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

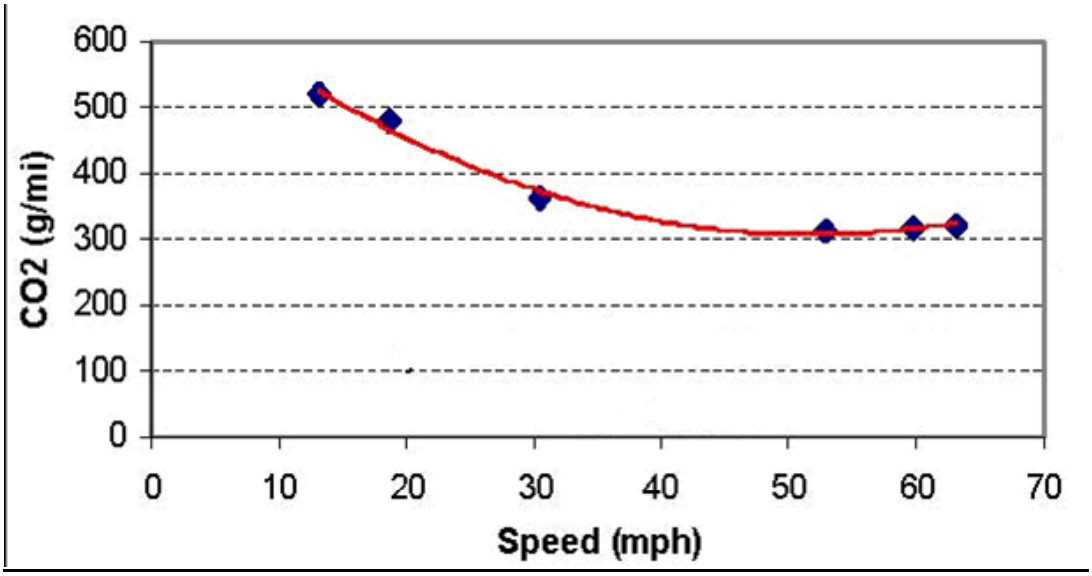
According to a recent white paper by the Association of Environmental Professionals (AEP)[115], "an individual project does not generate enough greenhouse gas emissions to significantly

[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.