to the 1997 Air Quality Management Plan (AQMP). Due to delays, the CO attainment demonstration provided in the 1997 AQMP amendments lapsed. In January 2005, the California Air Resources Board (CARB) declared CO attainment for the SCAB based on air quality data collected during 2001 through 2003. The redesignation was approved by the State Office of Administrative Law, and it became effective on July 23, 2004. The 2005 CO Redesignation Request and Maintenance Plan for SCAB was reviewed and approved by EPA, and the federal CO attainment status for SCAB became effective on June 11, 2007.

[83] The "-15" and "-17" designate the number of years within which attainment must be achieved.

Table 3.15-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a,c] Concentration	Federal Standards [b,c] Primary	Federal Standards [b,c] Secondary
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	—	—
	8 Hour	0.07 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3) [d]	—
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	Annual Average (AAM)	20 µg/m^3	— [e]	
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard	35 µg/m^3 [f]	Same as Primary
	Annual Average (AAM)	12 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Average (AAM)	0.030 ppm (56 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1 Hour	0.18 ppm (338 µg/m^3)	—	
Sulfur Dioxide (SO_2)	Annual Average (AAM)	—	0.030 ppm (80 µg/m^3)	—
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)	—
	3 Hour	—	—	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	—	—
Lead (Pb) [g]	30-Day Average	1.5 µg/m^3		—
	Calendar Quarter	—	1.5 µg/m^3	Same as Primary
	3-month rolling[h]	—	0.15 µg/m^3	Same as Primary
Visibility-Reducing Particles	8 Hour	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more due to particles when the relative humidity is less than 70%.	No Federal Standards	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride[f]	24 Hour	0.01 ppm (26 µg/m^3)		

[a] California standards for O_3, CO (except Lake Tahoe), SO_2 (1 and 24 hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to these reference conditions; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] The new standard of 0.075 ppm (previously 0.08 ppm) was adopted on March 12, 2008, and it became effective in June.

[e] The annual standard of 50 µg/m^3 was revoked by EPA in December 2006 due to a lack of evidence linking health problems to long-term exposure to coarse particulate pollution.

[f] Based on 2004-2006 monitored data, EPA tightened the 24-hour standard of $PM_{2.5}$ from the previous level of 65µg/m^3. The updated area designation will become effective in early 2010.

[g] The California Air Resources Board (CARB) has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[h] Final rule for the new federal standard was signed October 15, 2008.

AAM – annual arithmetic mean; mg/m^3 – milligrams per cubic meter; µg/m^3 – micrograms per cubic meter; ppm – parts per million

Source: California Air Resources Board Web site: http://www.arb.ca.gov/aqs/ - Accessed December 2008.

Table 3.15-3
Health Effects Summary for Criteria Air Pollutants

Pollutant	Sources	Primary Effects
Ozone (O_3)	Atmospheric reaction of organic gases with nitrogen oxides in the presence of sunlight.	Aggravation of respiratory diseases; irritation of eyes; impairment of pulmonary function; plant leaf injury.
Nitrogen Dioxide (NO_2)	Motor vehicle exhaust; high temperature; stationary combustion; atmospheric reactions.	Aggravation of respiratory illness; reduced visibility; reduced plant growth; formation of acid rain.
Carbon Monoxide (CO)	Incomplete combustion of fuels and other carbon-containing substances, such as motor vehicle exhaust; and natural events, such as decomposition of organic matter.	Reduced tolerance for exercise; impairment of mental function; impairment of fetal development; impairment of learning ability; death at high levels of exposure; aggravation of some cardiovascular diseases (angina).
Particulate Matter (PM_{10} and $PM_{2.5}$)	Fuel combustion in motor vehicles, equipment, and industrial sources; construction activities; industrial processes; residential and agricultural burning; atmospheric chemical reactions.	Reduced lung function; aggravation of the effects of gaseous pollutants; aggravation of respiratory and cardio-respiratory diseases; increased cough and chest discomfort; soiling; reduced visibility.
Sulfur Dioxide (SO_2)	Combustion of sulfur-containing fossil fuels; smelting of sulfur-bearing metal ores; industrial processes.	Aggravation of respiratory and cardiovascular diseases; reduced lung function; carcinogenesis; irritation of eyes; reduced visibility; plant injury; deterioration of materials (e.g., textiles, leather, finishes, coating).
Lead (Pb)	Contaminated soil.	Impairment of blood function and nerve construction; behavioral and hearing problems in children.

Source: EPA Web site at www.epa.gov/air/oaqps/greenbk/. Accessed November 2006.

All nonattainment areas are subject to a "transportation conformity" measure, requiring local transportation and air quality officials to coordinate their planning to ensure that transportation projects do not hinder an area's ability to reach its clean air goals. These requirements become effective 1-year after an area's nonattainment designation.

Request for Reclassification of Basin's 8-hour Ozone Status to Extreme Nonattainment

For a nonattainment area, the CAA provides voluntary reclassification of the area to a higher classification by submitting a request to EPA. The SCAQMD has requested (as part of its 2007 AQMP submittal to EPA) a reclassification for the Basin from "severe-17' to "extreme" nonattainment. This would extend the 8-hour O_3 attainment date to 2024 and allow attainment demonstration to rely on emission reductions from measures that anticipate the development of new technologies or improvement of existing control technologies.

California Ambient Air Quality Standards

The State of California began to set its ambient air quality standards, CAAQS, in 1969 under the mandate of the Mulford-Carrell Act. The California Clean Air Act (CCAA) was enacted September 30, 1988, and it became effective January 1, 1989. The CCAA requires all areas of the state to achieve and maintain the CAAQS by the earliest practicable date. Table 3.15-1 shows the CAAQS currently in effect for each of the criteria pollutants, as well as the other pollutants recognized by the state. As shown in Table 3.15-4, the CAAQS are more stringent than the NAAQS for most of the criteria air pollutants. In general, California state standards are more health protective than the corresponding NAAQS. In addition, the CAAQS include standards for other pollutants recognized by the state. For example, California has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Moreover, on April 28, 2005, CARB approved a new 8-hour-average O_3 standard of 0.070 ppm to further protect California's most vulnerable population (i.e., children) from the adverse health effects associated with ground-level O_3. The standard went into effect in early 2006.

Based on the CAAQS, the SCAB complies with the state standards for sulfates, hydrogen sulfide, and vinyl chloride, but it is unclassified for the California standard for visibility-reducing particles. Table 3.15-4 provides the Basin's attainment status with respect to federal and state standards.

Table 3.15-4
South Coast Air Basin Attainment Status

Pollutant	Attainment Status Basis	
	National Standard	California Standard
Ozone (O_3), 1-hour average	Not Applicable	Extreme
Ozone (O_3), 8-hour average	Severe-17 [b]	Nonattainment
Carbon Monoxide (CO)	Attainment/Maintenance [c]	Attainment [c]
Nitrogen Dioxide (NO_2)	Attainment/Maintenance	Attainment/Maintenance [d]
Sulfur Dioxide (SO_2)	Attainment	Attainment
PM_{10}	Serious	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead (Pb)	Attainment	Attainment
Sulfates (SO_4^{2-})	Not Applicable	Attainment

[a] The National 1-hour O_3 standard was revoked June 15, 2005.
[b] A request for reclassification status to "extreme" nonattainment was submitted to EPA in September 2007.
[c] The redesignation request for CO status to attainment-maintenance, as adopted by SCAQMD on March 4, 2005, and by CARB on February 24, 2006, was recently approved by EPA, and the redesignation became effective June 11, 2007.
[d] The State NO_2 standard was amended February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are approved by the Office of Administrative Law. The attainment status provided in this table is based on the old standard.

Sources: EPA Web site: http://www.epa.gov/region09/air/maps/. Accessed February 8, 2007;
CARB Web site: http://www.arb.ca.gov/desig/adm/. Accessed May 2007.

Project-level Conformity Determination

Project-level conformity is required for projects in CO, PM_{10}, and $PM_{2.5}$ nonattainment and maintenance areas. As discussed previously, a region is a nonattainment area if one or more monitoring stations in the region fail to attain the relevant CAAQS or NAAQS. Areas that were previously designated nonattainment, but have recently met the CAAQS or NAAQS, are called maintenance areas. In general, projects must not cause the standards to be violated, and in nonattainment areas, the project must not cause any increase in the number and severity of violations.

In March 2006, the Transportation Conformity Rule was updated to include regulations for performing qualitative analysis of PM_{10} and $PM_{2.5}$ hot-spot impacts. Only projects that are considered "Projects of Air Quality Concern" (POAQC) are required to perform an analysis. POAQCs are defined generally, as: (1) new or expanded highway projects that have a significant number of or significant increase in diesel vehicles, (2) projects affecting intersections that are Level of Service (LOS) D, E, or F with a significant number of diesel vehicles, (3) new or expanded bus and rail terminals and transfer points with a significant number of diesel vehicles congregating in a single location, and (4) projects in or affecting locations, areas, or categories of sites that are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan as sites of possible violation.

Project-level transportation conformity was determined by conducting hot-spot analysis for CO, PM_{10}, and $PM_{2.5}$, for which the SCAB is designated as nonattainment or maintenance area. The hot-spot analyses were based on the Caltrans guidance document, *Transportation Project-Level Carbon Monoxide Protocol (CO Protocol)*[84], and the FHWA/EPA guidance document, *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas (Guidelines)*[85].

The proposed project is not a new facility, and it does not include the addition of traffic lanes; therefore, no capacity enhancement or change in traffic pattern is anticipated. As such, the future (postconstruction) project traffic volumes and associated air pollutant emissions would be based on the ambient growth rate; the no-action and build traffic volumes and associated emissions data would be the same, and no significant impact from project implementation, with the exception of improved seismic safety, is expected to occur.

Table 3.15-5, which was derived from the project traffic study, summarizes the effect of project implementation during the construction years and for future/post-construction years, on traffic conditions along the adjacent roadways, which would be carrying additional detour traffic volume during the construction years. As shown, no change in truck percentages is expected to occur as a result of project implementation. The primary focus of this project-level air quality or hot-spot analysis is the operational impact on air quality created by the proposed improvement. The analysis is provided for CO, PM_{10}, and $PM_{2.5}$. The analysis years consist of the project's opening year (2014) and the design or horizon year (2035) referenced in the approved plan. The approach to the local analysis is tiered, and it is dependent on the SIP: the CO analysis can be qualitative or quantitative. The PM_{10} and $PM_{2.5}$ analysis is qualitative in scope.

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84 Caltrans, 1998. California Department of Transportation. *Transportation Project-Level Carbon Monoxide Protocol* (UCD-ITS-RR-97-21, 1997).

85 EPA, 2006. United States Environmental Protection Agency. Publication EP420-B-06-902. *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas.* Accessed via Web site at www.epa.gov/air/oaqps/greenbk/. March.

Table 3.15-5
Peak-Hour Traffic Conditions along Local Roadway Segments for Existing Year, Opening Year, Detour Years, and Horizon Year

Year	Scenario	Peak Hour	Segments of 6th Street Viaduct														
			Soto Street to Boyle Avenue			Boyle Avenue to I-101 NB On-ramp			I-101 NB On-ramp to Mateo Street			Mateo Street to Alameda Street			Alameda Street to Central Avenue		
			EB v/c /LOS	WB v/c /LOS	Traffic Volume	EB v/c /LOS	WB v/c /LOS	Traffic Volume	EB v/c /LOS	WB v/c /LOS	Traffic Volume	EB v/c /LOS	WB v/c /LOS	Traffic Volume	EB v/c /LOS	WB v/c /LOS	Traffic Volume
2007	Existing	AM	0.15 /A	0.5 /A	1,538	0.09 /A	0.54 /A	1,521	0.11 /A	0.52 /A	1,532	0.14 /A	0.42 /A	1,329	0.17 /A	0.4 /A	1,368
		PM	0.44 /A	0.18 /A	1,490	0.38 /A	0.17 /A	1,326	0.4 /A	0.15 /A	1,322	0.38 /A	0.13 /A	1,229	0.35 /A	0.16 /A	1,234
2014	Opening Year - (Build and No Action)	AM	0.16 /A	0.53 /A	1,652	0.1 /A	0.58 /A	1,631	0.12 /A	0.56 /A	1,641	0.15 /A	0.45 /A	1,425	0.18 /A	0.43 /A	1,466
		PM	0.48 /A	0.19 /A	1,600	0.41 /A	0.18 /A	1,420	0.43 /A	0.16 /A	1,411	0.41 /A	0.14 /A	1,318	0.38 /A	0.17 /A	1,323
2011-2014	Detour Years	AM	0.11 /A	0.23 /A	822	—[a]	0.04 /A	103	—[a]	—[a]	0	0.04 /A	0.06 /A	252	0.13 /A	0.17 /A	718
		PM	0.26 /A	0.13 /A	924	—[a]	0.05 /A	120	—[a]	—[a]	0	0.04 /A	0.04 /A	202	0.19 /A	0.1 /A	682
2035	Horizon Year - (Build and No Action)	AM	0.19 /A	0.65 /B	2,030	0.12 /A	0.72 /C	2,010	0.15 /A	0.69 /B	2,020	0.18 /A	0.55 /A	1,750	0.22 /A	0.53 /A	1,800
		PM	0.58 /A	0.24 /A	1,970	0.5 /A	0.23 /A	1,750	0.53 /A	0.19 /A	1,740	0.5 /A	0.17 /A	1,620	0.47 /A	0.21 /A	1,630
			Segments of 4th Street with affected LOS [b]														
			Soto Street to I-5 NB Ramps			I-101 NB Off-ramp to I-101 SB Off-ramp			I-101 SB Off-ramp to I-101 SB On-ramp/Pecan			I-101 SB On-ramp to Alameda Street			Alameda Street to Central Avenue		
2007	Existing	AM	0.13 /A	0.55 /A	2,445	0.09 /A	0.72 /C	1,840	0.08 /A	0.69 /B	2,757	0.11 /A	0.67 /B	2,791	0.1 /A	0.66 /B	2,736
		PM	0.3 /A	0.47 /A	2,752	0.29 /A	0.21 /A	2,105	0.28 /A	0.21 /A	1,768	0.48 /A	0.19 /A	2,385	0.46 /A	0.25 /A	2,577
2014	Opening Year - (Build and No Action)	AM	0.15 /A	0.59 /A	2,657	0.1 /A	0.81 /D	2,156	0.09 /A	0.74 /C	2,982	0.19 /A	0.76 /C	3,416	0.11 /A	0.7 /B	2,934
		PM	0.34 /A	0.5 /A	3,027	0.31 /A	0.26 /A	2,399	0.32 /A	0.23 /A	1,967	0.61 /A	0.24 /A	3,071	0.5 /A	0.27 /A	2,762
2011-2014	Detour Years	AM	0.16 /A	**0.65 /B**	2,917	0.12 /A	**0.91 /E**	2,417	0.11 /A	**0.84 /D**	3,406	0.14 /A	**0.86 /D**	3,589	0.12 /A	**0.8 /C**	3,323
		PM	0.4 /A	0.51 /A	3,289	0.4 /A	0.29 /A	2,660	0.41 /A	0.25 /A	2,379	0.7 /B	0.27 /A	3,483	0.54 /A	0.3 /A	3,017
2035	Horizon Year - (Build and No Action)	AM	0.19 /A	0.73 /C	3,280	0.12 /A	1 /E	2,660	0.11 /A	0.91 /E	3,670	0.23 /A	0.94 /E	4,210	0.14 /A	0.87 /D	3,620
		PM	0.42 /A	0.62 /B	3,730	0.38 /A	0.32 /A	2,950	0.39 /A	0.28 /A	2,420	0.76 /C	0.3 /A	3,790	0.61 /A	0.33 /A	3,410
			Segments of 7th Street														
			Soto Street to Boyle Avenue			Boyle Avenue to Santa Fe Avenue			Santa Fe Avenue to Mateo Street			Mateo Street to Alameda Street			Alameda Street to Central Avenue		
2007	Existing	AM	0.11 /A	0.3 /A	989	0.18 /A	0.26 /A	1,057	0.16 /A	0.38 /A	1,293	0.22 /A	0.37 /A	1,437	0.19 /A	0.38 /A	1,355
		PM	0.16 /A	0.35 /A	1,217	0.36 /A	0.11 /A	1,128	0.4 /A	0.16 /A	1,346	0.36 /A	0.2 /A	1,347	0.32 /A	0.21 /A	1,273
2014	Opening Year - (Build and No Action)	AM	0.12 /A	0.33 /A	1,060	0.2 /A	0.28 /A	1,134	0.17 /A	0.41 /A	1,387	0.24 /A	0.4 /A	1,540	0.2 /A	0.4 /A	1,451
		PM	0.17 /A	0.37 /A	1,304	0.39 /A	0.12 /A	1,223	0.43 /A	0.18 /A	1,461	0.38 /A	0.22 /A	1,452	0.34 /A	0.23 /A	1,365
2011-2014	Detour Years	AM	0.19 /A	0.54 /A	1,741	0.28 /A	**0.66 /B**	2,247	0.23 /A	**0.7 /B**	2,216	0.3 /A	**0.69 /B**	2,370	0.23 /A	0.6 /A	2,000
		PM	0.38 /A	0.42 /A	1,931	0.67 /B	0.23 /A	2,154	0.64 /B	0.26 /A	2,157	0.59 /A	0.3 /A	2,149	0.38 /A	0.28 /A	1,600
2035	Horizon Year - (Build and No Action)	AM	0.14 /A	0.4 /A	1,300	0.24 /A	0.34 /A	1,400	0.21 /A	0.5 /A	1,710	0.3 /A	0.5 /A	1,900	0.25 /A	0.5 /A	1,790
		PM	0.21 /A	0.45 /A	1,600	0.48 /A	0.15 /A	1,500	0.53 /A	0.22 /A	1,800	0.47 /A	0.28 /A	1,790	0.42 /A	0.28 /A	1,690

Notes: LOS=level of service; v/c=vehicle to capacity ratio; ADT=average daily traffic volume; EB=eastbound; WB=westbound; NB=northbound; SB=southbound

The LOS and v/c data for segments of roadways that would be affected by the Viaduct closure during the detour years are shown in bold.

** Truck percentages remain unchanged along all shown segments for No Action, Build Alternatives, and CEQA Base year. The truck volume along the shown segments is either 5% or 6% of total traffic volume.*

a. No traffic flow due to Viaduct closure.

b. From 8 studied segments of 4th street, the 5 segments that were affected by the detour plan are presented.

Source: *Traffic Analysis Report* (ACT Consulting Engineers, 2007).

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CO Hot-Spot Analysis

The CO Protocol has a screening exercise that would determine whether the project requires a qualitative or quantitative analysis, or if none would be necessary. Below are the steps taken following Figure 1 of the CO Protocol (flow charts of Figures 1 and 3 in the CO Protocol are included in the Air Quality Technical Report).

3.1.1 Is the project exempt from all emissions analyses?

The proposed project is defined as "reconstructing of a bridge (6th Street Viaduct), with no additional travel lanes," in Table 1 of the Protocol, among the Safety projects that are exempt from all emission analyses; however, because the horizontal alignment of the new structure may be different from the existing viaduct (when the final design alternative is selected), this study proceeds with examining the potential CO hot-spot impact analysis; *continue to step 3.1.2.*

3.1.2 Is project exempt from regional emissions analyses?

Yes – The project is defined as exempt in the currently conforming RTP and RTIP (see Appendix D); in addition, see the response to the previous question; *continue to step 3.1.9.*

3.1.9 Examine local impacts – Proceed to Section 4 (Figure 3)

Section 4, *local analysis*: procedures delineated in the flow chart of Figure 3 of the CO Protocol were followed as described below.

Level 1. Is the project in a CO nonattainment area?

No – The project is located in the SCAB, which was approved and redesignated by EPA as a CO attainment/maintenance area as of June 11, 2007. *Proceed to Level 1a.*

Level 1a. Was the area designation "attainment" after the 1990 Clean Air Act?

Yes – See response to previous question. *Proceed to Level 1b.*

Level 1b. Has "continuous attainment" been verified with the local Air District, if appropriate?

The redesignation to attainment-maintenance was recently approved (June 11, 2007) by EPA; therefore, the annual review of monitoring data has not occurred. According to Section 4.1.3 of the Protocol, *proceed to Level 7.*

Level 7. Does project worsen air quality?

No – Based on the following discussion, as prescribed by the Protocol, the project is not likely to worsen air quality at the intersections or for the local project area.

Screening Analysis *(Reference Section 4.7.1 of CO Protocol)*

a. Does the project significantly increase (more than 2 percent) the percentage of vehicles operating in cold start mode?

An increase in percentage of vehicles in cold start mode is not anticipated because the project does not include areas such as parking lots where engine cold starts are expected to occur.

b. Does the project significantly increase traffic volumes? According to the Protocol, increases in traffic volume in excess of 5 percent are generally considered potentially significant. Increases less than 5 percent would be potentially significant, if a reduction in average speeds is anticipated.

The project is a bridge seismic improvement, noncapacity-increasing project. The project does not include the addition of traffic lanes and would not change the fleet mix or traffic patterns; therefore, it would not result in a significant increase (if any) of daily traffic volumes.

c. Does the project worsen traffic flow? For uninterrupted roadway segments, a reduction in average speeds (within a range of 3 to 50 mph) should be regarded as worsening traffic flow. For intersections, a reduction in average speed or an increase in average delay should be considered as worsening traffic flow.

The proposed project provides seismic improvement for the safety of the viaduct. A replacement viaduct would provide the same number of traffic lanes, a median, shoulders, and sidewalks, but no additional traffic lanes. As such, the project would not cause changes in truck volume percent or AADT compared to the No Action Alternative. No adverse impacts from implementation of the project are expected to occur.

Based on the above analysis, it is concluded that the project is satisfactory for the screening level analysis, and no further qualitative or quantitative CO analysis would be required.

Particulate Matter (PM_{10} and $PM_{2.5}$) Qualitative Hot-Spot Analysis

Pursuant to Federal Conformity Regulations [specifically, 40 CFR 93.105 (c)(1)(i)], an Interagency Review Form was prepared for the proposed project and was submitted to the SCAG Transportation Conformity Working Group (TCWG). The project Review Form was discussed among representatives at the TCWG meeting on July 22, 2008, to determine if the proposed project requires a project-level PM hot-spot analysis. The TCWG determined that the project is not a project of air quality concern; therefore, no further PM hot-spot analysis is required for the proposed project. A copy of the Project Review Form, as well as the TCWG conformity determination (from the minutes of the work group meeting) is provided in Appendix J.

3.15.3.3 Construction Impacts

Project-related air-contaminant emissions would be considered causing adverse air quality impacts if they result in emissions that either create a violation of the NAAQS (Table 3.15-2) or exceed Thresholds of Significance. Table 3.15-6 outlines the threshold criteria recommended by SCAQMD for use in evaluating the effects of project emissions, pertaining to CEQA, on existing air quality and potential violations of standards and plans.

Table 3.15-6
SCAQMD CEQA Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Maximum Emission (lbs/day)**	
	Construction	**Operation**
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550
Lead	3	3

Toxic Air Contaminants (TACs) and Odor Thresholds	
TACs (including carcinogens and noncarcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
Ambient Air Quality for Criteria Pollutants [b]	
NO_2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (338 μg/m^3) – state 0.030 ppm (56 μg/m^3) – state
PM_{10} 24-hour average annual geometric average annual arithmetic mean	10.4 μg/m^3 (construction)[c] and 2.5 μg/m^3 (operation) 1.0 μg/m^3 20 μg/m^3
$PM_{2.5}$ 24-hour average	10.4 μg/m^3 (construction)[c] and 2.5 μg/m^3 (operation)
Sulfate 24-hour average	25 μg/m^3
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (23,000 μg/m^3) – state 9.0 ppm (10,000 μg/m^3) – state/federal

lbs/day – pounds per day; ppm – parts per million; μg/m^3 – microgram per cubic meter; ≥ – greater than or equal to
[a] Based on SCAQMD CEQA Handbook, 1993.
[b] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[c] Ambient air quality threshold based on SCAQMD Rule 403.

Source: SCAQMD Web site (www.aqmd.gov/CEQA/handbook/signthres.doc), 2007.

Based on the guidelines of the *L.A. CEQA Thresholds Guide*[86], construction of the proposed project would have a significant air quality impact if any of the following would occur:

- *Regional Impact*: Construction-related emissions of criteria pollutants exceed the SCAQMD Mass Daily Thresholds provided in Table 3.15-6.
- *Local Impact*: Proposed project construction emissions would result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance summarized in Table 3.15-5.
- *Toxic Air Contaminants*: Project construction activities would emit carcinogenic or TACs that exceed the maximum individual cancer risk of ten in one million, or an acute or chronic hazard index of 1.0.
- *Odor*: Project construction activities would create objectionable odors at sensitive receptors.

Analysis Methodology

Construction impacts consist of (1) direct air pollutant emissions from onsite operation of heavy-duty construction equipment and earthwork activities (e.g., excavation, grading), as well as offsite emissions from haul trucks and construction workers commuting to and from construction site; and (2) indirect impacts from vehicular emissions due to traffic detours during the required closure of the viaduct (for the Replacement Alternative).

The SCAQMD guidance document, *CEQA Air Quality Handbook, November 1993* (Handbook), was used to calculate air pollutant emissions from construction of the proposed project. Mass daily emissions during different construction stages were forecast using the construction schedule and phasing provided by the proposed project's design engineers. The CARB OFFROAD 2007 emissions model was used to develop exhaust emission factors for the various types of off-road construction equipment to be used in the project construction activities. The EMFAC2007 emissions model was used to develop the emission factors for on-road trucks and employee vehicles. Fugitive dust emission factors were based on guidance from SCAQMD. The localized effects from the onsite portion of mass daily emissions were evaluated for each phase of construction using the dispersion model ISCST-AERMOD, consistent with procedures outlined in EPA's *1998 Guideline on Air Quality Models* and SCAQMD's *Localized Significance Threshold Methodology for CEQA Evaluations* guidance documents. The emission rates utilized in dispersion modeling analysis were developed from the peak daily onsite emissions divided by the 8-hour-per-day construction duration. Details of the construction schedule, the type and amount of equipment anticipated to be used in each phase, the emissions estimation model, and

[86] City of Los Angeles, 2006. L.A. CEQA Thresholds Guide.

dispersion model input assumptions used in this analysis are presented in the Air Quality Technical Report[87] prepared for this project.

The recently released SCAQMD document: *Final – Methodology to Calculate Particulate Matter (PM) 2.5 and $PM_{2.5}$ Significance Thresholds* (October 2006), provides appropriate guidance for analyzing $PM_{2.5}$ emissions. Because $PM_{2.5}$ emission factors for mechanical or combustion processes are not well developed, SCAQMD has recommended an indirect approach to calculating $PM_{2.5}$ emissions until more precise $PM_{2.5}$ emission factors are developed. Since $PM_{2.5}$ is a subset of PM_{10}, the current methodology for calculating $PM_{2.5}$ from fugitive dust sources (e.g., grading, demolition, unpaved roads, open storage piles) and combustion sources (i.e., stationary combustion sources, vehicle exhaust) is based on estimated PM_{10} emissions. Total suspended particulate matter emissions typically contain specific fractions of PM_{10} and $PM_{2.5}$ that can be measured. In general, particulate matter from fugitive dust-generating sources is primarily composed of PM_{10}, with a relatively small fraction of the fugitive particulate matter consisting of $PM_{2.5}$. According to the report, fugitive dust contains approximately 21 percent $PM_{2.5}$. Alternatively, particulate matter from combustion sources is primarily composed of $PM_{2.5}$, with a small fraction consisting of PM_{10}. For off-road heavy-duty equipment, exhaust emissions consist of approximately 89 percent $PM_{2.5}$.

Alternative 1 – No Action

Since no construction would occur under this alternative, no air quality impacts would occur.

Alternative 2 – Retrofit

Direct Construction Impacts

Air pollutant emissions from construction equipment operation are calculated for the worst day during each phase of construction. Since the worst day of Alternative 2 could be similar to Alternative 3, the equipment mix of Alternative 3 is used for the calculation. Please see the Alternative 3 analysis below.

Indirect Construction Impacts

Since Alternative 2 construction would not require long-term viaduct closure (e.g., continuous closure lasting a week or longer), no traffic detours would occur; therefore, no vehicular emissions associated with traffic detours are anticipated.

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[87] Air Quality Technical Report for 6th Street Viaduct Seismic Improvement Project. September 2008.

Alternative 3 – Replacement

Regional Impacts

Regional Direct Construction Impacts

In accordance with the SCAQMD Air Quality Handbook for CEQA impact analysis, emissions were calculated for a worst-case day (see Figure 3.15-2). The worst-case day represents the maximum emissions that can reasonably be expected and helps in determining the degree of potential air quality impact.

Table 3.15-7 summarizes the mass daily direct construction emissions for the proposed project for the worst-case days of each of the years 1 through 4 of the construction period. As shown for year 3 of construction, daily emissions for the 2 months with the most construction activities were estimated because 1 month would include most earthwork activities and another would contain the most overlapping phases. Emissions exceeding the threshold criteria are shown in **bold type.** As Table 3.15-7 shows, year 1 of construction activities would include the highest worst-case daily pollutant emissions. The calculation results indicate that unmitigated daily direct emissions of NO_X would exceed the SCAQMD regional significance threshold level during peak overlapping activities of each construction year. Maximum regional direct construction emissions would not exceed the SCAQMD daily significance thresholds for other criteria pollutants.

Indirect Emissions from Detour Traffic

The daily emissions of detoured vehicle traffic during the construction years were calculated using the peak-hour vehicle miles traveled (VMT) data and projected average vehicle speeds within the project study area. These data were obtained from the Traffic Analysis Report[88] prepared for this project. Emission factors for the average travel speeds were obtained using the EMFAC2007 model.[89] Table 3.15-8 summarizes the results of the project indirect construction (detour phase) emissions estimates during the detour years. As shown, during the detour years, the net change in average daily indirect construction (detour traffic) emissions between the project and No Action baseline (i.e., indirect construction emissions) for all pollutants except NO_X, would be negative. Regional NO_X emissions would increase 0.5 lbs/day or less than 0.2 percent of total NO_X emissions.

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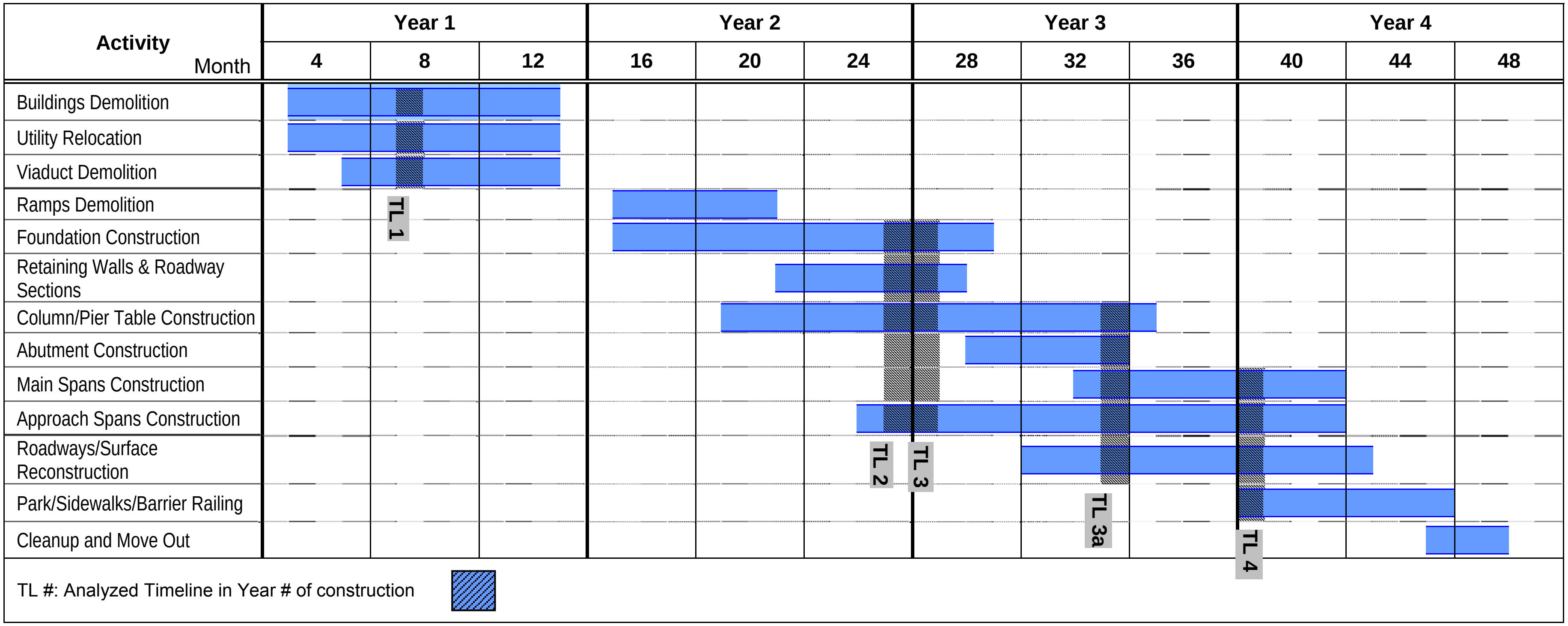
88 Traffic Analysis Report. December 2007.

89 CARB, 2008. California Air Resources Board. Accessed via Web site at http://www.arb.ca.gov/aqs/ (revised February 22, 2007). May.

Figure 3.15-2
Outline of Construction Schedule for Replacement Alternative



Source: Air Quality Technical Report (Parsons, 2008a).

Table 3.15-7
Estimate of Regional Direct Construction Emissions[a]
(lbs/day)

Construction Year	VOC	NO_X	CO	PM_{10}[b]	$PM_{2.5}$
YEAR 1					
Peak Concurrent Activities (Month 6)					
Onsite	26	347	167	81	28
Offsite[c]	10	72	69	2	2
Total	36	**419**	236	83	30
Regional Daily Significance Threshold	75	100	550	150	55
Over/(Under) regional CEQA threshold	(39)	319	(314)	(67)	(25)
Exceed CEQA Threshold?	No	**Yes**	No	No	No
YEAR 2					
Peak Concurrent Activities (Month 12)					
Onsite	20	229	106	24	13
Offsite[c]	3	19	23	<1	<1
Total	23	**247**	129	25	14
Over/(Under) regional CEQA threshold	(52)	147	(421)	(125)	(41)
Exceed CEQA Threshold?	No	**Yes**	No	No	No
YEAR 3					
Peak Concurrent Activities (Month 1)					
Onsite	25	251	127	46	20
Offsite[c]	4	21	28	<1	<1
Total	29	**271**	155	46	20
Over/(Under) regional CEQA threshold	(46)	171	(395)	(104)	(35)
Exceed CEQA Threshold?	No	**Yes**	No	No	No
Peak Concurrent Activities (Month 8)					
Onsite	29	264	143	18	15
Offsite[c]	2	6	16	<1	<1
Total	31	**270**	159	18	15
Over/(Under) regional CEQA threshold	(44)	170	(391)	(132)	(40)
Exceed CEQA Threshold?	No	**Yes**	No	No	No
YEAR 4					
Peak Concurrent Activities (Month 1)					
Onsite	16	161	85	17	10
Offsite[c]	3	14	21	<1	<1
Total	19	**175**	106	18	10
Over/(Under) regional CEQA threshold	(56)	75	(444)	(132)	(45)
Exceed CEQA Threshold?	No	**Yes**	No	No	No

[a] Compiled using the CEQA Air Quality Handbook and the emissions inventory from OFFROAD model. The equipment mix and use assumption for each phase is provided by the construction engineer.

[b] PM_{10} emissions estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression.

[c] Offsite emissions include motor vehicle emissions associated with construction equipment transport to the site, workers' commute, and debris-hauling activities.

Source: *Air Quality Technical Report* (Parsons, 2008a).

Table 3.15-8
Project Indirect Construction (Detour) Emissions during Detour Years (lbs/day)

Project Scenario/ Roadway Segments	CO	VOC	NO_X	SO_2	PM_{10}	$PM_{2.5}$
Year 2014 – No Action (Viaduct Open)						
6th Street - Soto Street to Central Avenue	124.8	4.9	35.2	0.2	2.8	1.8
1st Street - Soto Street to Central Avenue	152.0	5.8	45.1	0.3	3.4	2.3
4th Street - Soto Street to Central Avenue	277.5	10.6	82.4	0.6	6.2	4.2
7th Street - Soto Street to Central Avenue	102.6	3.9	30.5	0.2	2.3	1.5
Central Avenue – 1st Street to 7th Street	51.8	2.0	14.6	0.1	1.1	0.8
Alameda Street – 1st Street to 7th Street	108.4	4.1	32.2	0.2	2.4	1.6
Mateo Street – 6th Street to 7th Street	5.2	0.2	4.6	1.4	<0.1	0.1
Santa Fe Avenue – 6th Street to 7th Street	10.7	0.5	2.9	<0.1	0.2	0.2
Boyle Avenue – 1st Street to 7th Street	63.4	2.5	17.9	0.1	1.4	0.9
Soto Street – 1st Street to SR 60 EB On-ramp	158.8	6.0	47.2	0.3	3.4	2.9
Total Year 2014 – No Action	**1,055.1**	**40.5**	**309.3**	**2.1**	**23.6**	**15.7**
Year 2014 – With Project (Viaduct Closed)						
6th Street - Soto Street to Central Avenue	19.4	0.8	5.5	<0.1	0.4	0.3
1st Street - Soto Street to Central Avenue	159.4	6.1	47.3	0.3	3.6	2.4
4th Street - Soto Street to Central Avenue	305.6	11.6	90.8	0.6	6.9	4.6
7th Street - Soto Street to Central Avenue	166.3	6.3	49.4	0.3	3.7	2.5
Central Avenue – 1st Street to 7th Street	44.8	1.8	12.6	0.1	1.0	0.7
Alameda Street – 1st Street to 7th Street	108.4	4.1	32.2	0.2	2.4	1.6
Mateo Street – 6th Street to 7th Street	6.1	0.3	1.6	<0.1	0.1	0.1
Santa Fe Avenue – 6th Street to 7th Street	10.7	0.5	2.9	<0.1	0.2	0.2
Boyle Avenue – 1st Street to 7th Street	63.1	2.5	17.8	0.1	1.4	0.9
Soto Street – 1st Street to SR 60 EB On-ramp	167.6	6.4	49.8	0.3	3.8	2.5
Total Roadway Traffic Emissions	**1,051.2**	**40.2**	**309.8**	**2.1**	**23.6**	**15.7**
Detour Emissions (Total Indirect Construction Daily Emissions)	**-3.9**	**-0.3**	**0.5**	**0.0**	**0.0**	**0.0**

Note:
Emissions are calculated using emission factors from EMFAC2007, at the projected average speed, and VMT of each roadway segment within the study area (from Traffic Analysis Report). The calculation worksheets are included in the *Air Quality Technical Report.*

EB – eastbound

Source: *Air Quality Technical Report* (Parsons, 2008a).

Total Regional Construction Emissions

The total direct and indirect construction emissions are subject to SCAQMD significance criteria for construction impacts. Table 3.15-9 presents the total regional emissions and comparison with the SCAQMD thresholds of significance.

Table 3.15-9
Estimated Regional Emissions of Total Construction Emissions (lbs/day)

Scenario/Alternative	CO	VOC	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Roadway Emissions – Year 2014 Viaduct Open – No Action	1,055.1	40.5	309.3	2.1	23.6	15.7
Roadway Emissions – Year 2014 Viaduct Closed – Alternative 3B	1,051.2	40.2	309.8	2.1	23.6	15.7
Detour Emissions – Alternative 3B	-3.9	-0.3	0.5	0.0	0.0	0.0
Direct Construction Emissions – Year 1	236	36	419	1	83	30
Total Regional Construction Emissions – Year 1	232	36	**420**	1	83	30
Direct Construction Emissions – Year 2	129	23	247	1	25	14
Total Regional Construction Emissions – Year 2	125	23	**248**	1	25	14
Direct Construction Emissions – Year 3	159	31	271	1	46	20
Total Regional Construction Emissions – Year 3	155	31	**272**	1	46	20
Direct Construction Emissions – Year 4	106	19	175	1	18	10
Total Regional Construction Emissions – Year 4	103	19	**176**	1	18	10
SCAQMD CEQA Significance Threshold	*550*	*75*	*100*	*150*	*150*	*55*

Notes:
Emissions exceeding the threshold criteria are shown in **bold type**.
- Roadway emissions are calculated using emission factors from EMFAC2007, at the projected average speed, and VMT of each roadway segment within the study area (from Traffic Analysis Report).
- The calculation worksheets are included in the *Air Quality Technical Report*.
- Direct construction emissions calculated using the CEQA Air Quality Handbook and the emissions inventory from OFFROAD model.

Source: *Air Quality Technical Report* (Parsons, 2008a).

As Table 3.15-9 shows, the regional emissions of NO_X would exceed the SCAQMD daily significance threshold, while emissions of other criteria pollutants would not exceed the thresholds. These results are similar to the direct construction emissions impact since the regional operational emissions would not be significantly affected by the detour traffic.

Localized Impacts

Direct Construction Emissions

The localized effects from onsite construction emissions constitute the direct construction emissions (i.e., emissions generated within the construction site). The onsite emissions were evaluated and combined with the roadway emissions during the detour years (i.e., indirect construction emissions) to determine potential pollutant concentrations at the offsite sensitive receptor locations. The closest sensitive receptors to the construction site are the first row of single-family residences located approximately 600 ft north of the 6th Street Viaduct and immediately west of US 101; and Soto Street Elementary School, Soto Street Children's Center (closest daycare facility), and Boyle Heights Medical Clinic, located approximately 0.3-mile, 0.45-mile, and 0.1-mile southeast of the project eastern limit, respectively. The modeling was conducted for year 1 (the year in which most demolition activities would occur, resulting in the highest PM emissions) and year 3 (representing the highest emissions of years 2, 3, and 4).

Indirect Emissions from Detour Traffic

The emissions from vehicle traffic along the roadways adjacent to the construction site were included in dispersion modeling and combined with direct emissions from the construction site to estimate the local concentration at the sensitive receptors during project construction years.

Emissions from vehicle movement along each roadway were simulated as line source emissions in the modeling analysis, and each line source was as a series of separated volume sources. Mobile source emissions along each local roadway were estimated based on roadway-specific vehicle activity data, including traffic volumes, VMT, and average travel speed. The total emission rate of each roadway was then divided by the number of volume sources in that roadway segment to obtain emissions per volume source for model input.

The effects of CO emissions from detour traffic are local in nature, and they are prominent at the intersections with potential for hot-spot generation; therefore, local CO concentrations were projected at selected intersections using the CALINE-4 traffic emission dispersion model. The analysis followed Appendix B of the CO Protocol and is consistent with procedures identified through SCAQMD's CO modeling protocol. The SCAQMD recommends a hot-spot evaluation of potential localized CO impacts when volume-to-capacity ratios are increased by 2 percent at intersections with an LOS of D or worse. The SCAQMD also recommends a CO hot-spot evaluation when an intersection declines in LOS by one level beginning when LOS changes from an LOS of C to D. As shown in Table 3.15-10, of the 31 studied intersections, 10 would be impacted by the detour traffic. Analysis of the affected intersections was performed for the base year (2007), as well as the detour year (2014). The ambient CO concentrations were estimated based on the CEQA Handbook and CO Protocol guidance and using SCAQMD projected future year 1-hour and 8-hour concentrations for the Central Los Angeles monitoring station area (SCAQMD, 2007). Receptor locations were 3 meters from each intersection corner. The results of local area CO dispersion analysis are presented in Table 3.15-11.

Table 3.15-11 indicates that during the detour years at the analyzed intersections, the 1-hour CO concentrations would range from 5.9 ppm to 7.9 ppm, and 8-hour CO concentrations would range from 5.2 ppm to 6.6 ppm. Therefore, the state 1-hour standard (20 ppm) and the federal/ state 8-hour standard (9.0 ppm) would not be exceeded; thus, the proposed project would not have a significant impact upon local CO concentrations at any intersections during the detour years. Since significant impacts would not occur at the intersections with the highest potential for CO hot-spots formation, sensitive receptors in the detour area would not be significantly affected by CO emissions generated by the additional/diverted traffic during the construction years.

Table 3.15-10
Intersections Impacted by Traffic Diversion during Construction Years

Intersection	Peak Hour	Existing (Year 2007)		Construction Year (2014)					
				No Project (Viaduct Open)		With Project (Viaduct Closed)		V/C Increase	Exceeds SCAQMD Threshold [a]
		V/C	LOS	V/C	LOS	V/C	LOS		
4th Street - Pecan Street/ US 101 SB On-Ramp	AM	1.037	F	0.801	D	0.898	D	0.097	**Yes**
	PM	0.541	A	0.412	A	0.499	A	0.087	No
4th Street and US 101 SB Off-Ramp	AM	1.074	F	0.787	C	0.885	D	0.097	**Yes**
	PM	0.451	A	0.366	A	0.421	A	0.055	No
4th Street and US 101 NB Off-Ramp	AM	0.109	F	1.059	F	1.137	F	0.078	**Yes**
	PM	0.422	A	0.399	A	0.469	A	0.070	No
4th Street and Boyle Avenue	AM	0.718	C	0.804	D	0.899	D	0.095	**Yes**
	PM	0.595	A	0.669	B	0.771	C	0.102	No
4th Street and I-5 SB Ramps/ Gertrude Street	AM	0.731	C	0.719	C	0.809	D	0.090	**Yes**
	PM	0.87	D	1.040	F	1.127	F	0.087	**Yes**
4th Street and I-5 NB Ramps/Cummings Street	AM	0.67	B	0.801	D	0.877	D	0.076	**Yes**
	PM	0.647	B	0.755	C	0.773	C	0.018	No
4th Street and S. Soto Street	AM	0.102	F	1.115	F	1.205	F	0.090	**Yes**
	PM	0.142	F	1.542	F	1.591	F	0.048	**Yes**
7th Street and Santa Fe Avenue	AM	0.403	A	0.444	A	0.685	B	0.241	No
	PM	0.476	A	0.582	A	0.816	D	0.235	**Yes**
7th Street and Boyle Avenue	AM	0.339	A	0.371	A	0.836	D	0.465	**Yes**
	PM	0.334	A	0.365	A	0.645	B	0.280	No
7th Street and S. Soto Street	AM	0.557	A	0.605	B	0.712	C	0.107	No
	PM	0.67	B	0.725	C	0.826	D	0.101	**Yes**

LOS: level of service; NB: northbound; SB: southbound; v/c: vehicle to capacity ratio

Based on SCAQMD recommendations, significant impacts occur when volume-to-capacity ratios are increased by 2 percent at intersections with LOS D or worse, or when an intersection declines in LOS by one level beginning when LOS changes from LOS C to D.

Source: *Traffic Analysis Report* (ACT Consulting Engineers, 2007).

Table 3.15-11
Detour Years Localized Carbon Monoxide Concentrations (Indirect Construction Emissions)

Intersection	Peak Hour	1-hour Concentration (ppm)			8-hour Concentration (ppm)		
		Existing [a] (2007)	Detour Year 2014		Existing	Detour Year 2014	
			Viaduct Open	Viaduct Closed		Viaduct Open	Viaduct Closed
4th Street and US 101 SB Off-Ramp	AM	8.0	6.5	6.8	6.0	5.58	5.79
	PM	6.7	5.8	5.9	5.51	5.09	5.16
4th Street and US 101 NB Off-Ramp	AM	7.9	6.7	6.7	5.86	5.72	5.72
	PM	7.1	6.0	6.2	5.58	5.23	5.37
4th Street and Boyle Avenue	AM	7.6	6.3	6.3	5.79	5.44	5.44
	PM	7.4	6.2	6.3	5.72	5.37	5.44
4th Street and I-5 SB Ramps/ Gertrude Street	AM	7.2	6.1	6.1	5.65	5.30	5.37
	PM	7.2	6.1	6.2	5.65	5.30	5.37
4th Street and I-5 NB Ramps/ Cummings Street	AM	7.4	6.1	6.2	5.65	5.30	5.37
	PM	7.5	6.1	6.2	5.65	5.30	5.37
4th Street and S. Soto Street	AM	8.7	7.1	7.2	6.35	6.00	6.07
	PM	10.3	7.8	7.9	6.84	6.49	6.56
7th Street and Santa Fe Avenue	AM	7.4	6.1	6.4	5.72	5.30	5.51
	PM	7.2	6.0	6.2	5.65	5.23	5.37
7th Street and Boyle Avenue	AM	6.8	5.8	6.8	5.51	5.09	5.44
	PM	7.0	5.9	5.9	5.51	5.16	5.37
7th Street and S. Soto Street	AM	7.7	6.3	6.8	5.79	5.44	5.79
	PM	7.9	6.4	6.8	5.86	5.51	5.79
State Standard (ppm)		20			9.0		
Federal Standard (ppm)		35			9.0		

NB – northbound; SB – southbound

4th Street - Pecan Street/ US 101 SB On-Ramp was not modeled due to its very close proximity to 4th Street and US 101 SB Off-Ramp.

Total CO concentrations include background 1-hour and 8-hour concentrations of 5.1 and 4.6 ppm, respectively, based on SCAQMD projected future concentrations for the Central Los Angeles monitoring station.

[a] Existing CO levels refer to 2007 and include worst-case background concentrations of 5.58 ppm, 1-hour average, and 5.02 ppm, 8-hour average. Background concentrations are based on a 3-year average of the highest 1-hour and 8-hour concentrations measured at the Central Los Angeles (Main Street) air monitoring station. This scenario presents conditions for CEQA thresholds.

Source: *Air Quality Technical Report* (Parsons, 2008a).

Total Localized Construction Emissions Impact

The combined direct and indirect construction emissions include onsite construction emissions (direct) and emissions from traffic along the detour route (indirect), including construction-related traffic. Local impacts of combined direct and indirect construction emissions of NO_X were evaluated using the ISCST3 dispersion model. Table 3.15-12 presents the modeling results for years 1 and 3 of construction, which represent the worst-case construction emissions. For conservative estimates, the detour traffic of year 2014 was considered for both of the analyzed years.

As shown in Table 3.15-12, the potential increase in $PM_{2.5}$ emissions and the estimated potential maximum CO (1-hour and 8-hour) and NO_2 concentrations, when added to background ambient concentrations, would not violate their respective air quality standards at any of the sensitive receptor locations. As such, localized impacts with respect to these pollutant local concentrations during construction would not exceed CEQA thresholds.

The projected potential impacts represent worst-case conditions during demolition and site preparation, when earthwork activities occur close to the nearest residential units. The impacts would be reduced as these activities conclude near the northeast site boundary and move farther from the residential receptors. Table 3.15.-12 also indicates that maximum PM_{10} concentrations could reach a level of 11.9 $\mu g/m^3$ at the nearest residence located north of the project site during the peak concurrent demolition/construction activities of year 1 (month 6). This increased concentration level would exceed the SCAQMD threshold. Therefore, it would result in a localized CEQA significant impact; however, mitigation measures would reduce the impact below the CEQA threshold.

3.15.3.4 Asbestos

The project area does not include naturally occurring asbestos; however, project construction activities may include the demolition of buildings constructed prior to 1980. These structures may contain friable ACMs, which are subject to regulations that require demolition activities to minimize asbestos released into the air. Primarily, this is accomplished through the observation of rules for asbestos management promulgated by the National Emission Standards for Hazardous Air Pollutants (NESHAP). EPA enforces the NESHAP rules through CARB and SCAQMD.

Table 3.15-12
Estimate of Local Construction Emissions
Based on CEQA Air Quality Impact Criteria

Pollutant (Averaging Time)	Impact Criteria [a]	Maximum Ambient Pollutant Impact at the Nearest Sensitive Receptors [b]				
		Residential		School	Medical	Daycare
PM_{10} (24-Hour)						
Year 1	Maximum Increase ($\mu g/m^3$)	**11.9**	3.7	1.1	1.6	1.0
Year 3		6.0	2.8	<1	1	<1
CEQA Threshold ($\mu g/m^3$)		10.4	10.4	10.4	10.4	10.4
Significant CEQA Impact		**Yes**	No	No	No	No
$PM_{2.5}$ (24-Hour)						
Year 1	Maximum Increase ($\mu g/m^3$)	9.7	3.3	<1	1.3	<1
Year 3		3.6	2.3	<1	<1	<1
CEQA Threshold ($\mu g/m^3$)		10.4	10.4	10.4	10.4	10.4
Significant CEQA Impact		No	No	No	No	No
NO_2 (1-hour) [c,d]						
Year 1	Concentration at Receptor (project + background) ($\mu g/m^3$)	318	289	290	279	292
Year 3		308	289	284	277	285
CEQA Threshold ($\mu g/m^3$)		338	338	338	338	338
Adverse Concentration		No	No	No	No	No
CO (1-Hour)[d]						
Year 1	Concentration at Receptor (project + background) ($\mu g/m^3$)	6,025	6,028	5,890	5,925	5,886
Year 3		5,970	6,089	5,889	5,893	5,900
CEQA Threshold ($\mu g/m^3$)		23,000	23,000	23,000	23,000	23,000
Adverse Concentration		No	No	No	No	No
CO (8-Hour)[d]						
Year 1	Concentration at Receptor (project + background) ($\mu g/m^3$)	5,344	5,291	5,280	5,276	5,282
Year 3		5,328	5,305	5,273	5,275	5,272
CEQA Threshold (µg/m3)		10,000	10,000	10,000	10,000	10,000
Adverse Concentration		No	No	No	No	No

[a] Exceedances of the CEQA thresholds are shown in bold. The thresholds for PM_{10}/$PM_{2.5}$ are incremental thresholds; therefore, only impacts of emissions from project construction are compared to the thresholds. The thresholds for CO and NO_2 are combined thresholds; therefore, impacts from project emissions plus background pollutant concentrations are compared to the thresholds.

[b] The nearest sensitive receptors include single-family residences located approximately 600 ft north of the project and west of US 101; and Soto Street Elementary School, Soto Street Children's Center, and Boyle Heights Medical Clinic, approximately 0.3-mile, 0.45-mile, and 0.1-mile southeast of the project eastern limit, respectively.

[c] NO_2 concentrations were calculated using the conversion rate from NO_X to NO_2 based on the distance of the receptor from the emission source.

[d] Background concentrations: NO_2 =263 $\mu g/m^3$; estimated based on ambient concentration trends and the last 4 years of monitored data at Main Street Monitoring Station; CO (2014 concentration): 1-hour = 5,840 $\mu g/m^3$ (5.1 ppm); 8-hour = 5,267 $\mu g/m^3$ (4.6 ppm); projected future CO concentrations. http://www.aqmd.gov/CEQA/handbook/CO/.

Source: *Air Quality Technical Report* (Parsons, 2008a).

The NESHAP asbestos rule specifies work practices to be followed during demolition of all structures that contain, or may contain, asbestos (40 CFR 61, Subpart M [NESHAP]). These work practices have been designed to effectively reduce airborne asbestos to safe levels. The proposed project would be subject to the NESHAP asbestos rule; therefore, it would be required to comply with these specified work practices. Additionally, demolition activities would be subject to SCAQMD Rule 1403, Asbestos Emissions from Demolition/Renovation Activities; and Rule 301, Demolition and Renovation Project Fees. Consequently, airborne asbestos would not be generated in unhealthy amounts during demolition.

Therefore, adverse air quality impacts from asbestos are not anticipated, and no mitigation measures would be required.

3.15.3.5 Mobile Source Air Toxics

Currently, there are no established criteria for determining when mobile source air toxic (MSAT) emissions should be considered a significant issue in the NEPA context. The FHWA has developed an interim guidance on how to analyze MSATs in the NEPA process for highways. Depending on the specific project circumstances, FHWA has identified three levels of analysis depending on a project's potential MSAT impacts: (1) no analysis for projects with no potential for meaningful MSAT effects; (2) qualitative analysis for projects with low potential MSAT effects; and (3) quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Currently, FHWA's interim guidance[90] is used for analysis of potential impacts of MSATs to be included in environmental documents. The purpose of this project is to reduce vulnerability of the 6th Street Viaduct in major earthquake events, thus preserving 6th Street as a viable link between Boyle Heights and Downtown Los Angeles, by implementing a retrofit technique that would ensure the seismic safety of the viaduct for approximately 30 years. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air quality impacts for CAA criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in VMT, FHWA predicts that MSATs will decline in the range of 57 percent to 87 percent, from 2000 to

[90] FHWA, 2006. Federal Highway Administration. *Interim Guidance on Air Toxic Analysis in NEPA Documents.* February 3.

2020, based on regulations now in effect, even with a projected 64 percent increase in VMT. This will reduce the background level of MSATs, as well as the possibility of even minor MSAT emissions from this project.

3.15.3.6 Cumulative Impacts

Alternative 1 – No Action

No cumulative impacts on air quality would occur under the No Action Alternative.

Alternative 2 – Retrofit

Cumulative air pollutant emissions could occur if several projects within the same locality are under construction at the same times. The City would coordinate the proposed project with other projects that may be under construction in the immediate vicinity of the proposed project so that the heavy construction equipment on two or more project sites in proximity are not operated on the same day.

The project would not increase traffic capacity; therefore, no cumulative impact as a result of project operation would occur.

Alternative 3 – Replacement

The impacts would be similar to that discussed under Alternative 2.

3.15.3.7 Secondary Impacts

No secondary impacts on air quality were identified.

3.15.4 Avoidance, Minimization, and/or Mitigation Measures

Alternative 1 – No Action

No mitigation is required.

Alternative 2 – Retrofit

Construction of Alternative 2 is expected to be at a smaller scale than Alternative 3. In addition, no long-term traffic detour would be required. The contractor would be required to follow the requirements of existing SCAQMD rules and regulations. No additional mitigation measures would be required.

Alternatives 3 – Replacement

Tables 3.15-7 and 3.15-9 indicate that maximum construction emissions during peak construction activities would exceed the regional threshold of NO_X emissions during the construction period; and Table 3.15-12 shows that the maximum localized emissions would slightly exceed the localized PM_{10} localized significance threshold (LST) during the most intense demolition activities of year 1 (month 6) at the nearest residential receptor. Therefore, practices that would minimize air pollution must be employed during project construction.

Reduction of construction emissions would be achieved by two types of actions, including compliance with the requirements of existing SCAQMD rules and regulations and implementation of additional mitigation measures, as follows:

- In addition to SCAQMD Rule 403 requirements, the contractor shall water all excavation/ earth-moving activity areas as necessary to remain visibly moist during active operations.
- The contractor shall water the construction site three times daily, or apply nontoxic soil stabilizers, as needed, to reduce offsite transport of fugitive dust from all unpaved staging areas and unpaved road surfaces.
- The contractor shall properly tune and maintain construction equipment in accordance with manufacturer's specifications.
- During construction, the contractor shall keep trucks and vehicles in loading/unloading queues with their engines off when not in use to reduce vehicle emissions. The contractor shall phase construction activities to avoid emissions peaks, where feasible, and discontinue during second-stage smog alerts.
- To the extent possible, the contractor shall use construction equipment that is powered by aqueous diesel or alternative fuel sources (e.g., methanol, natural gas, or propane).
- Where feasible, the contractor shall use diesel oxidation catalyst for heavy-duty construction equipment.

❖ ❖ ❖

3.16 Noise

This section evaluates potential noise and vibration impacts on nearby noise-sensitive areas resulting from the proposed project. The detailed analysis, including input and output data, is contained in the Noise Technical Study Report prepared for this project.[91]

3.16.1 Regulatory Setting

The National Environmental Policy Act (NEPA) and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires a strictly baseline-versus-build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the federal 23 CFR 772 noise analysis; please see Chapter 4 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA [A-weighted decibels][92]) is lower than the NAC for commercial areas (72 dBA). Table 3.16-1 lists the NAC for use in the NEPA 23 CFR 772 analysis.

Figure 3.16-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise-levels discussed in this section with common activities.

[91] Noise Technical Study for 6th Street Viaduct Seismic Improvement Project. May 2008.
[92] See Section 3.15.2.1 - Fundamentals of Noise for a definition of various noise descriptors.

Table 3.16-1
Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA $L_{eq}(h)$	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above.
D	–	Undeveloped lands.
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: 23 CFR 772.

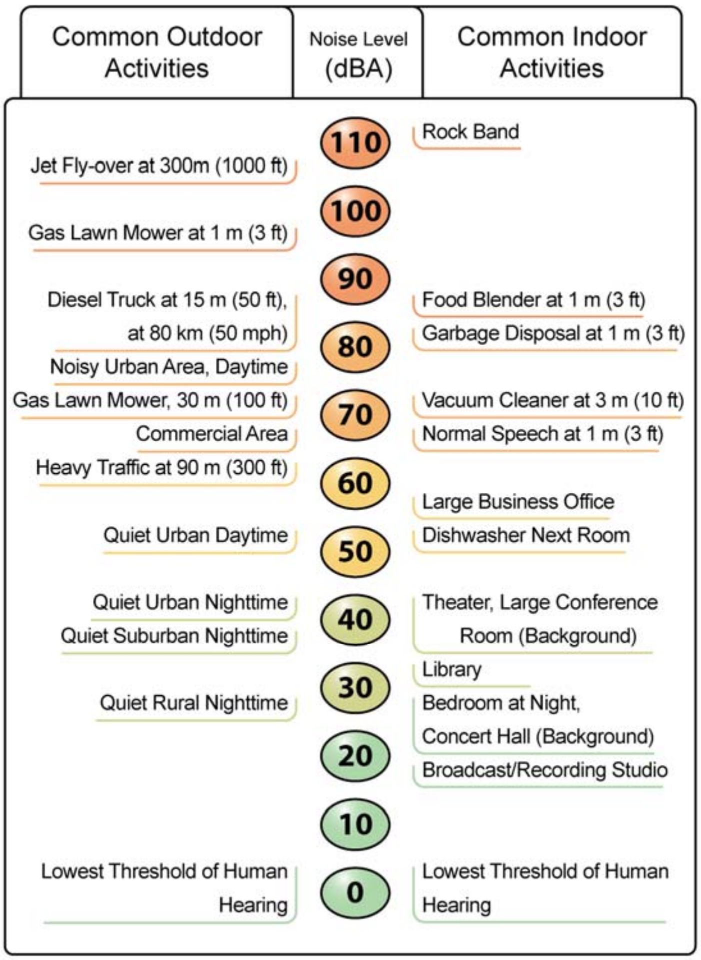


Figure 3.16-1 Noise Levels of Common Activities

In accordance with the Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006*, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

The Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5-dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978, and the cost per benefited residence.

City of Los Angeles Noise Standards

The City's noise criteria/standards are applicable to construction and operation of the proposed project as described below.

Construction Noise Regulations. The City's noise ordinance sets forth noise limits for construction activities. Chapter XI, article 2, Section 112.05, of the Los Angeles Municipal Code states that noise generated from construction and industrial machinery shall not exceed a maximum of 75 dBA at a distance of 50 ft, except where compliance is technically infeasible. "The burden of proving that compliance is technically infeasible shall be upon the person or persons charged with a violation of this section. Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers, and/or any other noise-reduction device or technique during the operation of the equipment."

In addition, Section 41.40 of the Los Angeles Municipal Code restricts construction activities during different hours of the day. According to this code, no person shall perform any construction or repair work that makes loud noises that disturbs persons occupying sleeping quarters in any place of residence between the hours of 9:00 p.m. of one day and 7:00 a.m. of the following day. Furthermore, the code prohibits any person other than an individual homeowner engaged in the repair or construction of his single-family dwelling from performing any construction or repair work on land occupied by residential buildings, or within 500 ft of land so occupied, before 8:00 a.m. or after 6:00 p.m. on any Saturday or at any time on any Sunday. If a tight project construction schedule would necessitate construction activities to occur outside of the hours allowed by the City's noise ordinance, then a permit from the police commission is required.

Land-Use Noise Regulations. Table 3.16-2 lists the City's noise standards. A violation of these standards would occur if the ambient background noise were exceeded by more than 5 dBA. The ambient noise is measured when the alleged noise source of concern, or that which is to be introduced, is not operating. The standard sets the minimum ambient noise level at 50 dBA during daytime and 40 dBA at night in residential areas, unless measured higher.

Table 3.16-2
City of Los Angeles Noise Standards

Zone	Presumed Ambient Noise Levels, dBA	
	Day (7:00 a.m. to 10:00 p.m.)	Night (10:00 p.m. to 7:00 a.m.)
Residential, agricultural	50	40
Commercial, Public Use	60	55
Manufacturing	60	55
Heavy manufacturing	65	65

Notes:
Noise Limitation:
No equipment or machinery shall be operated in any manner as to create any noise that would cause the noise level at any occupied property to exceed the ambient noise level by more than 5 dB.

- At the boundary line between two zones, the presumed ambient noise level of the quieter zone shall be used.
- Adjustments to Noise Source:
  Where the sound alleged to be offending is of a type or character set forth below, the following decibel values shall be the sound level measurement of the offending noise:
  a. Add 5 dBA to any steady, pure tone with audible fundamental frequency or overtones above 200 Hz.
  b. Add 5 dBA from any repeated, impulsive noise.
  c. Subtract 5 dBA from any noise occurring 15 minutes or less in any period of 60 consecutive minutes between the hours of 7:00 a.m. and 10:00 p.m. of any day.

Source: City of Los Angeles. 2007. Los Angeles Municipal Code, Sixth Edition, Chapter XI – Noise Regulation.

In addition to the above-listed City noise standards, the City also uses the California General Plan's guidelines for using the community noise equivalent level (CNEL) to assess community noise in determining land use compatibility for future developments, as listed in the *Los Angeles CEQA Thresholds Guide* and shown in Table 3.16-3; however, due to the nature of this proposed project, where potential noise impacts would more likely stem from traffic diversion onto areas along nearby roadways during peak traffic hours from the construction period viaduct closure, Caltrans criteria and the City standards listed in Table 3.16-2, which also satisfy CEQA requirements, would be more appropriate.

Table 3.16-3
Land Use Compatibility Guidelines for Community Noise

Land Use Category	Community Noise Exposure CNEL, dBA			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single-Family, Duplex, Mobile Homes	50 – 60	55 – 70	70 – 75	Above 75
Multi-Family Homes	50 – 65	60 – 70	70 - 75	Above 75
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	Above 80
Transient Lodging – Motels, Hotels	50 – 65	60 – 70	70 – 80	Above 80
Auditoriums, Concert Halls, Amphitheaters	--	50 – 70	--	Above 65
Sports Arena, Outdoors Spectator Sports	--	50 – 75	--	Above 70
Playgrounds, Neighborhood Parks	50 – 70	--	67 – 75	Above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 75	--	70 – 85	Above 80
Office Buildings, Business and Professional Commercial	50 – 70	67 – 77	Above 75	--
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	Above 75	--

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development would generally be discouraged. If new construction or development does proceed, then a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

Source: City of Los Angeles, 2006. *Los Angeles CEQA Thresholds Guide.*

Under CEQA, a *substantial noise increase* may result in a significant adverse environmental effect and, if so, must be mitigated or identified as a noise impact for which it is likely that no or only partial abatement measures are available. Per the *Los Angeles CEQA Thresholds Guide*, proposed project operations would normally pose a significant noise impact if they cause the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” category, or any 5 dBA or greater noise increase (see Table 3.16-3).

3.16.2 Affected Environment

Fundamentals of Noise

Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. A continuous sound can be described by its frequency (pitch) and its amplitude (loudness). The loudness of sound increases and decreases with increasing and decreasing amplitude. These units are called decibels (dB).

Because decibels are logarithmic units, sound pressure levels (L_p) cannot be added or subtracted by ordinary arithmetic means. When two sounds of equal L_p are combined, they will produce a combined L_p, which is 3 dB greater than the original individual L_p. In other words, sound energy must be doubled to produce a 3-dB increase. If two sound levels differ by 10 dB or more, the combined L_p is equal to the higher L_p; in other words, the lower sound level does not increase the higher sound level.

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear. In general, the healthy human ear is most sensitive to sounds between 1,000 Hertz (Hz) and 5,000 Hz, and it perceives a sound within that range as being more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of L_p adjustments is usually applied to the sound level at different frequencies. These adjustments are referred to as a weighting network. The A-scale weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. Noise levels for traffic noise reports are typically reported in terms of dBA. In environmental noise studies, A-weighted sound pressure levels are commonly referred to as noise levels.

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns; others are random. Some noise levels fluctuate rapidly; others fluctuate slowly. Some noise levels vary widely; others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following is a list of the noise descriptors most commonly used in traffic noise analysis:

Equivalent Sound Level (L_{eq}) – L_{eq} represents an average of the sound energy occurring over a specified period. L_{eq} is, in effect, the steady-state sound level that, in a stated period, would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level, L_{eq} (h), is the energy average of the A-weighted sound levels occurring during a 1-hour period.

Percentile-Exceeded Sound Level (L_x) – L_x represents the sound level exceeded for a given percentage of a specified period. For example, L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time.

Maximum Sound Level (L_{max}) – L_{max} is the highest instantaneous sound level measured during a specified period.

Existing Noise Environment

Noise measurement sites are locations where noise measurements are undertaken to determine existing noise levels and to verify or calibrate computer noise models. These sites are chosen as being representative of similar noise-sensitive receptor sites in the area. Noise-sensitive receptors are locations selected for determining noise impacts. These locations normally represent areas where frequent outdoor human-use occurs or is likely to occur in the foreseeable future (e.g., vacant property for which development plans have received final approval). Locations that are expected to receive the greatest noise impacts, such as the first row of houses from the noise source, are generally chosen. All measurement sites are selected so that there would not be any unusual noises from sources, such as dogs, pool pumps, or children, which could affect the measured levels. It is also desirable to choose sites that are free of major obstructions or contamination.

The 6th Street Viaduct is located in the area zoned for industrial use. Current uses along the corridor on the north and south sides of the viaduct are indoor manufacturing/commercial buildings and parking lots. No noise-sensitive receptors or sensitive land uses are located immediately adjacent to the viaduct. The closest residences to the project site are located approximately 600 ft northeast of the proposed project's eastern limit near 6th Street and Clarence Street (Figure 3.15-1). Therefore, existing noise measurements were conducted within the community east of the proposed project site, as shown in Figure 3.16-2. Noise measurements for the 6th Street project were conducted in conformance with Caltrans' *Technical Noise Supplement*[93] and the guidelines outlined in FHWA's *Measurement of Highway-Related Noise*, FHWA-DP-96-046,[94] as well as City procedures outlined in Chapter XI of the Los Angeles Municipal Code.

Table 3.16-4 summarizes the results of the ambient noise measurements at the selected locations. Measurements were conducted during peak traffic hours when traffic was observed to be free flowing; therefore, it was reasonable to assume that the worst hourly noise levels were recorded. Existing peak-hour noise levels were measured between 56 and 78 dBA at receptors that may be affected by traffic diversion resulting from the proposed closure of the 6th Street Viaduct during construction of Alternative 3. Note that these noise levels are generated primarily by existing traffic on respective streets.

[93] Caltrans, 1998. California Department of Transportation. *Technical Noise Supplement – A Technical Noise Supplement to the Traffic Noise Analysis Protocol.* October.

[94] FHWA, 1996. United States Department of Transportation, Federal Highway Administration. *Measuring of Highway-Related Noise.* FHWA-DP-96-046.

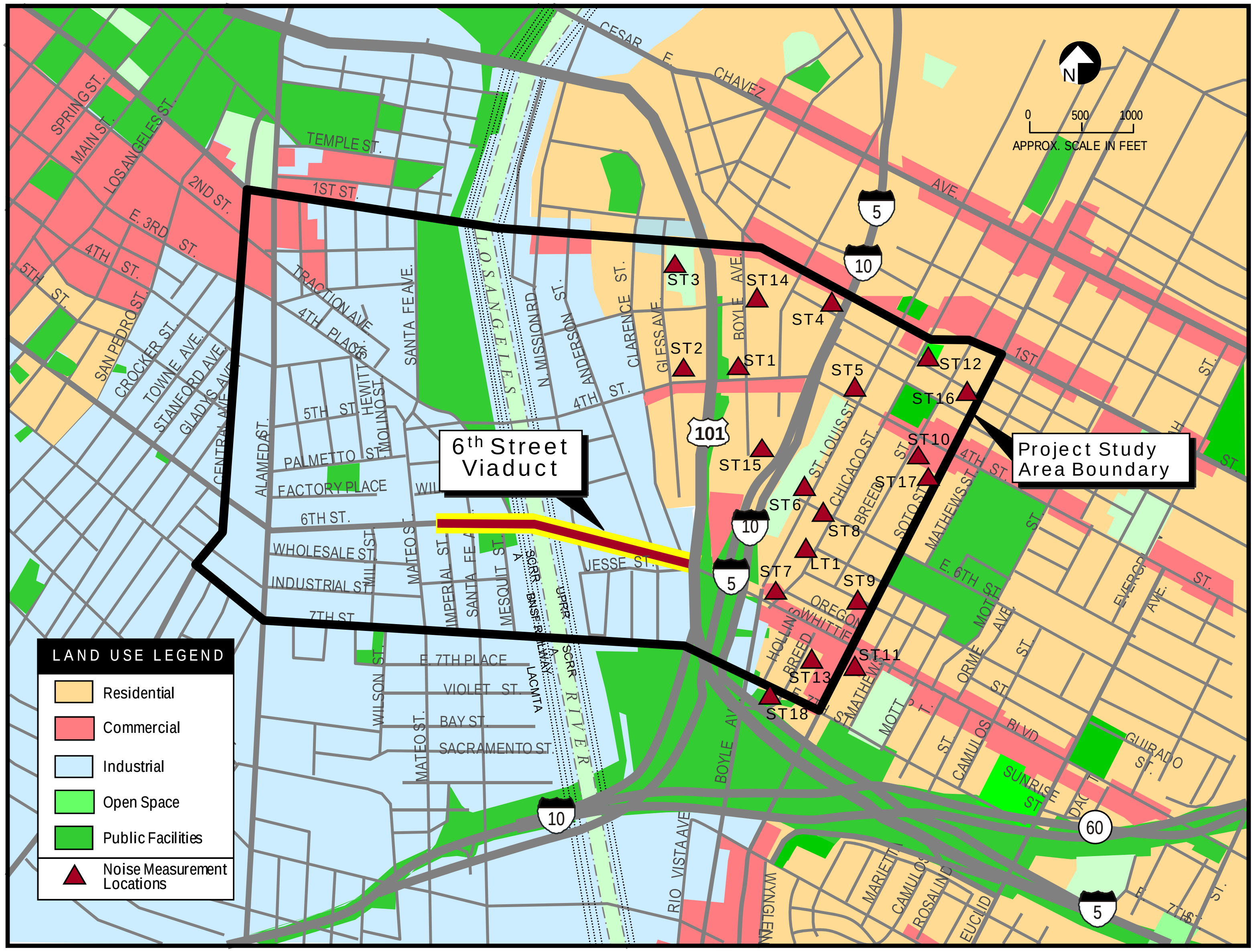


Figure 3.16-2 Noise Measurement Locations

Table 3.16-4
Noise Measurement Results

Site Number	Street Address, City	Land Use[1]	Measurement Date	Start Time	Measured L_{eq}^{2}, dBA
ST 1	Intersection of 4th Street and South Boyle Avenue	COM	9/12/2007	7:30 am	73
ST2	Intersection of 4th Street and Gless Street	SCH	9/12/2007	7:55 am	77
ST3	135 South Gless Street	SFR	9/12/2007	8:25 am	58
ST4	1939/1933 2nd Street	SCH	9/12/2007	9:00 am	61
ST5	300 South St. Louis Street	SFR	9/12/2007	9:30 am	72
ST6	600 South St. Louis Street	REC	9/12/2007	9:55 am	67
ST7	Intersection at Whittier Boulevard between South Boyle Avenue and Chicago Street	COM	9/12/2007	3:50 pm	76
ST8	2100 East 6th Street	MFR	9/12/2007	4:15 pm	62
ST9	700 South Soto Street	SFR	9/12/2007	4:45 pm	73
ST10	456 South Breed Street	MFR	9/12/2007	5:15 pm	62
ST11	919 South Soto Street	SCH	9/13/2007	7:10 am	73
ST12	2229 East 2nd Street	SFR	9/13/2007	7:55 am	56
ST13	963 South Breed Street	SFR	9/13/2007	9:05 am	61
ST14	212 South Boyle Avenue	MFR	9/18/2007	6:46 am	68
ST15	Intersection of South Boyle Avenue and I-5 ramp	MFR	9/18/2007	7:22 am	72
ST16	201 South Soto Street	MFR	9/18/2007	7:55 am	74
ST17	459 South Soto Street	SFR	9/18/2007	8:33 am	78
ST18	2422 East 7th Street	MFR	9/18/2007	9:30 am	66
LT1[3]	2112 Inez Street	SFR	9/12/2007	3:27 pm	59

Notes:
[1] *SFR – Single-Family Residential; MFR – Multiple-Family Residential; COM – Commercial; REC – Recreation; SCH – School*
[2] *All short-term measured noise levels were measured for periods of 20 minutes.*
[3] *Noise level shown is the actual peak-hour noise level during a 24-hour period.*
ST = Short Term Measurement
LT = Long Term Measurement

Source: Parsons, 2008d.

3.16.3 Environmental Consequences

3.16.3.1 Construction Impacts

Construction noise is regulated by Caltrans Standard Specifications, Section 7-1.001, Sound Control Requirements. These requirements state that noise levels generated during construction should comply with applicable local, state, and federal requirements. Normally, construction noise levels should not exceed 86 dBA (L_{max}) at a distance of 50 ft (15 meters).

Noise impacts from construction activities for the proposed project are a function of the noise generated by construction equipment, location and sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. The degree of construction noise impacts could vary for different areas within the project site depending on the construction activities. For environmental impact analysis purposes, a construction equipment list for each phase of project construction was developed to calculate the expected level of noise to be generated from equipment operation. A construction noise impact is determined using the construction noise limits set forth by the City of Los Angeles Noise Ordinance (Table 3.16-2).

Alternative 1 – No Action

There would be no construction under this alternative; therefore, no construction noise impacts would occur.

Alternative 2 – Retrofit

Construction Noise

Noise levels to be generated from the pool of equipment during each phase of construction were estimated based on the Alternative 3 (Replacement) list of equipment to represent the worst-case scenario. Noise impacts from retrofit activities would be confined to a relatively narrow corridor extending along both sides of the viaduct and corresponding to the construction sequence. Since the nearest commercial/industrial land uses are located immediately adjacent to the project corridor, the expected construction noise levels at the property lines of these land uses would likely exceed Caltrans recommended 86 dBA (L_{max}) at a distance of 50 ft on an occasional basis due to infrequent heavy equipment operations. These commercial/industrial areas are not identified as “frequent human outdoor-use” locations; therefore, no adverse construction noise impacts to commercial/manufacturing uses along the 6th Street corridor are anticipated. Since the closest residences to the viaduct are located 600 ft away, no adverse noise impact would occur. (See calculation results under Alternative 3 – Replacement below to support this statement.)

Traffic Noise

Construction of the Retrofit Alternative would not require long-term permanent closure of the viaduct; therefore, noise would result primarily from construction equipment and material hauling activities. This impact is temporary and not unusual for a major public works construction project in an urban area. No adverse noise impacts from vehicular traffic are anticipated.

Alternative 3 – Replacement

Construction Noise

Construction of the proposed project is anticipated to occur over the 4-year construction period. Normally, construction noise differs with various construction activities, and each type of construction activity has its own noise characteristics based on the mix of construction equipment in use. The highest construction noise levels for this proposed project are expected to occur during construction phases involving foundation/substructure, superstructure, and wall and embankment construction activities because these phases of construction require the use of a noisier equipment fleet, such as impact pile drivers (see Table 3.16-5). Noise impacts from these activities would be confined to a relatively narrow corridor extending along both sides of the viaduct and corresponding to the construction sequence. Since the nearest commercial/industrial land uses are located immediately adjacent to the project corridor, the expected construction noise levels at the property lines of these land uses would likely exceed Caltrans recommended 86 dBA (L_{max}) at a distance of 50 ft on an occasional basis due to infrequent heavy equipment operations. These areas are not identified as "frequent human outdoor-use" locations; therefore, no adverse construction noise impacts to commercial/manufacturing uses along the 6th Street corridor are anticipated.

To assess noise impacts to the nearest residences from the 6th Street Viaduct, noise levels at this location (6th Street/Whittier Boulevard and St. Louis Street) were calculated, as shown in Table 3.16-5. In computing the L_{eq} for equipment noise, it was assumed that the equipment would be operating at, or near, maximum sound levels 30 percent of the time during operation, except for the impact pile driver, for which 10 percent was assumed. All construction activities were assumed to be occurring daily during daytime hours that are not restricted by City and County noise ordinances. It was assumed that no construction activity would occur on Sundays and holidays. If it became necessary to operate outside of the listed hours due to scheduling constraints, then a variance must be approved by the City.

Based on the results of construction noise prediction, overall noise levels at a 50-ft distance from construction activities would range between 78 and 90 dBA. The noise levels that could be expected at the residences located to the east of the project site near 6th Street/Whittier Boulevard and St. Louis Street during each of the construction phases/activities would range between 54 and 66 dBA; therefore, adverse noise impacts from construction activities are not anticipated on residents living closest to the project site.

Table 3.16-5
Estimated Construction Noise Levels (in dBA)

Construction Activity Equipment	Number of Equipment Vehicles	Daily Operation Hours	Sound Level at 50 ft	Effective Usage Factor	L_{eq}(h) at 50 ft	L_{eq}(h) at Closest Residences
Building Demolition						
Front End Loader	1	8	75	0.30	70	46
Dump Truck	2	8	80	0.60	78	54
Flat Bed Truck	1	8	81	0.30	76	52
Water Truck	1	8	78	0.30	73	49
Crane	1	8	81	0.30	76	52
Excavator with Hydraulic Hammer	1	8	81	0.30	76	52
Dozer	1	8	80	0.30	75	51
			Overall L_{eq} =		**84**	**60**

Table 3.16-5
Estimated Construction Noise Levels (in dBA)

Construction Activity Equipment	Number of Equipment Vehicles	Daily Operation Hours	Sound Level at 50 ft	Effective Usage Factor	L_{eq}(h) at 50 ft	L_{eq}(h) at Closest Residences
Existing Viaduct Demolition						
Hydraulic Pulverizer Claw	1	8	83	0.30	78	54
Crane	1	8	81	0.30	76	52
Front End Loader	1	8	75	0.30	70	46
Excavator with Hydraulic Hammer	2	8	90	0.60	88	64
Dump Truck	2	8	80	0.60	78	54
Excavator with Hydraulic Thumb	2	8	83	0.60	81	57
			Overall L_{eq} =		**89**	**66**
USACE Ramp Demolition						
Front End Loader	1	8	75	0.30	70	46
Dump Truck	10	8	80	3.00	85	61
Flat Bed Truck	1	8	81	0.30	76	52
Water Truck	1	8	78	0.30	73	49
Crane	1	8	81	0.30	76	52
Excavator with Hydraulic Hammer	1	8	90	0.30	85	61
Dozer	1	8	80	0.30	75	51
			Overall L_{eq} =		**89**	**65**
Foundation Construction –Option 1: Pile Driving						
Crane	1	8	81	0.30	76	52
Impact Piling Hammer	1	4	101	0.05	88	64
Crane – 40 ton	1	4	75	0.15	67	43
			Overall L_{eq} =		**88**	**65**
Foundation Construction –Option 2: Drilled Shaft						
Drill rig/Auger	1	8	80	0.30	75	51
Crane	1	8	81	0.30	76	52
Crane – 30 ton	1	4	75	0.15	67	43
Backhoe	1	4	75	0.15	67	43
Welder	1	4	73	0.15	65	41
Air Compressor	1	8	65	0.30	60	36
			Overall L_{eq} =		**79**	**56**
Footing Construction						
Crane – 30 ton	1	4	75	0.15	67	43
Backhoe	1	4	75	0.15	67	43
Concrete Pump	1	2	77	0.08	66	42
Ready-mix Concrete Trucks	2	2	85	0.15	77	53
			Overall L_{eq} =		**78**	**54**
Column Construction						
Crane	1	8	81	0.30	76	52
Crane – 30 ton	1	8	75	0.30	70	46
Backhoe	1	4	75	0.15	67	43
Electric Generators	4	8	70	1.20	71	47
			Overall L_{eq} =		**78**	**55**
Balanced Cantilever Erection						
Crane - 275 ton	2	8	84	0.60	82	58
Crane – 140 ton	3	8	81	0.90	81	57
Crane - 30	3	8	75	0.90	75	51
Electric Generators	2	8	70	0.60	68	44
Concrete Pump	2	2	77	0.15	69	45
Ready-mix Concrete Trucks	2	2	85	0.15	77	53
Backhoe	5	4	75	0.75	74	50
			Overall L_{eq} =		**86**	**62**

Table 3.16-5
Estimated Construction Noise Levels (in dBA)

Construction Activity Equipment	Number of Equipment Vehicles	Daily Operation Hours	Sound Level at 50 ft	Effective Usage Factor	L_{eq}(h) at 50 ft	L_{eq}(h) at Closest Residences
AC, Base, Curb & Gutter & Sidewalk Removal						
Front End Loader	1	8	75	0.30	70	46
Dump Truck	2	8	80	0.60	78	54
Flat Bed Truck	1	8	81	0.30	76	52
Water Truck	1	8	78	0.30	73	49
			Overall L_{eq} =		**81**	**57**
Wall and Embankment Construction – Option 1: Proprietary Wall and Embankment						
Backhoe	2	8	75	0.60	73	49
Front End Loader	2	8	75	0.60	73	49
Plate Compactor	4	4	75	0.60	73	49
Dump Truck	6	8	80	1.80	83	59
Water Truck	1	2	78	0.08	67	43
Hand Compactor – 5hp	2	2	75	0.15	67	43
Steel Roller – 20 ton	2	8	76	0.60	74	50
			Overall L_{eq} =		**84**	**61**
Wall and Embankment Construction – Option 2: Concrete Reinforcing Wall on Steel Pile Foundation						
Crane – 140 ton	1	4	81	0.15	73	49
Diesel Pile Hammer	1	4	101	0.05	88	64
Crane – 30 ton	1	4	75	0.15	67	43
Electric Generators	2	8	70	0.60	68	44
Concrete Pump	2	2	77	0.15	69	45
Read-mix Concrete Trucks	2	2	85	0.15	77	53
Backhoe	5	4	75	0.75	74	50
Dump Truck	6	8	80	1.80	83	59
Steel Roller – 20 ton	2	8	76	0.60	74	50
			Overall L_{eq} =		**90**	**66**
Wall and Embankment Construction – Alt 3: Concrete Reinforcing Wall on Drilled Shaft Foundation						
SoilMec Drill Rig	1	8	80	0.30	75	51
Crane – 40 ton	1	8	75	0.30	70	46
Concrete Pump	2	2	77	0.15	69	45
Ready-mix Concrete Trucks	2	2	85	0.15	77	53
Backhoe	1	4	75	0.15	67	43
Welder	1	4	73	0.15	65	41
Air Compressor	1	8	65	0.30	60	36
De-Sanding Unit	1	4	81	0.15	73	49
Dump Truck	6	8	80	1.80	83	59
Steel Roller	2	8	76	0.60	74	50
			Overall L_{eq} =		**85**	**62**
Superstructure Construction						
Diesel Pile Hammer	1	4	101	0.05	88	64
Welder	2	4	73	0.30	68	44
Crane – 30 ton	1	2	75	0.08	64	40
Backhoe	1	2	75	0.08	64	40
Crane – 140 ton	1	6	81	0.23	75	51
Electric Generator	4	8	70	1.20	71	47
			Overall L_{eq} =		**88**	**65**

Source: Noise Study Report (Parsons, 2008d).

Traffic Noise

Implementation of the proposed replacement alternatives would require closure of the 6th Street Viaduct during the 4-year construction period between 2011 and 2014, and traffic diversion would occur on nearby roadways where residential communities are located. Noise impacts from anticipated traffic diversion were evaluated to satisfy CEQA requirements. Traffic noise modeling was conducted along major roadways where sensitive receptors could be potentially affected by the increased traffic noise levels. The street detour segments contained in the noise modeling area are bound by Central Avenue and Soto Street on the west and east, respectively, and 1st and 7th Streets on the north and south, respectively (see Figure 3.16-2). The expected traffic diversion distributions within the study area during the proposed project construction period are shown in Figure 3.7-1 of Section 3.7, Traffic and Transportation/Pedestrian Facilities, of this Draft EIR/EIS.

Noise levels were modeled along various roadways throughout the study area for existing year 2007, future year 2014, and future design year 2035, using the FHWA traffic noise model, TNM 2.5.[95] Comparisons of these noise levels would reveal any adverse noise effects on the community where traffic would be diverted during the construction period. The detailed traffic modeling input and output data are presented in the Noise Study Report[96] for this project.

Tables 3.16-6 through 3.16-8 present the modeled noise levels along various street segments throughout the study area for the existing condition, Year 2014, and Year 2035. Note that noise levels for Year 2014 were modeled two ways: (1) representing conditions with the viaduct open, which is equivalent to the No Action Alternative, and (2) conditions when the viaduct is closed, which is equivalent to the worst-case construction scenario (year 4 of construction) when volumes would be highest due to normal annual growth. Comparisons of these noise levels would reveal any adverse noise effects on the community where traffic from the proposed project construction would be diverted.

As shown in Table 3.16-7, during the construction period, represented by year 2014 when the 6th Street Viaduct would be closed and traffic would be diverted to surrounding surface streets, the resulting noise levels are higher. Because the traffic would be dispersed along the proposed detour routes, the increase in noise levels along most affected street segments modeled was found to be not substantial – typically no more than 1 or 2 dBA; several would experience no increase; and only one segment, 7th Street between Boyle and Santa Fe Avenues, would be expected to incur a 3-dBA increase. Since the noise-level increase along the potentially affected roadways would be less than 5 dB (as allowed by City ordinance) no impact is expected to result from the detoured traffic dispersion during the anticipated 4-year construction period.

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95 FHWA, 2004. United States Department of Transportation, Federal Highway Administration. *FHWA Traffic Noise Model.* TNM 2.5. February.

96 Noise Study Report for Proposed 6th Street Viaduct Seismic Improvement Project. April 2008.

Table 3.16-6
Traffic Noise Modeling Results – Year 2007 (Viaduct Open)

Street	Segment and Intersection # (see Location of Intersection in Figure 3.7-1)	Land Use	Predicted Hourly Noise Level L_{eq} (dBA)
6th Street	Soto Street (6) to Boyle Avenue (22)	Commercial	68
	Boyle Avenue (22) to US 101 NB on-ramp (21)	Commercial	69
	US 101 NB on-ramp (21) to Mateo Street (7)	Industrial	69
	Mateo Street (7) to Alameda Street (4)	Industrial	68
	Alameda Street (4) to Central Avenue (30)	Industrial	70
1st Street	Soto Street (25) to Boyle Avenue (17)	Commercial	68
	Boyle Avenue (17) to US 101 NB on-/off-ramps (12)	Commercial	69
	US 101 NB on-/off-ramps (12) to SB on-/off-ramps (11)	Commercial	70
	US 101 SB on-/off-ramps (11) to Alameda Street (1)	Residential	72
	Alameda Street (1) to Central Avenue (27)	Commercial	71
4th Street	Soto Street (26) to I-5 NB on-/off-ramps/Cummings Street (20)	Commercial, Residential	72
	I-5 NB on-/off-ramps/Cummings Street (20) to SB on-/off-ramps (19)	Residential	72
	I-5 SB on-/off-ramps (19) to Boyle Avenue (18)	Residential	71
	Boyle Avenue (18) to US 101 NB off-ramp (15)	Residential	71
	US 101 NB off-ramp (15) to SB off-ramp (14)	Residential	72
	US 101 SB off-ramp (14) to Pecan Street/US 101 SB on-ramp (13)	Residential	72
	Pecan Street/US 101 SB on-ramp (13) to Alameda Street (2)	Residential	73
	Alameda Street to Central Avenue, EB: (29) to (3), WB: (2) to (28)	Residential	73
7th Street	Soto Street (16) to Boyle Avenue (23)	Residential	70
	Boyle Avenue (23) to Santa Fe Avenue (10)	Residential	70
	Santa Fe Avenue (10) to Mateo Street (8)	Residential	71
	Mateo Street (8) to Alameda Street (5)	Residential	71
	Alameda Street (5) to Central Avenue (31)	Residential	71
Central Avenue	1st Street (27) to 3rd Street (28)	Commercial	66
	3rd Street (28) to 4th Street (29)	Industrial	65
	4th Street (29) to 6th Street (30)	Industrial	67
	6th Street (30) to 7th Street (31)	Industrial	67
Alameda Street	1st Street (1) to 3rd Street (2)	Commercial	70
	3rd Street (2) to 4th Street (3)	Industrial	70
	4th Street (3) to 6th Street (4)	Industrial	70
	6th Street (4) to 7th Street (5)	Industrial	71
Mateo Street	6th Street (7) to 7th Street (8)	Industrial	62
Santa Fe Avenue	6th Street/Frontage Road (9) to 7th Street (10)	Industrial	65
Boyle Avenue	1st Street (17) to 4th Street (18)	Residential	66
	4th Street (18) to 6th Street (22)	Residential	68
	6th Street (22) to 7th Street (23)	Residential	68
Soto Street	1st Street (25) to 4th Street (26)	Residential	71
	4th Street (26) to 6th Street/Whittier Boulevard (6)	Residential	72
	6th Street/Whittier Boulevard (6) to 7th Street (16)	Industrial	69
	7th Street (16) to SR 60 EB on-ramp (24)	Residential	71

Note: Numbers in parenthesis denote the Study Intersection Number shown on Figure 3.17-1.
EB: eastbound; NB: northbound; SB: southbound; WB: westbound

Source: Noise Study Report (Parsons, 2008d).

Table 3.16-7
Traffic Noise Modeling Results – Year 2014 (Viaduct Open and Closed Conditions)

Street	Segment and Intersection # (see Figure 3.7-1 for Location)	Land Use	Hourly Noise Level L_{eq} (dBA) Viaduct Open (Closed)	Noise Level Increase/ Decrease during Closed Condition
6th Street	Soto Street (6) to Boyle Avenue (22)	Commercial	68 (66)	-2
	Boyle Avenue (22) to US 101 NB on-ramp (21)	Commercial	70 (62)	-8
	US 101 NB on-ramp (21) to Mateo Street (7)	Industrial	69 (49)	-20
	Mateo Street (7) to Alameda Street (4)	Industrial	69 (61)	-8
	Alameda Street (4) to Central Avenue (30)	Industrial	70 (67)	-3
1st Street	Soto Street (25) to Boyle Avenue (17)	Commercial	69 (69)	0
	Boyle Avenue (17) to US 101 NB on-/off-ramps (12)	Commercial	69 (69)	0
	US 101 NB on-/off-ramps (12) to SB on-/off-ramps (11)	Commercial	71 (71)	0
	US 101 SB on-/off-ramps (11) to Alameda Street (1)	Residential	72 (73)	1
	Alameda Street (1) to Central Avenue (27)	Commercial	72 (72)	0
4th Street	Soto Street (26) to I-5 NB on-/off-ramps/Cummings Street (20)	Commercial, Residential	73 (73)	0
	I-5 NB on-/off-ramps/Cummings Street (20) to SB on-/off-ramps (19)	Residential	72 (73)	1
	I-5 SB on-/off-ramps (19) to Boyle Avenue (18)	Residential	72 (72)	0
	Boyle Avenue (18) to US 101 NB off-ramp (15)	Residential	72 (72)	0
	US 101 NB off-ramp (15) to SB off-ramp (14)	Residential	73 (73)	0
	US 101 SB off-ramp (14) to Pecan Street/US 101 SB on-ramp (13)	Residential	73 (73)	0
	Pecan Street/US 101 SB on-ramp (13) to Alameda Street (2)	Residential	74 (73)	-1
	Alameda Street to Central Avenue, EB: (29) to (3), WB: (2) to (28)	Residential	73 (74)	1
7th Street	Soto Street (16) to Boyle Avenue (23)	Residential	70 (72)	2
	Boyle Avenue (23) to Santa Fe Avenue (10)	Residential	70 (73)	3
	Santa Fe Avenue (10) to Mateo Street (8)	Residential	71 (73)	2
	Mateo Street (8) to Alameda Street (5)	Residential	71 (73)	2
	Alameda Street (5) to Central Avenue(31)	Residential	71 (72)	1
Central Avenue	1st Street (27) to 3rd Street (28)	Commercial	65 (65)	0
	3rd Street (28) to 4th Street (29)	Industrial	66 (65)	-1
	4th Street (29) to 6th Street (30)	Industrial	67 (67)	0
	6th Street (30) to 7th Street (31)	Industrial	67 (67)	0
Alameda Street	1st Street (1) to 3rd Street (2)	Commercial	70 (70)	0
	3rd Street (2) to 4th Street (3)	Industrial	70 (70)	0
	4th Street (3) to 6th Street (4)	Industrial	71 (71)	0
	6th Street (4) to 7th Street (5)	Industrial	71 (71)	0
Mateo Street	6th Street (7) to 7th Street (8)	Industrial	63 (63)	0
Santa Fe Avenue	6th Street/Frontage Road (9) to 7th Street (10)	Industrial	65 (65)	0
Boyle Avenue	1st Street (17) to 4th Street (18)	Residential	66 (66)	0
	4th Street (18) to 6th Street (22)	Residential	68 (68)	0
	6th Street (22) to 7th Street (23)	Residential	68 (68)	0
Soto Street	1st Street (25) to 4th Street (26)	Residential	72 (72)	0
	4th Street (26) to 6th Street/Whittier Boulevard(6)	Residential	72 (72)	0
	6th Street/Whittier Boulevard(6) to 7th Street (16)	Industrial	69 (70)	1
	7th Street (16) to SR 60 EB on-ramp (24)	Residential	71 (71)	0
Note: Numbers in parenthesis denote the Study Intersection Number shown on Figure 3.17-1. EB: eastbound; NB: northbound; SB: southbound; WB: westbound				

Source: Noise Study Report (Parsons, 2008d).

Table 3.16-8
Traffic Noise Modeling Results – Year 2035 (Viaduct Open)

Street	Segment and Intersection # (see Location of Intersection in Figure 3.7-1)	Land Use	2007 Hourly Noise Level L_{eq} (dBA)	2035 Hourly Noise Level L_{eq} (dBA)
6th Street	Soto Street (6) to Boyle Avenue (22)	Commercial	68	69
	Boyle Avenue (22) to US 101 NB on-ramp (21)	Commercial	69	71
	US 101 NB on-ramp (21) to Mateo Street (7)	Industrial	69	70
	Mateo Street (7) to Alameda Street (4)	Industrial	68	69
	Alameda Street (4) to Central Avenue (30)	Industrial	70	71
1st Street	Soto Street (25) to Boyle Avenue (17)	Commercial	68	70
	Boyle Avenue (17) to US 101 NB on-/off-ramps (12)	Commercial	69	70
	US 101 NB on-/off-ramps (12) to SB on-/off-ramps (11)	Commercial	70	72
	US 101 SB on-/off-ramps (11) to Alameda Street (1)	Residential	72	73
	Alameda Street (1) to Central Avenue (27)	Commercial	71	73
4th Street	Soto Street (26) to I-5 NB on-/off-ramps/ Cummings Street (20)	Commercial, Residential	72	74
	I-5 NB on-/off-ramps/Cummings Street (20) to SB on-/off-ramps (19)	Residential	72	73
	I-5 SB on-/off-ramps (19) to Boyle Avenue (18)	Residential	71	73
	Boyle Avenue (18) to US 101 NB off-ramp (15)	Residential	71	73
	US 101 NB off-ramp (15) to SB off-ramp (14)	Residential	72	74
	US 101 SB off-ramp (14) to Pecan Street/US 101 SB on-ramp (13)	Residential	72	74
	Pecan Street/US 101 SB on-ramp (13) to Alameda Street (2)	Residential	73	75
	Alameda Street to Central Avenue, EB: (29) to (3), WB: (2) to (28)	Residential	73	74
7th Street	Soto Street (16) to Boyle Avenue (23)	Residential	70	71
	Boyle Avenue (23) to Santa Fe Avenue (10)	Residential	70	71
	Santa Fe Avenue (10) to Mateo Street (8)	Residential	71	72
	Mateo Street (8) to Alameda Street (5)	Residential	71	72
	Alameda Street (5) to Central Avenue (31)	Residential	71	72
Central Avenue	1st Street (27) to 3rd Street (28)	Commercial	66	66
	3rd Street (28) to 4th Street (29)	Industrial	65	67
	4th Street (29) to 6th Street (30)	Industrial	67	68
	6th Street (30) to 7th Street (31)	Industrial	67	68
Alameda Street	1st Street (1) to 3rd Street (2)	Commercial	70	71
	3rd Street (2) to 4th Street (3)	Industrial	70	71
	4th Street (3) to 6th Street (4)	Industrial	70	72
	6th Street (4) to 7th Street (5)	Industrial	71	72
Mateo Street	6th Street (7) to 7th Street (8)	Industrial	62	63
Santa Fe Avenue	6th Street/Frontage Road (9) to 7th Street (10)	Industrial	65	66
Boyle Avenue	1st Street (17) to 4th Street (18)	Residential	66	67
	4th Street (18) to 6th Street (22)	Residential	68	69
	6th Street (22) to 7th Street (23)	Residential	68	69
Soto Street	1st Street (25) to 4th Street (26)	Residential	71	73
	4th Street (26) to 6th Street/Whittier Boulevard (6)	Residential	72	73
	6th Street/Whittier Boulevard (6) to 7th Street (16)	Industrial	69	60
	7th Street (16) to SR 60 EB on-ramp (24)	Residential	71	72
Note: Numbers in parenthesis denote the Study Intersection Number shown on Figure 3.17-1. EB: eastbound; NB: northbound: SB: southbound; WB: westbound				

Source: Noise Study Report (Parsons, 2008d).

When comparing the predicted future noise levels associated with the proposed project to the existing noise levels, the noise level increase would not be more than 2 dB in all roadway segments under study. This would not constitute a "substantial increase" as defined under the Caltrans protocol (i.e., an increase of 12 dBA). Furthermore, the increases would be due to natural traffic growth, since there is no project-induced increase. In addition, since the projected noise-level increase along the potentially affected roadways would be less than 5 dB, as allowed by City ordinance, no adverse noise impact is expected to occur along City streets.

Construction Vibration Impacts

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that diminish in strength with distance. Construction vibration varies greatly depending on the construction phases, type and condition of equipment used, and layout of the construction site.

Construction vibration levels are governed primarily by the heaviest pieces of equipment, such as impact pile drivers and pavement breakers. Table 3.16-9 lists the various types of construction equipment anticipated for this project and typical vibration levels of the equipment at various distances in peak particle velocity (PPV) levels. Since the construction equipment is mobile, the intensities of vibration perceived would vary greatly depending on the spatial relationship between the source and the receiver. The worst vibration impacts would generally occur during demolition and viaduct foundation construction activities involving pavement breakers and pile drivers, respectively.

Table 3.16-9
Typical Construction Equipment Vibration Levels

Construction Equipment	Peak Particle Velocity at Distance, PPV (inch/second)				
	25 feet (8 meters)	50 feet (15 meters)	75 feet (23 meters)	200 feet (61 meters)	350 feet (107 meters)
Concrete Pump	0.05	0.018	0.010	0.002	0.001
Crane	0.05	0.018	0.010	0.002	0.001
Excavator	0.107	0.038	0.021	0.005	0.002
Front End Loader	0.03	0.011	0.006	0.001	0.001
Impact Pile Driver	1.518	0.537	0.292	0.067	0.029
Pavement Breaker	0.622	0.22	0.120	0.028	0.012
Soil Auger	0.05	0.018	0.010	0.002	0.001

Source: Parsons.

The Federal Railroad Administration (FRA) provides ground-borne vibration impact criteria for various types of building uses. FRA provides a vibration damage threshold criterion of 0.50-inch/second PPV for fragile buildings and 0.12-inch/second PPV for extremely fragile historic buildings for typical construction equipment.[97] FRA recommends that these criteria be used as a damage threshold for the fragile structures located near the right-of-way of a transit project.

With the current estimated construction equipment list, the highest vibration levels would be caused by the impact pile driver, which would be operational during substructure construction. Since no historic buildings are located within 50 ft of the proposed construction site, no adverse impacts from construction vibration are expected to occur even during impact pile driving activity, which would generate the highest vibration level among the various pieces of equipment during construction.

3.16.3.2 Permanent Impacts

Alternative 1 – No Action

No long-term noise impacts would occur under this alternative. Traffic noise at the horizon year (2035) would be increased as a result of natural traffic growth, as shown in Table 3.16-6.

Alternative 2 – Retrofit

No long-term noise impacts would occur once the retrofit construction is complete. Traffic noise at the horizon year (2035) would be increased as a result of natural traffic growth, as shown in Table 3.16-8.

Alternative 3 – Replacement

The proposed Alternative 3 would not add traffic lanes or increase operating capacity; therefore, noise levels for the 2035 design year would be the same as the No Action Alternative and Alternative 2, as shown in Table 3.16-8. If compared to the Caltrans requirements and NAC, noise levels at many of the roadway segments within the study area are expected to approach or exceed the NAC. It should be noted, however, that under the existing condition, the elevated noise levels are generated by traffic on local streets that are not associated with the proposed project. Noise abatement measures along the project corridor in the form of soundwalls would not be feasible due to restricted access between the existing roadways, the viaduct, and the buildings. In addition, business owners would likely be opposed to having the view or line of sight to their businesses blocked by any soundwall located in front of their properties.

3.16.3.3 Cumulative Impacts

Noise impacts are localized and would not result in any cumulative impacts under any alternative implementation.

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[97] USDOT, 1998.

3.16.3.4 Secondary Impacts

No secondary impacts were identified.

3.16.4 Avoidance, Minimization, and Compensation Measures

Alternative 1 – No Action

No mitigation is required.

Alternatives 2 and 3

Since no long-term traffic associated noise impacts are anticipated as a result of proposed project implementation, no abatement measures would be required.

Construction of soundwalls along the viaduct corridor and adjacent local roadways along the detour routes in the heavily urbanized area of the City of Los Angeles to mitigate noise during the construction period is not feasible and would likely be opposed by the business owners. The following measures would be implemented to minimize noise and vibration disturbances at adjacent commercial/industrial land uses during periods of construction:

Equipment Noise Control

- Use newer equipment with improved noise muffling and ensure that all equipment has the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators intact and operational. (Newer equipment will generally be quieter in operation than older equipment.) All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding).
- Utilize construction methods or equipment that would provide the lowest level of noise and ground vibration impact, such as alternative low-noise pile installation methods.
- Turn off idling equipment.

Administrative Measures

- Implement a construction noise and/or vibration monitoring program to limit noise effects.
- Comply with relevant noise ordinance sections of the City of Los Angeles. The City imposes a limit on noise generated by construction activities, as well as specific hours during which construction activities shall not occur.
- Limit construction activities to daytime hours. If nighttime construction is necessary, then the proper permits and variances would be obtained.
- Comply with the Traffic Management Plan (TMP) on designated construction routes to avoid or minimize impacts on noise-sensitive receptors located in areas of close proximity to the project site.

- Keep noise levels relatively uniform and avoid impulsive noises.
- Maintain good public relations with the community to minimize objections to the unavoidable construction noise. Provide frequent activity updates of all construction activities and schedules.
- A combination of the aforementioned abatement/mitigation techniques with equipment noise control and administrative measures could be selected to provide the most effective means to minimize the effects of the construction activity. Application of these abatement/mitigation measures would help reduce construction-related noise effects; however, a temporary increase in noise and vibration over the existing ambient levels may still occur.

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3.17 Biological Environment

This section discusses potential impacts to biological resources within the project area as a result of proposed project implementation. The information presented in this section is excerpted from the Natural Environment Study (NES) (Minimal Impacts) conducted for this project.[98]

A project biologist and botanist conducted a general plant and wildlife survey on May 4, 2007, by walking and driving throughout the study area, utilizing binoculars when necessary. The biological study area is similar to the APE designated for the historical and archaeological study. The California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California[99] and the California Department of Fish and Game's (CDFG) California Natural Diversity Database[100] were reviewed prior to the field survey to identify special-status plants, wildlife, and habitats known to occur in the vicinity of the survey area, which extends from the east side to the west side of the project limits and the area surrounding the viaduct footprint.

The biological survey was conducted to assess the biological conditions of the site, inventory the wildlife habitat and vegetation types, and to evaluate the site's potential to support special-status plant and wildlife species within the survey area. All species observed were recorded in field notes. Plant species were identified in the field or collected for subsequent identification using keys in Hickman (1993)[101] and Munz (1974)[102]. Taxonomy follows Hickman (1993) and current scientific data (e.g., scientific journals) for scientific and common names. The Sunset Western Garden Book[103] was used for ornamental species that were not included in the references listed above. Taxonomy and nomenclature for wildlife generally follows Fisher and Case (1997)[104] for amphibians and reptiles, American Ornithologists Union (1998)[105] for birds, and Baker *et al.* (2003) for mammals.

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98 Natural Environment Study (Minimal Impacts) for 6th Street Viaduct Seismic Improvement Project. February 2009.
99 CNPS, 2009. California Native Plant Society. Inventory of Rare and Endangered Vascular Plants of California.
100 CDFG, 2009. California Department of Fish and Game. California Natural Diversity Database.
101 Hickman, J.C. Editor. 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley, California
102 Munz, P.A. 1974. *A Flora of Southern California*. University of California Press, Berkeley, California
103 Brenzel, K. N., Editor. 2001. *Sunset Western Garden Book.* Sunset Publishing Corporation, Menlo Park, California
104 Fisher, R. N. and T. J. Case. 1997. *A Field Guide to the Reptiles and Amphibians of Coastal Southern California*. San Mateo, CA: Lazer Touch.
105 American Ornithologists' Union. 1998. *Check-list of North American Birds, 7th ed.* American Ornithologists' Union, Washington, D.C.

3.17.1 Natural Communities

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

3.17.1.1 Affected Environment

The information presented in this section is excerpted from the NES (Minimal Impacts) conducted for this project.[106] The project vicinity is composed primarily of developed areas and is generally considered of low biological value to plant and wildlife species. Although non-native ornamental vegetation is present, along with small disturbed ruderal patches of invasive weeds, no natural communities/vegetation types are present on the site or in the immediate vicinity. No critical habitat under the Federal Endangered Species Act (FESA) is present within the project area.

3.17.1.2 Environmental Consequences

Since no natural communities/vegetation types are present on the site or in the immediate vicinity, no direct, indirect, short-term or long-term impacts would occur with implementation of any of the proposed project alternatives.

3.17.1.3 Avoidance, Minimization, and Compensation Measures

No avoidance, minimization, and compensation measures are required.

3.17.2 Wetlands and Other Water

3.17.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (CWA) (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The CWA regulates the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

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[106] Natural Environment Study (Minimal Impacts) for 6th Street Viaduct Seismic Improvement Project. February 2009.

Section 404 of the CWA establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by EPA.

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

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, then a Lake or Streambed Alteration Agreement will be required. The CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from CDFG.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the CWA. See Section 3.11 – Water Quality and Stormwater Runoff, for additional details.

3.17.2.2 Affected Environment

No riparian vegetation or wetlands are present in the project area. Although the Los Angeles River is concrete-lined, this watercourse is under the jurisdiction of USACE and CDFG. Permits would be required from these resource agencies and from the RWQCB prior to any impact; however, because the proposed project would not result in any additional fill or other permanent change to existing biological conditions, it is likely that no mitigation would be required.

3.17.2.3 Environmental Consequences

Since riparian vegetation or wetlands are not present on the project site or in the immediate vicinity, no direct, indirect, short-term or long-term impacts would occur to wetlands with implementation of any of the proposed project alternatives. However, work in the Los Angeles River channel is expected during construction of either the retrofit or replacement alternatives. Relevant permits (i.e., Section 404, Section 401, and Section 1602 permits) would be required. Ongoing coordination with appropriate agencies has been made throughout the environmental review process of this project. Applicable Best Management Practices (BMPs) to protect the Los Angeles River channel, as discussed in Section 3.11 – Water Quality and Stormwater Runoff, would be proposed as part of the permit application.

3.17.2.4 Avoidance, Minimization, and Compensation Measures

No avoidance, minimization, and compensation measures pertaining to wetlands are required.

3.17.3 Plant Species

3.17.3.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and CDFG share regulatory responsibility for the protection of special-status plant species under federal and state laws, respectively. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA).

The regulatory requirements for FESA can be found at U.S.C 16, Section 1531, *et seq.* (see also 50 CFR Part 402). The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, *et seq.* Caltrans projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and CEQA, Public Resources Code, Sections 2100-21177.

3.17.3.2 Affected Environment

The study area consists of a highly urbanized environment. It is mainly developed, including many industrial and commercial buildings, paved roadways, and several active railroad tracks running under the existing viaduct along the Los Angeles River. During the survey, a modest amount of water was flowing and utility workers were driving vehicles within the concrete-lined Los Angeles River. A high level of transient activity was observed throughout the survey area, including within the existing viaduct support structures.

Vegetation within the study area includes non-native invasive species growing through cracks in concrete and pavement, including London rocket (*Sisymbrium irio*), Mediterranean schismus (*Schismus barbatus*), foxtail chess (*Bromus madritensis ssp. rubens*), common sow-thistle (*Sonchus oleraceus*), and bermuda grass (*Cynodon dactylon*). In addition, other non-native invasive species are present in small ruderal patches (such as along chain-link fencing and abandoned railroad tracks), including Sellow's pampas grass (*Cortaderia selloana*), African fountain grass (*Pennisetum setaceum*), tree of heaven (*Ailanthus altissima*), smilo grass (*Piptatherum miliaceum*), and black mustard (*Brassica nigra*). Finally, the study area includes many non-native ornamental species growing in landscaped areas adjacent to buildings and roadways, such as Canary Island date palm (*Phoenix canariensis*), Mexican fan palm (*Washingtonia robusta)*, acacia (*Acacia redolens*), gum (*Eucalyptus sp.*), Peruvian pepper tree *(Schinus molle*), elm (*Ulmus sp.*), and English walnut (*Juglans regia*).

3.17.3.4 Environmental Consequences

Alternative 1 – No Action

No temporary or permanent impacts to plant species would occur under this alternative.

Alternative 2 – Retrofit

No biological resources were indentified during project-related field surveys within the viaduct footprint where construction activities would occur. No mature trees would be removed; hence, no adverse impacts to plant species are anticipated. Although no cliff swallows or roosting bats were apparent underneath the 6th Street Viaduct during the survey, they may establish new nests or roosts under the viaduct deck. A preconstruction survey would be conducted to confirm the absence or presence of any nesting birds or roosting bats. If found, any nests or roosts that are less than 50 percent complete would be removed and any further habitation would be prevented. Any nests or roosts that are more than 50 percent complete would have a buffer area of 150-ft radius for songbirds and 500-ft radius for raptors flagged off-limits until such time as the young have fledged.

Alternative 3 – Replacement

Ornamental trees within the survey area have a low potential to support nesting birds, which are protected by the Migratory Bird Treaty Act. Given the larger construction area for Alternative 3, a preconstruction survey would be conducted to identify any mature trees subject to removal prior to the commencement of construction activities. Although no cliff swallows and roosting bats were apparent underneath the 6th Street Viaduct during the survey, they may establish new nests or roosts under the viaduct deck. A preconstruction survey would be conducted to confirm the absence or presence of any nesting birds or roosting bats. If found, any nests or roosts that are less than 50 percent complete would be removed and any further habitation would be prevented. Any nests or roosts that are more than 50 percent complete would have a buffer area of 150-ft radius for songbirds and 500-ft radius for raptors flagged off-limits until such time as the young have fledged.

3.17.3.5 Avoidance, Minimization, and Compensation Measures

Alternative 1 – No Action

No mitigation is required.

Alternative 2 – Retrofit

If construction occurs between February 1 and August 31, then a preconstruction survey by a qualified biologist will be conducted to identify any active nesting or roosting locations. If the biologist finds an active nest or roost within the construction area and determines that it may be impacted, then the biologist will delineate an appropriate buffer zone around the nest or roost depending on the species and the type of construction activity. Any active nests or roosts observed during the survey will be mapped on an aerial photograph. The biologist shall serve as a construction monitor during those periods when construction activities shall occur near active nesting/roosting areas to ensure that no inadvertent impacts shall occur. Results of the preconstruction survey and any subsequent monitoring shall be provided to CDFG.

Alternative 3 – Replacement

To protect any possible migratory bird nesting or roosting bat activity, construction activities and removal of non-native ornamental vegetation will be conducted between September 1 and January 31. If construction occurs between February 1 and August 31, then a preconstruction survey by a qualified biologist will be conducted to identify any active nesting or roosting locations. If the biologist finds an active nest or roost within the construction area, then the CDFG biologist will be consulted on how to relocate them to avoid any construction impacts.

3.17.4 Animal Species

3.17.4.1 Regulatory Setting

Many federal and state laws regulate impacts to wildlife. The USFWS, National Oceanic and Atmospheric Administration (NOAA) Fisheries, and CDFG are responsible for implementing these laws.

Federal laws and regulations pertaining to wildlife include:

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

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act (CEQA)
- Sections 1600 – 1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

3.17.4.2 Affected Environment

As previously described, most of the survey area is developed and completely surrounded by a highly urbanized environment. Due to the level of disturbance and the extremely limited amount of vegetated areas, the biological diversity within the survey area and immediate surroundings is low. The site provides very limited potential to support wildlife species that are highly adapted to urbanized conditions. These species occur throughout the urbanized areas of the region. Among the species expected to occur, the following were observed in the survey area: rock dove (*Columba livia*), American crow (*Corvus brachyrhynchos*), cliff swallow (*Petrochelidon pyrrhonota*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), mallard (*Anas platyrhynchos*), brewer's blackbird (*Euphagus cyanocephalus*), rough-winged swallow (*Stelgidopteryx serripennis*), common grackle (*Quiscalus quiscula*), mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferus*), domestic cat (*Felis catus*), and domestic dog (*Canis lupus familiaris*). A few additional species, such as roof rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), Virginia opossum (*Didelphis virginiana*), and red-tailed hawks (*Buteo jamaicensis*), are also expected to occasionally utilize the survey area. Within the concrete-lined Los Angeles River bed in the survey area, a few additional species may be expected, such as mosquito fish (*Gambusia affinis*), Pacific tree frog (*Pseudacris Regilla*), and occasional water loving birds, such as the black necked stilt (*Himantopus mexicanus*), which was observed just downstream of the survey area. No cliff swallows or roosting bats were apparent underneath the 6th Street Viaduct during the survey.

3.17.4.3 Environmental Consequences

Same as that discussed under Section 3.17.3.3.

3.17.4.4 Avoidance, Minimization, and Compensation Measures

Same as that discussed under Section 3.17.3.4.

3.17.5 Threatened and Endangered Species

3.17.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the FESA: 16 U.S.C., Section 1531, *et seq.* (see also 50 CFR Part 402). This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as FHWA, are required to consult with USFWS and NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, *et seq.* CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFG is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

3.17.5.2 Affected Environment

During the reconnaissance-level biological field survey, no native habitats, vegetation types, or special status species were observed within the survey area.

Table 3.17-1 lists special-status plant and wildlife species identified by CDFG and the California Native Plant Society (CNPS) with potential to occur within the project area.[107, 108, 109, 110]

3.17.5.3 Environmental Consequences

There are no special-status plants and animals within or immediately adjacent to the biological survey area. Although several special-status plant and wildlife species are known to occur in the project region, as shown in Table 3.17-1, no threatened or endangered species are expected to occur within the survey area due to the lack of suitable habitat and the disturbed nature of the survey area. Sally Brown from USFWS was unaware of any federal listed species in this area. She also stated that there is no critical habitat in this area.[111] The field survey resulted in no native habitats, plant communities, or special-status species being observed within the project study area. No impacts to threatened and endangered species as a result of proposed project implementation are anticipated.

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[107] California Department of Fish and Game (CDFG) California Natural Diversity Database, 2009a: Hollywood, Los Angeles, Inglewood, and South Gate U.S. Geological Survey (USGS) quadrangles

[108] CDFG Special Animals List, 2008.

[109] Special Vascular Plants, Bryophytes, and Lichens List, 2009b)

[110] California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants - Electronic Version v7-09a, 2009: Hollywood, Los Angeles, Inglewood, and South Gate USGS quadrangles.

[111] E-mail correspondence between Sally Brown of USFWS and Marc Brain of BonTerra Consulting on March 12, 2009.

Table 3.17-1
Special-Status Species with Potential to Occur in the 6th Street Viaduct Project Area

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Source
Plants					
Arenaria paludicola	Marsh sandwort	FE, SE, CNPS List 1B.1	Marshes and swamps.	A	CNPS 2009
Astragalus brauntonii	Braunton's milk-vetch	FE, CNPS List 1B.1	Chaparral; coastal scrub; valley and foothill grassland.	A	CNPS 2009
Astragalus pycnostachyus var. *lanosissimus*	Ventura marsh milk-vetch	FE, SE, CNPS List 1B.1	Coastal dunes; coastal scrub; marshes and swamps.	A	CNPS 2009
Astragalus tener var. *titi*	Coastal dunes milk-vetch	FE, SE, CNPS List 1B.1	Coastal bluff scrub; coastal dunes; coastal prairie.	A	CNPS 2009
Atriplex serenana var. *davidsonii*	Davidson's saltscale	CNPS List 1B.2	Coastal bluff scrub; coastal scrub.	A	CNPS 2009
California macrophylla	Round-leaved filaree	CNPS List 1B.1	Cismontane woodland; valley and foothill grassland.	A	CNPS 2009
Calochortus plummerae	Plummer's mariposa lily	CNPS List 1B.2	Chaparral; cismontane woodland; coastal scrub; lower montane coniferous forest; valley and foothill grassland.	A	CNPS 2009
Calystegia sepium ssp. *binghamiae*	Santa Barbara morning-glory	CNPS List 1A	Marshes and swamps.	A	CNPS 2009
Camissonia lewisii	Lewis's evening-primrose	CNPS List 3	Coastal bluff scrub; cismontane woodland; coastal dunes; coastal scrub; valley and foothill grassland.	A	CNPS 2009
Centromadia parryi ssp. *australis*	Southern tarplant	CNPS List 1B.1	Marshes and swamps; valley and foothill grassland; vernal pools.	A	CNPS 2009
Dudleya multicaulis	Many-stemmed dudleya	CNPS List 1B.2	Chaparral; coastal scrub; valley and foothill grassland.	A	CNPS 2009
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	CNPS List 1A	Marshes and swamps.	A	CNPS 2009
Hordeum intercedens	Vernal barley	CNPS List 3.2	Coastal dunes; coastal scrub; valley and foothill grassland; vernal pools.	A	CNPS 2009
Horkelia cuneata ssp. *puberula*	Mesa horkelia	CNPS List 1B.1	Chaparral; cismontane woodland; coastal scrub.	A	CNPS 2009
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	CNPS List 1B.1	Marshes and swamps; playas; vernal pools.	A	CNPS 2009
Linanthus orcuttii	Orcutt's linanthus	CNPS List 1B.3	Chaparral; lower montane coniferous forest; pinyon and juniper woodland.	A	CNPS 2009
Nasturtium gambelii	Gambel's water cress	FE, ST, CNPS List 1B.1	Marshes and swamps.	A	CNPS 2009

Table 3.17-1
Special-Status Species with Potential to Occur in the 6th Street Viaduct Project Area

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Source
Navarretia fossalis	Moran's navarretia	FT, CNPS List 1B.1	Chenopod scrub; marshes and swamps; playas; vernal pools.	A	CNPS 2009
Navarretia prostrata	Prostrate vernal pool navarretia	CNPS List 1B.1	Coastal scrub; meadows and seeps; valley and foothill grassland; vernal pools.	A	CNPS 2009
Orcuttia californica	California Orcutt grass	FE, SE, CNPS List 1B.1	Vernal pools.	A	CNPS 2009
Phacelia stellaris	Brand's star phacelia	FC, CNPS List 1B.1	Coastal dunes; coastal scrub.	A	CNPS 2009
Pseudo-gnaphalium leucocephalum	White rabbit-tobacco	CNPS List 2.2	Chaparral; cismontane woodland; coastal scrub; riparian woodland.	A	CNPS 2009
Ribes divaricatum var. *parishii*	Parish's gooseberry	CNPS List 1A	Riparian woodland.	A	CNPS 2009
Symphyotrichum defoliatum	San Bernardino aster	CNPS List 1B.2	Cismontane woodland; coastal scrub; lower montane coniferous forest; meadows and seeps; marshes and swamps; valley and foothill grassland.	A	CNPS 2009
Symphyotrichum greatae	Greata's aster	CNPS List 1B.3	Broadleafed upland forest; chaparral; cismontane woodland; lower montane coniferous forest; riparian woodland.	A	CNPS 2009
Reptiles					
Phrynosoma coronatum blainvillii	Coast (San Diego) horned lizard	SCC	Coastal sage scrub and chaparral in arid and semi-arid climate conditions.	A	CDFG 2009
Invertebrates					
Carolella busckana	Busck's gallmoth	-	Sand dunes.	A	CDFG 2009
Birds					
Athene cunicularia	Burrowing owl	SCC	Open, dry annual or perennial grasslands, deserts, and scrublands with low-growing vegetation.	A	CDFG 2009
Empidonax traillii extimus	South-western willow flycatcher	FE, SE	Riparian woodlands in southern California.	A	CDFG 2009
Polioptila californica californica	Coastal California gnatcatcher	FT, SCC	Coastal sage scrub below 2,500 feet in elevation in southern California.	A	CDFG 2009
Mammals					
Antrozous pallidus	Pallid bat	SCC	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting.	A	CDFG 2009

Table 3.17-1
Special-Status Species with Potential to Occur in the 6th Street Viaduct Project Area

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/ Absent	Source
Eumops perotis californicus	Western mastiff bat	SCC	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral.	A	CDFG 2009
Lasiurus cinereus	Hoary bat	-	Prefers open habitats or habitat mosaics, with access to trees for cover, and open areas or habitat edges for feeding.	A	CDFG 2009
Microtus californicus stephensi	South coast marsh vole	SCC	Tidal marshes in Los Angeles, Orange, and southern Ventura counties.	A	CDFG 2009
Nyctinomops femorosaccus	Pocketed free-tailed bat	SCC	Variety of arid areas in southern California: pine-juniper woodlands, desert scrub, palm oasis, desert wash, and desert riparian.	A	CDFG 2009
Nyctinomops macrotis	Big free-tailed bat	SCC	Low-lying arid areas in southern California.	A	CDFG 2009
Taxidea taxus	American badger	SCC	Drier, open stages of most shrub, forest, and herbaceous habitats, with friable soils.	A	CDFG 2009

LEGEND:
Habitat Present/Absent: P: Present; A: Absent (no further work needed)
Federal (USFWS): FE: Endangered; FT: Threatened; FC: Candidate
State (CDFG): SE: Endangered; ST: Threatened; SR: Rare; SC: Candidate; SCC: Species of Special Concern; FP: Fully Protected Species
California Native Plant Society (CNPS) List Categories
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 Common Elsewhere
List 3: Plants About Which We Need More Information - A Review List;
List 4: Plants of Limited Distribution A Watch List
California Native Plant Society (CNPS) Threat Rank Extensions
.1 Seriously threatened in California (high degree/immediacy of threat)
.2 Fairly threatened in California (moderate degree/immediacy of threat)
.3 Not very threatened in California (low degree/immediacy of threat or no current threats known)

3.17.5.4 Avoidance, Minimization, and Compensation Measures

No mitigation measures would be required.

3.17.6 Invasive Species

3.17.6.1 Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." The FHWA guidance issued August 10, 1999, directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

3.17.6.2 Affected Environment

The California Invasive Plant Council (Cal-IPC) maintains a California Invasive Plant Inventory that categorizes non-native invasive plants that threaten the state's wildlands. Approximately 200 species are currently considered invasive in California based on assessed ecological impacts. Vegetation within the project study area includes sparse non-native invasive species growing through cracks in concrete and pavement and in small ruderal patches, such as along chain-link fencing and abandoned railroad tracks. Species observed include London rocket (*Sisymbrium irio*), Mediterranean schismus (*Schismus barbatus*), foxtail chess (*Bromus madritensis* ssp. *rubens*), bermuda grass (*Cynodon dactylon*), Sellow's pampas grass (*Cortaderia selloana*), African fountain grass (*Pennisetum setaceum*), tree of heaven (*Ailanthus altissima*), smilo grass (*Piptatherum miliaceum*), black mustard (*Brassica nigra*), tree tobacco (*Nicotiana glauca*), giant reed (*Arundo donax*), red-stemmed filaree (*Erodium cicutarium*), Italian thistle (*Carduus pycnocephalus*), tocalote (*Centaurea melitensis*), and castor bean (*Ricinus communis*). Invasive weeds are the type of plants best suited to growing in developed areas and extremely disturbed patches of soil.

3.17.6.3 Environmental Consequences

None of the species on the California list of noxious weeds is currently used by the City of Los Angeles or Caltrans for erosion control or landscaping purposes within the project area. Implementation of the proposed project would not introduce or promote the spread of invasive species within the project area except during the construction phase, when invasive species could be inadvertently hauled onsite via construction vehicles.

3.17.6.4 Avoidance, Minimization, and Compensation Measures

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from FHWA, the landscaping and erosion control included in the project would not use species listed as noxious weeds. Precautions would be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should a propagation of invasives in the project area occur prior to construction.

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3.18 Any Irreversible and Irretrievable Commitments of Resources that would be Involved in the Proposed Action

Implementation of the proposed action involves commitment of a range of natural, physical, human, and fiscal resources. Land dedicated for the retrofit or replacement construction and subsequent operation of the viaduct would constitute a semi-permanent commitment for the life of the facility; however, if a greater need arose for use of the land or if the facility became obsolete, then the land could be converted to another use. Currently, there is no reason to believe that such a conversion would ever be necessary or desirable, given that the project corridor has been used for transportation purposes for more than 100 years and will continue to be used for the foreseeable future.

Construction and operation of the proposed project would also require consumption of fossil fuels, labor, and construction materials. Additionally, the project would require expenditure of labor, and natural resources would be used in the fabrication and preparation of the necessary construction materials. These expenditures would be, for the most part, irrecoverable; however, they are not in short supply, and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of federal and local funds.

The commitment of these resources is based on the concept that residents in the immediate area, as well as the region, state, and nation, would benefit from the safer transportation system in this critical transportation artery to the most-populated and heavily visited city in California. This benefit is anticipated to outweigh the commitment of these resources.

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3.19 The Relationship between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

The proposed project involves tradeoffs between obtaining the long-term benefits of preventing the loss of human lives and property damage due to the possible collapse of the 6th Street Viaduct in a major earthquake against short-term impacts to the environment. Construction activities would result in temporary impacts that would cease upon completion of the viaduct construction. These impacts include air quality degradation associated with increased emissions of criteria pollutants; noise effects generated by heavy equipment operation; socioeconomic and community impacts from construction; impacts to utility systems caused by relocation and potential service interruption; generation of hazardous materials and wastes from construction; and intermittent roadway obstruction and traffic detours. These impacts would be mitigated, with the exception of air quality during certain phases of construction.

If the Retrofit Alternative were implemented, then the proposed project would provide a viable east-west link between Boyle Heights and Downtown Los Angeles via a seismically retrofitted structure that could withstand a design-level earthquake over the next 30-year period. If the Replacement Alternative were implemented, then the proposed project would provide a viaduct that meets functional and seismic safety standards for a period of at least 75 years.

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Chapter 4
California Environmental Quality Act Evaluation

Chapter 4 California Environmental Quality Act Evaluation

4.1 Determining Significance under CEQA

The proposed project is subject to federal, as well as City of Los Angeles (City) and state environmental review requirements because the City proposes the use of federal funds and the project requires a federal approval action. Project documentation, therefore, has been prepared in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The City is the project proponent and the lead agency under CEQA. Federal Highway Administration's (FHWA) responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable federal laws for this proposed project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

One of the primary differences between NEPA and CEQA is the way that significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement (EIS), or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated, and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an Environmental Impact Report (EIR) must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list mandatory findings of significance that also require the preparation of an EIR. There are no types of actions under NEPA that parallel the mandatory findings of significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

4.2 Resources Considered Not Relevant or Resulting in No Impacts

Section 3.1.3 of this EIR/EIS lists "farmland" as a resource that is considered not relevant to this proposed project. The resources determined to have no impacts from project implementation, as listed in Section 3.1.4, include growth and energy. Implementation of Alternative 1 – No Action would result in no impacts to any of the environmental resources under consideration; however, the Alkali Silica Reaction (ASR) causing the concrete to decompose throughout the 6th Street Viaduct would continue, resulting in further deterioration of the structure.

4.3 Less than Significant Effects of the Proposed Project

This section summarizes the resources that would have a less than significant impact from implementation of each project alternative. More-detailed analysis can be found in the respective sections within Chapter 3 of this document.

4.3.1 Alternative 2 – Retrofit

Land Use

Alternative 2 would not have any conflict with applicable land use plans and policies; however, Alternative 2 would not provide the City with an opportunity to designate 6th Street along the 6th Street Viaduct as a bikeway. Bicyclists who wish to cross the 6th Street Viaduct would have to continue using the outside traffic lanes and sidewalks at their own risk. Construction of Alternative 2 would also offer less opportunity for proposed future green project development within the area as planned under the Los Angeles River Revitalization Master Plan (LARRMP).

Traffic and Transportation/Pedestrian Facility

Alternative 2 would cause traffic disruption, sidewalk blockage, and parking space obstruction during the 2.5-year construction period. Any such effects would be highly localized, temporary, and of short duration. Implementation of a mandatory Work Area Traffic Control Plan (WATCP), outlined in the Standard Specifications for Public Works Construction and the Work Area Traffic Control Handbook, adopted by the City, would minimize this effect to a less than significant level.

Emergency Service

During the construction period, delays in emergency response time could occur due to roadway obstructions and partial closures. Implementation of the WATCP would minimize this effect to a less than significant level.

Hydrology and Floodplains

The stormwater collection design of the existing viaduct results in excessive runoff concentration during a major storm event causing clogging at the inlets located at Mateo Street. Under Alternative 2, the excessive runoff from the viaduct during major storm events would continue to occur. No impact to floodplains would occur since there would be no removal or extension of the center pier of the viaduct, only retrofit of the existing pier, which would result in essentially the same floodplain “footprint.”

Water Quality

Stormwater runoff from the construction site could contain erosion-related pollutants. A Stormwater Pollution Prevention Plan (SWPPP) and Monitoring Program would be prepared and implemented prior to and during construction activities to minimize water quality impacts. Special stormwater best management practices (BMPs) would also be installed and implemented to minimize debris deposition into the river.

Since there would be no permanent treatment BMP devices installed with this alternative, all stormwater runoff from the viaduct would be directly discharged to the river without being treated, similar to the existing condition.

Paleontology

No previously recorded paleontological sites were identified during the records search. A qualified paleontological monitor would be present at the site during excavation. If subsurface deposits are discovered, then the standard policy of Caltrans would be followed. If fossil remains are discovered, then the monitor would recover them. Earth-moving activities at the fossil site would be halted or diverted temporarily around the site to allow for the recovery of the remains.

Noise and Vibration

Construction Impacts

Noise impacts from Alternative 2 construction activities would be confined to a relatively narrow corridor extending along both sides of the roadway and corresponding to the construction sequence. Noise levels from construction activities at the nearest residences to the construction site are predicted to be well below the City’s limit of 75 A-weighted decibels (dBA). Minimal construction noise impacts are expected to occur.

During the construction period, the highest vibration levels would be caused by the impact pile driver, which would be operational during substructure construction. Buildings located adjacent to the pile driving location could temporarily experience the vibration effect. Since no fragile buildings or historic buildings are located within 50 ft of the proposed construction site, no adverse impacts from construction vibration to adjacent buildings are expected to occur.

Permanent Impacts

No permanent impact would occur after the construction is complete since traffic volumes would not increase as a result of the retrofit.

Biological Resources

No biological resources exist within the viaduct footprint where construction activities would occur, and no mature trees would be removed; hence, no adverse impacts to wildlife or plant species are anticipated. Although no cliff swallows or roosting bats were apparent underneath the 6th Street Viaduct during the survey, they may establish new nests or roosts under the viaduct deck at any time. A preconstruction survey would be conducted to confirm the absence or presence of any nesting birds or roosting bats. If found, steps would be taken to remove existing nests and/or roosts and to prevent the establishment of new nests or roosts prior to the beginning of the nesting season.

4.3.2 Alternative 3 – Replacement

Utilities

Alternative 3 could result in temporary impacts to utilities, such as an increase in utility demand and solid waste volume. Construction of Alternative 3 would cause temporary and permanent relocation of underground utility lines, such as sewer pipes and storm drain lines. Working in close coordination with the utility providers prior to the commencement of construction to develop a relocation plan would minimize impacts to service utilities.

Construction of Alternative 3 would result in potential periodic short- and extended-term shutdown of some railroad tracks on each side of the Los Angeles River to construct the new viaduct. Written construction agreements would be entered into with the railroad companies. Close coordination with the railroads' owners to work on the railroad during periods when specific tracks are not in active use and to avoid track closures to the extent feasible would minimize the impacts to railroad operations.

Hydrology and Floodplains

The new viaduct structure would be designed to adequately collect and route stormwater runoff on the viaduct to a stormwater treatment system prior to discharging to the river. None of the new bridge concepts would have a larger center river pier than the existing one. No impacts to floodplains and flood flow would occur.

Water Quality

Stormwater runoff from the construction site could contain erosion-related pollutants. An SWPPP and Monitoring Program would be prepared and implemented prior to and during construction to minimize water quality impacts. Special BMPs would also be installed and implemented to minimize debris deposition into the river.

Geology/Soil/Seismicity

Alternative 3 would replace the existing severely deteriorated viaduct with a new viaduct that is designed to meet current seismic safety standards required by Caltrans.

Paleontology

Similar to Alternative 2 described above.

Noise

Similar to Alternative 2 described above, but the impacts would occur for a longer period of time.

Biological Resources

Ornamental trees within the biological survey area have a limited potential to support nesting birds, which are protected by the Migratory Bird Treaty Act. A preconstruction survey would be conducted to identify any mature trees subject to removal prior to the commencement of construction activities. Measures for protection of potential cliff swallows or roosting bats would be similar to Alternative 2 described above.

4.4 Significant Environmental Effects of the Proposed Project

This section summarizes the environmental resources that are determined to be significantly affected by implementation of the proposed project, as outlined in Chapter 3 of this document.

4.4.1 Alternative 2 – Retrofit

Community Impacts

Construction of Alternative 2 has the potential to cause local roadway blockage and business disruption. The City of Los Angeles Maintenance Facility and one business located within the viaduct footprint would have to be relocated.

Utilities

Alternative 2 could result in temporary impacts to utilities, such as an increase in utility demand and solid waste volume. Construction of Alternative 2 would involve foundation work, which would require either temporary or permanent relocation of many underground utility lines, such as sewer pipes and storm drain lines. Working in close coordination with the utility providers to develop a utility relocation plan prior to the commencement of construction would minimize impacts.

Construction of Alternative 2 would result in potential periodic short- and extended-term shutdown of some railroad tracks on each side of the Los Angeles River to modify existing bent columns and foundations, and to add shear walls. Written construction agreements would need to be entered into with the railroad companies. Close coordination with the railroads' owners to allow work during periods when specific tracks are not in active use and to avoid track closures to the extent feasible would minimize the impacts to railroad operations.

Implementation of Alternative 2 would further reduce horizontal clearance between the center of the existing tracks and the retrofitted columns to approximately 8 ft, which is less than the current standard of 8.5 ft, as required by BNSF, and 10 ft, as required by Metrolink. The impact is unavoidable.

Visual/Aesthetics

Alternative 2 would encase most of the existing columns with heavy steel casing covered by architectural mortar to recreate the historic column shape, resulting in a more massive column configuration. In addition, construction of sheer walls between many of the columns would limit many of the views under the viaduct. View restriction under the viaduct deck could affect the activities that benefit from the present views under the viaduct, such as filming. The improvement would not likely change the overall visual quality of any of the associated landscape units.

Cultural Resources

During the construction period, potential impacts to the historic-era archaeological site (no. 19-003683) would be mitigated to a level of less than significant through the establishment of an Environmental Sensitive Area (ESA) Action Plan. The ESA would be fenced off from construction activities and require monitoring of ground-disturbing activities by a qualified archaeologist and Native American monitor, and the Action Plan would require training of construction workers. There is also the potential to encounter archaeological materials during ground disturbance. Monitoring during ground-disturbing activities by a qualified archaeologist and a Native American monitor would mitigate potential impacts to buried cultural resources to a level of less than significant.

Alternative 2 would alter and/or destroy many of the historic elements, features, and spatial relationships that characterize the viaduct. Implementation of Alternative 2 would result in a significant impact on the 6th Street Viaduct because it would materially alter in an adverse manner those physical characteristics of the historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources (CRHR) (CEQA Guidelines, Section 15064.5(b)(2)(A).

As described in Chapter 3, Section 3.1.2, the 6th Street Viaduct is also a contributing feature of a CRHR-eligible historic district[112]. Alternative 2 would result in a less than significant impact on the historic district because the structure would still exist and the character-defining features of the bridge, such as the pylon and main spans, would still remain. Therefore, the proposed project would not materially alter in an adverse manner those physical characteristics, also called character-defining features, of the viaduct in the overall context of the historic district that convey its historical significance and justify its eligibility for inclusion in the CRHR (CEQA Guidelines, Section 15064.5(b)(2)(A).

Geology/Soil/Seismicity

Alternative 2 would only prevent collapse under a design seismic event. Due to railroad access restrictions, Bent 12 would not be retrofitted. Although the retrofitted viaduct would not collapse in a major earthquake, the likely damage would require its replacement. Furthermore, the design life expectancy with this alternative is only about 30 years, until the ASR would overtake the structure, requiring its replacement.

Hazardous Waste/Materials

A preliminary site investigation conducted along the viaduct corridor detected petroleum hydrocarbon at several soil samples and volatile organic compounds (VOCs) at many groundwater samples, and soils near US 101 may contain aerially deposited lead (ADL) generated by historic motor vehicle exhaust. In addition, the viaduct and appurtenances may have asbestos-containing materials (ACMs) in the form of coatings, insulation, and/or expansion joint compounds and lead-based paint (LBP) coatings; these materials could be released into the air during construction.

Air Quality

Construction Impacts

Construction impacts on air quality are analyzed in Section 3.15.3.3. Under the worst-case day of the construction period (i.e., viaduct closed, traffic detour in effect), the regional emissions of

[112] SHPO letter to Caltrans, Reply to FHWA 860919Z, no date

nitrogen oxides (NO_X) would exceed the daily significance threshold set forth by the South Coast Air Quality Management District (SCAQMD).

Operational Impacts

Permanent impacts on air quality under NEPA are determined by comparing the project-related emissions level to the No Action baseline condition; however, under CEQA, the impacts to air quality consider the changes in pollutant emission levels between the baseline year (2007), post-operation years including opening year (2014) [SCAQMD requirement], and horizon year (2035) with and without project conditions. Since the proposed project is neither a new facility, nor does it include additional traffic lanes, no capacity enhancement or change in traffic pattern is anticipated. As such, the future (post-construction) project traffic volumes and associated air pollutant emissions would be based on the ambient growth rate; the no action and proposed project traffic and associated emissions would be the same, therefore no significant impacts from implementation of the project, with the exception of improved seismic safety, are expected to occur.

Mandatory Findings of Significance

The project site is currently developed and devoid of significant fish, wildlife, and/or plant populations. Construction activities would not degrade or have adverse impacts on the natural environment. Alternative 2 would alter and/or destroy historic materials, features, and spatial relationships that characterize the viaduct. Implementation of Alternative 2 would result in an adverse effect under Criterion *ii* of the Secretary of the Interior's *Standards for the Treatment of Historic Buildings*. The impacts of Alternative 2 on the viaduct are considered adverse and potentially significant under CEQA.

4.4.2 Alternative 3 – Replacement

Land Use

Alternative 3 would require some land acquisition, which would result in a loss of several industrial buildings and relocation of up to 12 businesses situated adjacent to the viaduct. The loss of industrial and commercial uses and associated jobs would be inconsistent with the objective of the two redevelopment projects administered by the Community Redevelopment Agency of the City of Los Angeles.

Community

Alternative 3 would require the relocation of up to 12 businesses within the vicinity of the 6th Street Viaduct. Temporary roadway blockage and business disruption is expected to occur throughout the 4-year construction period. Construction of the proposed project would require closure of the viaduct during the construction period, resulting in traffic detours and delay along the street network on both sides of the Los Angeles River. This impact would be borne almost exclusively by local area residents and businesses. In addition to increased local congestion and reduced mobility, area residents would also be affected by elevated air pollutant emissions and ambient noise levels associated with the operation and transport of heavy construction equipment.

Traffic and Transportation/Pedestrian Facility

Construction of Alternative 3 would require full closure of the 6th Street Viaduct for up to 4 years, resulting in traffic detours along the street network east and west of the river. Based on the results of the traffic analysis, up to 13 out of 31 intersections under study would be adversely impacted. Pedestrian circulation blockage and the loss of some 50 public parking spaces around the viaduct would also occur during the construction phase.

Emergency Services

During the proposed project’s 4-year construction period, delays in emergency response time could occur due to closure of the 6th Street Viaduct and related traffic congestion at intersections along the detour routes. The City would implement a mandatory WATCP and closely coordinate with emergency service providers to ensure that the construction schedule and traffic detour information are available to relevant parties in advance.

Visual/Aesthetics

Replacement of the viaduct and the loss of this historic resource would change the visual character of the landmark. The various bridge replacement concepts would be expected to alter the existing views to varying degrees. The most notable visual impact would result from the replacement of the historic structure with a new structure of modern bridge design; however, each of the designs considered would maintain the visual qualities (i.e., vividness, memorability, unity, and intactness) experienced by viewers of the landmark.

Cultural Resources

During the construction period, potential impacts to the historic-era archaeological site (no. 19-003683) would be mitigated to a level of less than significant through the establishment of an ESA Action Plan, which would require fencing the area off from construction activities, monitoring of ground-disturbing activities by a qualified archaeologist and Native American monitor, and training construction workers. There is also the potential to encounter archaeological materials during ground disturbance. Monitoring during ground-disturbing activities by a qualified archaeologist and a Native American monitor would mitigate potential impacts to buried cultural resources to a level of less than significant.

Alternative 3 would destroy the historic elements, features, and spatial relationships that characterize the viaduct as an individual resource and as a contributor to a CRHR-eligible historic district. Implementation of Alternative 3 would result in a significant impact because it would demolish in an adverse manner those physical characteristics of the historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources (CEQA Guidelines, Section 15064.5(b)(2)(A)).

Hazardous Waste/Materials

Similar to Alternative 2 described above.

Air Quality

Construction Impacts

Construction impacts are analyzed in Section 3.15.3.3. Under the worst-case day of the construction period (i.e., viaduct closed, traffic detour in effect), the regional emissions of nitrogen oxides (NO_X) would exceed the daily significance threshold set forth by the SCAQMD.

Operational Impacts

Construction of Alternative 3 would require closure of the roadway and viaduct between Mateo Street and the US 101 NB on-ramp during the 4-year period of construction. The detoured daily traffic would be diverted to nearby local roadways within the project area. This would result in a change of traffic patterns and the associated mobile source emissions in the area during the construction years.

For the postconstruction operational years, including horizon year 2035, the traffic patterns on the replaced viaduct would be the same as with the No Action Alternative because there would be no additional traffic lanes; therefore, no changes in the LOS or posted speed are expected as a result of implementation of the project. The future project traffic volumes and associated air pollutant emissions would be based only on ambient growth. Consequently, the pollutant emissions from the no-build and build scenarios would be the same; therefore, no impacts from the project are anticipated. The following subsections present the analysis results of various air quality impact categories.

Regional Operational Impact

For each study scenario, the peak-hour VMT data and projected average speeds within the project study area were derived in the project's traffic study. Emission factors for average travel speeds were obtained using the EMFAC2007 model. Table 4-1 summarizes the results of the project's operational emissions analysis for the opening year (2014) and horizon year (2035).

Table 4-1
Summary of Replacement Alternative Operational Regional Emissions (lbs/day)

Scenario/Alternative	CO	VOC	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Year 2007 – CEQA Baseline	1,692.4	73.6	481.9	1.9	24.0	16.6
Year 2014 – Opening Year	1,055.1	40.5	309.3	2.1	23.6	15.7
Net Change from 2007 CEQA Baseline	-641	-33	-172	0.2	-0.4	-0.9
SCAQMD Significance Threshold	550	55	55	150	150	55
Exceed Threshold?	No	No	No	No	No	No
Year 2035 – Horizon Year	494.9	18.2	111.2	2.6	25.3	15.7
Net Change from 2007 CEQA Baseline	-1,198	-55	-371	0.7	1.3	-0.9
Exceed Threshold?	No	No	No	No	No	No

Notes:
1. Emissions are calculated using emission factors from EMFAC2007, at the projected average speed, and VMT of each roadway segment within the study area (from Traffic Analysis Report).
2. VMT, average speed data an the calculation worksheets are provided in the Air Quality Technical Report

Source: *Air Quality Technical Report* (Parsons, 2008a).

The data in Table 4-1 show that during the detour years (represented by year 2014, which constitutes the worst-case traffic during detour years), the regional emission level of all pollutants would be less than the existing or base-year of 2007, with the exception of SO_2 which shows a slight increase over the base-year emission level. The projected emissions reduction is due to application of the existing, and newly adopted, regulations for mobile source control measures. These include the use of alternative or reformulated fuels, the use of retrofit controls on engines, and installing or encouraging the use of new engines and cleaner in-use heavy-duty vehicles. Similar results are shown for year 2035, with the exception of PM_{10} emissions, which show an increase of 1.3 over the 2007 emissions level. The increase in SO_2 emissions in 2014 and 2035 and the increase in PM_{10} emissions in 2035, which are attributable to the proposed project's build alternatives, are well below the CEQA operational thresholds of 150 pounds per day; therefore, regional operational emissions would be less than significant pursuant to CEQA.

Detour Traffic Local Operation Impact

The local construction emissions of criteria pollutants from the traffic along the detour route during the detour years were calculated and incorporated in the analysis. To complement the above analysis, the post-construction daily indirect construction emissions of $PM_{2.5}$ and PM_{10} along the studied local roadways were estimated for opening and horizon years to provide comparison with the year 2007.

Table 4-2 presents the estimated PM_{10} and $PM_{2.5}$ daily emissions attributable to total vehicular traffic on the adjacent roadways. These projected values are based on estimates of $PM_{2.5}$ and PM_{10} emissions from tailpipe, break wear, and tire wear sources. The projected daily emissions show that although the traffic volumes increase compared to base year 2007, the particulate emission levels would change only slightly compared to the 2007 level. This is due to the use of improved engines and cleaner fuel in the future years.

Table 4-2
Estimate of PM_{10} and $PM_{2.5}$ along Local Roadways during Post-Construction Years (Opening and Horizon Years)

Local Roadway	PM_{10} Emission (lbs/day)					$PM_{2.5}$ Emission (lbs/day)				
	2007 CEQA Base	2014 Opening Year	2035 Horizon Year	Increment		2007 CEQA Base	2014 Opening Year	2035 Horizon Year	Increment	
				2014	2035				2014	2035
6th Street - Soto Street to Central Avenue	3.0	2.8	3.0	-0.2	0.0	2.1	1.8	1.9	-0.3	-0.2
1st Street - Soto Street to Central Avenue	3.5	3.4	3.6	-0.2	-0.1	2.4	2.3	2.2	-0.1	-0.2
4th Street - Soto Street to Central Avenue	5.9	6.2	6.7	0.3	0.8	4.1	4.2	4.1	0.1	0.0
7th Street - Soto Street to Central Avenue	2.4	2.3	2.5	-0.1	0.1	1.7	1.5	1.5	-0.2	-0.2
Central Avenue - 1st Street to 7th Street	1.2	1.1	1.2	-0.1	0.0	0.9	0.8	0.8	-0.1	-0.1
Alameda Street - 1st Street to 7th Street	2.5	2.4	2.6	-0.1	0.0	1.7	1.6	1.6	-0.1	-0.1
Mateo Street - 6th Street to 7th Street	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Santa Fe Avenue - 6th Street/ Frontage Road to 7th Street	0.3	0.2	0.2	-0.1	0.0	0.2	0.2	0.2	0.0	0.0
Boyle Avenue - 1st Street to 7th Street	1.5	1.4	1.5	-0.1	0.0	1.0	0.9	1.0	-0.1	0.0
Soto Street - 1st Street to 7th Street	3.8	3.6	3.8	-0.2	0.0	2.6	2.4	2.4	-0.2	-0.2

Source: *Air Quality Technical Report* (Parsons, 2008a).

Mobile Source Toxic Air Contaminants

Control of TACs is required by both federal and state regulations. The SCAQMD currently provides rules and policies that are oriented for analyzing TACs from land use projects. The following analysis provides an assessment of project operational emissions of MSATs for comparison with the CEQA baseline (year 2007) and the indirect construction emissions during the detour years. The analysis was conducted using the projected traffic data, including local roadway traffic volumes and VMT, vehicle mix, traffic diversion data, average speed, and the associated changes in MSATs for the project alternatives.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs. Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of many EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or state level.

In California, MATES-II and MATES-III studies included monitoring of more than 30 toxic air pollutants and an effort to estimate cancer risk from exposure to DPMs. The study identified particulate emissions, which were attributed mostly to diesel engines, as an important cancer risk factor. According to MATES-II, DPMs accounted for approximately 70 percent (84 percent according to MATES-III) of the total cancer risk associated with the investigated group of air pollutants. MATES-II also provided regional trends in estimated outdoor cancer risk from air toxics emissions.

The EPA is in the process of assessing the risks of various kinds of exposures to MSAT emissions. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken from EPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is characterized as a probable human carcinogen, based on limited evidence in humans and sufficient evidence in animals.

- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is characterized as a probable human carcinogen based on the increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust (DE)** is characterized as a likely carcinogen to humans by inhalation from environmental exposures. Diesel exhaust, as reviewed in this document, is the combination of DPM and DE organic gases. Diesel exhaust also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

Other studies have addressed MSAT health impacts on humans in proximity to roadways. The Health Effects Institute, which is a nonprofit organization funded by EPA, FHWA, and the transportation industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

The SCAQMD MATES-II and MATES-III studies offer an opportunity to estimate air toxics-related health risks from roads. While at the regional scale the study approximates air toxics-related health risk from roads, it was not designed to provide accurate approximations of risk as a function of proximity to roads. Monitoring data near freeways were limited to three sites, and modeling results were not finely resolved to provide concentration gradients near roads. The MATES-II monitoring results are consistent with other research indicating that pollutant concentrations generally diminish as distance is increased from the source and are often close to or approximately the same as background conditions beyond 100 meters from a road. Furthermore, the study cautions that results are highly dependent upon the unit risk factors assumed, particularly for DPM, for which uncertainties are an order of magnitude or more. At the microscale, MATES-II was not designed to effectively assess changes in pollutant concentrations with varying distance from roadways; therefore, the available methodology and techniques need to be refined so that they provide tools and information that would be useful to alleviate the uncertainties listed above and enable a more comprehensive evaluation of specific health impacts.

Estimate of Project Emissions of Primary MSATs. The local roadways subject to traffic diversion would be affected by additional traffic volumes during the duration of construction. Emissions of priority MSATs were estimated along these local roadways. Emissions were also estimated for years 2035 and 2007 for comparison purposes. The 2007 emissions are included to show the effect of current VMT levels and the degree of control plans on MSAT emissions.

The analysis was conducted for six air toxics that are identified as priority MSATs by EPA. The EMFAC2007 model was used to provide the emission factors of total organic gas (TOG) and PM in Los Angeles County for the analysis years (i.e., base year 2007, year 2014 both as the opening year and as a conservative representative of detour years' traffic, and horizon year 2035). The PM data from EMFAC provide information for DPM. For the remaining priority MSATs (i.e., acrolein, acetaldehyde, formaldehyde, benzene, and 1,3-butadiene), CARB-supplied speciation factors can be used to obtain each MSAT compound as a fraction of TOG data.

The UC Davis-Caltrans *Project-Level MSAT Analysis Spreadsheet Tool*[113] was used to provide a comparison of MSAT emissions for the local roadways with and without the diverted traffic. The analysis was conducted for the affected local roadways based on the increase in traffic volume during detour years, as estimated by the traffic study. The traffic volumes and average speeds during peak and non-peak hours, percent of trucks, and VMTs were used as input data. The spreadsheet tool applies the traffic activity data to the emission factors and estimates MSAT emissions for different scenarios. The EMFAC2007 model was used to provide the emission factors of TOG and PM in Los Angeles County for the analysis years (i.e., base year 2007, year 2014 both as opening year and as a conservative representative of traffic during the detour years, and horizon year 2035).

Table 4-3 presents the estimated daily emissions for each analyzed local roadway. As shown, for all studied roadways, MSAT emissions are projected to decline markedly in the future compared to the base year 2007. This decrease is prevalent for all of the priority MSATs, and it is directly due to the improved pollution emission performance of a modernizing fleet of all diesel-fueled vehicles, which is a trend that is anticipated to continue throughout the planning horizon year. The estimated emissions increase on the adjacent roadways for the detour years 2011 to 2014 would be temporary, due to diverted traffic volume increasing along the detour route.

Unavailable Information for Project-Specific MSAT Impact Analysis

Evaluating the environmental and health impacts from MSATs on a proposed highway/roadway project would involve several key elements, including emissions modeling, dispersion modeling to estimate ambient concentrations resulting from the estimated emissions, exposure modeling to estimate human exposure to the estimated concentrations, and final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

[113] UC Davis and Caltrans, 2006. *Estimating Mobile Source Air Toxics Emissions: A Step-by-Step Project Analysis Methodology.* December 28.

Table 4-3
Estimate of Priority MSAT Emissions for the Local Roadways within Project Study Area [a] (grams/day)

Year/Scenario	DPM	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde
4th Street – Soto Street to Central Avenue						
Existing – 2007	1,599	1,686	322	444	73	1,389
Detour Year – 2014/ Viaduct Open	1,129	951	168	279	38	828
Detour Year – 2014/ Viaduct Closed	1,285	1,082	191	317	43	942
Horizon Year – 2035/ Build and No-Build	496	397	58	112	13	327
7th Street – Soto Street to Central Avenue						
Existing – 2007	603	532	101	151	23	459
Detour Year – 2014 / Viaduct Open	398	281	49	91	11	262
Detour Year – 2014 / Viaduct Closed	585	413	73	134	16	384
Horizon Year – 2035 / Build and No-Build	175	118	17	38	4	106
1st Street – Soto Street to Central Avenue						
Existing – 2007	771	680	129	193	29	587
Detour Year – 2014 / Viaduct Open	514	363	64	118	14	337
Detour Year – 2014 / Viaduct Closed	538	380	67	123	15	353
Horizon Year – 2035 / Build and No-Build	226	152	22	49	5	136
South Soto Street – 7th Street to 1st Street						
Existing – 2007	620	654	125	172	28	539
Detour Year – 2014 / Viaduct Open	409	345	61	101	14	300
Detour Year – 2014 / Viaduct Closed	432	364	64	107	15	317
Horizon Year – 2035 / Build and No-Build	180	144	21	41	5	119

[a] Project study area includes the roadways that are studied in the *Traffic Analysis Report*.

[b] Traffic data used for calculations are provided in the *Air Quality Technical Report*.

Source: *Air Quality Technical Report* (Parsons, 2008a).

- **Emissions.** The UC Davis-Caltrans methodology used in this analysis provides a tool to compare build and no-build project alternatives (i.e., daily traffic of local roadway with and without detours planned during the construction years), and to estimate how the alternatives affect MSAT emissions; however, calculation of the absolute value for project-level MSAT emissions requires more information, which is still evolving.
- **Dispersion.** The tools to predict how MSATs disperse are limited. The performance of currently available dispersion models is more useful for projecting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program is conducting research on best practices in applying models and

other technical methods in the analysis of MSATs. This work will also focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, there is a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations. For example, in the SCAB, the number of existing MATES-II monitoring stations is limited; therefore, there are no sufficient monitoring data for local areas throughout the SCAB to establish background concentrations.

- **Exposure Levels and Health Effects.** Even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis prevent reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is hard to calculate annual concentrations of MSATs near roadways accurately and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology, which affects emissions rates, over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts; therefore, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emission impacts on human health cannot be made at the project level. The amount of MSAT emissions from each of the project alternatives, and MSAT concentrations or exposures created by each of the project alternatives, cannot be predicted with enough accuracy to be useful in estimating health impacts. As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool at the project level; therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination whether any of the alternatives would have "significant adverse impacts on the human environment."

In conclusion, MSAT emissions from the proposed project alternative implementation would marginally increase in certain locations during the construction years when the detour plan would be in effect. At the same time (i.e., during detour years), the MSAT emissions would be marginally lower in areas near the closed segment of the 6th Street roadway and viaduct;

however, concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be defined with any level of confidence.

Toxic Air Contaminants

The greatest potential for TAC emissions would be related to DPM emissions associated with heavy equipment operations during grading and excavation activities. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. “Individual Cancer Risk” is the likelihood that a person exposed to concentrations of TACs over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. Given the construction schedule of 4 years, and considering that most grading and excavation activities would occur intermittently during different construction phases, the proposed project would not result in a long-term (i.e., 70 year) substantial source of TAC emissions with no residual emissions after construction and corresponding individual cancer risk. As such, potential impacts related to TAC emissions during construction would be less than significant, and no mitigation measures are required.

Mandatory Findings of Significance

The project site is currently developed and devoid of significant fish, wildlife, and/or plant populations. Construction activities would not degrade or have adverse impacts on the natural environment. Implementation of Alternative 3 would result in an adverse effect under Criterion *i* of the Secretary of the Interior’s *Standards for the Treatment of Historic Buildings.* The impacts of Alternative 3 on the viaduct are considered adverse and potentially significant under CEQA.

4.5 Unavoidable Significant Environmental Effects

Even with implementation of the proposed mitigation measures, some of the impacts identified would still remain significant as summarized herein.

4.5.1 Alternative 2 – Retrofit

Cultural Resources

Implementation of the ESA Action Plan would mitigate potential impacts to archaeological site 19-003683 to a level of less than significant.

Generally, a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Standards) or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995), Weeks and Grimmer, shall be considered as mitigated to a level of less than a significant impact on the historical resource (CEQA Guidelines Section 15064.5(b)(3)). Elements of Alternative 2 could be designed in a manner consistent with the Standards, but Alternative 2 overall would materially alter in an adverse manner those physical characteristics that convey the viaduct's significance, and the viaduct would not retain sufficient integrity for inclusion in the CRHR.

Lastly, implementation of the Standards in the proposed retrofit design and subsequent construction activities would mitigate impacts to the CRHR-eligible historic district to a level of less than significant because the character-defining features of the bridge, such as the pylon and main spans, would still remain and the overall integrity of the historic district would not be substantially diminished.

Utility – Railroad

Implementation of Alternative 2 would further reduce the substandard horizontal clearance between the existing tracks and the retrofitted columns of the viaduct. The impact is unavoidable.

Visual/Aesthetics

The restriction of views under the viaduct resulting from the seismic shear walls to be constructed between the columns cannot be avoided.

Geology/Soil/Seismicity

No other retrofit options are available to protect the viaduct from collapse for more than the design life expectancy of approximately 30 years due to the ongoing ASR deterioration, which cannot be stopped. The retrofitted viaduct would have to be replaced after this time.

Air Quality

Implementation of the recommended mitigation measures (refer to Section 3.15.6.3) would reduce construction emissions for all pollutants; however, as shown in Table 4-4, the regional emissions of NO_X would remain in exceedance of the SCAQMD CEQA significance threshold during the most intense activities through the construction period. Therefore, even with mitigation measures, regional emissions of NO_X would remain significant under CEQA and unavoidable during project construction.

Table 4-4
Estimate of Mitigated Regional Construction Emissions [a] (lbs/day)

Construction Year	VOC	NO_X [b]	CO	PM_{10} [c]	$PM_{2.5}$ [c]
YEAR 1					
Peak Concurrent Activities (Month 6)					
Mitigated Emission	35	401 (342)	228	56	24
Regional Daily Significance CEQA Threshold	75	100	550	150	55
Exceed CEQA Threshold?	No	**Yes**	No	No	No
YEAR 2					
Peak Concurrent Activities (Month 12)					
Mitigated Emission	22	236 (197)	123	19	12
Exceed CEQA Threshold?	No	**Yes**	No	No	No
YEAR 3					
Peak Concurrent Activities (Month 1)					
Mitigated Emission	28	259 (216)	148	33	17
Exceed CEQA Threshold?	No	**Yes**	No	No	No
Peak Concurrent Activities (Month 8)					
Mitigated Emission	29	257 (212)	152	17	14
Exceed CEQA Threshold?	No	**Yes**	No	No	No
YEAR 4					
Peak Concurrent Activities (Month 1)					
Mitigated Emission	18	167 (139)	102	14	9
Exceed CEQA Threshold?	No	**Yes**	No	No	No

[a] Mitigation reductions are applied to onsite construction activities. The emission values in the table are composed of on-road construction mitigation and mitigated onsite (off-road) emissions.
[b] Mitigation measure consists of maintaining construction equipment properly tuned. Exhaust emissions reduction is 5 percent for all criteria pollutants. For NO_X reduction, use of aqueous diesel fuel, plus oxidation catalyst for the construction equipment, would reduce onsite emissions up to 28 percent. These data are shown in parentheses.
[c] PM_{10} emissions estimates are based on compliance with SCAQMD Rule 403 requirements for fugitive dust suppression, plus additional watering of construction area. Additional watering would provide a 70 percent reduction in fugitive PM_{10}, as well as fugitive $PM_{2.5}$ emissions.

Source: *Air Quality Technical Report* (Parsons, 2008a).

4.5.2 Alternative 3 – Replacement

Land Use

Conversion of commercial/industrial land use in the vicinity of the viaduct corridor cannot be avoided with construction of the new viaduct.

Traffic and Transportation/Pedestrian Facility

Eleven out of 13 impacted intersections could not be mitigated without causing further right-of-way impacts.

Emergency Services

Even with implementation of a Traffic Management Plan (TMP), delays in emergency response could occur at impacted intersections along the detour routes during the 4-year construction period.

Cultural Resources

Implementation of the ESA Action Plan would mitigate potential impacts to archaeological site 19-003683 to a level of less than significant.

Under CEQA and case law, relocation of a historical resource is the only mitigation measure when demolition is proposed. Relocation of the viaduct is not a feasible alternative due to the deterioration of the concrete which has resulted from the Alkali-Silica Reaction. Therefore, adverse impacts due to the proposed demolition of the historic viaduct and the CRHR-eligible historic district cannot be mitigated.

Air Quality

Similar to Alternative 2 described above.

4.6 Significant Irreversible Environmental Changes

Significant irreversible environmental changes have been discussed in Section 3.18 of this document.

4.7 Growth-Inducing Impacts

The main objective of the proposed project is to seismically improve the ASR-damaged 6th Street Viaduct. Neither the retrofit nor replacement alternatives would result in traffic capacity enhancement. The proposed project is therefore not considered growth inducing.

4.8 Global Climate Change

4.8.1 Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization’s Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas[114] (GHG) emissions reduction

[114] Greenhouse gases related to human activity, as identified in AB 32, include: carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23, HFC-134a*, and HFC-152a*.

and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of AB 1493, California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. Assembly Bill 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80 percent below the 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. Assembly Bill 32 sets the same overall GHG emissions reduction goals while further mandating that the California Air Resources Board (CARB) create a plan that includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this Executive Order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Climate change and GHG reduction is also a concern at the federal level. At this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change; however, California, in conjunction with several environmental organizations and several other states, sued to force the U.S. Environmental Protection Agency (EPA) to regulate GHGs as a pollutant under the Clean Air Act (CAA) (*Massachusetts vs. Environmental Protection Agency et al.*, U.S. Supreme Court No. 05–1120. 549 U.S. ________. Argued November 29, 2006—Decided April 2, 2007). The court ruled that GHGs do fit within the CAA's definition of a pollutant and that EPA does have the authority to regulate GHGs. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting GHG emissions.

4.8.2 Affected Environment

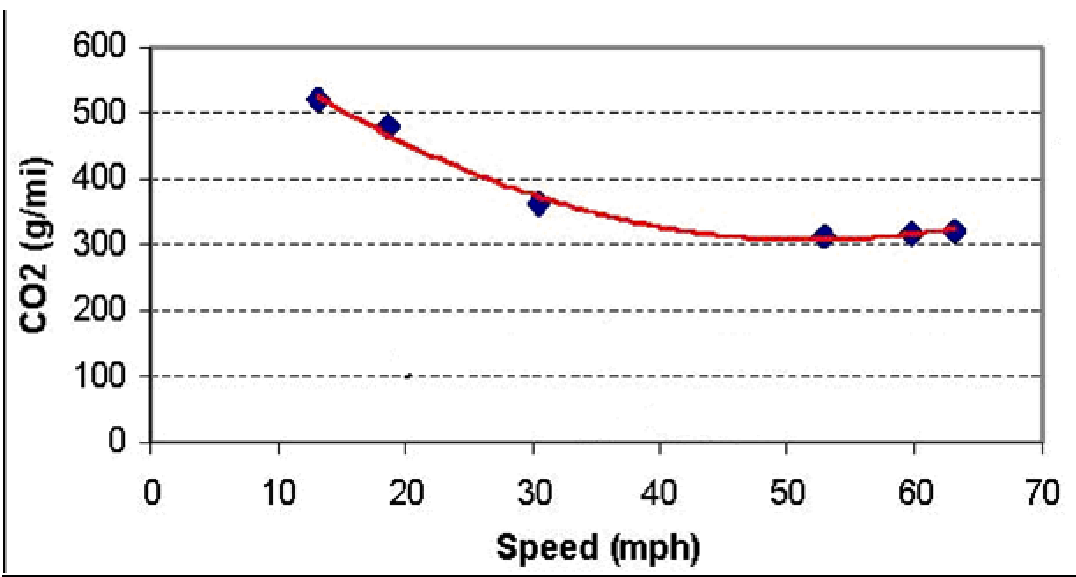
According to a recent white paper by the Association of Environmental Professionals (AEP)[115], "an individual project does not generate enough greenhouse gas emissions to significantly

[115] Hendrix, Michael and Wilson, Cori. *Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), p. 2.

influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases.

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, Caltrans has created and is implementing the *Climate Action Program at Caltrans* (December 2006). Transportation's contribution to GHG emissions is dependent on 3 factors: the types of vehicles on the road, the type of fuel the vehicles use, and the time/distance the vehicles travel.

One of the main strategies in Caltrans's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (zero to 25 miles per hour [mph]) and speeds over 55 mph; the most severe emissions occur from zero to 25 mph (see Figure 4-1). Relieving congestion by enhancing operations and improving travel times in high-congestion travel corridors will lead to an overall reduction in GHG emissions.



Source: Center for Clean Air Policy—http://www.ccap.org/Presentations/Winkelman%20TRB%202004%20(1-13-04).pdf

Figure 4-1 Fleet CO_2 Emissions vs. Speed (Highway)

4.8.3 Environmental Consequences

Climate change, as it relates to manmade GHG emissions, is by nature a global and cumulative impact. According to the AEP, in its paper titled *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents*[116], "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases." The following GHG emissions estimate is presented for the purpose of disclosing all project-related emissions. The analysis was performed for only the Alternative 3 scenario to represent the worst case.

Table 4-5 summarizes the annual GHG emissions that would occur within the project region from the proposed project during detour year 2014 and horizon year 2035. Sources considered in these emission calculations are the same as those analyzed for criteria pollutants. For the detour year, the total GHGs are presented as combined emissions from project-related detours, associated with other traffic within project corridor, and emissions from the simultaneous demolition of the old bridge.

Table 4-5
Annual GHG Emissions Associated with Proposed Alternative 3 Implementation

Project Scenario/Roadway Segments	Emissions (Metric Tons per Year)			
	CO_2	CH_4	N_2O	CO_2e
Base Year 2007				
6th Street – Soto Street to Central Avenue	3,809	0.3	0.3	3,900
1st Street – Soto Street to Central Avenue	4,552	0.4	0.3	4,666
4th Street – Soto Street to Central Avenue	7,662	0.6	0.6	7,854
7th Street – Soto Street to Central Avenue	3,154	0.3	0.2	3,233
Central Avenue – 1st Street to 7th Street	1,573	0.1	0.1	1,611
Alameda Street – 1st Street to 7th Street	3,285	0.3	0.2	3,367
Mateo Street – 6th Street to 7th Street	160	0.0	0.0	164
Santa Fe Avenue – 6th Street to 7th Street	330	0.0	0.0	338
Boyle Avenue – 1st Street to 7th Street	1,923	0.2	0.1	1,969
Soto Street – 1st Street to SR 60 eastbound on-ramp	4,866	0.4	0.4	4,988
Total Year 2007	**31,315**	**2.6**	**2.3**	**32,088**
Year 2014 – No Action (Viaduct Open)				
6th Street – Soto Street to Central Avenue	4,118	0.2	0.3	4,212
1st Street – Soto Street to Central Avenue	5,078	0.2	0.4	5,200
4th Street – Soto Street to Central Avenue	9,272	0.4	0.7	9,495
7th Street – Soto Street to Central Avenue	3,426	0.2	0.3	3,509

[116] AEP, 2007. Association of Environmental Professionals. *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents.*

Table 4-5
Annual GHG Emissions Associated with Proposed Alternative 3 Implementation

Project Scenario/Roadway Segments	Emissions (Metric Tons per Year)			
	CO_2	CH_4	N_2O	CO_2e
Central Avenue – 1st Street to 7th Street	1,710	0.1	0.1	1,750
Alameda Street – 1st Street to 7th Street	3,621	0.2	0.3	3,708
Mateo Street – 6th Street to 7th Street	172	0.0	0.0	175
Santa Fe Avenue – 6th Street to 7th Street	354	0.0	0.0	361
Boyle Avenue – 1st Street to 7th Street	2,092	0.1	0.1	2,139
Soto Street – 1st Street to SR 60 eastbound on-ramp	5,307	0.2	0.4	5,435
Total Year 2014 – No Action	**35,149**	**1.7**	**2.6**	**35,983**
Year 2014 – With Project (Viaduct Closed)				
6th Street – Soto Street to Central Avenue	641	0.0	0.0	656
1st Street – Soto Street to Central Avenue	5,325	0.3	0.4	5,453
4th Street – Soto Street to Central Avenue	10,208	0.5	0.8	10,453
7th Street – Soto Street to Central Avenue	5,554	0.3	0.4	5,688
Central Avenue – 1st Street to 7th Street	1,478	0.1	0.1	1,512
Alameda Street – 1st Street to 7th Street	3,621	0.2	0.3	3,708
Mateo Street – 6th Street to 7th Street	202	0.0	0.0	206
Santa Fe Avenue – 6th Street to 7th Street	354	0.0	0.0	361
Boyle Avenue – 1st Street to 7th Street	2,082	0.1	0.1	2,130
Soto Street – 1st Street to SR 60 eastbound on-ramp	5,599	0.3	0.4	5,733
Total Roadway Traffic Emissions	**35,064**	**1.7**	**2.6**	**35,900**
Construction Emissions – Detour Year 2014	3,259	0.01	0.01	3,262
Total Year 2014 – Proposed Project (Alternative 3)	**38,322**	**1.7**	**2.6**	**39,162**
Net Change from 2007	**7,008**	**-0.9**	**0.3**	**7,074**
Net Change from No-Action Scenario	**3,173**	**0**	**0**	**3,179**
Horizon Year 2035 – No-Action/ Proposed Project				
6th Street – Soto Street to Central Avenue	5,205	0.1	0.4	5,318
1st Street – Soto Street to Central Avenue	6,414	0.1	0.5	6,561
4th Street – Soto Street to Central Avenue	11,741	0.2	0.9	12,009
7th Street – Soto Street to Central Avenue	4,312	0.1	0.3	4,411
Central Avenue – 1st Street to 7th Street	2,154	0.0	0.1	2,201
Alameda Street – 1st Street to 7th Street	4,593	0.1	0.3	4,698
Mateo Street – 6th Street to 7th Street	228	0.0	0.0	232
Santa Fe Avenue – 6th Street to 7th Street	445	0.0	0.0	454
Boyle Avenue – 1st Street to 7th Street	2,641	0.0	0.2	2,698
Soto Street – 1st Street to SR 60 eastbound on-ramp	6,713	0.1	0.5	6,866
Total Year 2035 – Horizon Year	**44,448**	**0.8**	**3.2**	**45,449**

One metric ton equals 2,204.6 lbs

CO_2e = carbon dioxide equivalent of combined emissions of all GHGs. The CO_2-equivalent emission of each GHG is the emission rate multiplied by its corresponding global warming potential (GWP). The GWPs for CH_4 and N_2O are 21 and 310, respectively.

Source: Air Quality Technical Report (Parsons, 2008a).

The data in Table 4-5 show that in each analyzed future year, annual operational carbon dioxide (CO_2) emissions would increase from year 2007 baseline; however, there is no significance criterion established to evaluate the project GHG emission impacts.

Table 4-5 shows that during the construction years the GHG emissions would increase by approximately 9 percent between the without and with project scenarios. As shown, this increase is due to construction activities. For other future years from opening year 2014 through the horizon year 2035, there would be no change compared to the without project baseline (No Action) because the project would not increase capacity, fleet mix, or traffic patterns. Because no significance threshold has been established to compare the effect between the without and with project conditions, no determination of significance for construction years emissions of GHG has been made for this impact.

Caltrans and the Business, Transportation, and Housing Agency have taken an active role in addressing GHG emission reduction from transportation sources. Recognizing that more than 81 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human-made GHG emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans (December 2006).

One of the main strategies in the proposed Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (zero to 25 mph) and speeds above 55 mph. Relieving congestion by enhancing operations and improving travel times in high-congestion travel corridors will lead to an overall reduction in GHG emissions.

The stated objective of the proposed project is to reduce the risk of seismic collapse of the viaduct. It is not a capacity-enhancing project, so there will not be an increase in traffic volumes due to the proposed project. The proposed project is consistent with the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP), and it is included in the Regional Transportation Improvement Program (RTIP). Because the proposed project is not capacity enhancing, CO_2 emissions would not increase in the region as a result of the project's implementation.

Caltrans and government agencies in the State of California, including the city and county of Los Angeles, recognize the concern that CO_2 emissions raise for climate change; however, accurate modeling of GHG emissions levels, including CO_2 at the project level is not currently possible. No federal, state, or regional regulatory agency has provided methodology or criteria for GHG emissions and climate change impact analysis; therefore, Caltrans is unable to provide a scientific or regulatory-based conclusion regarding whether the project's contribution to climate change is cumulatively considerable.

Caltrans continues to be actively involved on the Governor's Climate Action Team as the CARB works to implement AB 1493 and AB 32. As part of the *Climate Action Program at Caltrans* (December 2006), Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, transit-oriented communities development, and high-density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light- and heavy-duty trucks; however it is important to note that the control of the fuel economy standards is held by EPA and CARB. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at UC Davis.

4.9 Standards and Mitigation Measures for Significant Impacts under CEQA

Several measures outlined in this document are the requirements of applicable laws, regulations, ordinances, and formally adopted City standards (e.g., Los Angeles Municipal Code and Bureau of Engineering Standard Plans), which govern the City and its contractors. Moreover, many measures are part of the requirements of the uniform practices established by the Southern California Chapter of the American Public Works Association (e.g., Standard Specifications for Public Works Construction and the Work Area Traffic Control Handbook) (WATCH Manual) as specifically adopted by the City of Los Angeles (e.g., The City of Los Angeles Department of Public Works Additions and Amendments to the Standard Specifications For Public Works Construction [aka "The Brown Book," formerly Standard Plan S-610]).

Table 4-6 listed the standard measures under applicable laws, regulations, and adopted City standards to be incorporated into bid and specification packages if the proposed project is approved for construction.

Table 4-6
Standard Measures under Applicable Laws, Regulations, and Adopted City Standards to be Incorporated into Bid and Specification Packages

No.	Standard Measures	Impacted Resources
1	Continue the outreach program to keep residents, businesses, and any service providers within the area informed, and to inform surrounding communities about the project construction schedule, relocation plans and assistance programs, traffic-impacted areas and the Traffic Management Plan (TMP), and other relevant project information.	Community Impacts
2	Compensate the private parking owners for the loss of any private parking spaces through the right-of-way (ROW) acquisition process.	Community Impacts
3	Provide assistance to local businesses within the project limits to the extent allowed by laws and regulations in the event permanent property acquisition or temporary business closures result from project construction.	Community Impacts
4	Coordinate closely with the railroad owners or their representatives during the design phase of the project to ensure that the final designs are reviewed and approved by respective railroad authorities.	Utility Impacts
5	Obtain a construction license agreement with respective railroad authorities for construction within the railroad ROW prior to start of construction. Coordinate with railroad representatives during the construction phase to minimize interruption to railroad operations.	Utility Impacts
6	Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and Monitoring program. The SWPPP would include erosion and sediment control; non-stormwater management; post-construction stormwater management; waste management and disposal; maintenance, inspection, and repair of Best Management Practices (BMPs); employee training to perform inspections of the BMPs at the construction site; and a sampling and analysis plan for contaminated storm runoff. The SWPPP would describe both structural and nonstructural BMPs to minimize or eliminate the potential for spills and leakage of construction materials and erosion of disturbed areas by water and wind.	Water Quality
7	Require the construction contractor to conduct soil profiling (in particular, but not limited to, metals and aerially deposited lead [ADL]) while handling soil at the project site during construction. If the soil contains contaminant concentrations that meet the definition of hazardous materials, then the contractor would be required to adhere to City Standard Specifications (known as the Greenbook), which address the management of various hazardous materials and wastes and that is consistent with the federal and state of California requirements pertaining to hazardous materials and wastes management.	Hazards and Hazardous Materials
8.	Require the construction contractor to conduct a survey to screen for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to demolition activities. If ACM is found, then the contractor would comply with the South Coast Air Quality Management District (SCAQMD) Rule 1403 notification and removal processes.	Hazards and Hazardous Materials
9	Require the construction contractor to dispose of any hazardous materials or wastes encountered during demolition and construction according to current regulatory guidelines.	Hazards and Hazardous Materials
10	Require the construction contractor to obtain an NPDES permit for wastewater discharge if there is a potential for dewatering activities at the project site during construction.	Hazards and Hazardous Materials
11	Require the construction contractor to implement PM_{10} control by applying measures contained in Tables 1 and 2 of SCAQMD Rule 403.	Air quality
12	Require the construction contractor to implement the following measures, when feasible, to reduce PM_{10} and NO_x emissions generated by construction equipment: a Water the construction site three times daily, or apply nontoxic soil stabilizers, as needed, to reduce offsite transport of fugitive dust from all unpaved staging areas and unpaved road surfaces. b Properly tune and maintain construction equipment in accordance with manufacturer's specifications. c Keep trucks and vehicles in loading/unloading queues with their engines off when not in use to reduce vehicle emissions. The contractor should phase construction activities to avoid emissions peaks, where feasible, and discontinue work during second-stage smog alerts.	Air quality

Table 4-6
Standard Measures under Applicable Laws, Regulations, and Adopted City Standards to be Incorporated into Bid and Specification Packages

No.	Standard Measures	Impacted Resources
	d To the extent possible, use construction equipment that is powered by aqueous diesel or alternative fuel sources (e.g., methanol, natural gas, propane). e Where feasible, use diesel oxidation catalyst for heavy-duty construction equipment.	
13	Incorporate the following requirements in the construction specifications: a. Use newer equipment with improved noise muffling and ensure that all equipment has the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding). b. Utilize construction methods or equipment that would provide the lowest level of noise and ground vibration impact, such as alternative low-noise pile installation methods. c. Turn off idling equipment. d. Implement a construction noise and/or vibration monitoring program to limit the impacts. e. Comply with all appropriate provisions of the City Noise Ordinance including, but not limited to, the restrictions on hours of construction and mechanical equipment noise levels. f. Limit construction activities to daytime hours. If nighttime construction is necessary, then the proper permits and variances would be obtained. g. Comply with the TMP on construction routes to avoid or minimize impacts on noise-sensitive receptors located in areas of close proximity to the project site. h. Keep noise levels relatively uniform and avoid impulsive noises. i. Keep area residents and businesses informed of the schedule, duration, and progress of the construction to minimize public objections of unavoidable noise. Notify communities in advance of the construction and of the expected temporary noise impacts during the construction period.	Noise

4.9.1 Alternative 2 – Retrofit

The following paragraphs provide specific mitigation measures for each impacted resource under Alternative 2 in addition to the standard measures presented in Table 4-6.

Community Impacts

MM-1 Develop a construction staging plan and TMP in close coordination with the members of the Downtown Construction Traffic Management Committee and with agencies or developers responsible for other planned projects in the immediate vicinity of the proposed project to minimize direct and cumulative construction impacts on the community. The TMP should also identify and provide alternate traffic detour routes, construction materials hauling routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.

Emergency Services

MM-2 Notify emergency service providers at least 2 weeks in advance of the project construction schedule. Provide detailed information on the construction schedule, roadway closures, traffic detour route maps, and expected congested intersections.

MM-3 Coordinate with emergency service providers throughout the construction period to notify them of any changes in construction schedule, roadway closures, and detour routes.

Cultural Resources

MM-4 Implement all stipulations of the executed Memorandum of Agreement (MOA) between the State Historic Preservation Officer (SHPO), City of Los Angeles, and Caltrans.

MM-5 Establish an Environmental Sensitive Area (ESA) Action Plan, which would include fencing of site 19-003683, archaeological and Native American monitoring during ground-disturbing activities (see MM-6 and MM-7, respectively), and training of construction workers.

MM-6 Provide a qualified archaeological monitor to be present at the site during ground-disturbing activities. In the event buried cultural resources are encountered during construction, construction would be halted and the discovery area isolated and secured until the archaeologist finishes evaluating the nature and significance of the find.

MM-7 Provide a Native American monitor(s) to be present at the site during ground-disturbing activities.

MM-8 If human remains are discovered, then the County coroner must be notified as soon as is reasonably possible (CEQA Section 15064.5). There should be no further site disturbance where the remains were found. If the remains are Native American, then the coroner is responsible for contacting the NAHC within 24 hours. The Commission, pursuant to Section 5097.98 of the PRC, should immediately notify those persons it believes to be the Most Likely Descendents (MLDs) of the human remains. Treatment of the remains would be dependent on the views of the MLD.

Paleontology

MM-9 Retain a qualified paleontologist prior to the start of construction to develop and implement a Paleontological Mitigation Plan (PMP). The PMP would include obtaining a written storage agreement with a recognized museum repository;

presenting preconstruction meeting instructions for construction personnel on environmental awareness; instructions on fossil remains handling requirements for archiving; archival requirements for remains prior to transfer to the repository for permanent storage and maintenance; instructions on fossil remains handling requirements; a discussion of bulk sample requirements of fine-grained sediment from fossiliferous or potentially fossiliferous strata; and preparation of a report summarizing the findings of the work conducted under the PMP.

MM-10 Provide a paleontological monitor onsite on a full-time basis to inspect new exposures created by earth-moving activities in areas underlain by the older alluvium and at depths greater than 5 ft below current grade for the younger alluvium.

MM-11 If fossil remains are discovered, then earth-moving activities at the fossil site would be halted or diverted temporarily to allow the monitor to recover the fossil remains

Biological Resources

MM-12 If construction occurs between February 1 and August 31, conduct a preconstruction survey by a qualified biologist to identify any active nesting or roosting locations. If the biologist finds an active nest or roost within the construction area and determines it may be impacted, then the biologist would delineate an appropriate buffer zone around the nest or roost depending on the species and the type of construction activity. Any active nests or roosts observed during the survey would be mapped on an aerial photograph. The biologist would serve as a construction monitor during those periods when construction activities occur near active nest or roost areas to ensure that no inadvertent impacts occur. Results of the preconstruction survey and any subsequent monitoring would be provided to the California Department of Fish and Game (CDFG).

4.9.2 Alternative 3 – Replacement

The following paragraphs provide specific mitigation measures for each impacted resource under Alternative 3 in addition to the standard measures presented in Table 4-6.

Community Impacts

In addition to mitigation measures to minimize impacts on traffic and transportation, air quality, and noise described in respective sections of the EIR/EIS, the following measures would be implemented.

MM-1: The City of Los Angeles would actively participate in the community planning process to redevelop the vacated area around the 6th Street Viaduct to provide recreational, retail, cultural, or other amenities.

MM-2: The City of Los Angeles would provide landscape and streetscape improvements to enhance the aesthetics of the affected intersections along the proposed detour routes that could not be mitigated to the less than significant level.

MM-3: The City of Los Angeles would actively participate in implementation of the LARRMP to improve the area near the 6th Street Viaduct in accordance with the Greening Concept objectives set forth in the Master Plan.

MM-4 The City of Los Angeles would develop a construction staging plan and TMP in close coordination with members of the Downtown Construction Traffic Management Committee and with agencies or developers responsible for other planned projects in the immediate vicinity of the proposed project to minimize direct and cumulative construction impacts on the community. The TMP would also identify and provide alternate traffic detour routes, construction materials hauling routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.

Traffic and Transportation/Pedestrian Facilities

MM-5: The City of Los Angeles would install new traffic signals, and connect to Los Angeles City ATSAC system at the intersection of 4th Street and I-5 SB On-/Off-Ramps/Gertrude Street.

MM-6: The City of Los Angeles would restripe to add an eastbound right-turn lane at the intersection of 4th Street and Soto Street.

MM-7: The City of Los Angeles would provide alternative pedestrian access within the vicinity of the 6th Street Viaduct during the construction period.

Emergency Services

MM-8 Notify emergency service providers of the project construction schedule at least 2 weeks in advance. Provide detailed information on the construction schedule, roadway closures, traffic detour route maps, and expected congested intersections.

MM-9 Coordinate with emergency service providers throughout the construction period to notify them of any changes in construction schedule, roadway closures, and detour routes.

Visual Resources

MM-10 Work with the community for input through a formalized Context Sensitive Solutions process to develop Aesthetic and Urban Design Guidelines for the new structure.

MM-11 Evaluate benefits to the community of preserving open space created by the project. Work with the community and other stakeholders, including City agencies, in developing the Greening Concept to include open space and park amenities within the community, including the viaduct design for future connections to the river corridor.

MM-12 Develop bridge architecture to create a Community/City Gateway – including possible bridge monuments with decorative lighting, parapet wall treatments, decorative fencing/railing and lighting, and abutment/wing walls – to increase the memorability of the bridge.

MM-13 Texturize and color slope paving and other smooth surfaces to deter graffiti and enhance the bridge aesthetics.

MM-14 Apply architectural detailing to the retaining walls, including textures, colors, and patterns. Include caps that will provide shadow lines.

Cultural Resources

MM-15: Implement all stipulations of the executed MOA between the SHPO, City of Los Angeles, and Caltrans.

MM-16 Establish an Environmental Sensitive Area (ESA) Action Plan, which would include fencing of site no. 19-003683, archaeological and Native American monitoring during ground-disturbing activities (see MM-17 and MM-18, respectively), and training of construction workers.

MM-17 Provide a qualified archaeological monitor to be present at the site during ground-disturbing activities. In the event buried cultural resources are encountered during construction, construction would be halted and the discovery area isolated and secured until the archaeologist finishes evaluating the nature and significance of the find.

MM-18 Provide a Native American monitor(s) to be present at the site during ground-disturbing activities.

MM-19 If human remains are discovered, then the County coroner must be notified as soon as is reasonably possible (CEQA Section 15064.5). There should be no further site disturbance where the remains were found. If the remains are Native American, then the coroner is responsible for contacting the NAHC within 24 hours. The Commission, pursuant to Section 5097.98 of the PRC, would immediately notify those persons it believes to be the Most Likely Descendents (MLDs) of the human remains. Treatment of the remains would be dependent on the views of the MLD.

Paleontology

MM-20 Retain a qualified paleontologist prior to the start of construction to develop and implement a PMP. The PMP would include obtaining a written storage agreement with a recognized museum repository; presenting preconstruction meeting instructions for construction personnel on environmental awareness; instructions on fossil remains handling requirements for archiving; archival requirements for remains prior to transfer to the repository for permanent storage and maintenance; instructions on fossil remains handling requirements; a discussion of bulk sample requirements of fine-grained sediment from fossiliferous or potentially fossiliferous strata; and preparation of a report summarizing the findings of the work conducted under the PMP.

MM-21 Provide a paleontological monitor onsite on a full-time basis to inspect new exposures created by earth-moving activities in areas underlain by the older alluvium and at depths greater than 5 ft below current grade for the younger alluvium.

MM-22 If fossil remains are discovered, then earth-moving activities at the fossil site would be halted or diverted temporarily to allow the monitor to recover the fossil remains.

Biological Resources

MM-23 To protect any possible migratory bird nesting activity, avoid removal of non-native ornamental vegetation between September 1 and January 31. If construction occurs between February 1 and August 31, conduct a preconstruction survey by a qualified biologist to identify any active nesting locations. If the biologist finds an active nest within the construction area, then the CDFG biologist would be consulted on how to relocate them to avoid any construction impacts.

Chapter 5
Comments and Coordination

Chapter 5 Comments and Coordination

5.1 Introduction

The Council on Environmental Quality (CEQ) NEPA Regulations (40 CFR Part 1500 *et seq*.) and the State CEQA Guidelines (14 CCR, Sections 15082-15083) recommend that federal, state, and local lead agencies use a public scoping process to help identify the various issues to be addressed in the environmental document. Scoping allows public agencies and the general public to learn about the proposed project and to provide suggestions regarding alternatives and the types of impacts to be evaluated.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), authorizing U.S. highway and transit programs, was signed into law on August 10, 2005. Numerous provisions of the law are aimed at improving the environmental review process for transportation projects. One of the key requirements of SAFETEA-LU related to public involvement is that the lead agency must provide the "opportunity for involvement" to participating agencies and the public in developing the purpose and need and the range of alternatives to be considered for a proposed project.

Public involvement, agency coordination, and Native American tribal coordination were carried out during the development process of the proposed project by means of formal scoping meetings, participating agency coordination meetings, community meetings, potentially affected property owner meetings, political representative meetings, notification letters, and the creation and maintenance of a project Web site.

Ongoing coordination meetings with affected business owners and groups, government agencies, railroads, and utility companies are being conducted to update interested parties on the status of the proposed project, obtain public and agency input, and resolve issues. Letters describing the proposed project and inviting comment were sent to Native American groups and other individuals known to have an interest in the proposed project.

This chapter summarizes the results of the City of Los Angeles and Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing public involvement and agency coordination. A Public Outreach Report was compiled to provide a record of all the meetings held and the comments received.[117]

[117] Diverse Strategies for Organizing, 2008. Public Outreach Report – Scoping Phase for 6th Street Viaduct Seismic Improvement Project. September.

5.2 Pre-Scoping Activities

Several public outreach activities were conducted prior to the formal CEQA/NEPA scoping process to disseminate information about the viaduct improvement proposal and the actions undertaken by the City and Caltrans.

5.2.1 Initial Project Information Meetings

In October 2006, prior to commencement of the formal environmental review process, the Project Development Team (PDT) initiated widespread notification of government agencies and the public about proposed project information meetings. Notices were mailed to interested agencies and residents within a 2,000-ft radius of the viaduct; published in newspapers (the *Los Angeles Times* and *La Opinion*); and hand-delivered to residents and property owners in the immediate vicinity of the viaduct. Two proposed project information meetings were held – one on January 23, 2007, at the Artshare Los Angeles (west side of the Los Angeles River) and one on January 25, 2007, at St. Isabel Church (east side of the Los Angeles River). Approximately 80 people attended the meetings, listened to the proposed project information presentation, asked questions, and provided suggestions.

Several other proposed project information meetings were conducted upon request. These meetings were held with the Boyle Heights Neighborhood Council (BHNC) Land Use Committee (February 13, 2007), the BHNC Quadrant 4 (March 12, 2007), the Downtown Los Angeles Neighborhood Council (March 13, 2007), the BHNC Quadrant 3 (May 9, 2007), the Boyle Heights Resident Homeowner Association (May 19, 2007), and the Downtown Arts District Business Improvement District (October 3, 2007).

5.2.2 Community Advisory Committee Formation

Following the proposed project information meetings, a Community Advisory Committee (CAC) was formed. Twenty-five (25) potential members were identified by PDT members based on their representation of affected neighborhoods, businesses and various other stakeholders, and their willingness to serve as conduits between the project design team and their constituents. As of March 2008, six CAC meetings were conducted, as summarized below:

- CAC Meeting No. 1 was held March 29, 2007, at Benjamin Franklin Library, 2200 E. 1st Street. Seventeen (17) members attended the meeting. The PDT presented project information to CAC members and informed them about the objective of the CAC meetings and the role of its members. All members were provided the opportunity to ask questions related to the proposed project and express their concerns.

- CAC Meeting No. 2 took place May 10, 2007, at the Boyle Heights Youth Technology Center, 1600 E. 4th Street. Fifteen (15) members and 2 guests attended the meeting. The members were divided into 5 small groups to discuss the issues and opportunities associated with the proposed project.

- CAC Meeting No. 3 took place June 28, 2007, at the Boyle Heights Youth Technology Center, 1600 E. 4th Street. Thirteen (13) members attended the meeting. The objective of this meeting was to provide CAC members with an opportunity to participate in development of the purpose and need statement for use as a guide in proposed project alternative development and in the environmental document preparation.

- CAC Meeting No. 4 took place August 28, 2007, at the Boyle Heights Youth Technology Center, 1600 E. 4th Street. Seventeen (17) members attended the meeting. The objective of this meeting was to provide CAC members with an opportunity to view possible replacement bridge types. CAC members also participated in a workshop for expressing their personal preferences among numerous potential bridge types, as input for the project team.

- CAC Meeting No. 5 took place November 8, 2007, at the Boyle Heights Youth Technology Center, 1600 E. 4th Street. Eighteen (18) members attended the meeting. The objective of this meeting was to update CAC members on the screening of replacement bridge types and alignments, retrofit technologies, and status of the environmental review process.

- CAC Meeting No. 6 took place March 26, 2008, at the 6th Street Viaduct site. Fifteen (15) CAC members participated in the site tour. They had an opportunity to see first-hand the cracks in structural concrete elements as a result of the alkali silica reaction (ASR) and the constraints affecting project implementation.

- CAC Meeting No. 7 took place October 28, 2008, at the Boyle Heights Youth Technology Center, 1600 E. 4th Street. Eleven (11) members attended the meeting. The objective of this meeting was to update CAC members on the current project status and present a status update of the environmental analysis process. Most of the CAC members present at the meeting were in support of the replacement alternative with the modern bridge type.

- CAC Meeting No. 8 took place February 12, 2009, at the Boyle Heights Youth Technology Center, 1600 E. 4th Street. Fifty (50) people were present at the meeting. Representatives of Council District 14, the President of the City of Los Angeles Board of Public Works, and the City of Los Angeles City Engineer participated in the meeting. The objective of this meeting was to brief the CAC members on the Administrative Draft EIR/EIS that was under review by Caltrans Headquarters and Legal Office. A few CAC members were vocal about the bridge type (cable-supported concept) recommended by the PDT. The team explained to the CAC that no final decision had been made regarding project alternatives, and that the public would have opportunities to provide input about the proposed project alternatives during the circulation and public hearing for the Draft EIR/EIS.

- CAC Meeting No. 9 took place on April 7, 2009, at the Boyle Heights Senior Center, 2839 E. 3rd Street, Los Angeles. Approximately forty (40) people were present at the meeting. The Council member for Council District 14 and the City Engineer participated in the meeting. The objective of the meeting was to brief the members about modifications made to the Draft EIR/EIS based on feedback received during the previous meeting. In addition, the design team solicited input from members regarding architectural elements that should be considered as part of the various replacement bridge types. The City displayed renderings of 7 bridge types for review and feedback from the members. The team explained that the members and the public will have opportunities to provide feedback related to the bridge type during the public review process. The team informed the members that the Draft EIR/EIS will not include a staff-recommended bridge type.

Additional CAC meetings will be held as the proposed project proceeds to keep the public informed of project progress and to allow them to provide input at key milestones.

5.3 Scoping Process

The scoping process was initiated by widespread notification of government agencies and the public via publication of a Notice of Intent (NOI) and a Notice of Preparation (NOP) announcing initiation of the Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The NOI was published in the *Federal Register* (Volume 72, Number 169) on August 31, 2007, in accordance with NEPA. The NOP was posted on the City of Los Angeles Web site[118], the project's public Web site[119], and with the Los Angeles County Clerk/Recorder throughout the public review period (July 23, 2007, to September 13, 2007), in accordance with CEQA. Other notification activities included placement of public notices in newspapers of general circulation; mailing the NOP to potentially affected government agencies, residents, and businesses; and translation of public documents from English to Spanish. Other project information was also posted on the public Web site indicated above.

[118] http://eng.lacity.org/techdocs/emg/Environmental_Review_Documents.htm
[119] http://www.la6thstreetviaduct.org/TheProject/ documents/NOP_Public.pdf

5.3.1 Mailings

The NOP was mailed to government agencies, business groups, neighborhood associations, property owners, and other stakeholders on July 23, 2007. These groups were invited to scoping meetings held on August 14 and 16, 2007.

A scoping meeting invitation, which gave details about the proposed project and announced the times and locations of the public scoping meetings, was mailed to more than 1,500 occupants within a 2,000-ft radius of the proposed project corridor.

5.3.2 Public Noticing

Advertisements announcing the scoping meetings were placed in the *Los Angeles Times* and *La Opinion*. The *Los Angeles Times* is circulated throughout the county and read by millions of subscribers. *La Opinion* is circulated to the Latino community of Los Angeles.

The notices were published in English and Spanish to accommodate the diversity of the affected communities. An English advertisement was placed in the *Los Angeles Times* on July 27, 2007, and a Spanish advertisement was placed in *La Opinion* on July 27, 2007.

5.3.3 Scoping Meetings

Two separate scoping meetings were held on August 24, 2007; one was for government and public agencies and the other for the general public. The meetings were held at the Artshare Los Angeles, which is located at 326 S. Hewitt Street in Los Angeles on the west side of the Los Angeles River. The agency meeting took place from 2:00 p.m. to 4:00 p.m., and the general public meeting took place from 6:00 p.m. to 8:00 p.m. Another scoping meeting was held on August 26, 2007, at the Boyle Heights Youth Technology Center, which is located at 1600 E. 4th Street on the east side of the river and within the Boyle Heights community.

The agenda for these meetings included an introduction of the proposed project team members, a PowerPoint presentation on the proposed project, and a question and answer period. Attendees also participated in an open house. Display boards illustrating the proposed project limits and alternatives were placed throughout the room for attendees to view and interact with project representatives. The meetings were staffed by individuals representing the City of Los Angeles and the project consultant team. At both public meetings, Spanish interpreters were available to accommodate any non-English speakers.

5.3.4 Participating Agency Coordination

Section 6002 of SAFETEA-LU requires that all transportation projects requiring an EIS, for which the original NOI was published in the *Federal Register* after August 10, 2005, must have a plan established for coordinating public and agency participation and comment during the environmental review process. It is the responsibility of the lead agencies to develop the coordination plan to facilitate and document the interaction between the lead agencies and participating and cooperating agencies and the public.

As of July 1, 2007, Caltrans assumed FHWA's authority and responsibility for compliance with NEPA and other environmental laws. The Memorandum of Understanding (MOU) between FHWA and Caltrans concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program allows Caltrans to serve as the federal lead agency on this project.

As part of the Scoping Process and in accordance with the Section 6002 requirement, Caltrans prepared a Coordination Plan for this proposed project (see Appendix J). A summary of the coordination activities is provided below:

5.3.4.1 Invitation to Become Coordination/Participating Agencies

Cooperating agencies are the federal agencies, other than the federal lead agency, which have jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative. Cooperating agencies are also participating agencies. No cooperating agencies were identified for this project.

Participating agencies are federal, state, regional, or local agencies that may have an interest in the project. A list of pertinent federal, state, and local agencies was developed. A letter of invitation to participate in the project was sent on July 26, 2007, to agencies likely to have an interest. The rest of the agencies on the list received notification regarding the project through the NOI and NOP. Nine agencies responded to the letter of invitation, as shown in Table 5-1.

Table 5-1
Participating Agency List

Participating Agencies	Contact Person/Title	Phone/E-mail/Address
U.S. Army Corps of Engineers	Theodore Masigat Engineering Division, Operations, Los Angeles District	(213) 452-3393 theodore.j.masigat@usace.army.mil 915 Wilshire Boulevard, Los Angeles, CA 90017
U.S. Army Corps of Engineers	Phuong Trinh Regulatory Division, Los Angeles District	(213) 452-3372 Phuong.h.trinh@usace.army.mil 915 Wilshire Boulevard, Los Angeles, CA 90017
*U.S. Army Corps of Engineers	Gabe Brooks Right-of-Way Division, Los Angeles District	915 Wilshire Boulevard, Los Angeles, CA 90017

Table 5-1
Participating Agency List

Participating Agencies	Contact Person/Title	Phone/E-mail/Address
*U.S. Army Corps of Engineers	Ken Wong Permits, Los Angeles District	915 Wilshire Boulevard, Los Angeles, CA 90017
U.S. Environmental Protection Agency	Susan Sturges Environmental Review Office Community and Ecosystems Division	(415) 947-4188 sturges.susan@epa.gov 75 Hawthorne Street, San Francisco, CA 94105
Advisory Council on Historic Preservation	Carol Legard Federal Highway Liaison Office of Federal Agency Programs	(202) 606-8522 clegard@achp.gov 1100 Pennsylvania Avenue NW Suite 809 Old Post Office Building Washington, DC 20004
*U.S. Department of Housing and Urban Development Los Angeles Field Office	William Vasquez CPD Field Office Director	611 West 6th Street, Suite 800 Los Angeles, CA 90017
*U.S. Department of Commerce	Environmental Review Section	14th and Constitution NW, Room 6800 Washington, DC 20230
U.S. Department of Homeland Security Federal Emergency Management Agency	Gregor Blackburn, CFM, Branch Chief Floodplain Management and Insurance Branch	(510) 627-7190 1111 Broadway, Suite 1200, Oakland, CA 94607-4052
*U.S. Department of Energy	Environmental Review Section	1000 Independence Avenue SW 4G-064 Washington, DC 20585
*Federal Railroad Administration Office of Railroad Development	David Valenstein	400 Seventh Street SW MS20 Washington, DC 20590
City of Los Angeles Department of Parks and Recreation	David Attaway Environmental Supervisor	(213) 928-9130 4155 S. Saint Louis Street, Los Angeles, CA 90033
City of Los Angeles Bureau of Engineering Real Estate Group	Frank Viramontes Chief Real Estate Officer II	(213) 485-5447 frank.viramontes@lacity.org Department of Public Works, Bureau of Engineering Real Estate Division 600 S. Spring Street, 7th Floor, Stop 515 Los Angeles, CA 90014
Los Angeles County Metropolitan Transportation Authority	John C. Miller, P.E. Engineering Project Manager	(213) 922-2000 millerjo@mta.net 1 Gateway Plaza Mail Stop: 99-22-1 Los Angeles, CA 90012-2932
SCRRA—Metrolink	Laurene Lopez Community Relations/Environmental Review Administrator	(213) 452-0288 lopezl@scrra.net SCRRA—Metrolink 700 South Flower Street, 26th Floor Los Angeles, CA 90017

Note:

* Federal agency not responding to the letter of invitation to become a participating agency.

Per SAFETEA-LU, a federal agency invited shall be designated as a participating agency unless the agency declines the invitation by the deadline specified and states that the agency (1) has no jurisdiction or authority with respect to the project, (2) has no expertise or information relevant to the project, and (3) does not intend to submit comments on the project.

5.3.4.2 Coordination Meetings

Three coordination meetings were held during the Section 6002 environmental review process. The first meeting was held on October 31, 2007, at the Caltrans District 7 Office to provide the participating agencies with project information and to discuss the roles and responsibilities of the participating agencies. Caltrans provided the participating agencies with the opportunity for their involvement in developing the draft purpose and need statement. The meeting also allowed the participating agencies to advise and provide input on the technical studies. In addition, Caltrans provided the agencies with information regarding the range of alternatives being considered and further studied. They commented on this material, and a brief discussion was held after this information was presented. A site visit was also conducted following the first meeting.

The second participating agency meeting was held on February 4, 2008. An update of the project status was presented to the agencies. Caltrans outlined the next stages in the participating agency role in the environmental review process, including discussion of technical studies and methodologies, as well as social, economic, and environmental impacts within the project area. In addition, Caltrans provided the agencies with the opportunity to comment on anticipated issues that might arise in the future. Floodplain issues, railroad concerns, and the Los Angeles River Revitalization Plan were the main topics that the agencies noted.

The third meeting was held on October 20, 2008. Caltrans provided an update to the participating agencies on the project status. A summary of the Alkali Silica Reaction (ASR) Workshop was presented. In addition, Caltrans discussed the environmental analysis results. Additional participating agency meetings will be held as the EIR/EIS progresses.

A list of all agencies invited to become a participating agency or cooperating agency is located in the Coordination Plan (Appendix J).

During the project development period, Caltrans had several meetings with public agencies. Caltrans, City of Los Angeles, and State Historic Preservation Officer (SHPO) held a meeting on April 6, 2009. The main focus was the discussion of Alkali Silica Reaction and possible mitigation measures. A field review was conducted after the meeting.

Caltrans and the City of Los Angeles held a meeting on February 4, 2009, with the Los Angeles Office of Historic Resources. The main purpose of this meeting was to discuss the proposed measures to be included in the Section 106 Memorandum of Agreement (MOA) for the various bridges undergoing improvement.

In addition, Caltrans, the City of Los Angeles Department of Public Works Bureau of Engineering, and the City of Los Angeles Planning Department had a meeting with the Los

Angeles Conservancy on October 29, 2007. The purpose of this meeting was to provide detailed information about the project development process and other background information. The meeting also provided a forum for the Los Angeles Conservancy to ask questions and gain a better understanding of the issues surrounding the project.

Additional coordination meetings with federal, state, and local agencies are ongoing, and they will continue throughout the planning stage of the proposed project. In addition, various historical society/historic preservation groups and Native American individuals/organizations have been contacted and kept informed about the status of project development.

5.4 Public Participation

Public participation has been an important aspect of this project. A series of meetings with affected property owners, community groups, and interested agencies has been carried out throughout the project development period and will continue as the project moves forward. Representatives from the City of Los Angeles Department of Public Works Bureau of Engineering, Caltrans, and the project consultant team have presented project information and answered questions from the attendees at numerous meetings. Several methods were used to inform the public of meetings, such as newspaper notices, invitations sent to affected property owners and community groups, invitations to become a participating agency and/or cooperating agency, and the NOP/NOI.

The community and property owner meetings carried out to date consist of the following:

- Boyle Heights Neighborhood Council Land Use Committee – February 13, 2007
- Boyle Heights Neighborhood Council Quadrant 4 – March 12, 2007
- Downtown Los Angeles Neighborhood Council – March 13, 2007
- Boyle Heights Neighborhood Council Quadrant 3 – May 9, 2007
- Boyle Heights Resident Homeowner Association – May 19, 2007
- Downtown Arts District Business Improvement District – October 3, 2007
- Community Redevelopment Agency of Los Angeles, Eastside Region – October 4, 2007
- Los Angeles Conservancy – October 29, 2007
- City of Los Angeles Interdepartment Planning Staff – March 24, 2008
- City of Los Angeles Interdepartment Planning Staff – April 4, 2008
- American Institute of Architects – April 23, 2008
- ASR Workshop – August 27, 2008
- Central City East Association – December 3, 2008
- City of Los Angeles Office of Historic Resources – February 4, 2009

In addition to the above-mentioned meetings, a CAC was formed, and nine meetings have been conducted. Refer to Section 5.2.2 for more detailed information regarding the CAC.

The Public Outreach Report[120] was also prepared to summarize the project outreach activities and the comments received. The report is available for review at the City of Los Angeles Department of Public Works Bureau of Engineering, Bridge Improvement Program, and Caltrans District 7 office.

5.5 Business Survey

A business survey was conducted to acquire information on business operations and identify issues and concerns of businesses located within the vicinity of the project construction limits. More than 100 survey questionnaires were distributed to local businesses within the project area. Forty (40) businesses were interviewed by the outreach team. The information collected was evaluated to determine the potential effects on businesses and employees as a result of project implementation.

5.6 Comments and Responding to Comments

Numerous questions and concerns were raised at the public information meetings, scoping meetings, and coordination meetings. In addition, 23 written comments were received during the scoping period.

The main issues and concerns that were expressed include:

- Historic resource preservation
- Public safety
- Costs and funding
- Preference for either retrofit or replacement of the viaduct
- Design and development opportunities
- Management of homeless residents
- Integration of the proposed Los Angeles River Revitalization Project
- Business impacts due to right-of-way acquisitions
- Construction impacts, including traffic detours
- Traffic volumes and speed on the viaduct
- Loss of industrial land use area
- Impacts to railroad operation

[120] Public Outreach Report – Scoping Phase for 6th Street Viaduct Seismic Improvement Project. September 2008.

Most of the comments raised at the various meetings were responded to by the project team to the extent that the information was available at the time. Written responses to selected substantive comments were prepared, and follow-up meetings with the commenting parties were held to respond to the issues of concern. All comments received were considered during the project development/preliminary design phase and in the Draft EIR/EIS preparation.

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Chapter 6
List of Preparers

Chapter 6 List of Preparers

6.1 Lead Agency Staff

City of Los Angeles

John Koo, P.E.	Program Manager
Jim Wu, P.E.	Project Manager
Wally Stokes	Environmental Facilitator and Reviewer
Bearj Sarkis, P.E.	Transportation Engineer, Traffic Analysis Reviewer

California Department of Transportation

Carlos Montez, Senior Environmental Planner	Environmental process oversight, Document Reviewer
David Lewis, Environmental Planner	Document Coordinator and Reviewer
Gary Iverson, Senior Environmental Planner	Cultural Resources Reviewer
Claudia Herbert, Environmental Planner	Cultural Resources Reviewer
Andrew Yoon, Transportation Engineer	Air Quality Study Reviewer
Jine Lee, Senior Noise Engineer	Noise Study Reviewer
Gene Kimmel, Landscape Architect	Visual Impact Assessment Reviewer
Linda Wong, Senior Right-of-Way Agent	Draft Relocation Impact Report Reviewer
Gustavo Ortega, Senior Engineering Geologist	Draft Foundation Report Reviewer
Ayubur Rahman, Hazardous Waste Branch Chief	Initial Site Assessment Reviewer
Paul Caron, Senior Biologist	NES Reviewer

6.2 Report Preparers

Parsons Transportation Group, Inc.

Jeffery Bingham, Senior Project Manager	Environmental Project Director, Section 4(f) Evaluation preparer, technical reviewer

Anne Kochaon, QEP, Project Manager	Environmental Project Manager, Community Impact Assessment, EIR/EIS document coordinator, technical report peer reviewer, and EIR/EIS report preparer
Nasrin Behmanesh, Ph.D., Principal Air Quality Specialist	Air Quality Technical Report preparer
Angela Schnapp, Senior Planner	Initial Site Assessment preparer
Jeff Lormand, Principal Landscape Architect	Visual Impact Assessment preparer
Thanh Luc, Noise Specialist	Noise Study Report preparer
Francesca Smith, Senior Architectural Historian	Historical Property Survey Report preparer
Kip Harper, Senior Cultural Resources Specialist	Historic Property Survey Report preparer
Carrie Chasteen, Senior Architectural Historian	Finding of Effect Report preparer
Pika Rosario, Associate Planner	Data collection and Land Use analysis
Leslie Provenzano, Associate Planner	Data collection, Document publication coordinator
Ron Carbone, Senior Graphic Designer	Visual simulation and graphics preparer
Elizabeth Koos, Technical Editor	Document editor

David Evans and Associates

Steve Thoman, S.E., Project Design Manager	Project Manager, Coauthor of Bridge Type Selection Advance Planning Study and Bridge Type Selection Structure Type Screening Phase
Brett Jones, P.E., Project Manager	Bridge Engineer, Project Study Report and Project Report preparer
Brian Hansen, P.E., Bridge Engineer	Bridge Engineer, Coauthor of Bridge Type Selection Advance Planning Study Phase

Kent Cordtz, S.E., Bridge Project Engineer	Bridge Engineer, Coauthor of Bridge Type Selection Advance Planning Study and Bridge Type Selection Structure Type Screening Phase

IDC Consulting Engineers, Inc.

Shafi Sharifan, Ph.D., P.E., Principal	Bridge Engineer, Coauthor of Bridge Type Selection Structure Type Screening Phase Report

Don MacDonald Architects

Donald MacDonald, AIA	Bridge Architect, Contributor to the Bridge Type Selection, Advance Planning Study Phase Report.

Moffatt & Nichol, Inc.

Walt Quesada, P.E., Project Manager	Roadway Lead and Technical Contributor, Technical Reviewer
Suhash Patel, P.E., Senior Roadway Engineer	Right-of-Way Task Leader
Nicholas Schilling, Roadway Engineer	Roadway Designer and Utilities Coordinator
Weixia Jin, Ph.D., P.E., Senior Hydrology Engineer	Hydraulics and Hydrology
Steve Robinson, Senior Railroad Engineer	Railroad Coordination
S. R Chan, P.E./S.E., Senior Project Manager	Technical Reviewer
Goska Nichol, P.E., Senior Roadway Engineer	Technical Reviewer

ACT Consulting Engineers

Hon Yow, P.E.	Traffic Analysis Report preparer

Paragon Partners

Konstantin Akhrem	Real Estate Right-of-Way Investigations
Darryl Root	Real Estate Right-of-Way Investigations
Craig Chong	Real Estate Right-of-Way Investigations
Richard Saretsky	Real Estate Right-of-Way Investigations

BonTerra Consulting, Inc.

Pamela G. Castens, Senior Project Manager	Technical Reviewer of Natural Environment Study (NES), Archaeological Study Report (ASR), and Paleontological Investigation Report (PIR).
Amber S. Oneal, Senior Project Manager	Ecologist, NES preparer
Brian Daniels, Senior Biologist	NES preparer
Andrea Edwards, Ecologist	NES preparer
Patrick Maxon, RPA, Director Cultural Resources	Reviewer of ASR and PIR
Brian K. Glenn, RPA, Cultural Resources Manager	ASR preparer

Paleo Environmental Associates

Bruce Lander, Ph.D., Principal Paleontologist	PIR preparer

CH2M Hill

Yoga Chandran, Ph.D., G.E., Senior Project Manager	Program Manager and Coordinator
Craig Leszkiewicz, P.E.	Project Geologist, Foundation Report preparer
Partha Bora	Hazardous Material Specialist, Site Investigation Task Leader

De Leon, Inc.

Domingo Leon, P.E., Principal	Utilities Search

Diverse Strategies for Organizing

Tony Torres, Vice President	Public Outreach Manager
Glenda Silva, Outreach Specialist	Public Outreach Coordinator

Chapter 7
Distribution List

Chapter 7 Distribution List

This Draft EIR/EIS has been made available for review by the general public, government agencies, and other interested parties. The public notification process announcing the availability of this Draft EIR/EIS is summarized below.

7.1 Federal Register

Availability of the Draft EIR/EIS and information regarding the review period and public hearing schedule was published in the *Federal Register* in May 2009 at the time that the Draft EIR/EIS is released for public review.

7.2 Notice of Completion

The Notice of Completion (NOC) announcing release of the Draft EIR/EIS was filed with the Office of Planning and Research, the County Clerk, and the City Clerk in May 2009.

7.3 Notice of Availability

The Notice of Availability of the Draft EIR/EIS containing the project description, the locations where the Draft EIR/EIS can be reviewed, the comment period, and the invitation to the public hearing was directly mailed to affected residents, businesses, and all occupants in the proposed project study area in May 2009. The mailing area covers all businesses and residences situated within a 2,000-ft radius from the 6th Street Viaduct. The public review and comment period for the Draft EIR/EIS is 60 days.

The public notice and invitation to attend public hearings was published in local newspapers, including the *Eastside Sun, Los Angeles Downtown News,* and *La Opinion* approximately 2 weeks before the scheduled hearing dates.

7.3.1 Locations Where the Draft EIR/EIS can be Viewed

Copies of the Draft EIR/EIS are available for viewing at the following locations:

City of Los Angeles Department of Public Works Bureau of Engineering, Bridge Improvement Program, 221 N. Figueroa Street, Suite 350, Los Angeles, CA 90012

City of Los Angeles Department of Public Works Bureau of Engineering, Environmental Management Group, 1149 South Broadway, Suite 600, Los Angeles, CA 90015
Caltrans, District 7 Office, Environmental Group, 100 S. Main Street, Los Angeles, CA 90012
Benjamin Franklin City Library, 2200 E. 1st Street, Los Angeles, CA 90033
Little Tokyo Branch City Library, 203 S. Los Angeles Street, Los Angeles, CA 90012
Council District 14 Information Desk, 200 N. Spring Street, RM 465, Los Angeles, CA 90012, and field office at 1870 E 1st Street, Los Angeles, CA 90033.
The City of Los Angeles Web site: http://eng.lacity.org/projects/fwp/project.htm
Caltrans website at http://www.dot.ca.gov/dist07/resources/envdocs/
Public Website at http://www.la6thstreetviaduct.org

7.3.2 Draft EIR/EIS Distribution List

The following officials, agency representatives and interested parties have received either a copy of the draft environmental document or a notice informing them of its availability.

7.3.2.1 Elected Officials

Federal

Congressperson Xavier Becerra (District 31)
Congressperson Lucille Roybal-Allard (District 34)
Senator Barbara Boxer
Senator Diane Feinstein

State

State Assembly Member Kevin de León, District 45
State Assembly Member John Pérez, District 46
State Senator Member Gilbert Cedillo, District 22

Local

Los Angeles County Supervisor Gloria Molina, District 1

City of Los Angeles

Councilman Jose Huizar, Council District 14
Councilman Ed Reyes, Council District 1
Mayor Antonio Villaraigosa

7.3.2.2 Government Agencies

Federal

U.S. Fish & Wildlife Service

U.S. Army Corps of Engineers – Los Angeles District

U.S. Environmental Protection Agency Region 9

U.S. Federal Emergency Management Agency

U.S. Department of Transportation, Federal Highway Administration

U.S. Department of Energy

U.S. Department of Housing and Urban Development

U.S. Department of Interior

Federal Railroad Administration

Native American Tribal Councils

Advisory Council on Historic Preservation

State

Office of Planning and Research, State Clearinghouse

- California Air Resources Board
- California Department of Fish and Game
- California Department of Parks and Recreation
- California Department of Justice
- California Highway Patrol
- California Resources Agency
- California Public Utilities Commission
- California Integrated Waste Management Board
- California Native plant Society

California Regional Water Quality Control Board

California Transportation Commission

California Native American Heritage Commission

Regional

Southern California Association of Governments

South Coast Air Quality Management District

Los Angeles County

County Clerk

County of Los Angeles Department of Regional Planning

County of Los Angeles Community Development Commission

County of Los Angeles Metropolitan Transportation Authority

County of Los Angeles Department of Public Works

County of Los Angeles Sheriff Department

7.3.2.3 Local Jurisdictions

City of Los Angeles

Planning Department

Housing Department

Community Development Department

Environmental Affairs Department

Fire Department

Police Department

General Service Department

Department of Transportation

Department of Building Safety

Department of Public Works, Bureau of Engineering, Bridge Improvement Program

Department of Public Works, Bureau of Engineering, Environmental Management Group

Department of Public Works, Bureau of Street Lighting

Department of Public Works, Bureau of Engineering

Department of Public Works, Bureau of Street and Trees

Department of Public Works, Bureau of Street Services

Department of Recreation and Parks

Department of Water and Power

Cultural Affairs Department

Cultural Heritage Commission

City Clerk

City Attorney

Los Angeles River Revitalization Master Plan Committee

Community Redevelopment Agency of the City of Los Angeles

- Adelante Eastside Redevelopment Project
- Central Industrial Redevelopment Project

Other Interested and Potentially Affected Parties

Historical Society of Southern California

Los Angeles City Historical Society

Los Angeles Conservancy

County of Los Angeles Bicycle Coalition

Friends of the Los Angeles River
Union Pacific Railroad
AMTRAK National Railroad Passenger Corporation
Metrolink – Southern California Regional Rail Authority
BNSF Railway Company
Los Angeles Neighborhood Initiative
Boyle Heights Home Owners Association
Boyle Heights Chamber of Commerce
Boyle Heights Department of Neighborhood Empowerment
Boyle Heights Neighborhood Council
Boyle Heights Neighbors Organization
Boyle Heights Historical Society
Little Tokyo Business Association
Los Angeles Times
La Opinion
The Los Angeles Downtown News
Downtown Center Business Improvement District
Downtown Neighborhood Council
Los Angeles Unified School District
Central Library
Little Tokyo Branch City Library
Benjamin Franklin City Library
East Los Angeles County Library
Hinimoto Library
Malabar Library

Community Advisory Committee Members

Michele Arce, Boyle Heights Chamber of Commerce
Carol Armstrong, LA River Revitalization Committee
Shelly Backlar, Friends of the LA River
Ken Bernstein, Dept. of City Planning Historical Resources
Elizabeth Blaney, Boyle Heights Neighborhood Council
Jim Bickley, Spilo World Wide
Kevin Break, Break Photography Studio
Shannon Buhmaster, Downtown Los Angeles Neighborhood Council
Mike Buhler, LA Conservancy
Sonia Campos, Office of the Speaker

Joaquin Castellanos, Boyle Heights Resident
Rebecca Delgado, Boyle Heights Historical Society
Tony Dominguez, Arte Calidad & Festival de la Gente
Frank Gallo, Ranch Cold Storage
Smith Geoffrey, LA Film
Tammy Goss, Boyle Heights Neighborhood Council
Rosalie Gurrola, Boyle Heights Neighborhood Council
Arturo Herrera, Boyle Heights Resident Homeowner Association
Leslie Kendall, Petersen Museum
Peter Khan III, Business Owner of Cal Fiber
David Knutson, Stover Seed
Jesse Leon, Council District 14
Joe Linton, Livable Places
Estela Lopez, Central City East Association
George Magallanes, Ed Reye's Office
Teresa Marquez, Boyle Heights Resident, Homeowner Association & Neighborhood Council Quadrant 3
Michelle Mowery, Bicycle Advisory Committee LADOT
Jack Richter, Arts District Police Department Lead Officer
Colin Shorken, Owner of Un Deux Trois
Geoffery Smith, LA Film
Marc Spilo, Spilo World Wide
Vicky Torres, Boyle Heights Historical Society
Arturo Torres, Boyle Heights Historical Society
Marcello Vavala, Los Angeles Conservancy
Edgar Garcia, Dept. of City Planning Historical Resources
Ross Valencia, Boyle Heights Resident Homeowner Association
Marcello Vavala, LA Conservancy
Magnus Walker, Serious Clothing

Businesses and Residents

All residents and businesses within a 2,000-ft radius of the 6th Street Viaduct

APPENDICES

Appendix A
CEQA Checklist

CITY OF LOS ANGELES
CALIFORNIA ENVIRONMENTAL QUALITY ACT

INITIAL STUDY

(Article I – City CEQA Guidelines)

Council District: *14* Date: *July 23, 2007*

Lead City Agency: Department of Public Works, Bureau of Engineering

Project Title: ***6TH STREET VIADUCT SEISMIC IMPROVEMENT PROJECT***

I. PROJECT DESCRIPTION

A. Location

Project Location

The 6th Street Viaduct (Bridge No. 53C-1880) and Sixth Street Overcrossing (Bridge No. 53-0595) comprise a single structure, which spans a portion of the Hollywood Freeway (US 101, the Los Angeles River, city streets, and numerous railroad tracks. The structure is located in a highly urbanized area just east of downtown and connects the downtown portion of the North Central Community Planning Area with the Boyle Heights Community Planning Area in the City and County of Los Angeles. Figure 1 illustrates the project areas location with respect to the region while Figure 2 is a Vicinity Map.

B. Purpose

Seismic vulnerability studies, completed in 2004 concluded that the viaduct, with its current state of material deterioration and lack of structural detailing exhibits a high vulnerability to failure under a moderate seismic event (an earthquake with a probable return frequency of once every 40 years). The probability that the viaduct would experience significant failure, and possibly collapse as the result of seismic events exceeds 70 percent over 50 years. This vulnerability level is extremely high compared to the normally accepted collapse probability of 5 percent or less over 50 years. The high risk of collapse and continuing concrete deterioration indicates the need for timely corrective action to 1) seismically retrofit vulnerable viaduct and remove all concrete members experiencing ASR or 2) replace the existing viaduct.

The concrete elements of the 6th Street Viaduct are subject to an ongoing chemical reaction, known as *Alkali Silica Reaction (ASR)*, which has led to significant deterioration of the structure and loss if its seismic integrity. This deterioration of the 6th Street Viaduct has been occurring for at least 75 years, despite many efforts to arrest or limit its effect. In the 1940s, two large pylons (decorative towers) at the center river bent were removed because of concerns for public safety due to the poor condition of the concrete. In the late 1980s, the deck of the viaduct was stripped of asphalt, and a waterproof coating applied to the underlying concrete in an attempt to prevent moisture infiltration. In addition,, the viaduct has been repeatedly patched using epoxy injection; an activity that has left stains and discoloration and caused by the application of a cementitous coating to hide the unsightly honeycomb effect of these repairs. Cracking is once again evident throughout the viaduct, with large cracks and spalling clearly evident on the outer columns.

C. Description

The proposed project would improve response of this critical Los Angeles River crossing to an acceptable standard resulting from a moderate seismic event by either retrofitting the existing structure or replacing the 6th Street Viaduct entirely. Several alternatives were considere d during the project development phase of the project. Criteria used to select the alternatives for carrying forward for detailed analysis in the environmental document include construction and maintenance costs, life span of the facility, constructability, historic preservation, community disruption, and structural and operational safety. Based on the results of the preliminary screening analysis, a No Build Alternative and two Build Alternatives will be analyzed in the environmental document. These are briefly described below.

Alternative 1 – No Build: This alternative provides for neither retrofit nor replacement of the 6th Street Viaduct. The ASR deterioration of the structure would continue. The City would provide ongoing maintenance on the viaduct to keep it open to traffic as long as possible, given the ongoing ASR deterioration. The 6th Street Viaduct would maintain a roadway width of 46 feet, which accommodates two travel lanes in each direction with no outside shoulders or median. The unsafe rail ings would not be improved to acceptable standards.

Alternative 2 – Viaduct Retrofit: The viaduct's columns would be retrofitted with steel casings, and infill walls would be constructed at additional columns and bents. All columns that are currently ident ified to have "Moderate-Severe" to "Severe" damage ratings would be encased to reduce the possibility of further deterioration. Additionally, the steel casings would be designed to withstand the high level of internal pressure due to ASR-induced lateral dilation of the encased column. Under this retrofit alternative, 76 columns would be encased, of which 26 would utilize 7/8-inch plates and 50 would use 5/8-inch steel plates. The exposed plates, channels, and bars would be concealed by a 6-inch layer of architectural mortar. All exterior columns with "Light" or "Moderate" damage ratings would also be encased to account for future concrete degradation due to ASR. Encasement of all exterior columns would also maintain visual balance and consistency for the retrofi tted structure. The interior columns in Bents 1, 4, and 5 would be encased to enhance their shear strength

Alternative 3 – Viaduct Replacement: The 6th Street Viaduct would be demolished and replaced with a new four-lane structure. Four alignment alternatives have been defined for the purpose of environmental evaluation (Figure 2). Each alignment alternative may be evaluated with multiple bridge types and profiles. Based on public input, the new viaduct may be designed with various use features, but no additional traffic capacity would be provided. The bridge types and profiles for the following alignment options have yet to be determined.

The analysis in this document assumes that, unless otherwise stated, the project would be designed, constructed and operated following all applicable laws, regulations, ordinances and formally adopted City standards (e.g., *Los Angeles Municipal Code* and Bureau of Engineering *Standard Plans*). Construction would follow the uniform practices established by the Southern California Chapter of the American Public Works Association (e.g., *Standard Specifications for Public Works Construction* and the *Work Area Traffic Control Handbook*) as specifically adapted by the City of Los Angeles (e.g., The City of Los Angeles Department of Public Works *Additions and Amendments to the Standard*

Specifications For Public Works Construction (AKA "The Brown Book," formerly Standard Plan S-610)).

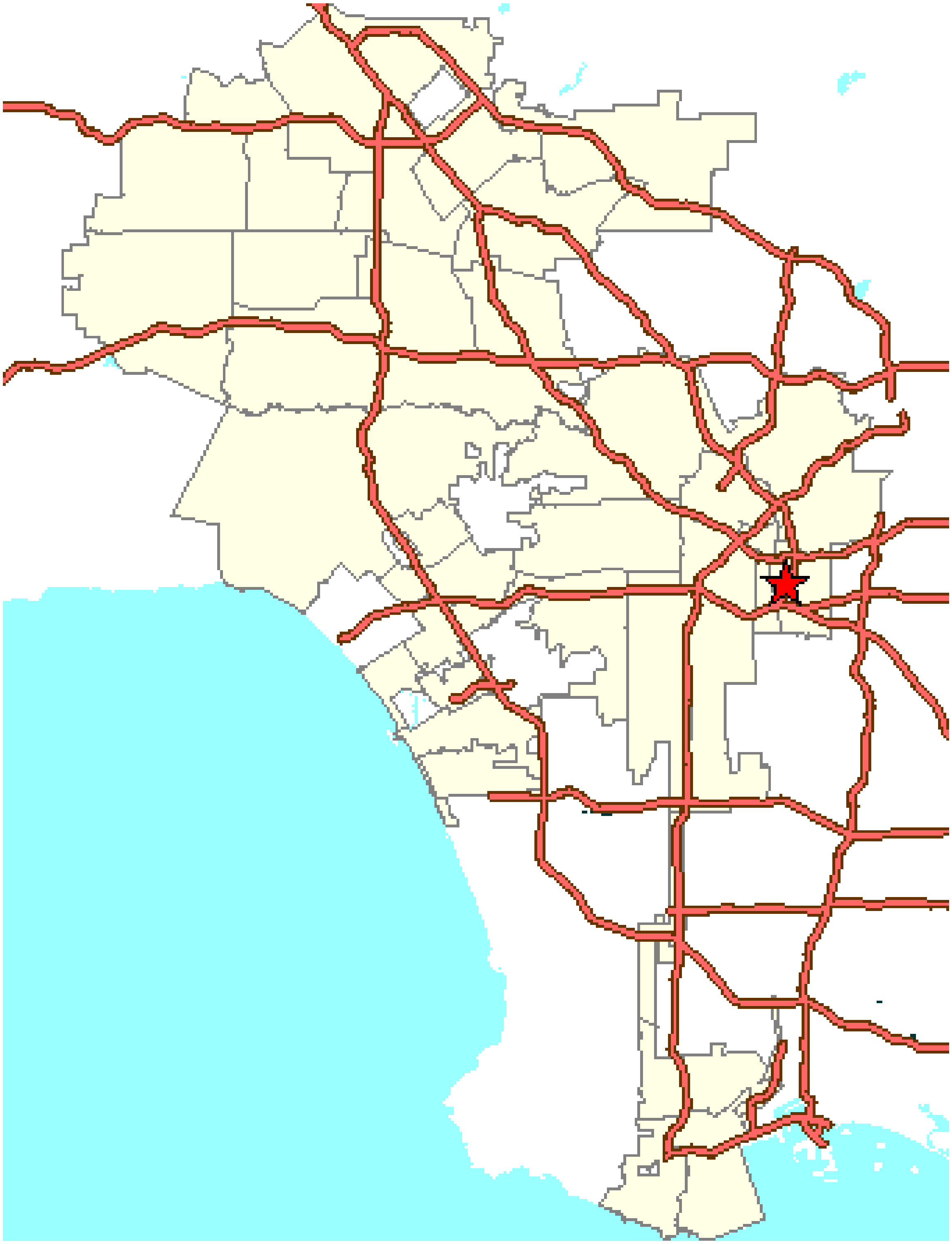

Figure 1. Regional Map

Figure 2. Vicinity Map

II. EXISTING ENVIRONMENT

The proposed project is located within a fully developed, mixed -use urban setting. The active construction zone would extend along 6th Street from west of I-5 on the east side of the Los Angeles River to Mill Street on the west side of the River (see Figure 2). The project is located at the boundary of the City of Los Angeles' Central City North and Boyle Heights General Plan Areas. 6th Street is one of the primary thoroughfares connecting downtown Los Angeles and Boyle Heights.

The 6th Street Viaduct crosses the Los Angeles River along an east -west alignment. Land uses along the north and south sides of the viaduct are predominantly industrial and commercial. The City maintenance office is located within the area underneath the viaduct on the west side of the river. Many homeless people are typically found sheltering under the viaduct on both sides of the river. A US Army Corps of Engineers tunnel is located under the viaduct on the west side to access the river.

In addition to the existing uses mentioned above, the Metropolitan Transit Authority (MTA) also owns a right-of-way corridor on the east and west banks of the river. On the west bank, the two tracks closest to the river are owned by MTA and used by the Southern California Regional Rail Authority (SCRRA) to operate Metrolink trains. The five tracks west of the MTA tracks are owned by Burlington Northern Santa Fe (BNSF), and the rest of the tracks are owned by MTA and used for the Metro Red Line. Amtrak and BNSF also operate trains on MTA's two tracks on the west bank. On the east bank, the two tracks closest to the river are owned by MTA, and the Union Pacific Railroad (UP RR) owns the rest of the tracks. UPPR also operates trains on MTA's tracks.

The Los Angeles River, which crosses under the viaduct in a north -south direction, is a trapezoidal concrete-lined channel. The Los Angeles River is a flood control channel that r eceives stormwater runoff from its 834-square-mile watershed, treated effluent from two wastewater treatment plants, and some rising groundwater (in the Glendale Narrows area). The river discharges to an estuary in Queensway Bay in the Long Beach Harbor. High voltage transmission lines are located along each bank of the river and cross over the viaduct

III. ENVIRONMENTAL IMPACT EVALUATION

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below ☒ would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist, which follows.

☒ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☐ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☒ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☒ Land Use/Planning
☐ Mineral Resources	☒ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☒ Transportation/Traffic
☒ Utilities/Service Systems	☒ Mandatory Findings of Significance	

ENVIRONMENTAL DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there would 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 would be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☒ I find that the proposed project MAY have a "potentially significant impact" on the environment and that an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Ara Kasparian, Ph.D.
Manager, Environmental Group
City of Los Angeles Department of Public Works
Bureau of Engineering

Date 7/25/07

ENVIRONMENTAL ANALYSIS AND DISCUSSION OF IMPACTS

I. AESTHETICS

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion:

The 6th Street Viaduct is a historic resource and is recognized as a visual landmark to the communities in the surrounding area as well as the general public within the City of Los Angeles. Implementation of any of the project alternatives would result in some degree of adverse impact to the visual character of the existing viaduct. The Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the proposed project would evaluate the visual and aesthetic impacts to scenic resources and the affected viewshed, and it would identify feasible mitigation measures to reduce any identified significant impact to a less than significant level.

II. AGRICULTURAL RESOURCES

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
the project:				
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?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Involve other changes in the existing environment which, due to their location or nature, could individually or cumulatively result in loss of Farmland, to non-agricultural use?	☐	☐	☐	☒

Discussion:

The proposed project is situated in a fully urbanized area that is devoid of farmland or agricultural operations.

III. AIR QUALITY

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐
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 emission which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion:

The proposed project is located in the South Coast Air Basin, which is in non-attainment for ozone and small particulate materials. Construction of the proposed project would marginally increase the emission of these air contaminants as a result of operating construction equipment; clearing of debris and asphalt; onsite excavation and grading; and transportation of demolition debris and excavated material to offsite disposal locations. The EIS/EIR will evaluate potential impacts to local and regional air quality, and identify measures to reduce potentially significant impacts to a less than significant level, as applicable.

IV. BIOLOGICAL RESOURCES

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 US Fish and Wildlife Service?	☐	☐	☒	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 US Fish and Wildlife Service?	☐	☐	☐	☒
c. Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☐	☐	☒
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion:

The project site is located within an urbanized industrial area of the City of Los Angeles and does not contain any significant biological resources, including riparian habitats, wetland, or protected trees. The project would not affect any biological resources. No further study is required.

V. CULTURAL RESOURCES

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☒	☐	☐	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Discussion:

The 6th Street Viaduct was built in 1932 and is 75 years old. According to the Caltrans Historic Bridge Inventory, the Viaduct is rated "2 – Eligible for listing by the National Register of Historic Places (NRHP)." Therefore, it is also included in the California Register of Historic Resources (California Register). In addition, several structures more than 50 years of age are located within the proposed project's area of potential effects. These structures will be evaluated and documented in the EIS/EIR.

A full Section 106 (of the National Historic Preservation Act) review, in consultation with the City of Los Angeles Cultural Heritage Commission, Los Angeles Conservancy, State Historic Preservation Officer (SHPO), Caltrans, and FHWA would be conducted as part of the EIS/EIR for this project. The Section 106 review would identify both archaeological and architectural historic resources subject to impact by the proposed project. The work would be done in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and the Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, under the stipulations of a Memorandum of Agreement (MOA) to be entered into between FHWA, SHPO, Caltrans, and the City of Los Angeles as a result of Section 106 consultation.

VI. GEOLOGY AND SOILS

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e. 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?	☐	☐	☐	☒

Discussion:

The proposed project would be located in Southern California, an area known to be seismically active and prone to earthquakes, which may result in hazardous conditions to people and property within the region. The existing 6th Street Viaduct's vulnerability to extensive damage as a result of a moderate event is the principal concern for undertaking the proposed project. The proposed project would be designed to meet seismic requirements of the local, state, and federal agencies governing the project.

Short-term erosion impacts could occur during the construction phase of the project. During grading, excavation, and other site preparation activities, unearthed and exposed soil could potentially be eroded. Implementation of standard erosion control would minimize the impacts to a less than significant level.

The EIS/EIR would address potentially significant impacts associated with seismic and short-term erosion impacts. Mitigation measures to reduce the identified significant impacts to a less than significant level would be provided.

VII. HAZARDS AND HAZARDOUS MATERIALS

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through the reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
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?	☐	☒	☐	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
h. Expose people or structures to the risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion:

The project site is characterized by industrial and commercial land uses. A potential to encounter hazardous wastes/materials exists within the proposed project's footprint. An Initial Site Assessment (ISA) was conducted along the viaduct corridor within the project limits to identify any hazardous waste or material sites or any potentially contaminated areas listed by federal, state, and local agencies (Parsons, 2007). Based on the ASTM E 1527-00 standard search distances, 183 sites were identified in the database. Only one of these sites has been determined to present a Recognized Environmental Condition (REC) having the potential to cause soil and/or groundwater contamination.

The viaduct and appurtenances may include asbestos-containing materials (ACM), and portions of the viaduct structure may have previously been treated with lead-based paint (LBP) coatings that would be disturbed by demolition. Unpaved soils adjacent to roadway surfaces within the project corridor (e.g., US 101) may contain aerially deposited lead (ADL).

A site investigation would be conducted during the engineering design phase of the project to confirm the extent of impact and to identify the appropriate mitigation measures. The result of the site investigation would be presented in the EIS/EIR.

The proposed project is situated within a heavy traffic area near downtown Los Angeles. Construction activities related to the proposed project would require traffic lane closures, which would be likely to interfere with traffic flows. Emergency response and evacuation plans that use affected roadways would be impacted in the short term. Implementation of a Traffic Management Plan (TMP) would be required to minimize the impacts to a less than significant level.

The EIS/EIR would discuss potential impacts associated with hazardous waste and materials, including interference with emergency response plans because of project construction. Mitigation measures to minimize these construction phase impacts to a less than significant level would be identified.

VIII. HYDROLOGY AND WATER QUALITY

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
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 (i.e., 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)?	☐	☐	☐	☒
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 that would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
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?	☐	☐	☐	☒
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems to provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f. Otherwise substantially degrade water quality?	☐	☐	☐	☒
g. Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h. Place within a 100-year floodplain structures that would impede or redirect flood flows?	☐	☐	☐	☒
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?	☐	☐	☐	☒
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion:

The 6th Street Viaduct crosses the Los Angeles River through a section that is concrete lined and fully channelized. The proposed project would involve some work in the channel to either retrofit, remove or reconstruct existing piers, depending on the alternative selected. A n hydraulic analysis would be conducted to assess the impact to the river flow and floodway elevation within the channel.

The City of Los Angeles in cooperation with the California Department of Fish and Game (CDFG), the Regional Water Quality Control Board Los Angeles Region (RWQCB), United States Army Corps of Engineers Los Angeles District (USACE), and Caltrans District 7, has developed a classification system and menu of Construction Best Management Practices (BMPs) to address the potential for bridge construction projects to harm waterways. Adherence to the approved BMPs would ensure impacts to water resources are minimized to the level of less than significant.

IX. LAND USE AND PLANNING

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	☒
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?	☐	☒	☐	☐
c. Conflict with any applicable habitat conservation plan or natural communities conservation plan?	☐	☐	☐	☒

Discussion:

The project is located at the boundary of the City of Los Angeles Central City North and Boyle Heights General Plan Areas.

Within the Central City North Community Plan Area, the project site is located in the South Industrial Area, one of the major industrial districts within the City of Los Angeles. The South Industrial Area is located between Alameda Street and the Los Angeles River, and between 3rd Street and US 101. Preservation of industrial land use designations is a main objective of the Central City North Community Plan. The project area is also located in the Artists -in-Residence District, which is situated between the Santa Ana Freeway and Santa Monica Freeway and between Alameda Street and the Los Angeles River. Although the largest concentration of artists' residences is located outside of the project area between 1st Street and Palmetto Street and Alameda Street and the Los Angeles River, they are not restricted to those boundaries and may be encountered in the project area.

The Boyle Heights Community, situated east of the river, was developed as one of the first residential suburbs in Los Angeles when rail and rail -related uses began to expand and dominate the Los Angeles River corridor. would Immigrants and residents employed by the railroads a nd related industrial sectors settled in the Boyle Heights area. Moreover, some of the first public housing projects were constructed in Boyle Heights.

The Community Redevelopment Agency of Los Angeles (CRA) has two redevelopment projects in the project area including the Central Industrial Redevelopment Project and the Adelante Eastside Redevelopment Project. The Central Industrial Redevelopment Project is located in the western portion of the project site. The Adelante Eastside Redevelopment Project i s located in the eastern portion of the project site. The redevelopment projects are to revitalize the area, eliminate blight, and preserve industrial and commercial uses.

The Los Angeles River Revitalization Master Plan (LARRMP) is the conceptual framework to guide the revival of the Los Angeles River corridor. The 32-mile-long and one-mile-wide river plan spans from the area of Topanga Canyon east to River Glen and South to around Washington Boulevard. The plan is currently in the Draft Programmatic EIR/Programmatic EIS stage of the environmental process.

The project area lies within the "Downtown Industrial opportunity area," one of the five demonstration areas of the LARRMP. Two alternatives were considered for the development of the opportunity area: the DI-A and DI-B concepts. Both DI-A and DI-B designate 6th Street in the project area as a Primary Arterial Green Street. The alternatives also propose an expanded multi-use and bicycle trail on the western bank of the Los Angeles River, and a promenade along the eastern bank of the river, each having its own underpass beneath the 6th Street Viaduct. In addition, both alternatives provide pedestrian bridge access ramps from the west side of 6th Street north to the proposed expanded trail. Alternative DI-A designates the eastern portion of the project area on 6th Street as a *Neighborhood Gateway*, while Alternative DI-B establishes the eastern side of the project area as a *Regional Gateway*.

Since the proposed project may facilitate development of the area surround the existing viaduct, the EIS/EIR would evaluate the compatibility of the proposed project development with various land use plans, policies and zoning within the project area.

X. MINERAL RESOURCES

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion:

The proposed project is located in a highly urbanized area of the City of Los Angeles. No mineral resources that would be of value to the region or residents of the state have been identified in the vicinity of the project site. The State Department of Conservation has not designated the project site as a Significant Mineral Aggregate Resources Area; thus, no impacts resulting from the loss of mineral resources are anticipated.

XI. NOISE

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
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?	☐	☐	☐	☒
b. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	☒	☐	☐	☐
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
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?	☐	☐	☐	☒
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion:

Construction of the replacement alternative would require demolition of the existing viaduct and construction of the new structure, which could take up to 4 years. Ambient noise levels may temporarily increase when construction equipment is operating. Ground-borne vibration as a result of the new viaduct structure construction could also occur, potentially during the foundation construction phase. In addition, residents, businesses, and the general public along the designated traffic detour and material hauling routes could experience higher noise levels and ground-borne vibration during the construction period. The project would fully comply with the City's noise ordinance or require a permit from the Police Commission. The EIS/EIR would analyze noise impacts as a result of project construction and identify appropriate mitigation measures to minimize the project impacts.

Following construction, the proposed project is not expected to elevate ambient noise levels because the project would not cause and increase in traffic volumes along the viaduct corridor.

XII. POPULATION AND HOUSING

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion:

The project would not have any growth-inducing effects and would not result in the extension of roads or other infrastructure. The project would require some right-of-way acquisition, the extent of which would depend on the alignment alternative to be selected. The areas to be potentially acquired are mostly industrial and businesses. No residential relocation is anticipated. The EIS/EIR would address the right-of-way acquisition impacts and any necessary relocations within the proj ect limits. Environmental justice impacts would also be addressed in the EIS/EIR. Mitigation measures to minimize the impacts to a less than significant level would be identified.

XIII. PUBLIC SERVICES

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

Discussion:

The proposed project would not require additional police and fire protection or generate a need for new police or fire facilities in the area.

XIV. RECREATION

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Discussion:

The project would not generate any additional population; therefore, it would not increase demand for neighborhood or regional parks or other recreational facilities. No impacts to parks or other recreational facilities are anticipated. The project could possibly be designed to enhance the area surrounding the viaduct for recreational purposes and to be in compatible with the Los Angeles River Revitalization Plan. This aspect of t he project could be considered a benefit to the community and the region. This opportunity would be addressed in the EIS/EIR.

XV. TRANSPORTATION/TRAFFIC

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase i n either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
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?	☐	☐	☐	☒
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e. Result in inadequate emergency access?	☐	☒	☐	☐

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
f. Result in inadequate parking capacity?	☐	☒	☐	☐
g. Conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

Discussion:

In the event the replacement alternative is selected, the viaduct would be closed for demolition and construction for a period of up to four years. Traffic normally going across 6th Street and the viaduct would have to be rerouted to designated detour routes during this period. The impact from traffic rerouting, including parking loss, during this long construction duration would have to be addressed and mitigation measures identified.

The proposed project would not increase the traffic lanes on the viaduct or the 6th Street approaches. Once the project is in operation, there would be no change in traffic capacity and level of service within the local or regional networks related to the viaduct construction.

XVI UTILITIES AND SERVICE SYSTEMS

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e. Result in a determination by the wastewater treatment provider that serves or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion:

The proposed project would not require additional utility or service systems.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE

Issues & Supporting Information Sources	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☒	☐	☐
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, effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c. Does the project have environmental effects, which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion:

The project site is presently developed and devoid of significant fish, wild life, and/or plant populations. Construction activities would not degrade or have adverse impacts on the natural environment. If the replacement alternative is selected the historic viaduct would have to be demolished, or if it is retrofitted the viaduct would be substantially modified. The 6th Street Viaduct has been identified as eligible for listing on the NRHP and is also included in the California Register. In addition, several buildings within the vicinity of the viaduct that may be subject to right-of-way acquisition are more than 50 years old. These building are subject to evaluation to determine their historical significance. The EIS/EIR would provide further analysis of impacts on historic resources within the project limits and would identify possible mitigation.

Several known and foreseeable projects are planned within the vicinity of the project area. The EIS/EIR would identify all related projects in the immediate vicinity of the proposed project and analyze them for potential cumulative effects. Mitigation measures to reduce potentially significant adverse cumulative impacts would be identified and presented in the EIS/EIR.

XVIII. REFERENCES

City of Los Angeles, 2007. Draft Programmatic Environmental Impact Report/Programmatic Environmental Statement for the Los Angeles River Revitalization Master Plan. January. 2000.

Central City North Community Plan. December. 1998

Boyle Heights Community Plan. November. 1998

L.A. CEQA Threshold Guide. 2006

City of Los Angeles Bureau of Engineering, 2006. Prelimi nary Environmental Study, 6th Street Viaduct Seismic Improvement Project. March 2006

Parsons, 2007. Initial Site Assessment, 6th Street Viaduct Seismic Improvement Project. February. 2006

Appendix B
Section 4(f) Evaluation

Appendix B **Section 4(f) Evaluation**

1. Introduction

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327. Applicable technical reports for this Section 4(f) evaluation are as follows:

- Historic Resources Evaluation Report for 6th Street Viaduct Seismic Improvement Project, October 2007
- Archaeological Survey Report for 6th Street Viaduct Seismic Improvement Project, July 31, 2008
- Historic Property Survey Report for 6th Street Viaduct Seismic Improvement Project, October 2007

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S.C. 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- there is no prudent and feasible alternative to using that land; and
- the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer (SHPO) is also needed.

In general, a Section 4(f) "use" occurs with a Department of Transportation-approved project or program when any of the following conditions are met:

- **Direct Use.** A direct use of a Section 4(f) resource takes place when property is permanently incorporated into a transportation facility (23 *Code of Federal Regulations* [CFR] Section 774.17). This may occur as a result of partial or full acquisition of a fee simple interest, permanent easements, or temporary easements that exceed regulatory limits noted below.

- **Temporary Use.** A temporary occupancy of a Section 4(f) resource is considered a "use" when it is adverse in terms of the preservationist purposes of the Section 4(f) statute; however, under Federal Highway Administration (FHWA) regulations (23 CFR Section 774.13(d)), a temporary occupancy of property does not constitute a use of a Section 4(f) resource when the following conditions are satisfied.
  - The occupancy must be of temporary duration (i.e., shorter than the period of construction of the project) and not involve a change in ownership of the property.
  - The scope of the work must be minor, with only minimal changes to the Section 4(f) property.
  - There are no permanent adverse physical impacts or interference with the protected activities, features, or attributes of the property.
  - The property being used must be fully restored to a condition that is at least as good as that which existed prior to the project.
  - There must be documented agreement of the appropriate official having jurisdiction over the resource regarding the above conditions.

- **Constructive Use.** A constructive use of a Section 4(f) resource occurs when a transportation project does not permanently incorporate land from the resource, but the proximity of the project results in impacts (i.e., noise, vibration, visual, access, and/or ecological impacts) so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (i.e., "constructive use").

Section 4(f) is applicable to historic and archaeological resources when the resources are included on, or eligible for, the National Register of Historic Places (NRHP) (23 CFR 774.17). Section 4(f) does not apply to an archaeological site on or eligible for the NRHP where it is determined after consultation with the SHPO and the Advisory Council on Historic Preservation (ACHP) that the resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place (23 CFR 774.13(a)(1)). However, per Stipulation VIII.C.3 of the Section 106 Programmatic Agreement (PA) between the ACHP, FHWA, SHPO, and Caltrans (Caltrans 2003:4), "If archaeological properties within an undertaking's APE[121] are protected from any potential effects (and therefore, not subject to a Section 4(f) "use") by

[121] Area of Potential Effects

establishment and effective enforcement of an Environmentally Sensitive Area (ESA), as described in Attachment 5 to … Agreement, the signatories agree that Caltrans may consider such properties to be NRHP eligible for the purposes of that undertaking without conducting subsurface testing or surface collection" (clarification added for relevancy to Section 4(f)). Constructive use does not occur when compliance with the requirements of Section 106 of the National Historic Preservation Act (16 U.S.C. §470) and related regulations defining proximity impacts of a proposed project on an NRHP site results in a finding of "no effect" or "no adverse effect" (23 CFR 774.15(f)(1)).

The FHWA Section 4(f) Checklist, *Attachment B – Park, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f),* revised July 1998, represents their recommended "best practices" for compliance with Section 4(f) requirements. Attachment B of the checklist indicates that all archaeological and historical sites within the Section 106 Area of Potential Effect (APE) and all public parks, recreational facilities, and wildlife refuges within approximately 0.5-mile of any of the project alternatives should be included in the evaluation.

Caltrans has prepared this Section 4(f) evaluation because the proposed project would involve the use of Section 4(f) resources. This evaluation identifies Section 4(f) resources in the project area, describes the nature and the extent of the use of these resources, evaluates the alternatives that would avoid the use of Section 4(f) resources, and describes measures that would minimize harms to the affected resources.

2. Description of Proposed Project

2.1 Proposed Project

Caltrans and the City of Los Angeles (City) propose to undertake seismic and design improvements to the 6th Street Viaduct over the Los Angeles River (Bridge No. 53C-1880) and the 6th Street Overcrossing, which is a portion of the US 101 Hollywood Freeway (Bridge No. 53-0595). The 6th Street Viaduct and Overcrossing comprise a single structure located in a highly urbanized area just east of Downtown Los Angeles in the City and County of Los Angeles, California, as shown in Figure 1. This historic structure, constructed in 1932, spans a portion of the US 101 Hollywood Freeway, the Los Angeles River, city streets, and several railroad tracks. The project limits extend between Mateo Street on the west side of the river to just east of US 101 on the east side (Figure 2).

The proposed project would correct seismic deficiencies of this critical Los Angeles River crossing by either retrofitting the existing structure or replacing the viaduct entirely. The seismic vulnerability is due to outdated structural design and overall cracking and deterioration of the concrete elements of the viaduct over the last 75 years as a result of an internal chemical reaction called Alkali-Silica Reaction (ASR), as described below in Section 2.3, Purpose and Need, and in detail in Chapter 1 of the Environmental Impact Report/Environmental Impact Statement (EIR/EIS). The level of damage in various elements of the 6th Street Viaduct due to ASR is shown in Figure 3.

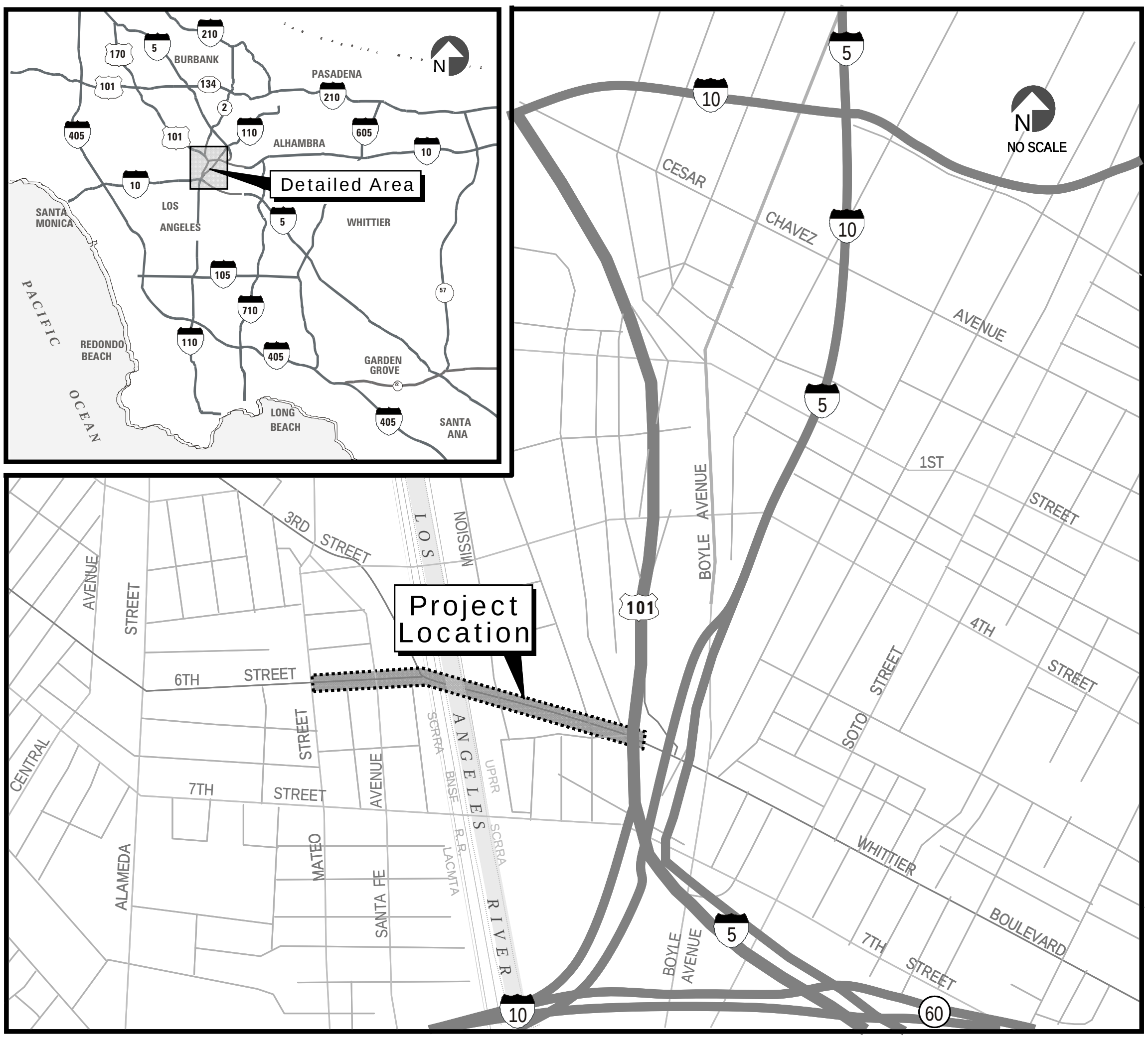

Figure 1 Project Location and Vicinity Maps

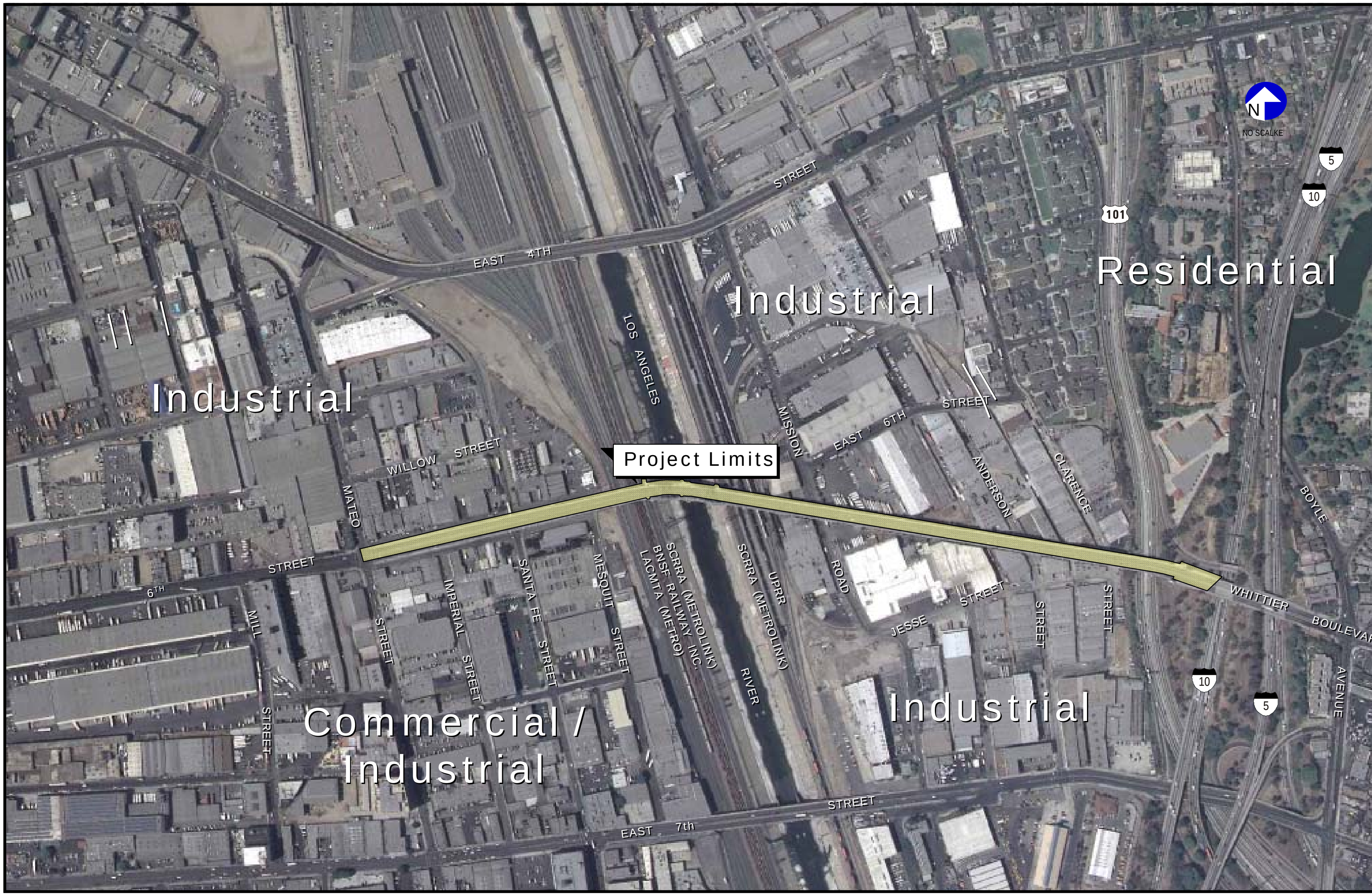

Figure 2 Project Limits

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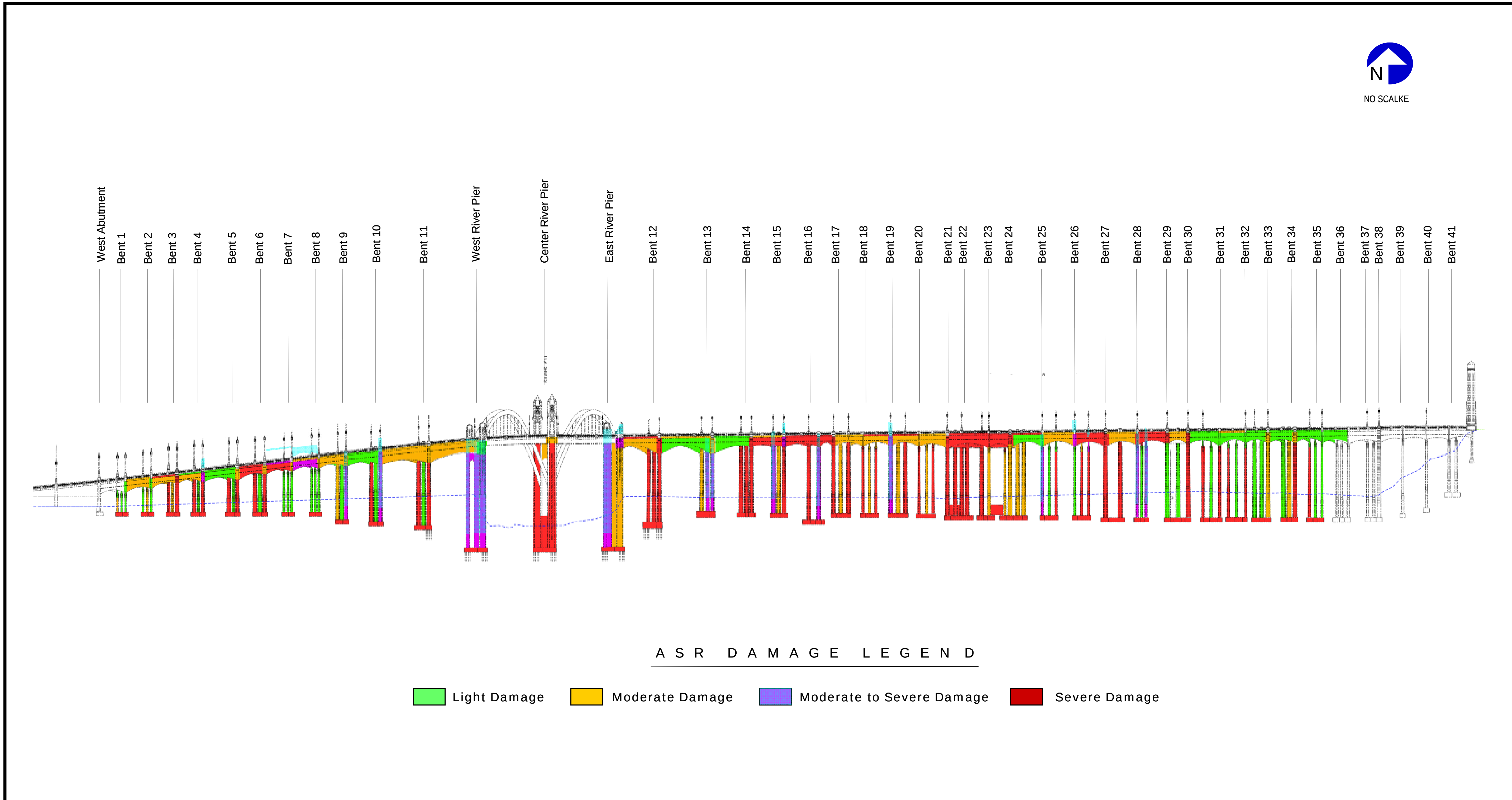

Figure 3 Level of Damage in Various Elements of the 6th Street Viaduct due to ASR

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Under the Replacement Alternative, other design (functional) deficiencies of the existing viaduct would be corrected to meet current codes set forth by the American Association of State Highway and Transportation Officials (AASHTO) and the City of Los Angeles Department of Transportation (LADOT). These functional deficiencies include inadequate roadway width (no outside shoulders and substandard sidewalk width), substandard bridge and approach railing (not meeting crash standards), insufficient stopping sight distance along the main span, and lack of a safety median. Nearby roadway, intersection, and adjacent land improvements would also be undertaken. More-detailed information on the proposed project and alternatives, as well as a complete description of the existing viaduct, can be found in Chapter 2, Proposed Project Alternatives, of the EIR/EIS.

2.2 Project Alternatives

Several project alternatives were developed during the project development phases. Screening exercises were conducted to select the most viable alternatives for evaluation in the environmental document. Selection of an alternative will not occur until there is full evaluation of all environmental impacts, consideration of all public hearing comments, and approval of the final environmental document.

Alternative 1 – No Action

This alternative provides neither retrofit nor replacement of the seismically and functionally deficient 6th Street Viaduct. The alkali silica reaction (ASR)-induced deterioration of the structure would continue, and the seismic vulnerabilities would worsen as the concrete strength continued to deteriorate. The City would provide ongoing inspection and maintenance on the viaduct to keep it open to traffic as long as possible, given the ongoing ASR deterioration and seismic vulnerabilities. The 6th Street Viaduct would remain at its existing roadway width of 46 feet (ft), which accommodates two travel lanes in each direction with no outside shoulders or safety median. None of the design deficiencies would be corrected under this alternative.

Alternative 2 – Viaduct Retrofit

Two retrofitted schemes were selected for detailed study and evaluation in the EIR/EIS, including Infill Wall and Heavy Steel Casing and Substructure Replacement. The following subsections provide detailed descriptions of each retrofit scheme.

<u>Retrofit using Infill Wall and Heavy Steel Casing Method</u>

Under this alternative, the viaduct's columns would be retrofitted by encasing them with steel, and infill walls would be constructed between selected columns. In addition, new foundations, grade beams, retrofitting of bent caps, and closure of some expansion joints in the superstructure would be constructed in combination with the column retrofits. The structure would be retrofitted to the minimal standard of “no collapse” for the design seismic event.

Column Retrofit

Under this retrofit alternative, 76 columns would be encased, of which 26 would utilize 7/8-inch plates and 50 would utilize 5/8-inch steel plates. A 6-inch layer of architectural mortar would conceal the exposed plates, MC8x18.7channels, and bars (Figure 4). All exterior columns with “Light” or “Moderate” damage ratings would also be encased to account for future concrete degradation due to ASR expansion. Encasing all exterior columns would also maintain visual balance and consistency for the retrofitted structure. The interior columns in Bents 1, 4, and 5 would be encased to enhance their shear strengths. Bent 12 would be excluded from retrofitting because of the lack of space available for construction of the column encasement due to proximity of railroad tracks.

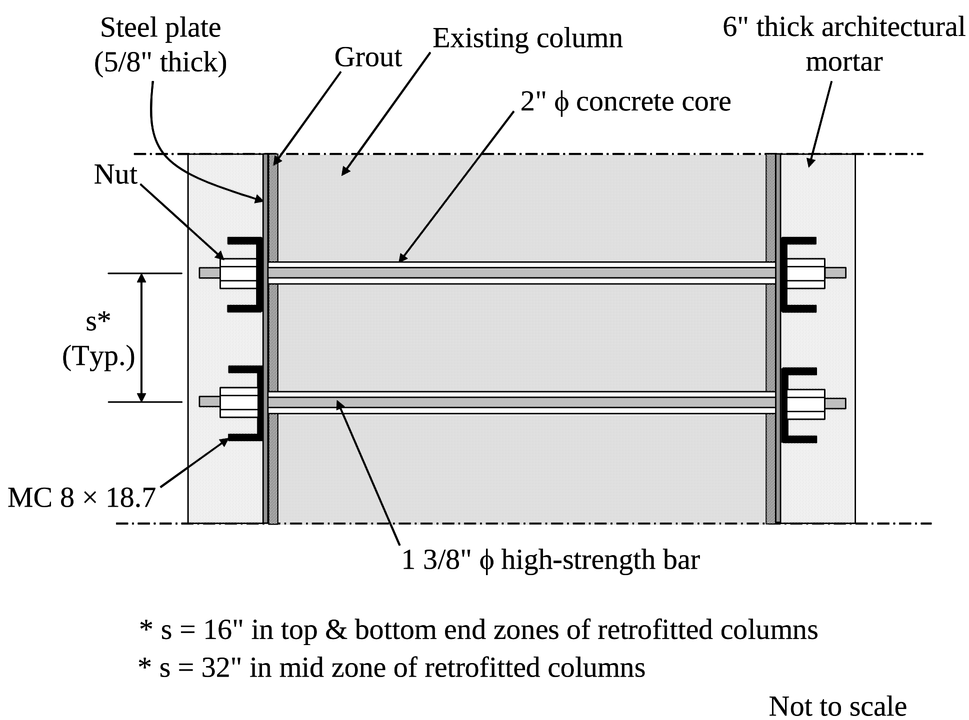


Figure 4 Steel Encasement of Columns

<u>Infill Walls, New Foundations, Grade Beams, and Closure of Expansion Joints</u>

Infill shear walls would be constructed between the columns to reduce transverse seismic movements of the structure. Grade beams would be constructed below ground between the existing pile caps to reduce longitudinal seismic movement of the structure. Expansion joints in the superstructure would be reconstructed at Bents 27 and 33, connecting adjacent spans to reduce seismic longitudinal displacement demands for the East Approach Spans. Figure 5 presents a conceptual sketch of the proposed infill walls and column casings.

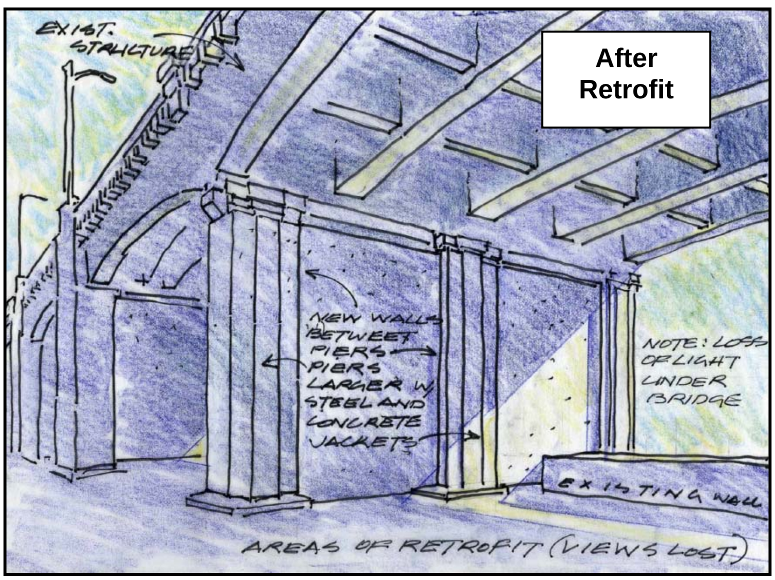


Figure 5 Conceptual Drawing Alternative 2 – Retrofit

<u>Bent Caps Retrofit</u>

Retrofitting of bent caps would ensure that the expected seismic damage would take place in a controlled fashion. Retrofitting of bent caps for flexural strength enhancement is proposed at 16 bents (excluding Bents 27 and 33 where expansion joints would be closed). Bent cap retrofit would be achieved by means of concrete bolsters, which would be bonded to the bent caps by dowels that run through pre-drilled cores in the existing bent cap. Continuity of the concrete bolsters along the length of the bent cap would be achieved by post-tensioning of high-strength bars that would run through pre-drilled cores in the superstructure girders (see Figure 6). The post-tensioning bars would be anchored at their ends by exterior steel plates; these exposed plates and the bars would also be concealed by mortar.

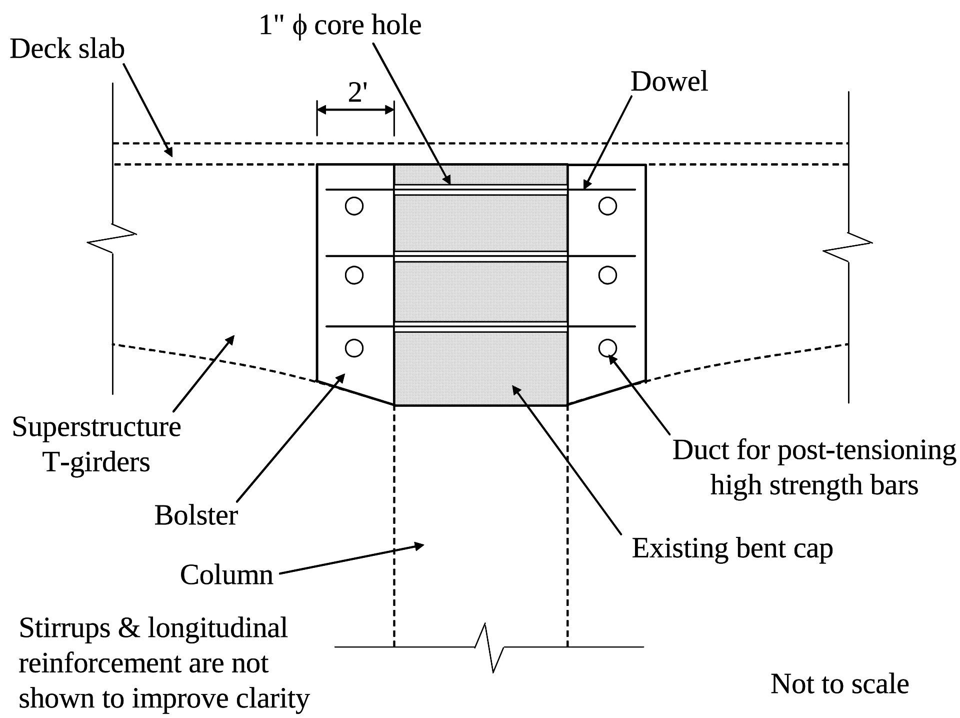


Figure 6 Retrofitting of Bent Caps by Concrete Bolsters

Bent caps at locations of expansion joints would be retrofitted as shown schematically in Figures 7 and 8. The positive flexural moment capacity would be enhanced by adding drop caps at the soffit of the existing bent caps. The new drop caps would be bonded to the existing bent cap by dowels. Steel plates would be placed along the sides of the bent caps and bonded to the concrete by means of high-strength bars inside core holes. The steel plates would enhance flexural capacity and resistance to horizontal shear.

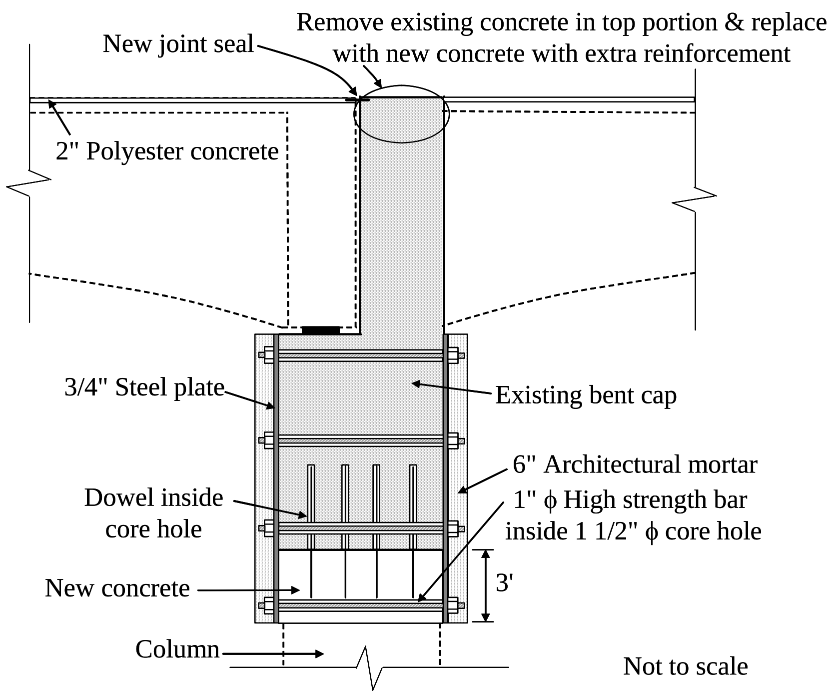


Figure 7 Bent Cap Retrofit at Expansion Joints (one simply supported span)

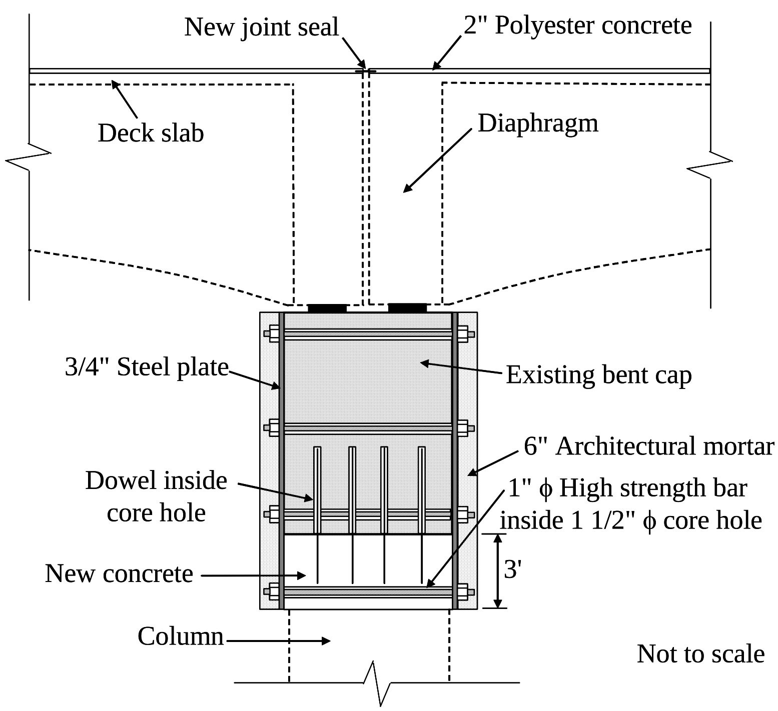


Figure 8 Bent Cap Retrofit at Expansion Joints (two simply supported spans)

River Piers Retrofit

The river piers would be retrofitted by placing infill walls between columns at the West and East River Piers. In addition, new pile foundations would be constructed around the existing foundations at the West and East River Piers to confine the poor lap-splices of the longitudinal column reinforcement and to allow column bases to develop their full plastic moment capacities.

New Expansion Joint Seals

Installation of new expansion joint seals is essential for long-term efficiency of the retrofit design because it helps protect the substructure from direct water flow onto concrete membranes. Additional moisture at the concrete surface can accelerate the ASR and subsequent concrete damage. Figures 7 and 8 show the proposed new expansion joint seals.

Alternative 3 – Viaduct Replacement

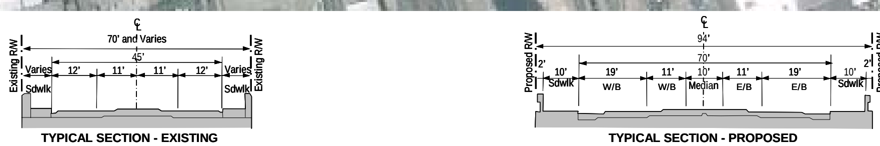
This alternative would construct a new viaduct along one of the three alignments under study. The main-span bridge type would be selected from one of the five alternatives under consideration. The design life expectancy of Alternative 3 is 75 years

Viaduct Alignment Corridors

Three viaduct replacement alignments; (i.e., 3A, 3B, and 3C); out of ten that were evaluated (refer to Section 2.4.2 for information on all alternatives evaluated) were selected for design consideration, as shown in Figure 9. A description of each alignment is provided below.

Alignment 3A: The replacement structure would be built along a new horizontal alignment. The new structure would have a cross section that meets secondary highway standards as required by LADOT. The new 70-ft-wide (curb-to-curb) roadway would consist of two 11-ft-wide lanes in each direction, a 10-ft-wide median, and 8-ft-wide shoulders. The proposed cross section also allows for 10-ft-wide sidewalks.

The new viaduct structure would extend east from Mateo Street to just east of US 101. The new roadway design has a transition on the west side of the river from the existing street width at Mill Street to the ultimate width of the proposed 6th Street Viaduct Replacement Alternative at Mateo Street. Because of the wider viaduct replacement structure, the north side of the viaduct footprint would extend further to the north, while the south side of the footprint would remain essentially at the same location except for the segment of the alignment over the Los Angeles River, which would be shifted slightly to the south to improve the horizontal curve radius and provide improved safety with better stopping sight distances.



PARSONS

Figure 9
Alignment Alternatives Selected for Further Study

Alignment 3B: The new viaduct would be designed with the same cross section as Alignment 3A. This option proposes a horizontally curved alignment beginning west of Santa Fe Avenue to the east bank of the river. The curve in the alignment is more gradual than Alignment 3A. This alignment, similar to Alignment 3A, maintains its present location on the south side of the existing bridge from Mateo Street to Santa Fe Avenue, and the alignment shifts to the north from Santa Fe Avenue to the east as it crosses over the river. This alignment would swing to the north approximately 85 ft further than the existing alignment on the east side of the river, which would eliminate the existing tight radius curve at the east end.

Alignment 3C: The new viaduct would be designed with the same cross section as Alignment 3A. To accommodate the wider viaduct, the footprint of the viaduct would be extended on the north and south sides, except for the area between Mateo Street and Mesquit Street, which would be wider to the north only. The segment that extends from the river to the east would be constructed so that the columns and foundations lie within existing right-of-way (ROW) and the viaduct roadway deck extends beyond the existing ROW over adjacent private properties.

Bridge Types

Fifteen (15) bridge concepts (types) were developed. Based on the Community Advisory Committee (CAC) and technical staff input, these were screened down to five bridge concepts for further consideration. A description of each bridge type is provided below. Each of the five bridge concepts could be constructed on any of the viaduct replacement alignments (i.e., 3A, 3B, or 3C) discussed above. Full details on the bridge types are contained in the *Advanced Planning Study for 6th Street Viaduct Seismic Improvement Project – Structural Type Screening Phase*.[122]

Bridge Concept 1 – Main Span Replication. The new replica bridge would capture the essence of the old landmark bridge with its decorative offset corner elements, similar steel arches, "deco" detailing and offset of planes at the pier walls, and corners with decorative dentil detailing below the concrete barrier along the entire length of the viaduct. The structure would mimic the original design with complimentary dual arches – the suspender elements spring out from the middle of the river pier to the thru-arch buttressing at the river bank piers. The new main center pylon with its belvederes would maintain the pedestrian viewing area of the original 1932-designed belvederes. Also, the central pier, which historically extended above the bridge deck until being removed in the 1950s, would be reintroduced in the replacement structure of Concept 1 (Figure 10).

[122] Advanced Planning Study for 6th Street Viaduct Seismic Improvement Project – Structural Type Screening Phase. June 2008.

Figure 10 Computer Model of Bridge Concept 1

Bridge Concept 2 – Cast-in-Place (CIP) Box Girder with Steel Tied Arch Pedestrian Ways. The bridge design of Concept 2 would employ a combination of some of the structural elements proposed for Concept 1 (Figure 11). The main span of the bridge would be a concrete box girder with gateway monuments at each end. In addition, the pedestrian would be separated from the bridge deck at the main span, allowing pedestrians to enjoy a different experience while crossing the bridge.

Figure 11 Computer Model of Bridge Concept 2

Bridge Concept 3 – Steel Half-Through Arch with CIP Box Girder Approaches. The design of Concept 3 would pick up structural elements found on the original half-through arch of the landmark main span (Figure 12). Reaching over the Los Angeles River, the new half-through arches would intersect the bridge deck and nestle into the embankment piers. The lateral tie beams between the arches above the deck would be similar in cross section to that of the arch and vertical structural members of the original bridge.

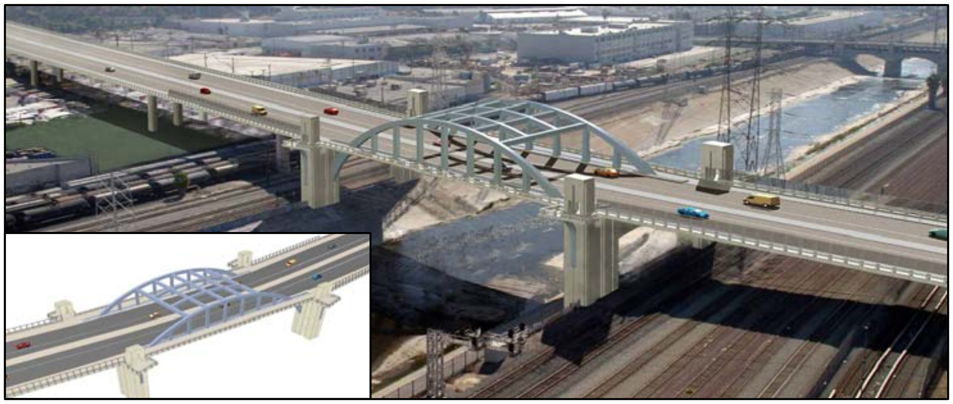


Figure 12 Computer Model of Bridge Concept 3

Bridge Concept 4 – Extradosed Concrete Box Girder with Dual Pylons. Bridge Concept 4, a contemporary cable-supported structure, would present a 21st century structural solution that introduces a relatively new technology to the United States (Figure 13). This extradosed type bridge, with dual exterior towers, could invoke a uniquely modern statement over the river. The top of each tower would be illuminated to enhance the nighttime effect of this distinctive structure.

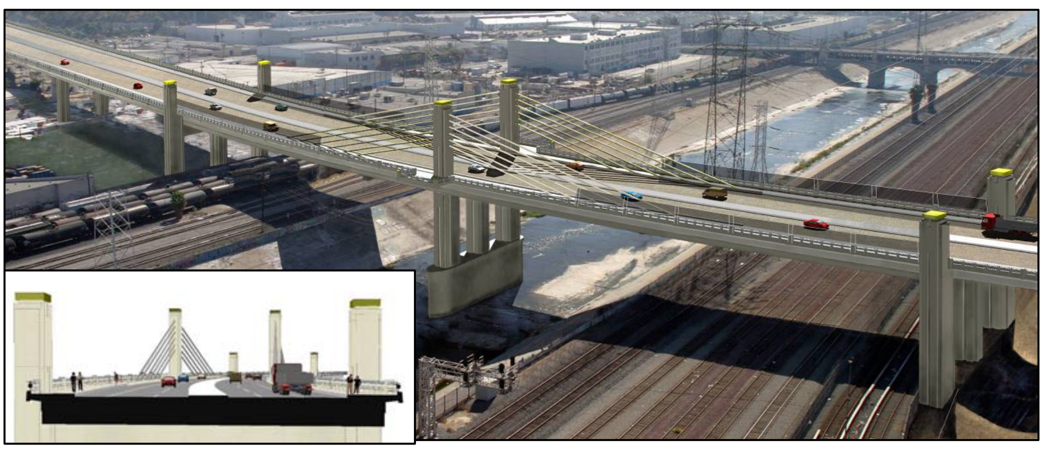


Figure 13 Computer Model of Bridge Concept 4

The bridge's main span would be composed of six vertical elements that rise above the bridge deck. The four lower elements on either end of the center span would designate crossing of the Los Angeles River. The two center pylons would house the cables that support the river span. All of these elements would boast details that derive their scale and decorative form from the existing viaduct. These six vertical elements would also acknowledge that the traveler is on 6th Street. Each pylon would be further accented by lights that crown each top. As a variation, the four lower tower elements could be designed to house cables similar to the two center pylons, thus providing three dual towers with cables.

Bridge Concept 5 – Extradosed Concrete Box Girder with Single Pylon. Concept 5 would comprise six extradosed structures spanning along the center of the bridge and viaduct approaches (Figure 14). As with Concept 4, this bridge concept is a state-of-the-art 21st century design with its cabled shapes. The six bridge towers would be symbolically representative of 6th Street. Lighting elements at the top of each tower would be furnished to reinforce the six elements of the 6th Street Viaduct.

Figure 14 Computer Model of Bridge Concept 5

2.3 Project Purpose and Need

A detailed description of the project purpose and need can be found in Chapter 1, Sections 1.3 and 1.4, of the EIR/EIS. In summary, the purpose of the proposed project is to achieve the following objectives:

- Preserve 6th Street as a viable east-west link between Boyle Heights and Downtown Los Angeles
- Reduce vulnerability of the 6th Street Viaduct in major earthquake events
- Resolve design deficiencies of the 6th Street Viaduct

The 6th Street Viaduct was constructed in 1932 using state-of-the-art concrete technology at that time and onsite mixing plants. Over the last 75 years, concrete elements of the viaduct have cracked and deteriorated as a result of ASR. The ongoing ASR has led to significant deterioration of the structure's concrete strength and loss if seismic integrity. This deterioration of the 6th Street Viaduct has been occurring for at least 75 years, despite many efforts to arrest or limit its effect. In the late 1980s, the deck of the viaduct was stripped of asphalt, and a waterproof coating was applied to the underlying concrete in an attempt to minimize moisture infiltration; water is a necessary component for ASR. In addition, the viaduct has been repeatedly patched using epoxy injection, which is a process that has left stains and discoloration and necessitated the application of a cementitous coating to hide the unsightly honeycomb effect of these repairs and to further seal the surface from moisture. Cracking is evident throughout the viaduct, with large cracks and spalling evident on its outer columns.

The proposed project would correct seismic deficiencies of this critical Los Angeles River crossing by either retrofitting the existing structure or replacing the 6th Street Viaduct entirely.

While the deteriorated surface appearance of the viaduct is an issue, its underlying structural integrity is of much greater concern. In 1989, the Whittier Narrows earthquake caused damage to shear keys and caused a column crack at Bent 33. The structure has since been classified by Caltrans as Category I and placed on the mandatory seismic retrofit list.

In the mid 1990s, Caltrans conducted an evaluation of Bridge No. 53-0595, which is the portion of the viaduct owned by Caltrans that crosses US 101. This evaluation determined that seismic retrofit was warranted, and in 1995 Caltrans undertook a retrofit construction project for that portion of the 6th Street Viaduct. The Caltrans seismic retrofit project placed infill walls between existing columns at the bents adjacent to the mainline roadbed, from Bent 37 to the east abutment. While this improvement was consistent with the Category I seismic retrofit program by eliminating potential collapse vulnerabilities, it did not resolve the long-term ASR problem and only improved the state-owned 235-ft-long portion of the 3,500-ft-long viaduct. The City elected to not move forward with a retrofit design similar to the one employed by Caltrans because of concerns that such a strategy did not address the ongoing degradation of the viaduct concrete due to ASR. The ASR deterioration weakens the concrete strength, which results in greater seismic vulnerability over time. ASR damage cannot be reversed after the reaction has taken place within the concrete, and the reaction continues to occur on the viaduct. In late 2000, the City engaged a consultant to conduct a material testing program to determine the strength of the existing concrete and the overall condition of the structure. This extensive material testing and investigation program, which was completed in January 2002, confirmed the presence of severe cracking and low concrete strength throughout the viaduct, and it identified its root cause to be ASR.

The *Final Seismic Retrofit Strategy Report*, which was completed in 2004,[123] concluded that the viaduct, in its current state of material deterioration and lack of structural strength, has a high vulnerability to failure in a major earthquake. The probability that the viaduct will experience significant structural failure, and possibly collapse, under major seismic events exceeds 70 percent in 50 years. This vulnerability level is extremely high compared to the normally accepted collapse probability of 10 percent or less over 50 years, as defined by AASHTO. The high risk of

[123] Sixth Street Viaduct Over the Los Angeles River Final Seismic Retrofit Strategy Report. June 2004.

collapse and continuing concrete deterioration indicates the need for timely corrective action to either seismically retrofit the viaduct or replace the viaduct.

In addition to its vulnerability to collapse under predictable seismic forces, the 6th Street Viaduct also has design and operational safety deficiencies issues based on current standards.

The City-owned viaduct (Bridge No. 53C-1880) has a sufficiency rating of 52.4.[124] Bridges are deemed structurally deficient by the federal government if the deficiency rating is below 80, and therefore eligible for federal funding to correct the deficiency. The purpose of the rating system is to help the federal government determine which bridges need funding for repair or replacement. The major factors contributing to the low sufficiency rating of the structure include:

- Cracking and condition of deck, superstructure, and substructure elements
- Inadequate roadway width
- Out of specification bridge and approach railing, and approach rail ends.
- Poor roadway alignment
- Out of specification geometric and seismic detail design

3. Description of Section 4(f) Properties

Resources subject to Section 4(f) consideration include publicly owned lands consisting of a public park/recreation area; public wildlife and waterfowl refuges of national, state, or local significance; or historic sites of national, state, or local significance, whether publicly or privately owned.

Based on information derived from the Community Impact Assessment[125] and the Natural Environment Study[126] prepared for the proposed project, it was determined that there are no public parks, recreation areas, or wildlife and waterfowl refuges of national, state, or local significance within the area affected by the proposed project; however, archaeological and historic property surveys conducted for the 6th Street Viaduct Seismic Improvement Project determined that there is one historic-era archaeological site and one historic architectural site eligible for listing in the NRHP in the proposed project's APE. The inventory and evaluation to identify historic properties was documented in a Historic Resources Evaluation Report (HRER), and these findings were submitted by Caltrans to the SHPO for concurrence on September 15, 2008. The 30-day review period ended on October 15, 2008, and concurrence with the proposed

[124] Caltrans. 2006. Bridge Inspection Records Information, Structure Inventory and Appraisal Report, Bridge No. 53C-1880, California Department of Transportation, Structure Maintenance and Investigation. August.

[125] Community Impact Assessment for Proposed 6th Street Viaduct Seismic Improvement Project. July 2008.

[126] Natural Environment Study (Minimal Impacts) for Proposed 6th Street Viaduct Seismic Improvement Project. June 2008.

findings was assumed. Caltrans then proceeded per stipulation VIII.C.5.a of the Section 106 Programmatic Agreement (PA) with the preparation of the Finding of Effect documentation for this project, which was submitted to the SHPO for review on November 12, 2008. A copy of the November 12, 2008, e-mail can be found in Attachment A.

3.1 Archaeological Site – Primary No. 19-003683

The records search conducted for the proposed project indicated that approximately 90 percent of the APE was previously investigated, with one historic-era archaeological site (19-003683) being identified within the APE. A field survey for archaeological resources was conducted on May 21, 2007. Most of the APE is within existing roadways and/or adjacent to the banks of the Los Angeles River and has been subjected to extensive disturbance. The survey resulted in the relocation of site 19-003683, though visibility was obscured by the presence of road gravels and cargo containers. Exposed portions of the APE and portions containing the historic-era archaeological site (19-003683) were traversed on foot. Site inspection focused on confirming, where possible, previous observations. Site 19-003683, consisting of historic period domestic refuse, is located within the APE, generally south of Jesse Road, east of Mission Road and west of the railroad tracks on the east side of the river.

According to the Archaeological Survey Report prepared for this project:

> The site record describes the resource as 'a diffuse scatter of domestic refuse collected from the north end of the lot. The collection dates from 1880 to 1930+.' The catalog attached to the site form lists several proveniences that include trenches and demolition areas. No specific associations are noted. Preliminary historic research, by means of the historic Sanborn Fire Insurance maps of the Project APE, indicates the property on which the deposits are located was part of a circa 1906-1951 Los Angeles Furniture Mart. Possibly associated with the deposit is a night and weekend watchman's house near the center of the Los Angeles Furniture Mart property. No other details of possible associations with the deposit were ascertained.[127]

Detailed site information concerning artifactual content and location must remain confidential to protect the integrity of this cultural resource.

Per Caltrans Stipulation VIII.C.3, "If archaeological properties within an undertaking's APE are protected from any potential effects by establishment and effective enforcement of an Environmentally Sensitive Area (ESA), the signatories agree that Caltrans may consider such

[127] Archaeological Survey Report for the 6th Street Viaduct Improvement Project. July 2008.

properties to be NRHP eligible for the purposes of that undertaking without conducting subsurface testing or surface collection." Because the archaeology site (Primary No. 19-003683) would be protected by an ESA as described in the HPSR prepared for this project, the resource was determined to be NRHP eligible. Please refer to Figure 17 for a detailed map showing the relationship of the Section 4(f) property to the project alternatives and/or limits.

3.2 Historic Site – 6th Street Viaduct

The inventory and evaluation effort for architectural resources for the project was conducted in 2007.[128] The inventory included survey of buildings, structures, and objects near the viaduct and identified historical resources constructed in or before 1964. Of the 145 parcels located within the APE, 33 contained individual buildings, groups of buildings, structures, groups of structures, and objects that were not eligible for exemption as defined in Attachment 4 of the Section 106 PA. The remaining 112 parcels had properties that were built in 1964 or later, were exempt from review under Attachment 4 of the PA, or they were vacant at the time of the survey.

The one NRHP-eligible historic site in the project APE is the 6th Street Viaduct. Of the Los Angeles River Bridges, 6th Street was the last of the historic Los Angeles River viaducts to be constructed and was by far the most comprehensive of the group. It is classified as steel arch in that its largest spans are twin 150-ft steel through arches. The remainder of the structure, the total span of which is 3,546 ft, comprises T-girder spans. An approximate 3,264-ft-long segment of the viaduct is owned by the City, and the 235-ft-long portion overcrossing US 101 is owned by Caltrans. The structure is located in a highly urbanized area just east of downtown Los Angeles and connects downtown on the west side of the Los Angeles River with the Boyle Heights community on the east side of the river (Figure 15).

128 Historic Resources Evaluation Report for 6th Street Viaduct Seismic Improvement Project. October 2007.

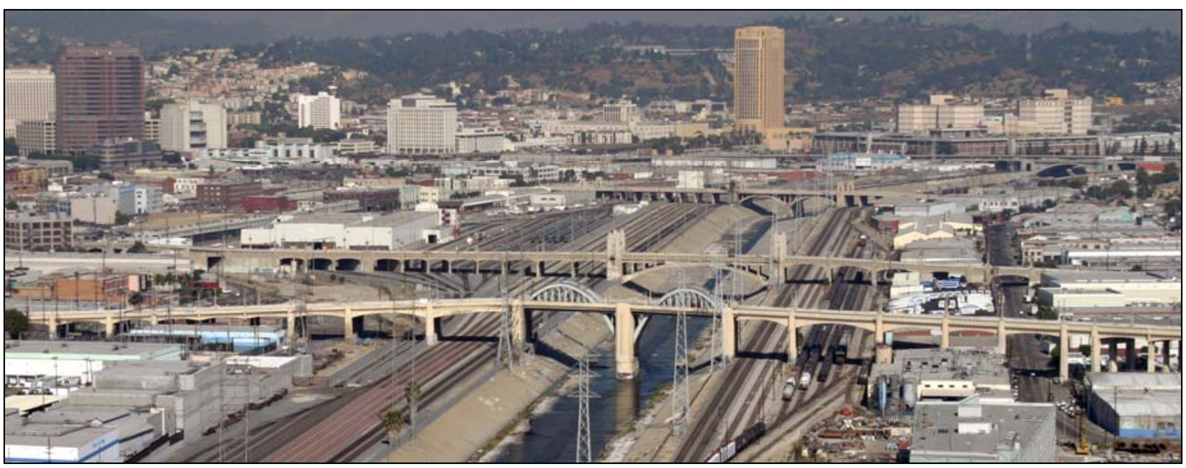


Figure 15 Aerial Views of 6th Street Viaduct

Called the “best expression of the modern phase” of the 25-year bridge building program, it is also “the last and grandest of the group.” The 6th Street Viaduct was initiated in 1926 when the City Council voted to acquire property. Upon completion, the 6th Street Viaduct was the longest and largest of the bridges spanning the Los Angeles River. The viaduct officially opened on June 16, 1933, at a cost of $2,383,271[129] (Figure 16).

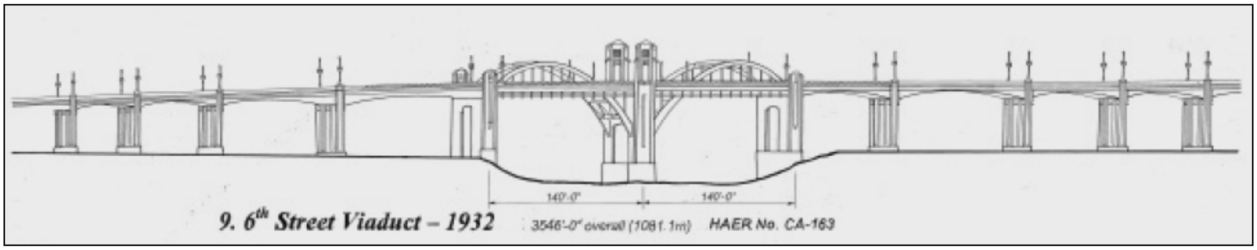


Figure 16: Excerpted Profile of Sixth Street Viaduct

(Line drawing from Historical American Engineering Record (HAER), National Park Service, Department of the Interior, Grant Day, delineator, 2000. "Los Angeles River Bridge Elevations" Los Angeles River Bridge Recording Project- 1911-1934. HAER 176.)

The viaduct's most distinctive features, other than its length, sheer mass, and exceptional detailing are the twin, parabolic steel through-arches. These arches meet at the center of the Los Angeles River toward the base of the tapered central piers, and diverge east and west, in irregular mirrored shapes. The unusual shape of the arches is emphasized by tapered profiles – each is thicker at the central pier and appears thinnest at the tops of the arches. The arches "pierce" the viaduct deck and terminate gracefully inboard of the decorative balusters, at the crowns of the next piers.

The boundaries of the historic property include the entire bridge: its abutments, bents and piers, all approaches, the deck, all handrails, streetlight standards and luminaires, the tunnel, the steel and concrete arches, the spandrels, and the areas below the decks that contain bridge-related structures. All elements contribute to its historic significance except the replaced streetlight standard luminaires and infilled piers from previous seismic retrofits.[130]

The 6th Street Viaduct (Bridge No. 53C-1880) was surveyed as part of the Caltrans 1985-1986 Bridge Survey, and Caltrans identified it as a significant structure at that time. The SHPO determined it eligible for separate listing in the NRHP, and the viaduct was assigned a status code of "2S2," which was defined as "Determined eligible for separate listing through a consensus determination by a federal agency and the State Historic Preservation Officer" at the time of the survey in late 1985. The 6th Street Viaduct was determined eligible on October 19, 1986. Its eligibility is under Criteria A and C, for its association with the Los Angeles River bridge program, and its extraordinary Streamline Moderne design, steel, and reinforced concrete

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129 Historic Resources Evaluation Report, 6th Street Viaduct Seismic Improvement Project. October 2007.
130 Ibid.

design. Its period of significance is from 1933, when it was completed, until 1957 (50-year cut-off), and its significance is at the state level.

The 6th Street Viaduct was also determined eligible for listing in the NRHP as a contributor to a thematic group of 118 “Historic Highway Arch and Other Bridges in California” in 1987.[131] The 6th Street Viaduct was also proposed as a contributor to a potential NRHP-eligible “City of Los Angeles Monumental Bridges” historic district, which is a group of 29 bridges located within the City of Los Angeles (JRP Historical Consulting for Caltrans, May 2004); however, SHPO never concurred with that recommendation. Additionally, the viaduct was designated as a City of Los Angeles Historic-Cultural Monument (HCM) in January 2008. Please refer to Figure 17 for a detailed map showing the relationship of the Section 4(f) property to the project alternatives and/or limits.

4. Impacts on Section 4(f) Properties

As discussed in Section 1, the use of Section 4(f) properties typically occurs when there is either a permanent commitment of the Section 4(f) site for a transportation project (i.e., actual use) or where the proximity of a project to the Section 4(f) site, without acquisition of land, causes impacts such as noise, visual, or access restriction that could impair the values and integrity of the land (i.e., constructive use).

The following section discusses whether any permanent or temporary occupation of a property would occur, or whether the proximity of the project would cause any access disruption, noise, vibration, or aesthetic effects that would substantially impair the features or attributes that qualify the resource for protection under Section 4(f). Table 1 summarizes the potential impacts to Section 4(f) resources as a result of the proposed project (see also Figure 17).

[131] Historic Resources Evaluation Report, 6th Street Viaduct Seismic Improvement Project. October 2007.

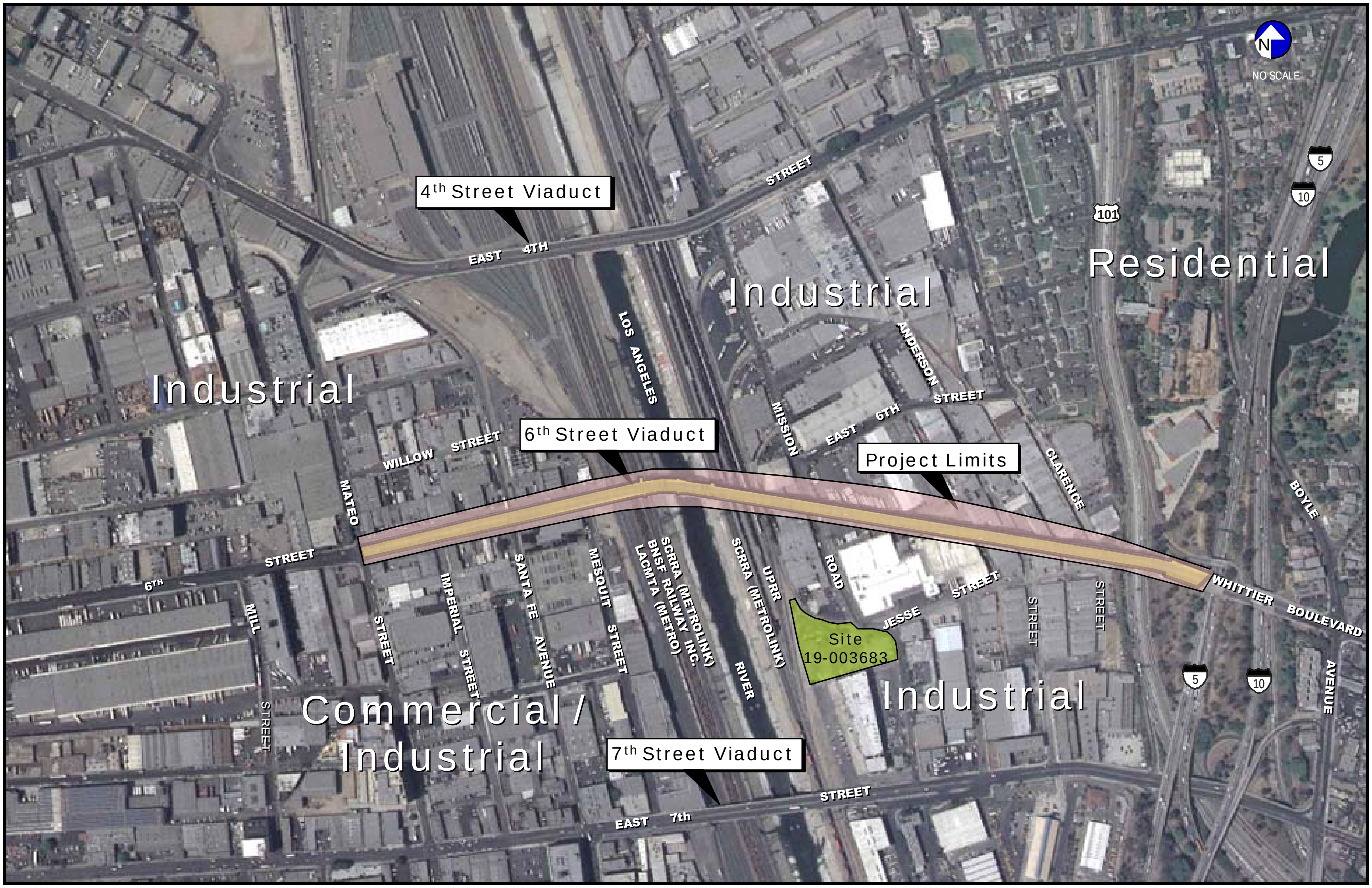

Figure 17 Location of Section 4(f) Properties in Relation to Project Alternative Limits

Table 1
Section 4(f) Resources within 0.25-mile of the Build Alternatives

Section 4(f) Resource	Type of Resource	Potential Impacts	Direct Use	Temporary Use/Occupancy	Constructive Use
6th Street Viaduct	Historic Resource	Structure to be retrofitted or replaced due to damage from ASR	Yes	No	No
Archaeology site 19-003683	Archaeological Resource	No impacts with avoidance and the establishment of an Environmentally Sensitive Area (ESA)	No	No (with avoidance and the establishment of an ESA)	No
4th Street Viaduct	Historic Resource	None	No	No	No
7th Street Viaduct	Historic Resource	None	No	No	No

4.1 Alternative 1 – No Action

Use of Section 4(f) properties would not be required under this alternative.

4.2 Alternative 2 – Viaduct Retrofit

The viaduct's columns would be retrofitted by encasing them with steel, and infill walls would be constructed between selected columns. In addition, new foundations, grade beams, retrofitting of bent caps, and closure of some expansion joints in the superstructure would be constructed in combination with the column retrofits. (Refer to EIR/EIS Chapter 2, Section 2.3.2, for further details.)

Archaeology site 19-003683 is located within an area designated as a potential construction staging area for Alternative 2; however, the site would be protected from potential impacts through the establishment of an Environmentally Sensitive Area (ESA) Action Plan. Therefore, Alternative 2 would not impact this resource.

The Retrofit Alternative would alter and/or destroy the historic materials, features, and spatial relationships that characterize the 6th Street Viaduct. Encasing the columns with steel would increase the size of the columns and decrease the distance between the columns in each bent. In addition, construction of new foundations, grade beams, retrofitting of bent caps, and closure of some expansion joints would alter the spatial relationship of the historic features of the viaduct and would alter the historic character of the viaduct through the introduction of new structural and visual elements. Because Alternative 2 would result in the alteration of the viaduct in a manner not consistent with the *Secretary's Standards for the Treatment of Historic Properties*, Alternative 2 would have a permanent, adverse impact on this historic property. Therefore, the bridge is so structurally deficient that it cannot be rehabilitated to meet minimum acceptable seismic requirements without adversely affecting the historic integrity of the bridge.

4.3 Alternative 3 – Viaduct Replacement

This proposed alternative would demolish the 6th Street Viaduct to build the proposed new structure. The existing viaduct would be replaced with one of five potential bridge concept designs of one of three alternative alignments under consideration. (Refer to EIR/EIS Chapter 2, Section 2.3.3, for further details.)

Archaeology site 19-003683 is located within an area designated as a potential construction staging area for Alternative 3; however, the site would be protected from potential impacts through the establishment of an ESA Action Plan. Therefore, Alternative 3 would not impact this resource.

With Alternative 3, the 6th Street Viaduct would be demolished; therefore, Alternative 3 would have a permanent, adverse impact on this historic property.

5. Avoidance Alternatives

A screening process was conducted to evaluate and select viable replacement alignments for further design consideration. Based on preliminary engineering investigation and public input, the project development team initially identified more than 20 replacement scenarios for consideration. These replacement scenarios were then refined and integrated into 10 replacement alternatives (see Figure 2-15 in the EIR/EIS). All of the replacement alternatives considered, including those eliminated, would physically impact the viaduct (see EIR/EIS Section 2.4.2).

The analysis of potential effects on Section 4(f) resources includes an evaluation of any feasible and prudent alternatives to avoid the use of the Section 4(f) resource. Feasibility is an engineering test: Is it feasible to build the alternative as a matter of sound judgment? Prudency is more subjective.

An avoidance alternative is prudent and feasible if it avoids using the Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. In assessing the importance of protecting the Section 4(f) property, it is appropriate to consider the relative value of the Section 4(f) property to the preservation purpose of the Section 4(f) statute.

Section 23 CFR 774.17 provides a balancing test to determine whether an avoidance alternative is prudent. Listed below are 6 factors to consider when determining whether an avoidance alternative is prudent:

- Compromises the project so that it is unreasonable given the purpose and need;
- Results in unacceptable safety or operational problems;

- After reasonable mitigation, still causes:
  - Severe social, economic, or environmental impacts;
  - Severe disruption to established communities;
  - Severe environmental justice impacts; or
  - Severe impacts to other federally protected resources.
- Results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- Causes other unique problems or unusual factors; or
- Involves multiple factors listed above that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

Refer to Table 2, Evaluation of Avoidance Alternative Selection Process, for the balancing test outlining the six factors used to determine whether an avoidance alternative is prudent.

Two of the Replacement Alignment Alternatives are described below because they are the only avoidance alternatives that would allow the existing 6th Street Viaduct to remain standing and still meet the project purpose and need.

Replacement Alignment 8

Replacement Alignment 8 proposes to preserve the existing viaduct by constructing a new viaduct to the north of the existing viaduct. Under this alternative, the existing viaduct would be retrofitted for preservation purposes and used only for pedestrian and bicycle traffic.

Although this alternative would allow the existing 6th Street Viaduct to remain standing, potentially for pedestrian and bicycle access only, the existing viaduct would still have to be seismically retrofitted for public safety in the same manner (i.e., “no collapse” standard), as described under the Retrofit Alternative and the ASR deterioration would continue (see Chapter 2).

In summary, Replacement Alignment 8 would not be prudent because:

- The viaduct is classified as a Category 1 Structure and seismic retrofit is mandatory, so even if this alignment was selected, the viaduct would have to be retrofitted for public safety. The Replacement Alignment 8 alternative compromises the project to a degree that is unreasonable to proceed given the stated purpose and need.
- The estimated cost to allow the existing 6th Street Viaduct to remain standing and to construct a replacement viaduct to the north of the existing 6th Street Viaduct would be approximately $584 million (Estimated Retrofit $226 million + Average Replacement

$358 million = $584 million). The high cost estimate for this alternative would constitute construction costs of an extraordinary magnitude.

- There is no method to stop ASR. The concrete in the viaduct would continue to deteriorate due to ASR, resulting in unacceptable seismic safety problems.
- Even after reasonable mitigation, Replacement Alignment 8 would not rectify the viaduct's design and operational safety deficiencies. This would add an additional access point to the intersection of Chicago Street and Boyle Avenue on the east side, which would make it a six-way intersection.
- Replacement Alignment 8 would result in additional construction and maintenance costs of an extraordinary magnitude because two bridge structures would have to be built or retrofitted and maintained. The maintenance cost would be doubled because there would be two bridges.

Unique problems are associated with this approach because constructing a new viaduct to the north and extending its limits to the east and west would result in substantially greater ROW impacts than any of the other proposed alternatives. Construction of the viaduct under Replacement Alignment 8 would also create major impacts to the sewer siphon across the Los Angeles River and the sewers located on the east bank of the river. In addition, this alignment would potentially impact one LADWP transmission tower located on the east bank of the river. The alignment would require the construction of a new US 101 northbound on-ramp, and two new bridges would also be required over I-5 for the northbound and southbound sections of the freeway. There would be greater impacts to the railroads by adding a new bridge to the north of the existing viaduct, plus the additional space required for retrofitting the existing columns that are located within the railroad ROW.

Replacement Alignment 9

Replacement Alignment 9 proposes to preserve the existing viaduct by constructing a new viaduct to the south of the existing viaduct. Under this alternative, the existing viaduct would be retrofitted for preservation purposes and used only for pedestrian and bicycle traffic.

Although this alternative would allow the existing 6th Street Viaduct to remain standing, potentially for pedestrian and bicycle access only, the existing viaduct would still have to be seismically retrofitted for public safety in the same manner (i.e., "no collapse" standard), as described under the Retrofit Alternative and the ASR deterioration would continue (see Chapter 2).

In summary, Replacement Alignment 9 would not be prudent because:

- The viaduct is classified as a Category 1 Structure and seismic retrofit is mandatory, so even if this alignment was selected, the viaduct would have to be retrofitted for public safety. Replacement Alignment 9 alternative compromises the project to a degree that is unreasonable to proceed given the stated purpose and need.
- The estimated cost to allow the existing 6th Street Viaduct to remain standing and to construct a replacement viaduct to the south of the existing 6th Street Viaduct would be approximately $584 million. The high cost estimate for this alternative would constitute construction costs of an extraordinary magnitude.
- There is no method to stop ASR. The concrete in the viaduct would continue to deteriorate due to ASR, resulting in unacceptable seismic safety problems.
- Even after reasonable mitigation, Replacement Alignment 9 would not rectify the viaduct's design and operational safety deficiencies. This would add an additional access point to the intersection of Chicago Street and Boyle Avenue on the east side, which would make it a six-way intersection.
- Replacement Alignment 9 would result in additional construction and maintenance costs of an extraordinary magnitude because two bridge structures would have to be built or retrofitted and maintained. The maintenance cost would be doubled because there would be two bridges.
- One of the main drawbacks of this approach is that constructing a new viaduct to the south and extending its limits to the east and west would result in substantially greater ROW impacts, similar to Replacement Alignment 8 discussed above. This alignment would impact three of the LADWP transmission towers (two on the west bank of the river and one on the east bank). In addition, LADWP's electrical substation between Santa Fe Avenue and Mesquit Street would be impacted. A new northbound on-ramp connection to US 101 would be required. Two new bridges would also be required over I-5 for the northbound and southbound sections of the freeway. There would be greater impacts to the railroads by adding a new bridge to the south of the existing viaduct, plus the additional space required for retrofitting the existing columns that are located within the railroad ROW.

Although Replacement Alignments 8 and 9 would allow the existing 6th Street Viaduct to remain standing for pedestrians and bicyclists, the viaduct would still have to be seismically retrofitted for public safety in the same manner (i.e., "no collapse" standard), as described under the Retrofit Alternative (see Chapter 2); furthermore, the ASR deterioration would continue. Therefore, Replacement Alignments 8 and 9 are not prudent avoidance alternatives because they would disrupt an established community, cause unacceptable seismic safety problems, and require substantial alteration of the viaduct, which would have a permanent, adverse impact on this historic property. The feasibility of constructing a parallel set of viaducts is low due to engineering concerns. Furthermore, it is not prudent to preserve the existing bridge for the reasons described above.

Per Section 106 PA Stipulation VIII.C.3, "If archaeological properties within an undertaking's APE are protected from any potential effects by establishment and effective enforcement of an Environmentally Sensitive Area (ESA), the signatories agree that Caltrans may consider such properties to be NRHP eligible for the purposes of that undertaking without conducting subsurface testing or surface collection." Because the archaeology site (Primary No. 19-003683) would be protected by an ESA as described in the HPSR prepared for this project, the resource was determined to be NRHP eligible. Alternatives 8 and 9 would both avoid a Section 4(f) use for the archaeological site.

Although the archaeological site can be avoided, based on the preceding discussion it is not possible to avoid a Section 4(f) use of the historic property with any of the build alternatives that meet the purpose and need of the project, including those alternatives already eliminated from further consideration. Only two alternatives considered for this study would avoid Section 4(f) lands:

- No Action Alternative
- Transportation System Management (TSM) and Transportation Demand Management (TDM) Alternatives

5.1 Alternative 1 – No Action

The 6th Street Viaduct crosses the Los Angeles River in an east-west direction. This proposed alternative would provide ongoing maintenance and inspection, but the viaduct would not be seismically retrofitted or repaired. The concrete would continue to deteriorate due to ASR, resulting in the viaduct remaining unsafe for pedestrian and vehicular traffic.

Because Alternative 1 would not result in the physical destruction of the viaduct or materially alter the historic fabric of the viaduct in a manner not consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Buildings*, the No Action Alternative would avoid the use of this Section 4(f) historic property; however, the viaduct would continue to be vulnerable to failure in the event of a major earthquake, and the ASR-damaged concrete would not be replaced or reinforced. Furthermore, existing design deficiencies would not be corrected.

In summary, the No Action Alternative is not prudent because it compromises the project so that it is unreasonable to proceed given the project's purpose and need. In addition, there is no method to stop the ASR. The concrete in the viaduct would continue to deteriorate due to ASR, resulting in unacceptable seismic safety risk.

5.2 Transportation System Management and Transportation Demand Management Alternatives

Transportation System Management strategies consist of actions that improve the efficiency of existing facilities to increase the number of vehicle trips that a facility can carry without increasing the number of through lanes, which is not the purpose of this proposed seismic improvement project. Transportation System Management also encourages improved mobility via public and private transit, ridesharing programs, bicycle, and pedestrian improvements as elements of a unified urban transportation system, all of which can be integrated in multiple forms. The following TSM measures have been incorporated into the Replacement Alternative for this project: 10-ft-wide sidewalks; 19-ft-wide outside lanes, including 8-ft-wide shoulders for bicycles; left-turn lane at Mateo Street; and traffic signal improvements at both ends of the project. However, TSM measures alone cannot satisfy the purpose and need of the proposed project.

Transportation Demand Management focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled, as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding travelers' transportation choices in terms of travel methods, time, route, costs, and the quality and convenience of the travel experience. Transportation Demand Management includes providing contract funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals. Since the proposed 6th Street Viaduct project is a seismic safety and bridge functional deficiency improvement, TDM does not apply.

In summary the TSM alternative is not prudent because it does not satisfy the purpose and need of the project. The viaduct would still be vulnerable to failure in the event of a major earthquake, and it would eventually have to be taken out of service, requiring construction of a new viaduct. The TSM alternative is not prudent because the ASR deterioration would continue, resulting in unacceptable seismic safety risks.

Table 2 summarizes the results of avoidance alternative evaluation.

Table 2
Evaluation of Avoidance Alternatives

Balancing Factors	No Action Alternative	Replacement Alignment 8	Replacement Alignment 9	TSM Alternatives
Compromises the project so that it is unreasonable given the purpose and need	Does not satisfy the Purpose and Need	Meets the Purpose and Need	Meets the Purpose and Need	Does not satisfy the Purpose and Need
Results in unacceptable safety or operational problems	Does not correct the seismic vulnerability or design deficiencies to a "no collapse" standard	Potential operation problem	Potential operation problem	Does not correct the seismic vulnerability or design deficiencies to a "no collapse" standard
After reasonable mitigation, still causes:				
• Severe social, economic, or environmental impacts	N/A	Additional business relocations	Additional business relocations	N/A
• Severe disruption to established communities	N/A	Right of-way impacts to Boyle Heights Community and Los Angeles Central City North District	Right-of-way impacts to Boyle Heights Community and Los Angeles Central City North District	N/A
• Severe environmental justice impacts	N/A	N/A	N/A	N/A
• Severe impacts to other federally protected resources	N/A	N/A	N/A	N/A
Results in additional construction, maintenance, or operational costs of an extraordinary magnitude	Would result in frequent maintenance upkeep	Double maintenance cost and creates major impacts to sewer siphon	Double maintenance cost and creates major impacts to sewer siphon and LADWP transmission lines	Would result in frequent maintenance upkeep
Causes other unique problems or unusual factors	N/A	Essentially doubles the construction cost	Essentially doubles the construction costs, and disrupts electric transmission lines at a high cost and may interrupt electric power supply	N/A
Involves multiple factors listed above that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude	N/A	N/A	N/A	N/A
Prudent and Feasible Determination	Prudent-No Feasible-No	Prudent-No Feasible-Yes	Prudent-No Feasible-Yes	Prudent-No Feasible-Yes

Note: Balancing factors are based on 23 CFR Section 774.3(c)(1).

6. Measures to Minimize Harm

For bridges that are adversely affected, agreement among the SHPO, ACHP, the City, and Caltrans would be reached through the Section 106 process of the NHPA on measures to resolve the adverse effect (aka. minimize harm under Section 4(f)), and those measures are incorporated into the project. A Memorandum of Agreement (MOA) for this proposed project, which will include stipulations and measures to resolve the adverse effect, is being prepared under separate cover. The MOA will address the preferred alternative, which has not been determined at this time.

6.1 Retrofit Alternative

Approximately 95 percent of the original viaduct would be retained because only the railings would be replaced. The remaining original structure would be incorporated into the retrofit design; however, the original structure would be enclosed within a new "skin" and would not be visible. New construction would be designed in a manner consistent with the Secretary of Interior's *Standards for the Treatment of Historic Properties.* Mitigation measures would be defined in the MOA prepared for this project. Potential mitigation measures could include the following:

- The City would incorporate all applicable Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68) into the design of retrofitting components.
- The City would install two new freestanding informative permanent metal plaques or signage at both ends of the bridge at public locations that provide a brief history of the bridge, its engineering features and characteristics, and the reasons it was replaced. Additionally, the City would install two Cultural Heritage plaques at the end of each bridge on the interior bridge rails in accordance with the City of Los Angeles' Cultural Heritage Monument program.
- The 6th Street Viaduct was previously recorded as part of the Historical American Engineering Record (HAER) program in 1996. Prior to any viaduct demolition or construction activities, Caltrans and the City would contact the National Park Service (NPS) Historic American Building Survey (HABS)/HAER program to determine the degree of additional recordation required for the property beyond that provided in 1996 (HAER No. CA-176). Unless otherwise agreed to by the NPS HABS/HAER, Caltrans and the City would ensure that all documentation is completed and accepted by HABS/HAER before the viaduct is altered or demolished.

6.2 Replacement Alternative

The Replacement Alternative would not retain any of the original elements of the historic property. Mitigation measures would be defined in the MOA prepared for this project. Potential mitigation measures could include the following:

- The City would install two new freestanding informative permanent metal plaques or signage at both ends of the bridge at public locations that provide a brief history of the bridge, its engineering features and characteristics, and the reasons it was replaced. Additionally, the City shall install two Cultural Heritage plaques at the end of each bridge on the interior bridge rails in accordance with the City of Los Angeles' Cultural Heritage Monument program.
- The 6th Street Viaduct was previously recorded as part of the HAER program in 1996. Prior to any viaduct demolition or construction activities, Caltrans and the City would contact the NPS HABS/HAER program to determine the degree of additional recordation required for the property beyond that provided in 1996 (HAER No. CA-176). Unless otherwise agreed to by the NPS HABS/HAER, Caltrans and the City would ensure that all documentation is completed and accepted by HABS/HAER before the viaduct is altered or demolished.
- The City would produce a documentary (motion picture or video) that addresses the history of the Los Angeles River Monument bridges, and their importance and use within the history of the City of Los Angeles. The motion picture or video would be of broadcast quality, of sufficient length for a standard 2-hour program, and would be made available to local broadcast stations, public access channels in the local cable systems, and requesting schools/libraries; one copy would be submitted to the Caltrans Transportation Library in Sacramento.
- The City would produce and publish a book on the Historic Los Angeles River Bridges that addresses the history of the monumental concrete bridges of Los Angeles and this bridge's place in that history. The book would be similar to the "Historic Highway Bridges of California" published by Caltrans and would include high-quality black-and-white photos of the Los Angeles River Bridges, historic photographs or drawings, as appropriate, and text describing each of the bridges' location, year built, builder, bridge type, significant character-defining features, and its historic significance.

7. Coordination

Public involvement, agency coordination, and Native American tribal coordination were carried out during the proposed project development process by means of formal scoping meetings, participating agency coordination meetings, community meetings, potentially affected property owner meetings, political representative meetings, notification letters, and the creation and maintenance of a project Web site.

Ongoing coordination meetings with affected business owners and groups, government agencies, railroads, and utility companies are being conducted to update interested parties on the status of the proposed project, obtain public and agency input, and resolve issues. Letters describing the proposed project and inviting comment were sent to Native American groups and other individuals known to have an interest in the proposed project.

7.1 Scoping Process

The scoping process was initiated by widespread notification of government agencies and the public via publication of a Notice of Intent (NOI) and a Notice of Preparation (NOP) announcing initiation of the Environmental Impact Statement (EIS) and Environmental Impact Report (EIR), respectively. The NOI was published in the *Federal Register* (Volume 72, Number 169) on August 31, 2007, in accordance with the National Environmental Policy Act (NEPA). The NOP was posted on the City of Los Angeles Web site[132], the project's public Web site[133], and with the Los Angeles County Clerk/Recorder throughout the public review period (July 23, 2007, to September 13, 2007), in accordance with the California Environmental Quality Act (CEQA). Other notification activities included placement of public notices in newspapers of general circulation; mailing the NOP to potentially affected government agencies, residents, and businesses; and translation of public documents from English to Spanish. Other project information was also posted on the public Web site indicated above.

Federal agencies having jurisdiction over the affected Section 4(f) resources, including the Department of Interior and the Department of Housing and Urban Development, ACHP, were on the NOI and NOP mailing list. State and local agencies having a stake over the affected Section 4(f) resources, such as State of California Historic Preservation Office, California Department of Fish and Game, Regional Water Quality Control Board, Native American tribal organizations, Los Angeles Conservancy, Los Angeles Cultural Heritage Commission, were coordinated throughout the environmental review process.

7.2 Participating Agency Coordination

Section 6002 of SAFETEA-LU requires that all transportation projects requiring an EIS, for which the original NOI was published in the *Federal Register* after August 10, 2005, must have a plan established for coordinating public and agency participation and comment during the environmental review process. It is the responsibility of the lead agencies to develop the coordination plan to facilitate and document the interaction between the lead agencies and participating and cooperating agencies and the public.

As part of the Scoping Process and in accordance with Section 6002 requirements, Caltrans prepared a Coordination Plan for this proposed project. A list of potential federal, state, and local

[132] http://eng.lacity.org/techdocs/emg/Environmental_Review_Documents.htm
[133] http://www.la6thstreetviaduct.org/TheProject/ documents/NOP_Public.pdf

agencies was developed. A letter of invitation to participate in the project was sent to agencies likely to have interest in the project on July 26, 2007. The rest of the agencies on the list received notification regarding the project through the NOI and NOP. Nine agencies responded to the letter of invitation.

Three participating agency coordination meetings were held during the scoping process. The first meeting was held on October 31, 2007, at the Caltrans District 7 Office to provide project information and to discuss the roles and responsibilities of the participating agencies. A site visit was also conducted following the first meeting. The second meeting was held on February 4, 2008, to provide the participating agencies with the progress of the project and to discuss the issues of concern raised by each agency. The third meeting was held on October 20, 2008, to update the agencies on the current project status and present status update of the environmental analysis process.

7.3 Consulting and Interested Party Consultation

The following section summarizes project coordination with additional consulting parties, such as Native Americans, local governments, and local historical societies.

7.2.1 Native American Consultation

The Native American Heritage Commission (NAHC) was contacted on April 2, 2007, to advise them of the proposed project. The NAHC responded on April 2, 2007, stating that their search of sacred land files revealed the presence of Native American cultural resources in the immediate project area. In addition, NAHC recommended that other Native American individuals/ organizations be contacted to verify the findings of NAHC. Notification letters were sent to various Native American tribes on June 19, 2007. Follow-up correspondences were also made.

7.2.2 Local Government, Historical Society, and Preservation Group Consultation

Table 3 summarizes coordination efforts with local governments and historical societies.

Table 3
Coordination with Government Agencies, Historical Societies, and Preservation Groups

State Government/ Local Government/ Local Historical Society/ Historic Preservation Groups	Description of Coordination
City of Los Angeles Office of Historic Resources, Department of City Planning	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered.
Los Angeles Conservancy	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered. Francesca Smith (FS) received telephone messages on 7/16 and 7/18/07 from Mike Buhler, Director of Advocacy, with additional questions and requesting an extension for comments to 8/2/07 (after the Cultural Heritage Commission meeting where project would be discussed). FS returned Mr. Buhler's call on 7/20/07 and left telephone message agreeing to extend deadline for comments to 8/2/07 as requested, clarifying information sought on identification of surrounding properties, the significance of which may not be readily apparent; and explained that an archaeological survey would be performed and any information to assist in that would be appreciated as well.
Los Angeles City Historical Society	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message undeliverable. Found correct e-mail address and resent; message undeliverable. Left telephone message on answering machine for Ms. Shea on 7/13/07.
Historical Society of Southern California (HSSC)	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered.. Received reply that Dr. Spooner was no longer with HSSC. Sent e-mail to Robert Montoya, Assistant Director, and HSSC general mail box. Received message that Mr. Montoya was no longer with HSSC. Sent e-mail to Christa Cordova, Administrative Assistant; message delivered.
California Historical Society	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered. Mr. Crosson replied via e-mail on 7/13/07, stating: I am afraid that we cannot do independent research, and we are not a regulatory agency involved in historic preservation review and compliance issues. That responsibility belongs to the State Office of Historic Preservation in Sacramento.
American Society of Civil Engineers	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered.
Boyle Heights Historical Society	Received e-mail message on 6/15/07 from ex-officio president Diana Ybarra (see HPSR, Attachment 2). She was forwarding the request for information to other historic organizations and asked: what parcels would be impacted, and what the effects would be on those parcels. In a telephone conversation on 6/18/07, FS recommended that they send any future comments in writing and explained that part of the purpose of the EIR was to identify historic resources and to evaluate the effects of the proposed project on those resources. Received letter dated 7/30/07 from Ms. Ybarra (see HPSR, Attachment 2). She included a historic map of the project vicinity that shows the names of parcels owned by "prominent pioneers of early Boyle Heights and Los Angeles" and specifically mentioned the Davis family. This information was reviewed for the project.
Chinese Historical Society of Southern California	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered.
Jewish Historical Society of Southern California	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered.

Table 3
Coordination with Government Agencies, Historical Societies, and Preservation Groups

State Government/ Local Government/ Local Historical Society/ Historic Preservation Groups	Description of Coordination
Los Angeles Railroad Heritage Foundation	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message undeliverable. Left message on telephone answering machine on 7/13/07. Mr. Lesser left a message on 7/18/07 stating that he was not sure why he was being contacted. A detailed message was left on his answering machine on 7/18/07 with additional clarification about the project and that he was being contacted for his input regarding "potential or known historic resources or other cultural resources within the project area."
Society of Architectural Historians, Southern California Chapter	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered. Received reply via attached e-mail on 7/16/07 from Dr. Ovnick. She forwarded the e-mail request for information to Mr. Matthew Roth (recent recipient of Ph.D. and Historian for the Auto Club of Southern California) who has researched and written on the bridges of Los Angeles. Dr. Ovnick did not provide any information on the bridge. No information or reply was received from Dr. Roth.
Army Corps of Engineers, District Planning Section	Notification letter sent on 6/1/07. Follow-up was made via e-mail on 7/13/07; message delivered. Mr. Dibble responded on 9/22/07 in an e-mail describing "a 1987 report entitled 'Historical and Architectural Evaluation, Additional LACDA Feasibility Study Bridges' by Roger Hatheway… [which] should have been on file at the Info Center." FS responded that no such report was located and requested a copy of the report. Mr. Dibble forwarded a copy of the report on 9/28/07.
California State Historic Preservation Officer California Department of Parks and Recreation Office of Historic Preservation	The HPSR/HRER/ASR prepared for this project was transmitted to the SHPO on August 9, 2009. No response was received as of October 15, 2008. An e-mail was sent from Claudia Harbert, Caltrans District 7, on 11/19/08 to inform the SHPO that Caltrans is hereby informing all concerned that we are proceeding forward per stipulation Vlll.C.5.a of the PA with preparation of the Finding Of Effect (FOE) documentation for this project. The FOE documentation was submitted to the SHPO for review on 1/27/09.
Los Angeles Conservancy (LAC)	Representatives from the City and the project consultant team met with members of the LAC on October 29, 2007, at the request of Mr. Mike Buhler of the LAC. The purpose of the meeting was to provide detailed information about the background and development process of the 6th Street Viaduct Seismic Improvement Project. The meeting also provided a forum for the LAC to ask questions and gain a better understanding of the issues surrounding the project.
Los Angeles Office of Historic Resources	Representatives from the City, Caltrans, and the project consultant team met with Mr. Edgar Garcia on February 4, 2009, to discuss the proposed measures to be included in the Section 106 Memorandum of Agreement (MOA) for the various bridges under improvement led by the City of Los Angeles Bureau of Engineering Bridge Improvement Program.

7.4 Other Coordination Meetings

Relevant to this Section 4(f) Evaluation, some of the issues and concerns expressed by the public and government agency representatives are related to retrofitting and rehabilitating the existing structure, preservation of the "iconic" features of the 6th Street Viaduct, arresting the ASR deterioration to save the historic viaduct, and other potential measures to minimize harm to the historic structure. A public outreach report summarizing outreach activities and the comments received during the scoping process was prepared and is available for review at the City of Los Angeles Department of Public Works Bureau of Engineering, Bridge Improvement Program. Minutes of the community meetings are included in the public outreach report for this project.[134]

8. Least Harm Analysis and Conclusion

Because there are no feasible and prudent avoidance alternatives to the project, during the evaluation of the build alternatives several factors will be considered to identify the alternative that causes the least overall harm in light of the Section 4(f) preservation purposes. Those factors are listed in Table 4.

Table 4
Least Harm Analysis

Factors	No Action Alternative	Viaduct Retrofit Alternative 2	Viaduct Replacement Alternative 3
Ability to mitigate adverse impacts to the Section 4(f) resource	There would be no Section 4(f) impacts to the 6th Street Viaduct.	Would have an adverse impact to Historic 6th Street Viaduct; viaduct structure retrofit would alter the historic character of the viaduct through new structural and visual elements.	Would have an adverse impact to Historic 6th Street Viaduct. The viaduct would be replaced.
Relative severity of the remaining harm, after mitigation, to the protected activities and attributes or features	There would be no Section 4(f) impact, and no mitigation would be required.	Adverse impacts to Historic 6th Street Viaduct cannot be avoided or mitigated to a level of no adverse effect.	Adverse impacts to Historic 6th Street Viaduct cannot be avoided or mitigated to a level of no adverse effect.
Relative significance of the Section 4(f) property	The Historic 6th Street Viaduct would remain standing and vulnerable to a seismic event.	The 6th Street Viaduct structure would remain, but the historic character would be adversely affected.	The Historic 6th Street Viaduct would be replaced and the historic character would be adversely affected.
Views of the officials with jurisdiction over the Section 4(f) property	N/A	SHPO concurred that the proposed project would have an adverse effect on the Section 4(f) resource.	SHPO concurred that the proposed project would have an adverse effect on the Section 4(f) resource.
Degree to which each alternative meets the purpose and need	This alternative does not meet the purpose and need.	This alternative meets the stated purpose and need of the project.	This alternative meets the stated purpose and need of the project.
After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)	There would be no Section 4(f) impact, and no mitigation would be required.	Impacts to traffic circulation and utilities would be less.	Greater impact to ROW, traffic circulation, and utilities than with construction of the Retrofit Alternative.
Substantial differences in costs among alternatives	The City would continue to provide ongoing inspection and maintenance of the 6th Street Viaduct; however, normal maintenance will not adequately address the situation.	The cost of construction in comparison with the Replacement Alternative is less. Design life expectancy is approximately 30 years. The estimated cost for this alternative is $226 million.	The cost of construction varies from $340 million to $402 million, depending on replacement bridge type, for Alignment 3. Design life expectancy is approximately 75 years.

[134] Public Outreach Report – Scoping Phase for 6th Street Viaduct Seismic Improvement Project. September 2008.

This analysis will incorporate input from the agencies and members of the public during circulation of the Draft EIR/EIS. A Memorandum of Agreement (MOA) will be prepared by Caltrans and submitted to FHWA and the SHPO for comment. The purpose of the MOA is to resolve adverse effects on historic properties. Once FHWA and SHPO agree on the terms and conditions of the MOA, it will be executed and Caltrans will concur. The conclusions of this analysis will be presented in the Final Section 4(f) Evaluation that will be circulated with the Final EIR/EIS.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

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07-LA Local Assistance
EA 965100
6th Street Viaduct Seismic Improvement Project

September 9, 2008

Mr. Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296-0001

Subject: Determinations of Eligibility for the 6th Street Viaduct Seismic Improvement Project, Los Angeles County, California, 07-LA-Local Assistance

Dear Mr. Donaldson

The California Department of Transportation (Caltrans) is initiating consultation with the State Historic Preservation Officer (SHPO) regarding the proposed improvements to the 6th Street Viaduct in Los Angeles County. This consultation is being undertaken in accordance with the January 1, 2004 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation* (PA). We are consulting with you under Stipulation VIII.C.5 of the PA, which requires that we seek your concurrence with our determinations of eligibility for historic properties.

Caltrans is initiating this consultation as a federal agency, following the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program*, which became effective on July 1, 2007. The MOU was signed pursuant to Section 6005 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, which allows the Secretary of Transportation to assign, and the State of California to assume, responsibility for FHWA's responsibilities under the National Environmental Policy Act as well as consultation and coordination responsibilities under other federal environmental laws. In that this project is covered by the above referenced MOU, FHWA has assigned, and Caltrans has assumed, FHWA responsibility for environmental review, consultation, and coordination on this project. Please direct all future correspondence on this project to Caltrans.

Caltrans, in conjunction with the City of Los Angeles Bureau of Engineering, is proposing to improve the seismic safety of the 6th Street Viaduct in Los Angeles County. The proposed project would either seismically retrofit the existing viaduct, or replace the existing viaduct with a new four-lane structure on one of three alignment alternatives. A full project description can be found on pages 1 to 4 of the enclosed Historic Property Survey Report (HPSR).

Consultation and identification efforts for the proposed undertaking (summarized on pages 1 – 2 in the HPSR) resulted in the identification of thirty-one properties requiring evaluation within the Area of Potential Effect (APE) as follows:

Name	Address/Location	Community	OHP Status Code	Map Ref. #
BNSF/AT & SF RY Co.	5164-005-800	Los Angeles	6Z	26
BNSF/AT & SF RY Co.	5164-004-802	Los Angeles	6Z	28
BNSF/AT & SF RY Co.	5164-004-804	Los Angeles	6Z	30
Union Pacific Railroad	5171-014-808	Los Angeles	6Z	33
Union Pacific Railroad	5171-014-809	Los Angeles	6Z	34
KC Products Co.	1600 E. 6th Street	Los Angeles	6Z	45
Senegram Holding Co.	601 S. Anderson Street	Los Angeles	6Z	47
Ken Redlamps (Senegram Holding Co.)	607 S. Anderson Street	Los Angeles	6Z	48
Philip Senegram Co. (Senegram Holding Co.)	611 S. Anderson Street	Los Angeles	6Z	49
Senegram Holding Co.	613 S. Anderson Street	Los Angeles	6Z	50
Cal Fiber Co. (Senegram Holding Co.)	621 S. Anderson Street	Los Angeles	6Z	52
Senegram Holding Co.	629-631 S. Anderson Street	Los Angeles	6Z	54
A.M.F. Supplies, Inc.	600 S. Anderson Street	Los Angeles	6Z	57
Sun Max Produce USA	622 S. Anderson Street	Los Angeles	6Z	60
624 S. Anderson Street building	624 S. Anderson Street	Los Angeles	6Z	62
601 S. Clarence Street building	601 S. Clarence Street	Los Angeles	6Z	67
605 S. Clarence Street building	605 S. Clarence Street	Los Angeles	6Z	68
BNSF/AT & SF RY Co.	5171-015-901	Los Angeles	6Z	100
BNSF/AT & SF RY Co.	5164-016-909	Los Angeles	6Z	103
BNSF/AT & SF RY Co.	5164-016-807	Los Angeles	6Z	104
BNSF/AT & SF RY Co.	5164-016-806	Los Angeles	6Z	105
BNSF/AT & SF RY Co.	5164-016-906	Los Angeles	6Z	106
BNSF/AT & SF RY Co.	5164-016-803	Los Angeles	6Z	107
Lumary's Tires/Michelin	600-602 S. Santa Fé Avenue/1474-1486 E. 6th Street	Los Angeles	6Z	110
1450 E. 6th Street building	1450 E. 6th Street	Los Angeles	6Z	115
605 S. Santa Fé Avenue building	605 S. Santa Fé Avenue	Los Angeles	6Z	119
613 Imperial Street building	613 Imperial Street	Los Angeles	6Z	128
Southwestern Bag Co.	601 Mateo Street	Los Angeles	6Z	129
Iron Mountain building	1340 E. 6th Street	Los Angeles	6Z	133
1340 E. 6th Street building	1340 E. 6th Street/ 5164-011-002	Los Angeles	6Z	134
650 S. Clarence Street building	650 S. Clarence Street	Los Angeles	6Z	144

One property, the Sixth Street Viaduct (Bridge #s 53-0595S, 53C-1880), Map Ref. # 145, was previously determined eligible for the National Register of Historic Places in 1986, 1987, and 2004.

One historic-era archaeological site (Primary No. 19-003683), consisting of domestic refuse, has not been previously evaluated for National Register of Historic Places (NRHP) eligibility. All project effects to the site can be avoided by the establishment of an Environmentally Sensitive Area (ESA).

Pursuant to Stipulation VIII.C.3 of the PA, Caltrans is considering Primary No. 19-003683 to be eligible for the NRHP under Criterion D for the purposes of this undertaking without conducting subsurface testing or surface collection and will establish and enforce ESAs to ensure that there will not be an adverse effect to the property as a result of the proposed undertaking pursuant to Stipulation X.B.2.a(ii). Native American consultation confirmed that the sites only have values that may qualify them as NRHP eligible under Criterion D.

Pursuant to Stipulation VIII.C.5 of the PA, Caltrans is requesting your concurrence with the following eligibility determinations:

- None of the properties evaluated as a result of this project are eligible for the National Register of Historic Places.

We look forward to receiving your response within 30 days of receipt of this submittal in accordance with Stipulation VIII of the PA. Pursuant to Stipulation X.A of the PA, Caltrans will apply the Criteria of Adverse Effect set forth in 36 CFR 800.5 (a)(1) and submit that documentation to your office at a later time.

If you need any additional information, please do not hesitate to contact Caltrans District 7 Architectural Historian Claudia A. Harbert (phone: 213.897.0415; e-mail: claudia_harbert@dot.ca.gov). Thank you for your assistance with this undertaking.

Sincerely,

Claudia Harbert

for GARY IVERSON, Chief
Central Area Project/Cultural Resources Services
Caltrans District 7
Division of Environmental Planning

Attachment: 6th Street Viaduct Seismic Improvement Project HPSR with HRER and ASR

Cc: Wally Stokes, City of Los Angeles Bureau of Engineering; Greg King – CCSO HQ; Jill Hupp – CCSO HQ.

Claudia Harbert/D07/Caltrans/CAGov

11/19/2008 01:11 PM

To Dawn Kukla/D07/Caltrans/CAGov@DOT

cc

bcc

Subject Fw: 30 days past notice: 6th Street - City of Los Angeles

Claudia Harbert
Associate Architectural Historian
Caltrans District 7
Division of Environmental Planning
100 S. Main Street
Los Angeles, CA 90012

----- Forwarded by Claudia Harbert/D07/Caltrans/CAGov on 11/19/2008 01:10 PM -----

Gary Iverson/D07/Caltrans/CAGov

11/12/2008 04:16 PM

To sstratton@parks.ca.gov, smikesell@parks.ca.gov

cc Claudia Harbert/D07/Caltrans/CAGov@DOT, Jill Hupp/HQ/Caltrans/CAGov@DOT

Subject 30 days past notice: 6th Street - City of Los Angeles

The following project was sent by Caltrans District 7 Division of Environmental Planning to SHPO:

Historic Property Survey Report for the City of Los Angeles 6th Street Bridge Project, City and County of Los Angeles, California

SHPO received this documentation on September 15, 2008 (Identification #FHWA080915).

The 30 day review period ended on October 15, 2008.

Since 30 days for comment has now passed, Caltrans is hereby informing all concerned that we are proceeding forward per stipulation VIII.C.5.a of the PA with the preparation of the Finding Of Effect documentation for this project.

Gary Iverson

"Man has no nobler function than to defend the truth"
- Ruth McKenney

LOS ANGELES CONSERVANCY

September 13, 2007

By email and mail
Wally E. Stokes, Environmental Coordinator
Bridge Improvement Program
City of Los Angeles
Department of Public Works, Bureau of Engineering
221 N. Figueroa, Suite 350
Los Angeles, CA 90014-1914
Email: wally.stokes@lacity.org

Re: Notice of Preparation of a Draft Environmental Impact Report
6th Street Viaduct Seismic Improvement Project

Dear Mr. Stokes:

On behalf of the Los Angeles Conservancy, thank you for the opportunity to comment on the Notice of Preparation of a Draft Environmental Impact Report for the 6th Street Viaduct Seismic Improvement Project. The Conservancy looks forward to working with the Bureau of Engineering – both during CEQA review and Section 106 consultation – to develop an alternative that upgrades and protects the historic 6th Street Viaduct, while meeting current seismic safety standards.

Established in 1978, the Conservancy grew out of the community-based effort to prevent demolition of the Los Angeles Central Library. The organization has grown to a membership of more than 7,000 households, including more than 400 volunteers. With a two-fold mission of advocacy and education, the Conservancy works to preserve existing architectural resources by developing preservation strategies and by raising public awareness of the value of those resources through tours, lectures, publications and major programs such as Last Remaining Seats.

The 6th Street Viaduct is both significant individually and as part of a collection of monumental bridges in Los Angeles. Built in 1932, the nearly mile-long span crosses the Los Angeles River, multiple railroad tracks, and many streets. Unlike the city's other monumental bridges, the 6th Street Viaduct includes two distinctive steel arches, and remains a prominent landmark with its concrete columns, bent caps, girders, and abutments. It is composed of three independent structures: the reinforced concrete west portion, the central steel arch section over the Los Angeles River, and the reinforced concrete east portion. The viaduct has been determined eligible for listing in the National Register of Historic Places, and is one of twenty-nine spans comprising an "important thematic group" of city monumental bridges.[1]

[1] "City of Los Angeles Monumental Bridges, 1900-1950: Historic Context and Evaluation Guidelines", JRP Historical Consulting, May 2004, at i.

Just last week, the Cultural Heritage Commission nominated a collection of thirteen city bridges, including 6th Street, for City of Los Angeles Historic-Cultural Monument status.

I. Alternatives

The EIR should consider at least two retrofit alternatives and, if possible, evaluate the effectiveness and feasibility of different technologies for treating of alkali-silica reaction in concrete structures. The Initial Study identifies only one retrofit alternative, compared to at least four alignments and myriad designs for new bridges, suggesting a bias in favor of demolition and replacement. Under the sole retrofit alternative,

> the viaduct's columns would be retrofitted with steel casings, and infill walls would be constructed with additional columns and bents. ...76 columns would be encased, of which 26 would utilize 7/8-inch plates and 50 would use 5/8-inch steel plates. The exposed plates, channels and bars would be concealed by a 6-inch layer of architectural mortar.

There is no mention of other, less visually intrusive retrofit schemes considered by the project team, if any, or justification provided for the recommended approach. The EIR should describe different options for treating ASR, and assess their feasibility in terms of cost, lifespan, and technical difficulty.

Retrofit alternatives should also take advantage of flexible, performance-based standards under the California Historical Building Code. The CHBC requires an equivalent level of safety as new construction, but permits identification of different options to achieve safety levels required under the prevailing code. The CHBC is specifically designed to address structural safety issues and used extensively in the seismic retrofit of all kinds of historic structures. Two chapters of the code are devoted to seismic performance: Chapter 8-7, "Alternative Structural Regulations," provides alternative design loads and methods of calculating lateral loads; and Chapter 8-8, "Archaic Materials and Methods of Construction," defines allowable strength values for historic materials.

Undoubtedly, the viaduct's twin arches over the river are its most recognizable and character-defining features. Although the viaduct stretches over 3,500 feet, the arched section comprises only a small portion of the overall length at less than 400 feet. Accordingly, the EIR should include a combined retrofit and partial replacement alternative that prioritizes retention of the iconic, arched section spanning the river.

II. Cumulative Impacts

Analysis of cumulative impacts of a project being studied in an EIR is necessary because "the full environmental impact of a proposed...action cannot be gauged in a vacuum."[2] Accordingly, the impacts of proposed retrofit and/or replacement of the 6th Street Viaduct should be considered in the context of all pending or approved bridge improvement projects along the river corridor, especially those involving other monumental bridges (i.e. North Spring Street, First Street, etc.). The EIR's cumulative impacts section should define the

---

[2] *Whitman v. Board of Supervisors* (1979) 88 Cal.App.3d 397, 408.

relevant area affected, and provide a reasonable explanation for geographic limitations based on prior context studies of historic Los Angeles River bridges.[3] Likewise, mitigation measures should be developed to reinforce the historic and physical linkages between the collection of bridges.

III. Regulatory Framework

The development of alternatives and evaluation of their feasibility should be informed by other state and federal laws, agreements, and guidelines applicable to historic bridge projects, including:

- **Section 4(f), U.S. Department of Transportation Act.** The 4(f) process was established in the U.S. Department of Transportation Act of 1966 to give certain protections to publicly owned properties, including historic sites of national, state or local significance. Under Section 4(f), the agency must show that there are no "feasible or prudent" alternatives to the use of historic properties.

- **Guidelines for Historic Bridge Rehabilitation and Replacement (March 2007).** Prepared for the American Association of State Highway and Transportation Officials (AASHTO), these guidelines are intended to be used as the protocol for defining when rehabilitation of historic bridges can be considered prudent and feasible and when it is not based on engineering and environmental data and judgments.

- **Section 106, National Historic Preservation Act.** As stated in the Initial Study, the project will be subject to full Section 106 review, in consultation with the City of Los Angeles Cultural Heritage Commission, Los Angeles Conservancy, State Historic Preservation Officer, Caltrans and FHWA. To ensure meaningful participation by the consulting parties, Section 106 review should take place before and thereby inform preparation of the Draft EIR.

- **Programmatic Agreement Regarding the Seismic Retrofit of Historic Bridge Structures in California (March 21, 1995).** This agreement is for the Section 106 process only and provides for the expeditious fulfillment of the requirements under Section 106.

Thank you for the opportunity to comment on the Notice of Preparation for the 6th Street Viaduct Seismic Improvement Project. Please don't hesitate to contact me at (213) 430-4203 or mbuhler@laconservancy.org should you have any questions.

Sincerely,

Michael Buhler, Esq.
Director of Advocacy

[3] Relevant context studies include the Caltrans report, "City of Los Angeles Monumental Bridges, 1900-1950: Historic Context and Evaluation Guidelines" (JRP Historical Consulting, May 2004) and the multiple-property nomination of thirteen bridges currently being prepared at the direction of the Cultural Heritage Commission.

6th Street Viaduct
Meeting with Los Angeles Conservancy
Meeting Notes

Meeting:	Los Angeles Conservancy Briefing	Meeting Date:	10/29/07 1:30 p.m. – 3:30 p.m.
		Location:	LABOE
Attendance:	John Koo, City of Los Angeles Bureau of Engineering Jim Wu, City of Los Angeles Bureau of Engineering Wally Stokes, City of Los Angeles Bureau of Engineering Mike Buhler, Los Angeles Conservancy Carlos Montes, Caltrans Claudia Harbert, Caltrans Cameron Millard, Caltrans Steve Thoman, DEA Yoga Chandran, CH2MHILL Jeff Bingham, Parsons Anne Kochaon, Parsons		

Overview

The meeting was arranged at the request of Mr. Mike Buhler of the Los Angeles Conservancy (LAC) to provide detailed information about the background and development process of the 6th Street Viaduct Seismic Improvement Project. The meeting also provided a forum for LAC to ask questions and to gain a better understanding of the issues surrounding the project. Jeff Bingham facilitated the meeting by conducting a PowerPoint presentation on the project background, objectives, areas of concern previously expressed by LAC, and project status.

Questions and Answers

Throughout the meeting, Mr. Buhler asked several questions and the team provided responses (expanded for clarification in these meeting notes) to each question as summarized below.

Questions asked by LAC	Response by the Project Team members
1) Why can't Section 106 start now?	The HPSR, HRER, and ASR is being completed by the project team. The package will be reviewed and approved by the City of LA and Caltrans before it is submitted to SHPO for review. It is anticipated that Section 106 consultation with the SHPO would commence in February or March 2008.
2) Can other retrofit alternatives be evaluated in the EIS/EIR? LAC desires at least one retrofit alternative that does not result in significant adverse effect be evaluated in the EIS/EIR.	The team explained that five rehabilitation retrofit alternatives were considered in the City's final seismic retrofit strategy report, (*Sixth Street Viaduct Over Los Angeles River, Final Seismic Retrofit Strategy Report* dated 2004) along with two replacement alternatives. Alternative No. 5, the rehabilitation scheme to use heavy steel casings (to contain the ASR symptoms resulting in the longest expected life span for the rehabilitated structure), was selected for evaluation in the environmental document. Based on the description of each rehabilitation retrofit alternative, all would likely result in an significant adverse effect to the viaduct pursuant to Section 106 and CEQA guidelines.

6th Street Viaduct
Meeting with Los Angeles Conservancy
Meeting Notes

Questions asked by LAC	Response by the Project Team members
3) Is there an opportunity to consider additional alternative(s), if one or more surfaced during the Section 106 process?	The team explained that a number of alternatives were considered and documented in the *Final Seismic Retrofit Strategy Report*. If a viable alternative is recommended that wasn't considered by the team, it would be included in the process.
4) In order to access federal funds, does functional obsolescence (geometry) need to be corrected? Do functional obsolescence correction requirements receive relaxation on historic bridge structures?	Yes. The facility needs to be upgraded to current standards.
5) Why can't the retrofit alternative approved by the City in 1990 (shear wall) be selected for implementation?	Caltrans asked the City not to proceed with this rehabilitation scheme because it would not resolve the ASR issue. Using the shear wall strategy could cause more damage to the existing columns during a seismic event because the load transfer between the shear walls and ASR affected columns would be problematic.
6) Can additional columns be added at the bents?	Yes. But that would create an adverse effect from a historical perspective. Also, this strategy would still not solve the ASR issue within the other structural elements of the bridge, including the existing columns, railings, decks, girders, foundations and other existing concrete elements.
7) Has the Caltrans' portion of the viaduct been tested for ASR after the shear walls were constructed?	Caltrans' portion of the viaduct (over US 101) has not had concrete core samples removed to determine the existence or extent of ASR damage within the concrete. The City is in the process of developing a program to obtain concrete core samples from the Caltrans' portion of the viaduct to perform ASR studies.
8) Can carbon fiber wrap technology be considered as one of the retrofit alternatives?	Yes, but the *Final Seismic Retrofit Strategy Report* did not evaluate this option in depth because of its cost being much higher relative to steel casing and its unknown long term durability. Also, similar to steel casings, carbon and fiberglass reinforced polymers rehabilitation schemes do not reverse or stop the ASR but only restrain the concrete expansion problem caused by the ASR for the columns over a period of time (approximately 30 years). The steel casing and carbon and fiberglass rehabilitation schemes do not provide a solution to treat the concrete expansion problems within other concrete structural elements including the railings, deck, girders, and foundations.
9) Is there a way to know when the ASR would stop?	No, however petrograhic evaluations can be made on existing concrete core samples to determine if materials are present to react chemically. However, there is no

Questions asked by LAC	Response by the Project Team members
	known method to reverse the damage that has already occurred throughout the concrete elements. The petrographic evaluations (*Sixth Street Viaduct Over Los Angeles River, Field Sampling and Testing Program*, 2002) of the core samples noted abundant un-reacted aggregates which will fuel ongoing reactions. The report also noted that "New cracks forming in heavily epoxy injected locations present evidence that ASR cracking continues to occur. The potential for future ASR reactions and deterioration appears to be high." The final report *Sixth Street Viaduct Over Los Angeles River, Field Sampling and Testing Program* noted that "Currently, there is no reliable method to arrest ASR deterioration. Protecting the structural members from further moisture infiltration would only slow down the reactive process." (Water is a required reactant.)
10) How effective is the lithium treatment? Does FHWA endorse this technology?	In March of 2007 FHWA published the report *The Use of Lithium to Prevent or Mitigate Alkali-Silica Reaction in Concrete Pavements and Structures*. Lithium treatment for the 6th Viaduct is not recommended for the following reasons: 1) The FHWA report states "Lithium treatment will not repair any damage that has already occurred." ASR damage has already occurred within the 6th Viaduct concrete elements. 2) Data from the FHWA reports indicate that application of lithium to existing structures can only penetrate an inch or so below the surface of the concrete member. The structural elements of the 6th St Viaduct are in the order of many feet thick. 3) In regards to usage of lithium to treat existing ASR affected structures, the report states, "Typically, such studies have used laboratory-sized specimens with relatively small cross-sections and it has not yet been demonstrated that lithium treatment is effective with larger specimens that are more representative of elements of concrete structures."
11) Can different technologies be put together to rehabilitate and seismically retrofit the viaduct?	The team is not aware of any technology that can extend the life of the concrete elements affected with ASR while still meeting seismic safety criteria. The team has and continues to consult with Professor

Questions asked by LAC	Response by the Project Team members
	Frieder Seible of UC San Diego. He is the current chairperson of the Caltrans Seismic Advisory Board and is a world renowned researcher in the area of materials usage in large scale structures such as the 6th Street Viaduct.
12) LAC has concerns that implementation of either the retrofit or replacement alternatives would result in significant adverse effect to the historic resources. Can EIS/EIR analyze a retrofit alternative that shows a less than significant impact?	The project team does not have knowledge of any retrofit alternative that would not cause significant adverse impact to the historic resource. The team is willing to consider a retrofit alternative that LAC believes would meet the project objective. The project team has considered the parallel viaduct construction option, which would leave the existing viaduct alone. The right of way cost would be very high. (Mike Buhler mentioned LAC would not favor this alternative.)
13) Can the California Historical Building Code be used in the case of the 6th Street Viaduct?	The 6th Street Viaduct minimum standards are covered by the American Association of State Highway and Transportation Officials specifications and supplemented by Caltrans Seismic Design Criteria. A life safety or "non collapse" criterion has been used to address the seismic vulnerabilities of the 6th Street Viaduct. The California Historical Building Code is not applicable to transportation facilities.
14) Is funding availability being used as one of the criteria to consider alternatives to be evaluated in the environmental document or not?	A "non-collapse" criterion was used as a minimum standard to consider the alternatives to be carried forward into the analysis. Funding availability is not directly used as the criterion. However, FHWA and Caltrans will make the decision which alternative can receive the HBP funds and Caltrans will make the decision on the use of Prop 1 B funding sources. Under the HBP funding regulations, a bridge replacement can be appropriate "rehabilitation" if cost analysis shows replacement is the most cost effective solution. Cost effectiveness studies may include life cycle cost analysis. However, cost comparison between rehabilitation and replacement is not the sole factor in deciding the best solution. All reasonable alternatives should be environmentally assessed. The team advised that funding sources are being sought from the HBP program at approximately 88% and approximately 12% from Prop 1B (November 2006 bond). Under the HBP program funding is available for rehabilitation or seismic retrofit (using strategies to rehabilitate or replace). Under the Prop 1B program the

Questions asked by LAC	Response by the Project Team members
	bridge must be seismically retrofitted (where rehabilitation or replacements are viable seismic retrofit strategies) Under both funding methods, the viaduct must be designed to meet current AASHTO and Caltrans standards.
15) Can an alternative be developed to consider partial retrofit and partial replacement; e.g. use of fiber wrap at the column and replacing the deck? Can it be considered and evaluated in the environmental document?	The *Final Seismic Retrofit Strategy Report*, Alternative No. 6A evaluated the strategy to replace the concrete members of the viaduct and preserve the steel arches over the river as non-load carrying elements. The team will reassess this alternative and determine if it should be considered in the environmental document.
16) Has the funding been applied for and what is the project description used in the application?	The City has applied for funding and is currently in the process securing funding through construction. The project description is the "6th Street Viaduct Seismic Improvement Project". Application to obtain maximum funding amounts has been based upon the recommendations of the *Final Seismic Strategy Report* and Caltrans' concurrent recommendation to replace the viaduct. However, HBP and Prop 1B final funding amounts will be based upon the outcome of the environmental process as noted in the Memorandum to Caltrans District Director Mr. Doug Failing from Mr. Scoot Straub, Caltrans Structure Design Services & Earthquake Engineering, dated 9/22/04. "Whether the bridge is retrofitted and rehabilitated or replaced will be determined during the environmental phase of the project."
17) LAC would advise the City to consider another alternative for preservation, in addition to the scheme to construct a parallel viaduct construction, which will leave the existing viaduct alone.	The City has considered the preservation of the arches over the river as non-load carrying elements (Alternative 6A of *the Final Seismic Retrofit Strategy Report*). The design team also considered using the arches as architectural gateway features at the east and west ends of the viaduct. Mike noted that the arches over the river were of significance importance to the LAC and would be open to the idea of the arches being incorporated into a design, but not away from the river.

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENVIRONMENTAL ANALYSIS, MS 27
1120 N STREET
P. O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (916) 653-7507
FAX (916) 653-7757
TTY (916) 653-4086

Flex your power!
Be energy efficient!

January 27, 2009

Mr. Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
P. O. Box 942896
Sacramento, CA 94296-0001

07-LAN-0
Sixth Street Viaduct Seismic
Improvement Project
OHP Ref. #FHWA080915

Dear Mr. Donaldson:

Subject: Finding of Adverse Effect for the Sixth Street Viaduct Seismic Improvement Project in the City of Los Angeles, Los Angeles County, California - FHWA080915

The California Department of Transportation (Caltrans) is continuing consultation with the State Historic Preservation Officer (SHPO) regarding our finding of adverse effect for the above referenced project. This consultation is undertaken in accordance with the January 2004 *Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation* (PA). We are consulting with you under Stipulation X.C.1.a of the PA, which requires consultation with the SHPO regarding a finding of adverse effect.

Caltrans is transmitting this as a federal agency, following the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program*, which became effective on July 1, 2007. The MOU was signed pursuant to Section 6005 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) which allows the Secretary of Transportation to assign, and the State of California to assume, responsibility for FHWA's responsibilities under NEPA as well as consultation and coordination responsibilities under other Federal environmental laws. In that this project is covered by the above referenced MOU, FHWA has assigned, and Caltrans has assumed, FHWA responsibility for environmental review, consultation, and coordination on this project. Please direct all future correspondence on this project to Caltrans.

In conjunction with Caltrans, the City of Los Angeles proposes to make improvements to the Sixth Street Viaduct over the Los Angels River (Bridge 53C-1880) and the Sixth Street Overcrossing (Bridge 53-0595), an element of the Hollywood Freeway (US 101), in order to correct seismic deficiencies by either retrofitting the existing Sixth Street Viaduct or replacing it with a new structure. A discussion of the proposed alternatives can be found on pages 7 through 14 of the enclosed Finding of Effect (FOE) report. A discussion of concepts proposed for the replacement structure can be found on pages 14 through 17.

Caltrans initiated consultation with the SHPO for this project with the submittal of a Historic Property Survey Report on September 15, 2008; no comments from the SHPO were received. The Area of Potential Effects for the proposed project contains two historic properties: The Sixth Street Viaduct and prehistoric archaeological site Primary No. 19-003683. Caltrans is assuming archaeological site Primary No. 19-003683 to be eligible for the National Register of Historic Places (NRHP) for the purposes of the proposed undertaking contingent on the establishment of an environmentally sensitive area that will protect the site from all project effects.

The Sixth Street Viaduct, completed in 1933, was determined eligible for the NRHP in 1985 under Criterion A and C as one of 12 significant viaducts that cross the Los Angeles River. In addition, the Sixth Street Viaduct was determined to be individually NRHP-eligible in 1986, and a City of Los Angeles Historic-Cultural Monument in January 2008.

In applying the Criteria of Adverse Effect pursuant to Stipulation X of the PA, Caltrans finds that the proposed undertaking would have an adverse effect on the Sixth Street Viaduct under all of the alternatives under consideration.

A copy of the FOE report supporting Caltrans' finding is enclosed for your review and comment. We are consulting with you pursuant to stipulation X.C.1 of the PA and request your concurrence with Caltrans' finding that the undertaking would have an adverse effect on historic properties. We look forward to receiving your response within 30 days of receipt of this submittal.

Thank you for your assistance with this undertaking. If you have any questions, please contact Jill Hupp at (916) 654-3567 or jill_hupp@dot.ca.gov.

Sincerely,

Gregory P. King

GREGORY P. KING
Chief
Cultural and Community Studies Office
Division of Environmental Analysis

Enclosure

c: GIverson – D7; CHarbert – D7; JHupp – CCSO

JH/jh

Appendix C
Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY (916) 653-4086

Flex your power!
Be energy efficient!

January 14, 2005

TITLE VI
POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

Will Kempton

WILL KEMPTON
Director

Appendix D
Summary of Relocation Benefits

California Department of Transportation Relocation Assistance Program

Relocation Assistance Advisory Services

The California Department of Transportation (Caltrans) would provide relocation advisory assistance to any person, business, farm, or nonprofit organization displaced as a result of Caltrans' acquisition of real property for public use. Caltrans would assist residential displacees in obtaining comparable decent, safe, and sanitary replacement housing by providing current and continuing information on sales prices and rental rates of available housing. Nonresidential displacees would receive information on comparable properties for lease or purchase.

Residential replacement dwellings would be in equal or better neighborhoods, at prices within the financial means of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, displacees would be offered comparable replacement dwellings that are open to all persons regardless of race, color, religion, sex, or national origin, and are consistent with the requirements of Title VIII of the Civil Rights Act of 1968. This assistance would also include supplying information concerning federal- and state-assisted housing programs, and any other known services being offered by public and private agencies in the area.

Additional Information

No relocation payment received would be considered as income for the purpose of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under the Social Security Act or any other federal law (except for any federal law providing low-income housing assistance).

Persons who are eligible for relocation payments and who are legally occupying the property required for the project would not be asked to move without being given at least 90 days' advance notice, in writing. Occupants of any type of dwelling eligible for relocation payments would not be required to move unless at least one comparable "decent, safe, and sanitary" replacement residence, open to all persons regardless of race, color, religion, sex, or national origin, is available or has been made available to them by the State.

Any person, business, farm, or nonprofit organization that has been refused a relocation payment by Caltrans, or believes that the payments are inadequate may appeal for a hearing before a hearing officer or the Caltrans' Relocation Assistance Appeals Board. No legal assistance is required; however, the displacee may choose to obtain legal council at his/her expense. Information about the appeal procedure is available from Caltrans' Relocation Advisors.

The information above is not intended to be a complete statement of all of Caltrans' laws and regulations. At the time of the first written offer to purchase, owner/occupants are given a more-detailed explanation of the State's relocation services. Tenant occupants of properties to be acquired are contacted immediately after the first written offer to purchase, and they are also given a more-detailed explanation of Caltrans’ relocation programs.

Important Notice

To avoid loss of possible benefits, no individual, family, business, farm, or nonprofit organization should commit to purchase or rent a replacement property without first contacting a Department of Transportation relocation advisor at:

State of California
Department of Transportation, District #07
100 South Main Street
Los Angeles, CA 90012

Appendix E
Glossary of Technical Terms

Appendix E Glossary of Technical Terms

Environmental Technical Terms

Action	"Action," a federal term, is the construction or reconstruction, including associated activities, of a transportation facility. For the purposes of this Environmental Impact Report (EIR)/Environmental Impact Statement (EIS), the terms "project," "proposal," and "action" are used interchangeably unless otherwise specified. An action may be categorized as a "categorical exclusion" or a "major federal action."
Area of Potential Effects (APE)	A term used in Section 106 regulations (36 *Code of Federal Regulations* [CFR] 800) to describe the area in which historic and archaeological resources may be affected by a federal undertaking.
Beneficial Use	A use of a natural water resource that enhances the social, economic, and environmental well-being of the user. Twenty-one (21) beneficial uses are defined for the waters of California, ranging from municipal and domestic supply to fisheries and wildlife habitat.
Best Management Practice (BMP)	Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.
Clean Air Act (CAA)	The Clean Air Act of 1970 and the subsequent amendments, including the Clean Air Act Amendments (CAAAs) of 1990 (42 United States Code [U.S.C.] 7401-7671g), is the primary federal law that protects the nation's air resources. This act establishes a comprehensive set of standards, planning processes, and requirements to address air pollution problems and reduce emissions from major sources of pollutants.
Council on Environmental Quality (CEQ)	The federal agency responsible for developing regulations and guidance for agencies implementing the National Environmental Policy Act (NEPA).
Cooperating Agency	"Cooperating Agency," under NEPA, means any agency other than the lead agency that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal for any action significantly affecting the human environment. Under the California Environmental Quality Act (CEQA), the term "responsible agency" is used.
Cumulative Effects	An impact on the environment that results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts result from individually minor, but collectively significant, actions taking place over a period of time.
Decibel (dB)	A unit of noise measured on a logarithmic scale that compresses the range of sound pressures audible to the human ear over a range from zero to 140, where zero decibels represents sound pressure corresponding to the threshold of human hearing and 140 decibels corresponds to a pressure at which pain occurs. Noise analysts measure sound pressure levels that people hear in decibels, much like other analysts measure linear distances in yards or meters. A-weighted decibels (dBA) refer to a weighting that accounts for the various frequency components in a way that corresponds to human hearing.

Environmental Assessment	A concise public document for which a federal agency is responsible that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a Finding of No Significant Impact. It is the federal equivalent of the CEQA term "initial study."
Environmental Document	A draft or final EIS or EIR, Finding of No Significant Impact, Environmental Assessment, or Negative Declaration. A Categorical Exclusion form is not considered an environmental document; it is rather the documentation that the project is exempt/excluded.
Environmental Justice	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.
Environmental Protection Agency (EPA)	An agency of the executive branch of the federal government charged with establishing and enforcing environmental regulations.
Floodplain	The lowlands adjoining inland and coastal waters and relatively flat areas and flood-prone offshore islands, including, at a minimum, those areas that have a 1 percent or greater chance of flood in any given year (also known as a 100-year or a Zone A floodplain).
Hazardous Materials	Substances or materials that the Secretary of Transportation has determined are capable of posing an unreasonable risk to human health, safety, and property when transported in commerce, as designated under 49 CFR Parts 172 and 173.
Hazardous Wastes	Waste materials that are, by their nature, inherently dangerous to handle or dispose of (e.g., old explosives, radioactive materials, some chemicals, some biological wastes). Usually, industrial operations produce these waste materials.
Historic Property	Any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). The term "eligible for inclusion in the NRHP" pertains to both properties that the Secretary of the Interior has formally determined to be eligible and to all other properties that meet NRHP listing criteria.
Initial Study	Under CEQA, the Initial Study is prepared to determine whether there may be significant environmental effects resulting from a project. The Initial Study is attached to the Negative Declaration or Mitigated Negative Declaration. It can become the basis of an EIR if it concludes that the project may cause significant environmental effects that cannot be mitigated below the level of significance.
Lead Agency	The public agency that has primary responsibility for carrying out or approving a project that may have a significant effect on the environment and for preparing the environmental document.
Level of Service (LOS)	A term that denotes traffic operating conditions at a given intersection. There are six levels of service, A through F, which relate to traffic congestion from best to worst. In general, LOS A represents free-flow conditions with no congestion. Conversely, LOS F represents severe congestion with stop-and-go conditions.

Low-Income Population	A population composed of persons whose median household income is below the Department of Health and Human Services poverty guidelines.
Maintenance Area	A federal term to describe any geographic region of the United States designated nonattainment pursuant to the CAAAs and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under Section 175A of the CAAAs.
Metropolitan Planning Organization (MPO)	A federal designation for the agency responsible for cooperative transportation decision making for an urbanized area with a population of more than 50,000.
Metropolitan Transportation Plan	The official intermodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the metropolitan planning area.
Minority Population	A population composed of persons who are Black (non-Hispanic), Hispanic, Asian American, American Indian, or Alaskan Native.
National Environmental Policy Act (NEPA)	The National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321-4347; P.L. 91-190) is the basic national charter for the protection of the environment. It establishes policy, sets goals, and provides means for carrying out the policy. Its purpose is to provide for the establishment of a CEQ and to instruct federal agencies on what they must do to comply with the procedures and achieve the goals of NEPA.
National Historic Preservation Act (NHPA)	The National Historic Preservation Act of 1966, as amended (16 U.S.C. 470-470 *et seq.;* P.L. 89- 665), is the basic legislation of the nation's historic preservation program that established the Advisory Council on Historic Preservation and the Section 106 review process. Section 106 of the NHPA requires every federal agency to "take into account" the effects of its undertakings on historic properties.
National Pollutant Discharge Elimination System (NPDES) Permit	A permit that is required for facilities and activities that discharge waste into surface waters from a confined pipe or channel.
National Register of Historic Places (NRHP)	Administered by the National Park Service, the nation's master inventory of known historic properties, including buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archeological, or cultural significance at the federal, state, and local levels.
Nonattainment Area	Any geographic region of the United States that EPA has designated as a nonattainment area for a transportation-related pollutant(s) for which a National Ambient Air Quality Standard (NAAQS) exists.
Notice of Availability	A formal public notice under NEPA announcing the availability of a completed Environmental Assessment, Draft EIS, or Final EIS. Such notice is to be published in local newspapers. For EISs, publication of such notice in the *Federal Register* is also required.
Notice of Completion	The CEQA notice submitted to the State Clearinghouse when an EIR is completed. For Caltrans EIRs, the requirement for a Notice of Completion is satisfied by the cover sheet transmitting the EIR to the Clearinghouse.
Notice of Determination	A formal written notice under CEQA filed by a lead state agency when approving any project subject to the preparation of a Negative Declaration or an EIR.

Notice of Intent (NOI)	A notice that an EIS will be prepared and considered. The NOI is published in the *Federal Register* by the lead federal agency. The CEQA equivalent of this notice is called the Notice of Preparation (NOP).
Notice of Preparation (NOP)	The CEQA notice that an EIR will be prepared for a project.
Project	CEQA (§21065) defines a "project" as an activity that may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and which is any of the following: a) An activity directly undertaken by any public agency. b) An activity undertaken by a person that is supported, in whole or in part, throughout contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies. c) An activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.
Recognized Environmental Conditions (RECs)	The presence or likely presence of any hazardous substance or petroleum product on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property (Ref. American Society of Testing and Materials [ASTM] Standard E 1527-00).
Record of Decision	A formal written statement, required under NEPA, wherein a federal lead agency must present the basis for its decision to approve a selected project alternative, summarize mitigation measures incorporated into the project, and document any required Section 4(f) approval.
Regional Transportation Plan (RTP)	"...the official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR Part 450."
Responsible Agency	A "public agency, other than the lead agency that has responsibility for carrying out or approving a project" (Public Resources Code [PRC] 21069). The CEQA Guidelines further explain the statutory definition by stating that a "responsible agency" includes "all public agencies other than the Lead Agency that have discretionary approval power over the project" (14 CCR 15381). State and local public agencies that have discretionary authority to issue permits, for example, fall into this category.
SAFETEA LU	The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (commonly known by its acronym, SAFETEA-LU) is the most recent federal transportation bill authorizing funding for the nation's surface transportation programs. Signed into law in August 2005, SAFETEA-LU replaced the expired Transportation Equity Act for the 21st Century (TEA-21). The law establishes funding levels and policies for the federal government's highway, highway safety, transit, motor carrier, and some rail programs administered by the U.S. Department of Transportation. SAFETEA-LU expires September 30, 2009.
Scoping	A process for determining the scope of issues to be addressed in an Environmental Assessment and EIS and for identifying significant issues to be analyzed in depth in an EIS.

Significance – CEQA

CEQA defines a "Significant effect on the environment" as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant” (§15382).

CEQA requires that the lead agency identify each “significant effect on the environment” resulting from the project and avoid or mitigate it.

The CEQA Guidelines include mandatory findings of significance for certain effects, thus requiring the preparation of an EIR.

Significance – NEPA

NEPA stipulates that an EIS is required when the proposed federal action has the potential to “significantly affect the quality of the human environment.” To determine that potential, one must consider both the context in which the action takes place and the intensity of its effect. Section 1508.27 of the CEQ regulations define the term “significantly” as:

Significantly, as used in NEPA, requires considerations of both context and intensity:

(a) Context. This means that the significance of an action must be analyzed in several contexts, such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial.

(2) The degree to which the proposed action affects public health or safety.

(3) Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

(5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

(10) Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment. [43 FR 56003, Nov. 29, 1978; 44 FR 874, Jan. 3, 1979]

State Implementation Plan (SIP)	The portion (or portions) of an applicable air quality implementation plan approved or promulgated, or the most recent revision thereof, under sections 110, 301(d) and 175A of the CAA.
State Water Resources Control Board	The principal authority of California for regulation of the quantity and quality of waters of the state, established by act of the legislature in 1967. It assumed responsibility for administration of the Porter-Cologne Water Quality Control Act of 1969.
Statewide Transportation Improvement Plan	A staged, multiyear, statewide, intermodal program of transportation projects that is consistent with the statewide transportation plan and planning processes and metropolitan plans, Transportation Improvement Plans, and processes.
Statewide Transportation Plan	The official statewide, intermodal transportation plan that is developed through the statewide transportation planning process.
Title VI of the Civil Rights Act of 1964	A policy of the United States that prevents discrimination on the grounds of race, color, or national origin in connection with programs and activities receiving federal financial assistance.
Transportation Control Measure	Any measure that is specifically identified and committed to in the applicable implementation plan that is either one of the types listed in §108 of the CAA, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the above, vehicle technology-based, fuel-based, and maintenance-based measures that control the emissions from vehicles under fixed traffic conditions are not Transportation Control Measures for the purposes of project-level conformity.
Transportation Improvement Plan	A staged, multiyear, intermodal program of transportation projects that is consistent with the metropolitan transportation plan. It is a federal term.
Trustee Agency	A state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California. Trustee agencies include: (a) the California Department of Fish and Game (CDFG) with regard to the fish and wildlife of the state, to designated rare or endangered native plants, and to game refuges, ecological preserves, and other areas administered by the department; (b) the State Lands Commission with regard to state-owned "sovereign" lands such as the beds of navigable waters and state school lands; (c) the State Department of Parks and Recreation with regard to units of the State Park System; and (d) the University of California with regard to sites within the Natural Land and Water Reserves System" (14 CCR 15386).
Volume to Capacity Ratio (V/C)	The ratio of an intersection's traffic volume (V) to its capacity (C), with capacity defined as the theoretical maximum number of vehicles that can pass through an intersection during a specified time period. When the V/C ratio is 1.0, traffic is considered to be "at capacity" and there is traffic congestion. A V/C ratio of 1.0 or more translates to an LOS F.
Wetland	Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. (United States Army Corps of Engineers [USACE] and EPA definition).

Engineering Terms

Abutment	Part of a bridge substructure. Refers to the first and last supports of a bridge.
Alkali-Silica Reaction	A reaction between reactive (amorphous) silica (in concrete aggregates) and an alkali (usually present in the cement), which results in the formation of a gel. This gel increases in volume with water and exerts expansive pressure on the concrete, causing failure of the concrete. (from Wikipedia)
Approaches	Part of bridge or bridges leading up to the main span.
Arch	A structural form utilizing a semicircular substructure.
Beam	A horizontal structure member supporting vertical loads by resisting bending.
Bent	Part of a bridge substructure. A single or multi-column frame commonly made of reinforced concrete or steel that supports a vertical load and is placed transverse to the length of a structure. Bents are commonly used to support beams and girders.
Bent cap	Refers to the horizontal element of a bent.
Cable-stayed	A variation of suspension bridge in which the tension members extend from one or more towers at varying angles to carry the deck. Allowing much more freedom in design form, this type does not use cables draped over towers, nor the anchorages at each end, as in a traditional suspension bridge.
Cast-in-place concrete girder	A concrete girder poured in the field in its final position.
Columns	Vertical supporting elements of a bridge.
Concrete box girder	A hollow concrete girder.
Deck	The portion of the superstructure in contact with vehicle tires.
Functionally obsolete	A structure including substandard components, such as older railing or sidewalk and having a roadway geometry that does not meet today's standards. A functionally obsolete bridge may be structurally sufficient, but unable to handle its current volume of traffic.
Girder	A girder is a larger beam.
Main span	Refers to the longest span of a bridge structure (usually significantly longer than other spans). Also refers to the portion of the structure spanning the longest distance.
Pier	A vertical support or substructure unit that supports the spans of a multi-span superstructure at an intermediate location between its abutments.
Piles	Long vertical steel or concrete elements drilled or driven deep into the ground to form part of a foundation. Piles are typically used in groups.
Pile Caps	A rectangular concrete element built on top of a group of piles. A column can be built above a pile cap.

Span	The distance between bents, piers, towers, or abutments.
Steel box girder	A hollow steel girder.
Steel casings	Steel pipe placed around another element for various applications.
Steel tied arch	Bridge built with a semicircular member over the deck, using the deck as a tie. This bridge usually involves cables connecting the deck to the arch.
Substructure	Any portion of a bridge structure below the superstructure, including abutments, columns, walls, and foundations that support the superstructure.
Superstructure	The portion of a bridge structure that carries the traffic load and transfers it to the substructure.
Tie-in	Location where approaches and main span meet.
Truss	A structural form that is used in the same way as a beam, but because it is made of a web-like assembly of smaller members, it can be made longer, deeper, and therefore, stronger than a beam or girder while being lighter than a beam of similar dimensions.

Appendix F
Minimization and/or Mitigation Summary

Appendix F Minimization and Mitigation Summary

The proposed project alternatives have been designed to avoid or minimize potential environmental impacts. Mitigation measures are proposed when avoidance and minimization attempts could not fully resolve the impacts. The following tables present standard measures and provisions based on applicable laws, regulations, ordinances and formally adopted City of Los Angeles standards to minimize project effects (Table 1) and specific mitigation measures (Table 2).

Table 1
Standard Measures under Applicable Laws, Regulations, and Adopted City Standards to be Incorporated into Bid and Specification Package

No.	Standard Measures	Impacted Resources
1	Continue the outreach program to keep residents, businesses, and any service providers within the area informed, and to inform surrounding communities about the project construction schedule, relocation plans and assistance programs, traffic-impacted areas and the Traffic Management Plan (TMP), and other relevant project information.	Community Impacts
2	Compensate the private parking owners for the loss of any private parking spaces through the right-of-way (ROW) acquisition process.	Community Impacts
3	Provide assistance to local businesses within the project limits to the extent allowed by laws and regulations in the event permanent property acquisitions or temporary business closures result from project construction.	Community Impacts
4	Coordinate closely with the railroad owners or their representatives during the design phase of the project to ensure that the final designs are reviewed and approved by respective railroad authorities.	Utility Impacts
5	Obtain a construction license agreement with respective railroad authorities for construction within the railroad ROW prior to start of construction. Coordinate with railroad representatives during the construction phase to minimize interruption to railroad operations.	Utility Impacts
6	Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and Monitoring program. The SWPPP would include erosion and sediment control; non-stormwater management; post-construction stormwater management; waste management and disposal; maintenance, inspection, and repair of Best Management Practices (BMPs); employee training to perform inspections of the BMPs at the construction site; and a sampling and analysis plan for contaminated storm runoff. The SWPPP would describe both structural and nonstructural BMPs to minimize or eliminate the potential for spills and leakage of construction materials and erosion of disturbed areas by water and wind.	Water Quality
7	Require the construction contractor to conduct soil profiling (in particular, but not limited to, metals and aerially deposited lead [ADL]) while handling soil at the project site during construction. If the soil contains contaminant concentrations that meet the definition of hazardous materials, then the contractor would be required to adhere to City Standard Specifications (known as the Greenbook), which address the management of various hazardous materials and wastes and that is consistent with the federal and state of California requirements pertaining to hazardous materials and wastes management.	Hazards and Hazardous Materials
8.	Require the construction contractor to conduct a survey to screen for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to demolition activities. If ACM is found, then the contractor would comply with the South Coast Air Quality Management District (SCAQMD) Rule 1403 notification and removal processes.	Hazards and Hazardous Materials
9	Require the construction contractor to dispose of any hazardous materials or wastes encountered during demolition and construction according to current regulatory guidelines.	Hazards and Hazardous Materials

Table 1
Standard Measures under Applicable Laws, Regulations, and Adopted City Standards to be Incorporated into Bid and Specification Package

No.	Standard Measures	Impacted Resources
10	Require the construction contractor to obtain a National Pollutant Discharge Elimination System (NPDES) permit for wastewater discharge if there is a potential for dewatering activities at the project site during construction.	Hazards and Hazardous Materials
11	Require the construction contractor to implement PM_{10} control by applying measures contained in Tables 1 and 2 of SCAQMD Rule 403.	Air Quality
12	Require the construction contractor to implement the following measures, when feasible, to reduce PM_{10} and NO_x emissions generated by construction equipment: a Water the construction site three times daily, or apply nontoxic soil stabilizers, as needed, to reduce offsite transport of fugitive dust from all unpaved staging areas and unpaved road surfaces. b Properly tune and maintain construction equipment in accordance with manufacturer's specifications. c Keep trucks and vehicles in loading/unloading queues with their engines off when not in use to reduce vehicle emissions. The contractor should phase construction activities to avoid emissions peaks, where feasible, and discontinue work during second-stage smog alerts. d To the extent possible, use construction equipment that is powered by aqueous diesel or alternative fuel sources (e.g., methanol, natural gas, propane). e Where feasible, use diesel oxidation catalyst for heavy-duty construction equipment.	Air Quality
13	Incorporate the following requirements in the construction specifications: a. Use newer equipment with improved noise muffling and ensure that all equipment has the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding). b. Utilize construction methods or equipment that would provide the lowest level of noise and ground vibration impact, such as alternative low-noise pile installation methods. c. Turn off idling equipment. d. Implement a construction noise and/or vibration monitoring program to limit the impacts. e. Comply with all appropriate provisions of the City Noise Ordinance including, but not limited to, the restrictions on hours of construction and mechanical equipment noise levels. f. Limit construction activities to daytime hours. If nighttime construction is necessary, then the proper permits and variances would be obtained. g. Comply with the TMP on construction routes to avoid or minimize impacts on noise-sensitive receptors located in areas of close proximity to the project site. h. Keep noise levels relatively uniform and avoid impulsive noises. i. Keep area residents and businesses informed of the schedule, duration, and progress of the construction to minimize public objections of unavoidable noise. Notify communities in advance of the construction and of the expected temporary noise impacts during the construction period.	Noise

Table 2
Proposed Specific Mitigation Measures

Environmental Factor	Mitigation Measures	
	Alternative 2 – Retrofit	**Alternative 3 – Replacement**
Community Impacts and Environmental Justice	• The City of Los Angeles would develop a construction staging plan and TMP in close coordination with members of the Downtown Construction Traffic Management Committee and with agencies or developers responsible for other planned projects in the immediate vicinity of the proposed project to minimize direct and cumulative construction impacts on the community. The TMP would also identify and provide alternate traffic detour routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.	• The City of Los Angeles would actively participate in the community planning exercise process to redevelop the vacated area around the 6th Street Viaduct to provide recreational, retail, and cultural, or other amenities. • The City of Los Angeles would provide landscape and streetscape improvements to enhance the aesthetics of the affected intersections along the proposed detour routes that could not be mitigated to the less than significant level. • The City of Los Angeles would actively participate in implementation of the Los Angeles River Revitalization Master Plan (LARRMP) to improve the area near the 6th Street Viaduct that is compatible within accordance with the Greening Concept features objectives set forth in the Master Plan. • The City of Los Angeles would develop a construction staging plan and TMP in close coordination with members of the Downtown Construction Traffic Management Committee and with agencies or developers responsible for other planned projects in the immediate vicinity of the proposed project to minimize direct and cumulative construction impacts on the community. The TMP would also identify and provide alternate traffic detour routes, construction materials hauling routes, bus stops, transit routes and operation hours, pedestrian routes, and residential and commercial access routes to be used during the construction period.
Traffic, Transportation and Pedestrian Facilities	No specific mitigation is required.	• The City of Los Angeles would install new traffic signals, and connect to Los Angeles City Automated Traffic Surveillance and Control (ATSAC) system at the intersection of 4th Street and I-15 southbound (SB) On-/Off-Ramps/Gertrude Street. • The City of Los Angeles would restripe to add an eastbound right-turn lane at the intersection of 4th Street and Soto Street. • The City of Los Angeles would provide alternative pedestrian access within the vicinity of the 6th Street Viaduct during the construction period.

Table 2
Proposed Specific Mitigation Measures

<table>
<tr><th rowspan="2">Environmental Factor</th><th colspan="2">Mitigation Measures</th></tr>
<tr><th>Alternative 2 – Retrofit</th><th>Alternative 3 – Replacement</th></tr>
<tr><td>Emergency Services</td><td>Notify emergency service providers at least 2 weeks in advance of the project construction schedule. Provide detailed information on the construction schedule, roadway closures, traffic detour route maps, and expected congested intersections.
Coordinate with emergency service providers throughout the construction period to notify them of any changes in construction schedule, roadway closures, and detour routes.</td><td>Same as Alternative 2.</td></tr>
<tr><td>Aesthetics and Visual Resources</td><td>During the preliminary design stage of the project, the City and Caltrans have been conducting ongoing design workshops with community representatives.</td><td>During the preliminary design stage of the project, the City and Caltrans have been conducting ongoing design workshops with community representatives.
Continue to work with the community for input through a formalized Context Sensitive Solutions process to develop Aesthetic and Urban Design Guidelines for the new structure.
Evaluate benefits to the community of preserving open space created by the project. Work with the community and other stakeholders, including City agencies, in developing the Greening Concept to include open space and park amenities within the community, including the viaduct design for future connections to the river corridor.
Develop bridge architecture to create a Community/ City Gateway – including possible bridge monuments with decorative lighting, parapet wall treatments, decorative fencing/railing and lighting, and abutment/wing walls – to increase the memorability and announce the presence of the bridge.
Texturize and color slope paving and other smooth surfaces to deter graffiti and enhance the bridge aesthetics.
Apply architectural detailing to the retaining walls, including textures, colors, and patterns. Include caps that will provide shadow lines.</td></tr>
<tr><td>Cultural/ Historical Resources</td><td>Implement all stipulations and measures to resolve the adverse effect to be developed as part of the executed Memorandum of Agreement (MOA) between the State Historic Preservation Officer (SHPO), City of Los Angeles, and Caltrans.
Establish an Environmental Sensitive Area (ESA) Action Plan, which would include fencing of site no. 19-003683, archaeological and Native American monitoring during ground-disturbing activities, and training of construction workers.</td><td>Same as Alternative 2.</td></tr>
</table>

Table 2
Proposed Specific Mitigation Measures

<table>
<tr><th rowspan="2">Environmental Factor</th><th colspan="2">Mitigation Measures</th></tr>
<tr><th>Alternative 2 – Retrofit</th><th>Alternative 3 – Replacement</th></tr>
<tr><td></td><td>• Provide a qualified archaeological monitor to be present at the site during excavation of the viaduct footings, building demolition, and all other construction-related excavations. In the event buried cultural materials are encountered during construction, construction would be halted and the discovery area isolated and secured until the archaeologist finishes evaluating the nature and significance of the find.
• Provide a Native American monitor(s) to be present at the site during ground-disturbing activities.
• If human remains are discovered, then the County coroner must be notified as soon as is reasonably possible (CEQA Section 15064.5). There should be no further site disturbance where the remains were found. If the remains are Native American, then the coroner is responsible for contacting the Native American Heritage Commission (NAHC) within 24 hours. The Commission, pursuant to Section 5097.98 of the Public Resources Code (PRC), would immediately notify those persons it believes to be the Most Likely Descendents (MLDs) of the human remains. Treatment of the remains would be dependent on the views of the MLD.</td><td></td></tr>
<tr><td>Paleontology</td><td>• Retain a qualified paleontologist prior to the start of construction to develop and implement a Paleontological Mitigation Plan (PMP). The PMP would include obtaining a written storage agreement with a recognized museum repository; presenting preconstruction meeting instructions for construction personnel on environmental awareness; instructions on fossil remains handling requirements for archival archiving; archival requirements for remains prior to transfer to the repository for permanent storage and maintenance; instructions on fossil remains handling requirements; a discussion of bulk sample requirements of fine-grained sediment from fossiliferous or potentially fossiliferous strata; and preparation of a report summarizing the findings of the work conducted under the PMP.
• Provide a paleontological monitor onsite on a full-time basis to inspect new exposures created by earth-moving activities in areas underlain by the older alluvium and at depths greater than 5 ft below current grade for the younger alluvium.
• If fossil remains are discovered, then earth-moving activities at the fossil site would be halted or diverted temporarily to allow the monitor to recover the fossil remains.</td><td>Same as Alternative 2.</td></tr>
</table>

Table 2
Proposed Specific Mitigation Measures

Environmental Factor	Mitigation Measures	
	Alternative 2 – Retrofit	**Alternative 3 – Replacement**
Biological Resources	• If construction occurs between February 1 and August 31, conduct a preconstruction survey by a qualified biologist to identify any active nesting or roosting locations. If the biologist finds an active nest within the construction area and determines that it may be impacted, then the biologist would delineate an appropriate buffer zone around the nest depending on the species and the type of construction activity. Any active nests or roosts observed during the survey would be mapped on an aerial photograph. The biologist would serve as a construction monitor during those periods when construction activities occur near active nest or roost areas to ensure that no inadvertent impacts on these nests occur. Results of the preconstruction survey and any subsequent monitoring would be provided to the California Department of Fish and Game (CDFG).	• To protect any possible migratory bird nesting activity, avoid removal of non-native ornamental vegetation between September 1 and January 31. If construction occurs between February 1 and August 31, conduct a preconstruction survey by a qualified biologist to identify any active nesting locations. If the biologist finds an active nest within the construction area, then the CDFG biologist would be consulted on how to relocate them to avoid any construction impacts.

Appendix G
List of Acronyms and Abbreviations

Appendix G List of Acronyms and Abbreviations

AADT	average annual daily traffic
AAM	annual arithmetic mean
AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
AC	Advanced Construction
ACHP	Advisory Council on Historic Preservation
ACMs	asbestos-containing materials
ADA	Americans with Disabilities Act
ADL	aerially deposited lead
ADT	average daily traffic
AEP	Association of Environmental Professionals
AIR	Artists-in-Residence
ARB	Air Resources Board
APE	area of potential effects
AQMP	Air Quality Management Plan
ASR	Alkali Silica Reaction Archaeological Survey Report
ASTM	American Society for Testing and Materials
ATSAC	Automated Traffic Surveillance and Control
bgs	below ground surface
BHNC	Boyle Heights Neighborhood Council
BID	Business Improvement District
BMPs	best management practices
BNSF	Burlington Northern Santa Fe
°C	degrees Celsius
CAA	Clean Air Act
CAAAs	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CAC	Community Advisory Committee
Cal-IPC	California Invasive Plant Council

Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Information Systems
CESA	California Endangered Species Act
CFR	*Code of Federal Regulations*
cfs	cubic feet per second
CGS	California Geological Survey
CHL	California Historical Landmarks
CHRI	California Historic Resources Inventory
CHRIS	California Historical Resources Information System
CIP	cast-in-place
City	City of Los Angeles
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
COM	commercial
CPHI	California Points of Historical Interest
CRA/LA	Community Redevelopment Agency of the City of Los Angeles
CRHR	California Register of Historical Resources
CTC	California Transportation Commission
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel

D/C	demand-to-capacity (ratio)
DE	diesel exhaust
DLANC	Downtown Los Angeles Neighborhood Council
DOT	United States Department of Transportation
DPM	diesel particulate matter
DRIR	Draft Relocation Impact Report
EB	eastbound
EBL	Eligible Bridge List
EFS	Environmental FirstSearch
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ERNS	Emergency Response and Notification System
ESA	environmentally sensitive area
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIMAP	Fire Insurance Map
FINDS	Facility Index System
FOE	Finding of Effect
FRA	Federal Railroad Administration
ft	feet/foot
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geographic information system
GWP	global warming potential
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HAPs	hazardous air pollutants
HBP	Highway Bridge Program
HCM	Historic-Cultural Monument

HHS	U.S. Department of Health and Human Services
HMIRS	Hazardous Material Incident Report System
HPSR	Historic Property Survey Report
HRER	Historical Resources Evaluation Report
HSSC	Historical Society of Southern California
Hz	hertz
I-5	Interstate 5
I-10	Interstate 10
IGR	Intergovernmental Review
ILUP	Industrial Land Use Policy
IPCC	Intergovernmental Panel on Climate Change
IRIS	Integrated Risk Information System
ISA	Initial Site Assessment
ISTEA	Intermodal Surface Transportation Efficiency Act
kV	kilovolt
LAANE	Los Angeles Alliance for a New Economy
LABOE	City of Los Angeles Bureau of Engineering
LAC	Los Angeles Conservancy
LACDA	Los Angeles County Drainage Analysis
LACDPW	Los Angeles County Department of Public Words
LADOT	Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAPD	Los Angeles Police Department
LARRMP	Los Angeles River Revitalization Master Plan
LBP	lead-based paint
lbs/day	pounds per day
LBSRA	Local Bridge Seismic Retrofit Account
L_{eq}	equivalent sound level
L_{max}	maximum sound level
LOS	level of service
L_P	sound pressure level

LST	localized significance threshold
LT	long-term
L_x	percentile exceeded sound level
MCE	maximum credible earthquake
MFR	multiple-family residential
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
μg/L	micrograms per liter
mg/m^3	milligrams per cubic meter
$\mu g/m^3$	micrograms per cubic meter
MIBK	4-methyl-2-pentanone
MLD	most likely descendent
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour
MPO	Metropolitan Planning Organization
MSATs	mobile source air toxics
msl	mean sea level
MTA	Metropolitan Transportation Authority
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NATA	National Air Toxics Assessment
NB	northbound
NCDB	National Compliance Database System
NCPP	New Community Plan Program
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFRAP	No Further Remedial Action Planned
NHPA	National Historic Preservation Act of 1966
NO_2	nitrogen dioxide

NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NOC	Notice of Completion
NOI	Notice of Intent
NOP	Notice of Preparation
NOS	North Outfall Sewer
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places
O_3	ozone
PA	Programmatic Agreement
PADS	Polychlorinated Biphenyls Activity Data System
Pb	lead
PBA	peak bedrock acceleration
PCBs	polychlorinated biphenyls
PDT	Project Development Team
PGA	peak ground acceleration
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
PMP	Paleontological Mitigation Plan
ppm	parts per million
POAQC	Projects of Air Quality Concern
PQS	professionally qualified staff
PPV	peak particle velocity
PRC	Public Resources Code
PRG	preliminary remediation goal
RAP	Relocation Assistance Program
RCRA	Resource Conservation and Recovery Act of 1976
RCRA COR	Resource Conservation and Recovery Correction Action Site

RCRA GEN	Resource Conservation and Recovery Generators
RCRA NLR	Resource Conservation and Recovery Sites
RCRA TSD	Resource Conservation and Recovery Treatment, Disposal, and Storage Site
REC	recognized environmental condition recreational
REG UST/AST	Registered Underground Storage Tank/Aboveground Storage Tank
ROW	right-of-way
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	southbound
SCAB or Basin	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SCH	school
SCRRA	Southern California Regional Rail Authority
SFR	single-family residential
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SRA	source receptor area
ST	short-term
STIP	Statewide Transportation Improvement Program
SUSMP	Standard Urban Stormwater Mitigation Plan
SVOCs	semivolatile organic compounds
SWL	solid waste landfill
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants

TCMs	Transportation Control Measures
TCWG	Transportation Conformity Working Group
TDM	Transportation Demand Management
TDS	total dissolved solids
TMP	Traffic Management Plan
TOG	total organic gas
TPH	total petroleum hydrocarbon
TRIS	Toxic Release Inventory System
TSM	Transportation System Management
TTLC	total toxic limit concentration
UPRR	Union Pacific Railroad
US 101	Hollywood Freeway
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
V/C	volume to capacity ratio
VMT	vehicle miles traveled
VOC	volatile organic compound
WATCP	Work Area Traffic Control Plan
WB	westbound

Appendix H
References

Appendix H References

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Appendix I
List of Technical Studies

Appendix I List of Technical Studies (bound separately)

- Air Quality Technical Report (Parsons, 2008a)
- Archaeological Survey Report (BonTerra Consulting, 2008)
- Community Impact Assessment (Parsons, 2008b)
- Foundation Report, Draft (CH2M Hill, 2008a)
- Historic Property Survey Report (Parsons, 2007a)
- Historical Resources Evaluation Report (Parsons, 2007b)
- Hydrology and Hydraulics Report (Moffatt & Nichol, 2008)
- Initial Site Assessment (Parsons, 2007c)
- Location Hydraulic Study (Moffatt & Nichol, 2009)
- Natural Environmental Study (BonTerra Consulting, 2009a)
- Noise Study Report (Parsons, 2008d)
- Paleontological Study (BonTerra Consulting, 2009b)
- Relocation Impact Report, Draft (Paragon Partners, 2008)
- Site Investigation Report (CH2M Hill, 2008b)
- Traffic Analysis Report (ACT Consulting Engineers, 2008)
- Visual Impact Assessment (Parsons, 2008e)

Appendix J
Section 6002 Coordination Plan

SAFETEA-LU 6002 COORDINATION PLAN

6TH STREET VIADUCT IMPROVEMENT PROJECT

Contents

Section 1. Lead/Cooperating/Participating Agencies

As one of the requirements under Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Act: a Legacy for Users (SAFETEA-LU), all transportation projects requiring an EIS, for which the original Notice of Intent was published in the Federal Register after August 10, 2005, must have a plan established for coordinating public and agency participation and comment during the environmental review process. It is the responsibility of the lead agencies to develop the coordination plan to facilitate and document the interaction between the lead agencies and participating and cooperating agencies and the public.

As of July 1, 2007, California Department of Transportation (Caltrans) has assumed Federal Highway Administration's (FHWA) authority and responsibility for compliance with NEPA and other environmental laws. *The Memorandum of Understanding (MOU) between the Federal Highway Administration and California Department of Transportation concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program* allows Caltrans to serve as the Federal lead agency on this project.

Appendix A, the original list of the federal, state and local agencies that were invited to become Cooperating and Participating agencies, is attached at the end of the plan. On July 26, 2007, federal, state and local agencies were sent an invitation letter asking to become Cooperating and Participating agencies for this project.

In response to the invitation letter, no cooperating agencies were identified. In addition, below is a list of agencies that agreed to be participating agencies in the environmental review process.

1.1 Agency Definitions and List of Agencies

Federal Lead Agency: The agency conducting the NEPA analysis.

Federal Lead Agency	Contact Person/Title	Phone/Email
California Department of Transportation (Caltrans) 100 South Main Street Mail Stop 16A Los Angeles, CA 90012	Carlos Montez Senior Environmental Planner David Lewis Environmental Planner	(213) 897-9116 Carlos_Montez@dot.ca.gov (213) 897-2860 David_Lewis@dot.ca.gov

Cooperating Agencies: Federal agencies, other than the Federal Lead Agency, who have jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative. Cooperating agencies are also participating agencies.

No cooperating agencies were identified for this project.

Participating Agencies: Federal, state, regional or local agencies that have an interest in the project.

Participating Agencies	Contact Person/Title	Phone/Email/Address
United States Army Corps of Engineers	Theodore Masigat Engineering Division, Operations, Los Angeles District	(213) 452-3393 theodore.j.masigat@usace.army.mil 915 Wilshire Blvd Los Angeles, CA 90017

Participating Agencies	Contact Person/Title	Phone/Email/Address
United States Army Corps of Engineers	Phuong Trinh Regulatory Division, Los Angeles District	(213) 452-3372 Phuong.h.trinh@usace.army.mil 915 Wilshire Blvd Los Angeles, CA 90017
*United States Army Corps of Engineers	Gabe Brooks Right-of-Way Division, Los Angeles District	915 Wilshire Blvd Los Angeles, CA 90017
*United States Army Corps of Engineers	Ken Wong Permits, Los Angeles District	915 Wilshire Blvd Los Angeles, CA 90017
United States Environmental Protection Agency	Susan Sturges Environmental Review Office Community and Ecosystems Division	(415) 947-4188 sturges.susan@epa.gov 75 Hawthorne Street San Francisco, CA 94105
Advisory Council on Historic Preservation	Carol Legard Federal Highway Liaison Office of Federal Agency Programs	(202) 606-8522 clegard@achp.gov 1100 Pennsylvania Avenue NW Suite 809 Old Post Office Bldg Washington DC 20004
*US Department of Housing and Urban Development Los Angeles Field Office	William Vasquez, CPD Field Office Director	611 West 6th Street, Suite 800 Los Angeles, CA 90017
*US Department of Commerce	Environmental Review Section	14th and Constitution NW, Room 6800 Washington DC 20230
US Department of Homeland Security Federal Emergency Management Agency	Gregor Blackburn, CFM, Branch Chief Floodplain Management and Insurance Branch	(510) 627-7190 1111 Broadway, Suite 1200 Oakland, CA 94607-4052
*US Department of Energy Environmental Review Section	Environmental Review Section	1000 Independence Ave SW 4G-064 Washington DC 20585
*Federal Railroad Administration Office of Railroad Development	David Valenstein	400 Seventh St SW MS20 Washington DC 20590
City of Los Angeles Department of Parks and Recreation	David Attaway, Environmental Supervisor	(213) 928-9130 4155 S. Saint Louis Street Los Angeles, CA 90033
City of Los Angeles Bureau of Engineering Real Estate Group	Frank Viramontes, Chief Real Estate Officer II	(213) 485-5447 frank.viramontes@lacity.org Department of Public Works, Bureau of Engineering Real Estate Division 600 S. Spring Street, 7th Floor, Stop 515 Los Angeles, CA 90014
Los Angeles County Metropolitan Transportation Authority	John C. Miller, P.E. Engineering Project Manager	(213) 922-2000 millerjo@mta.net 1 Gateway Plaza Mail Stop: 99-22-1 Los Angeles, CA 90012-2932
SCRRA—Metrolink	Laurene Lopez Community Relations/ Environmental Review Administrator	(213) 452-0288 lopezl@scrra.net SCCRA—Metrolink 700 South Flower Street, 26th Floor Los Angeles, CA 90017

* Federal agency did not respond to the letter of invitation to become a participating agency.

Per SAFETEA-LU, a Federal agency invited shall be designated as a participating agency unless the agency declines the invitation by the deadline specified, and states that the agency (1) has no jurisdiction or authority with respect to the project, (2) has no expertise or information relevant to the project, and (3) does not intend to submit comments on the project.

1.2 Agency Expectations

The expectations for the Lead Agency are:

- Prepare the EIS in accordance with 23 CFR 771, 40 CFR 1500-1508 and SAFETEA-LU.
- Take actions necessary to facilitate the expedited review of the environmental review process.
- Identify and involve cooperating and participating agencies.
- Develop a coordination plan and provide the plan to participating and cooperating agencies.
- Provide, as early as practicable but no later than the appropriate project milestone, project information on purpose and need, environmental resources, alternatives and proposed methodologies.
- Provide oversight in managing the process and resolving issues.
- The Lead Agency (Caltrans) will have ultimate responsibility for:

  1. Review and adoption of a NEPA document.
  2. Implementation of design and mitigation commitments.

The expectations for Cooperating Agencies are:

- Timely review and comment on the pre-draft or pre-final environmental documents to reflect the views and concerns of your agency on the adequacy of the document, purpose and need statements, alternatives considered, and the anticipated impacts and mitigation. Written comments by email or letter should be submitted to Caltrans Environmental within allocated time frame.
- Identify as early as practicable any issue of concern regarding the projects environmental or socioeconomic impacts.
- Identify as early as practicable any issues that could substantially delay or prevent the granting of a permit or other approval needed for the project.
- Share information that may be useful to the lead agency (Caltrans), cooperating and participating agencies.
- Participate in coordination meetings and joint field reviews as appropriate.
- Assume on request of the lead agency (Caltrans) responsibility for developing information and preparing environmental analysis including portions of the EIS over which that cooperating agency has special expertise.
- May adopt without recirculating the EIS of the lead agency (Caltrans) when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied.
- Make support staff available at the lead agency (Caltrans) request.
- Use own resources and funds.

The expectations for Participating Agencies are:

- Participation in the NEPA process starting at the earliest possible time, especially with regard to the development of the purpose and need statement, range of alternatives, methodologies, and the level of detail for the analysis of alternatives.
- Timely review and comment on the pre-draft or pre-final environmental documents to reflect the views and concerns of your agency on the adequacy of the document, purpose and need statements, alternatives considered, and the anticipated impacts and mitigation. Written comments by email or letter should be submitted to Caltrans Environmental within allocated time frame.
- Identify as early as practicable any issue of concern regarding the projects environmental or socioeconomic impacts.
- Identify as early as practicable any issues that could substantially delay or prevent the granting of a permit, delay completion of the environmental process, or other approval needed for the project.
- Share information that may be useful to the lead agency (Caltrans), cooperating and participating agencies.
- Provide input on purpose and need, methodologies, alternatives within 15 days of receipt thereof.
- Respond affirmatively in writing to the letter of invitation (for non-federal agencies) within 30 days of receipt.
- Respond in writing to the letter of invitation if you wish to decline the invitation (for federal agencies) within 30 days of receipt.
- Participate in coordination meetings and joint field reviews as appropriate.
- Participate as needed in Issues Resolution Process.
- Use own resources and funds.

Section 2. Agency Coordination

2.1 Coordination Points, Information Requirements and Responsibilities

Caltrans, as the lead agency, will adhere to the following coordination with Participating and Cooperating Agencies:

- Request for review of the project purpose and need (Response by the agencies to be provided within 15 days of receipt of project materials).
- Provide pertinent information about environmental and socioeconomic resources in the area. This information includes identification of resources located within project area and general location of alternatives, and will be provided by written correspondence or in a meeting. Agencies will identify any issues that could substantially delay permit or other approval needed for the project, and respond to the lead agency within 15 days of receipt of project materials.
- Review of the following information related to alternatives:
    1. Proposed range of alternatives
    2. Proposed methodologies for screening of alternatives
    3. Proposed Draft EIS alternatives
    4. Proposed Recommended Preferred Alternative

  This information will be provided in meetings and/or by written correspondence. Responses will be provided to the lead agency about each of these within 15 days of receipt of project materials.
- Provide Pre-Draft EIS (Response to be provided within 30 days of receipt of project materials).

2.2 EIS Advisory Committee

A project EIS Advisory Committee, consisting of representatives from each of the Cooperating and Participating Agencies, will be formed to guide and oversee the process. The EIS Advisory Committee will make recommendations to the Lead Agency based on their roles and responsibilities as outlined above. The EIS Advisory Committee will be moderated by the lead agency. Participation in the committee will consist of attending relevant meetings and providing timely review and comment of the proposed project documentation and methodologies.

Section 3. Project Schedule

The following schedule is proposed:

Milestone	Initiation Date	Details
Purpose and Need	November 2007	EIS Cooperating/Participating Agency Meeting #1 (October 31st, 2007): Caltrans provided the EIS Advisory Committee with draft purpose and need statement. Meeting also included discussion on the following topics: Description of roles and responsibilities of EIS Advisory Committee members, Coordination Plan, description of project and schedule, and discussion of purpose and need.
Range of Alternatives	November 2007	EIS Advisory Committee Meeting #1(October 31st, 2007): Caltrans provided the EIS Advisory Committee with information regarding alternatives being considered. Additionally, a description of the process and outcome of alignment and design alternatives proposed by the Project Development Team for further study including input from an expert panel and Community Advisory Committee (CAC).
Collaboration on impact assessment methodologies	February 2008	EIS Advisory Committee Meeting #2 (February 4, 2008): Caltrans discussed the technical studies being conducted and the level of detail required in the analysis of the alternatives.
Socioeconomic and environmental impacts	February 2008	EIS Advisory Committee Meeting #2 (February 4, 2008): Caltrans identified the resources located within project area and the general location of alternatives. EIS Advisory Committee will be asked to identify any issues that could substantially delay the project.
Identify the Locally Preferred Alternative	October 2008	EIS Advisory Committee Meeting #3 (October 20, 2008): Caltrans discussed the selection of the locally preferred alternative, ASR workshop and the environmental analysis results. Only one participating agency attended this meeting.
Circulation of DEIS	May 2009	Caltrans will provide the Pre-Draft EIS for review by written correspondence. **The comment period is 60 days.**

Section 4. Issues Resolution Process

SAFETEA-LU provides a formal process for resolving serious issues that may delay the project or result in a denial of a required approval for the project. An issue of concern is any issue that could delay the project or could prevent an agency from granting a permit or other approval that is needed for the project. Resolution of the issue of concern means that the agencies involved agree on how to proceed so that they are able to reach decisions on matters within their authority.

The Lead Agency and the EIS Advisory Committee shall work cooperatively in accordance with this section to identify, as early as possible, any issues of concern. The following process will be followed:

- Meetings will be held as needed during the environmental review process to discuss and resolve issues notably during the scoping process, technical report review, and prior to the circulation of the Draft EIS.
- Initial correspondence and relevant comments and information on the purpose and need and alternatives analysis will be included in the 6th Street Viaduct Improvement Project Scoping Report.
- If issues are not resolved in a timely manner:
  1. The Federal Lead Agency (Caltrans) will contact relevant participating agencies to determine if any information necessary to resolve issue is lacking and obtain all the necessary information.
  2. Caltrans will schedule an official issues resolution meeting.
  3. If no resolution can be achieved within 30 days of the meeting, then
  4. Caltrans will draft notification including: project description, details of issue(s) that could not be resolved, names of agencies invited and that actually participated in meeting, date of meeting, and determination that resolution could not be reached.
  5. Caltrans will send notification to the heads of all Participating and Cooperating Agencies, the Governor, appropriate Senate and House Committees, and the Council of Environmental Quality.
  6. Caltrans will publish such notice in the Federal Register.

Section 5. Revision History

This section is reserved for changes to the Coordination Plan.

Version	Date	Name	Description
2nd Version	1-29-08	Section 1.1 Agency Definitions and List of Agencies	Per response letter dated January 14, 2008 from the Army Corps of Engineers Regulatory Division, the Corps has declined the offer to become a participating/cooperating agency but has accepted to become a participating agency for this project. This supercedes the previous classification for the Corps' operations and regulatory sections as participating and cooperating agencies.
2nd Version	1-29-08	Section 3 Project Schedule	The coordination plan meeting has been scheduled for February 4, 2008 at Caltrans, instead of January 2008 as was originally noted.
3rd Version	2/23/09	Appendix A	We only list the participating agencies that accepted our invitation. In Appendix A, we are including a list of all the federal, state and local agencies that were originally invited to become a cooperating or participating agency.
3rd Version	2/23/09	Project Schedule	Updated the target date for Draft EIR/EIS release to agencies and public for review and comment. Also changed the comment period to 60 days per Caltrans management decision.

Appendix A
Participating and Cooperating Agency Invitation Mailing List

6th Street Viaduct Seismic Improvement Project
Cooperating and Participating Agency Mailing List

Native American Tribal Councils
Mr. Martin Alcala
P.O. Box 9090
Marina Del Rey, CA 90292

California Air Resources Board
Environmental Review Section
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

State Clearinghouse Office of Planning & Research
Director
P.O. Box 3044
Sacramento, CA 95812-3044

California Highway Patrol
Commisioner D.O. Helmik
P.O. Box 942898
Sacramento, CA 95814

California Regional Water Quality Control Board-
Los Angeles Region
Environmental Review Unit
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

State of California Resources Agency
Environmental Review Section
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

California Integrated Waste Management Board
Executive Director
P.O. Box 4025
Sacramento, CA 95812-4025

California Department of Fish and Game
Habitat Conservation Planning
4949 View Ridge Avenue
San Diego, CA 92123

California Transportation Commission
Dianne Eidam, Executive Director
1120 N Street
Room 2221 (MS-52)
Sacramento, CA 95814

California Native American Heritage Commission
Executive Secretary Larry Myers
915 Capitol Mall, Room 364
Sacramento, CA 95814

California State Department of Parks and Recreation
Office of Historic Preservation
Environmental Review Section
P.O. Box 942896
Sacramento, CA 94296-0001

California Department of Parks and Recreation
Attn: Environmental Review
1416 Ninth Street, 9th Floor
Sacramento, CA 95814

Los Angeles County Board of Supervisors
Susan Nissman Policy Deputy
500 W. Temple Street, #821
Los Angeles, CA 90012

County of Los Angeles
Department of Public Works
James Noyes, Director
900 S. Fremont Ave.
Alhambra, CA 91803-1331

6th Street Viaduct Seismic Improvement Project
Cooperating and Participating Agency Mailing List

County of Los Angeles Fire Department
P. Micheal Freeman, Chief
1320 N. Eastern Avenue
Los Angeles CA 90063

Southern California Associations of Government
Environmental Document Review Section
818 West Seventh Street 12th Floor
Los Angeles, CA 90017-3435

South Coast Air Quality Management District
Steve Smith, Program Supervisor, CEQA Section
21865 E. Copley Drive
Diamond Bar, CA 91765-4182

County of Los Angeles Metropolitan Transportation Authority
Chief Planning Officer
1 Gateway Plaza Mail Stop: 99-22-1
Los Angeles, CA 90012-2932

County of Los Angeles
Community Development Commission
Executive Director
2 Coral Circle
Monterey Park, CA 91755

County of Los Angeles
Dept of Regional Planning
Planning Director James Hartl
Rm. 1390, Hall of Records
320 W. Temple St.,
Los Angeles, CA 90012

County of Los Angeles Sheriffs Department
Sheriff Lee Baca
4700 Ramona Blvd.
Monterey Park, CA 91754-2169

Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza
Los Angeles, CA 90012
Attn: John Miller

County of Los Angeles Department of Regional Planning
Bruce McClendon, Planning Director
Hall of Records (13th Floor)
320 West Temple Street
Los Angeles, CA 90012

City of Los Angles Dept. of Public Works-Bureau of Street Services – Eng. Division
1149 South Broadway, Suite 400
Los Angeles, CA 90015
Attn: Mr. Chang Lin

Los Angeles County Dept of Public Works
Water Resources Division
900 South Freemont Avenue, 6th Floor
Alhambra, CA 91803

City of Los Angeles
Planning Department
S. Gail Goldberg, Planning Director
200 North Main Street
Los Angeles, CA 90012

Los Angeles Police Department
William Fierro
2111 East 1st St.
Los Angeles, CA 90033

City of Los Angeles Parks and Recreation
Gale Minniefield
4155 S. Saint Louis ST.
Los Angeles, CA 90033

6th Street Viaduct Seismic Improvement Project
Cooperating and Participating Agency Mailing List

Los Angeles Fire Department
Attn: Captain
1962 E. Cesar Chavez Ave,
Los Angeles, CA 90033

City of Los Angeles
Department of Public Works, Bureau of Engineering
City Engineer
650 S. Spring St., Suite 200
Los Angeles, CA 90014-1911

City of Los Angeles Environment Affairs Department
Asia Palmer
200 N. Spring St.
Los Angeles, CA 90012

Ara J. Kasparian, Manager
City of Los Angeles
Department of Public Works, Bureau of Engineering
Environmental Management Group
650 S. Spring St., Suite 572, Stop 939
Los Angeles, CA 90014-1911

Linda Moore, Environmental Supervisor II
City of Los Angeles
Department of Public Works, Bureau of Engineering
Environmental Management Group
650 S. Spring St., Suite 572, Stop 939
Los Angeles, CA 90014-1911

Mr. Frank Viramontes
City of Los Angeles
Department of Public Works, Bureau of Engineering
Real Estate Division
600 S. Spring Street, 7th Floor, Stop 515

City of Los Angeles
Department of Building & Safety
General Manager
201 N. Figueroa Street
Los Angeles, CA 90012

City of Los Angeles
Community Development Department
Environmental Review Section
215 W. 6th Street
Los Angeles, CA 90014

City of Los Angeles
Cultural Affairs Department
Jay M. Oren, Architect-Historic Preservation Officer
433 S. Spring Street, Suite 1000
Los Angeles, CA, 90013

City of Los Angeles
City Attorney
1800 City Hall East
200 Main Street
Los Angeles, CA 90012

City of Los Angeles
Department of Recreation & Parks
General Manager
200 N. Main Street, Room 1330
Los Angeles, CA, 90012

City of Los Angeles
Housing Authority
Executive Director Donald Smith
2600 Wilshire Boulevard
Los Angeles, CA 90057

City of Los Angeles
Department of Water and Power
Environmental Review Section
111 N. Hope Street
Los Angeles, CA, 90012

City of Los Angeles
Planning Department
200 North Spring Street
Los Angeles, CA 90012-2601

6th Street Viaduct Seismic Improvement Project
Cooperating and Participating Agency Mailing List

City of Los Angeles
Cultural Heritage Commission
Commission Members
433 South Spring Street, 10th Floor
Los Angeles, CA 90013

City of Los Angeles
Hollenbeck Police Station
Captain Paul Pesqueira
2111 E. First St.
Los Angeles, CA 90033

City of Los Angeles
General Services Department
City Hall South, Room 701
Los Angeles, CA 90012

Community Redevelopment Agency
Of the City of Los Angeles
354 South Spring Street, Suite 800
Los Angeles, CA 90013-1258

Los Angeles Unified School District
Office of Environmental Health and Safety
Angello Bellomo, Director
355 South Grand Avenue
Los Angeles, CA 90071

METROLINK
Southern California Regional Rail Authority
700 South Flower Street, 26th Floor
Los Angeles, CA 90017-4101
Attn: David Quirk [or designate]

Deadra Knox
Strategic Development Planner
SCRRA - Metrolink
700 S. Flower Street, 26th Floor
Los Angeles, CA 90017-4101

Naresh Patel
Public Projects
SCRRA - Metrolink
700 S. Flower Street, 26th Floor
Los Angeles, CA 90017-4101

AMTRAK
National Railroad Passenger Corporation
810 North Alameda Street
Los Angeles, CA 90012
Attn: Harry Steelman [or designate

U.S. Army Corps of Engineers
915 Wilshire Blvd.
Los Angeles, CA 90017

Advisory Council on Historic Preservation
Carol Legard
Federal Highway Liaison
Office of Federal Agency Programs
1100 Pennsylvania Avenue NW
Suite 809 Old Post Office Bldg
Washington DC 20004

U.S. Environmental Protection Agency
District IX
Susan Sturges
Environmental Review Office
Community and Ecosystems Division
75 Hawthorne Street
San Francisco, CA 94105

US Department of Homeland Security Federal Emergency Management Agency
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Appendix K
Draft Environmental Commitments Record

District 7 ENVIRONMENTAL COMMITMENTS RECORD

6th Street Viaduct Seismic Improvement Project
Draft Environmental Commitments Record
EA 251200
Los Angeles-District 7-101

Log No.	Mitigation Type	Responsible Party	Monitoring Frequency	Implementation/ Monitoring Phase	SSP/NSSP Req'd?	Permits/Spec/Plans Ref.	Mitigation Measure	Mitigation Monitoring Action Performed	Date Completed	Completed Signature Page	Mitigation Complete?	Remarks
	BIOLOGY											
1-1	Environmentally Sensitive Areas											
1-2	Pre-Construction Surveys						A preconstruction survey would be conducted to confirm the absence or presence of any nesting birds or roosting bats. If found, steps would be taken to remove existing nests and prevent establishment of new nests prior to the beginning of the nesting season.					
	Pre-Construction Surveys						To protect any possible migratory bird nesting or roosting bat activity, construction activities and removal of non-native ornamental vegetation will be conducted between September 1 and January 31. If construction occurs between February 1 and August 31, then a preconstruction survey by a qualified biologist will be conducted to identify any active nesting or roosting locations. If the biologist finds an active nest or roost within the construction area, then the CDFG biologist will be consulted on how to relocate them to avoid any construction impacts.					
1-4	Monitoring Required											
1-5	Wetland/Riparian/Uplands Mitigation (Identify if part of separate project)											
1-6	Compensatory Measures											
1-7	Vegetation											
1-8	Endangered Species											
	VISUAL/LANDSCAPE											
2-1	Landscape and Plant Design						Texturize and color slope paving and other smooth surfaces to deter graffiti and enhance the bridge aesthetics.					
2-2	Landscape and Plant Design						Apply architectural detailing to the retaining walls, including textures, colors, and patterns. Include caps that will provide shadow lines.					
2-3	Invasive species considerations (coordination w/biology)											
2-4	Erosion Control											
2-5	Special Architectural Treatments											
2-6	Contour Grading											
2-7	Revegetation - Plan Establishment Types and Period											
2-8	Other-Community Involvement						Work with the community through a Context-SensitiveSolutions (CSS) process to develop Aesthetic and Urban Design Guidelines for the new structure through a formalized process that allows community input. This should coincide with the final design efforts.					
							Evaluate the benefit to the community of preserving open space created by the proposed project. Work with the community and other stakeholders, including City agencies, on developing the Greening Concept to include open space and park amenities within the community.					
							Provide connections between the community and the future LARRMP features as part of the project design, either through incorporation of the Greening Concept or through provisions in the viaduct design for future connections to the river corridor.					
							Develop bridge architecture to create a Community/City Gateway, including possible bridge monuments with decorative lighting, parapet wall treatments, decorative fencing/railing and lighting, and abutment/wing walls, to increase the memorability and announce the presence of the bridge.					

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	CULTURAL RESOURCES											
3-1	Environmentally Sensitive Areas for Archaeological Resources						Archaeological resource 19-003683 is located within the project APE as a candidate area for construction equipment staging; however, the defined site limits would be protected from potential impacts through the establishment of an ESA. In addition, given the moderate to high archaeological sensitivity of the project area, there is the potential to encounter buried archaeological materials during ground disturbance; therefore, archaeological monitoring is warranted.					
3-2	Environmentally Sensitive Areas for Archaeological Resources						Provide a qualified archaeological monitor to be present at the site during excavation of the viaduct footings. In the event buried cultural materials are encountered during construction, construction would be halted and the discovery area isolated and secured until the archaeologist finishes evaluating the nature and significance of the find.					
3-3	Environmentally Sensitive Areas for Cultural Resources						A Cultural Resources Monitoring Plan will be developed prior to and implemented during ground-disturbing activities associated with the project.					
3-6	Human Remains/Cultural Materials						If human remains are discovered, then the County coroner must be notified as soon as is reasonably possible (CEQA Section 15064.5). There shall be no further site disturbance where the remains were found. If the remains are Native American, then the coroner is responsible for contacting the NAHC within 24 hours. The Commission shall immediately notify those persons it believes to be the MLDs of human remains. Treatment of the remains will be dependent on the views of the MLD.					
3-7	Other Requirements set forth in the MOA and or SHPO consultation						TBD					
	PALEONTOLOGY											
4-1	ESAs for Paleontology (including delineation on Plans)											
4-2	Monitoring Required						A qualified Principle Paleontologist will be retained prior to the start of construction to develop and implement a Paleontological Mitigation Plan (PMP). The PMP will include obtaining a written storage agreement with a recognized museum repository; presenting preconstruction meeting instructions for construction personnel on environmental awareness; instructions on fossil remains handling requirements for archiving; archival requirements for remains prior to transfer to the repository for permanent storage and maintenance; instructions on fossil remains handling requirements; a discussion of bulk sample requirements of fine-grained sediment from fossiliferous or potentially fossiliferous strata; and preparation of a report summarizing the findings of the work conducted under the PMP.					
4-3	Monitoring Required						A Paleontological Monitor will be on-site on a full-time basis to inspect new exposures created by earth-moving activities in areas underlain by the older alluvium and at depths greater than 5 ft below current grade for the younger alluvium.					
4-4	Unexpected Discovery Provisions						If fossil remains are discovered, then earth-moving activities at the fossil site will be halted or diverted temporarily to allow the monitor to recover the fossil remains.					

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	COMMUNITY/SOCIAL IMPACTS											
5-1	Environmental Justice						The City would continue its public outreach throughout the environmental review, design and construction phases of the project to keep area residents and businesses informed about the project decision and schedule and to resolve issues of concern. A Traffic Management Plan (TMP) and a Work Area Traffic Control Plan (WATCP) would be developed and implemented to ensure that cumulative traffic impacts are minimized.					
5-2	Parks and Recreation (such as multi-use trails, park improvements needed, etc.)											
5-3	ADA Requirements											
5-4	Relocation Impacts						The City Maintenance facility will be relocated to accommodate the construction.					
5-5	Relocation Impacts						The businesses that are subject to relocation would receive compensation at fair market value. Relocation assistance payments and counseling would be provided to persons and businesses in accordance with the Uniform Act. Based on the preliminary study, properties are available for the affected businesses to move into within the Community Redevolpment Agency of the City of Los Angeles (CRA/LA) Central Industrial Redevelopment Project area.					
5-6	Joint Development Agreement											
5-7	Bicyclists & Pedestrians											
5-8	Transit Services											
5-9	Environmental commitments to local jurisdictions						A Work Area Traffic Control Plan (WATCP) would be developed to minimize traffic impacts near the construction site. The traffic plan would provide alternative traffic detour routes, pedestrian routes, and residential/commercial access routes to be used during the construction period.					
5-10	Local community outreach activities during construction						The City of Los Angeles would continue its outreach effort to keep area residents informed of the project construction schedule, the traffic lane closure schedule and the traffic detour plan.					
5-11	Sensitive community resources and special access requirements											
5-12	Equipment, contractor yard, and restrictions on construction activities											
5-13	Noise and Vibration limitations											
	WATER QUALITY AND STORMWATER RUNOFF											
6-1	General						A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented during construction.					
	HYDROLOGY AND FLOODPLAIN											
7-1	General						All construction related work in the riverbed would be performed during the dry season to avoid any potential impacts to the river hydraulics. Construction site best management practices (BMPs) would be implemented to collect all construction related nuisance water discharges. The center pier in the river would be either eliminated or replaced with a pier that has same or smaller size as the existing one.					

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	UTILITIES AND EMERGENCY SERVICES											
8-1	General						The project would be designed to avoid adverse effects to existing service utilities, emergency services and railroad operations. Close coordination with the utility service providers in advance of the construction activities to relocate affected utilities would minimize the potential impacts to the users. Temporary impacts to emergency services within the project area would be minimized by implementation of the WATCP, mandated by the City, and the provision of advance notice to emergency service providers of the construction schedule. Written construction agreements would be entered into with the railroad companies. Close coordination with the railroads owners and operators to work on the railroad during the period when the railroad is not in operation and to avoid track closures would minimize the impacts to railroad operations.					
	Traffic and Transportation/Pedestrian Facilities											
9-1	General						The City would continue its public outreach activities to keep area residents and businesses informed of the proposed project schedule and progress. The City mandated Work Area Traffic Control Plan (WATCP) would be strictly implemented to minimize traffic impacts within the immediate vicinity of the construction site. Also a Traffic Management Plan (TMP) would be developed to identify temporary traffic detour routes, pedestrian routes, and residential and commercial access routes to be used as needed during the construction period. In addition, a traffic staging plan would be implemented tom minimize localized traffic impacts within the construction site activity.					
9-2	Parking						For the loss of private parking, property owners would receive compensation through the ROW acquisition.					
	NOISE											
10-1	Adminstrative Measures						Implement a construction noise monitoring program to limit noise effects.					
	Adminstrative Measures						Comply with relevant noise ordinance sections of the City of Los Angeles. The City imposes a limit on noise generated by construction activities, as well as specific hours during which construction activities shall not occur.					
	Adminstrative Measures						Limit construction activities to daytime hours. If nighttime construction is necessary, then the proper permits and variances shall be obtained.					
	Equipment Noise Control						Utilize construction methods or equipment that will provide the lowest level of noise and ground vibration impact, such as alternative low-noise pile installation methods.					
	Equipment Noise Control											
	Equipment Noise Control						Turn off idling equipment.					

District 7 ENVIRONMENTAL COMMITMENTS RECORD

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10-3	Equipment Noise Control						Use newer equipment with improved noise muffling and ensure that all equipment has the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures and engine vibration isolators intact and operational. All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices.					

District 7 ENVIRONMENTAL COMMITMENTS RECORD

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	AIR QUALITY											
11-1	Dust Control and other Best Management Practices						The contractor shall water all excavation/earth-moving activity areas as necessary to remain visibly moist during active operations. The contractor shall water the construction site three times daily or apply nontoxic soil stabliizers, as needed, to reduce offsite transport of fugitive dust from all unpaved staging areas and unpaved road surfaces.					
11-2	Equipment specifications						The contractor shall properly tune and maintain construction equipment in accordance with manufacturer's specifications.					
	Equipment specifications						During construction, the contractor shall keep trucks and vehicles in loading/unloading queues with their engines off when not in use to reduce vehicle emissions. The contractor shall phase construction activities to avoid emissions peaks, where feasible, and discontinue during second-stage smog alerts.					
	Equipment specifications						To the extent possible, the contractor shall use construction equipment that is powered by aqueous diesel or alternative fuel sources (e.g., methanol, natural gas or propane). Also, where feasible, the contractor shall use diesel oxidation catalyst for heavy-duty construction equipment.					
11-3	Reduction of construction emmisions						Complaince with the requirements of existing South Coast Air Quality Management District rules and regulations is required.					
	HAZARDOUS MATERIALS INVESTIGATION/TREATMENT											
12-1	Hazardous Waste/Materials during demolition and construction						Conduct soil profiling while handling soil at the project site during construction. If the soil contains contaminant concentrations that meet the definition of hazardous materials, then the contractor will be required to adhere to City Standard Specifications, which addresses the management of various hazardous materials and wastes and that are consistent with the federal and state of California requirements pertaining to hazardous materials and waste management.					
	Hazardous Waste/Materials during demolition and construction						Conduct a curvey to screen for Absestos Containing Materials and Lead Based Paint prior to demolition activities. If Asbestos Containing Materials are found, then the contractor shall comply with South Coast Air Quality Management District Rule 1403 notification and removal process.					
	Hazardous Waste/Materials during demolition and construction						Obtain a National Pollutant Discharge Elimination System (NPDES) permit for wastewater discharge if there is a potential for dewatering activities at the project site during construction.					
	Hazardous Waste/Materials during demolition and construction						Dispose of any hazardous materials or wastes encountered before or during the demolition stage of the project according to current regulatory guidelines					
12-2	ADL Issues and Provisions (Is ADL present or suspected on this project? Does sampling need to be done? Provisions needed?)						Soils within the project site near US 101 shall be tested for ADL prior to any excavation activities. If the soil contains ADL concentrations exceeding the current regulatory requirements, then the contractor must handle and dispose of the contaminated soil in accordance with the regulatory requirements.					
12-3	Appropriate Health and Safety Plan											

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	CONSTRUCTION											
13-1	Special Training for Construction Workers											
13-2	Clearing and Grubbing											
13-3	Construction Windows and Work Hours - For sensitive resources, community impacts and other											
13-4	Required Notification With/Reporting to Resource Agencies including contact names											
13-5	Air Quality Construction Monitoring											
13-6	Noise/Air Quality Specs Related to Construction Activities (such as dust control spec.)											
13-7	Detours											
13-8	(other - insert as necessary)											
13-9	(other - insert as necessary)											
13-10	(other - insert as necessary)											
	WATER QUALITY REQUIREMENTS											
14-1	Stormwater Pollution Prevention Plan (SWPPP)/Water Pollution Control Program (WPCP)						A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented during construction.					
14-2	Erosion Control											
14-3	Permanent Storm Water Control Measures including Operations and Maintenance Information											
14-4	Monitoring Required											
14-5	Critical temporary BMPs											
14-6	Impacted water bodies											
14-7	High risk water resources											
14-8	Permanent treatment controls											
14-9	(other - insert as necessary)											
14-10	(other - insert as necessary)											
14-11	(other - insert as necessary)											
	OTHER											
15-1	General											
15-2	(other - insert as necessary)											

***If Mitigation is complete input the number 1 in the corresponding row.**