Shoemaker Bridge Replacement Project

Air Quality Analysis Report

07-LA-710 PM6.0/6.4
EA: 27300
SCH No. 2016041007

August 2019

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AIR QUALITY REPORT

Shoemaker Bridge Replacement Project

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Prepared by

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Caltrans

August 2019

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AIR QUALITY REPORT

LOS ANGELES COUNTY, CALIFORNIA

CALIFORNIA DEPARTMENT OF TRANSPORTATION DISTRICT 7

E.A. 27300

SCH No. 2016041007

Reviewed by: ______________________ Date: 8/5/19

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Prepared by: ______________________ Date: Aug 5, 2019

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Acronyms and Abbreviations

Term	Definition
ºF	Degrees Fahrenheit
AADT	Average annual daily traffic
AB	Assembly bill
ADT	Average daily traffic
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ATM	Active Traffic Management
BACM	Best available control measures
BMP	Best Management Practice
BRT	Bus rapid transit
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Climate Action Program
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
City	City of Long Beach
CO	Carbon monoxide
CO_2	Carbon dioxide
County	Los Angeles County
EO	Executive Order
FCAA	Federal Clean Air Act
FHWA	Federal Highway Administration
ft	Feet
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GHG	Greenhouse gas

Term	Definition
IPCC	International Panel on Climate Change
ITS	Intelligent Transportation Systems
LOS	Level of service
LRTP	Long Range Transportation Plan
mi	Miles
MOVES	Motor Vehicle Emission Simulator
mph	Miles per hour
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MSAT	Mobile Source Air Toxics
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NO_2	Nitrogen dioxide
NOA	Naturally occurring asbestos
NO_x	Nitrogen oxide
O&M	Operations and maintenance
O_3	Ozone
OMB	White House Office of Management & Budget
OPR	Office of Planning and Research
PM	Particulate matter
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
POAQC	Project of Air Quality Concern
Ppb	Parts per billion
ppm	Parts per million
Protocol	Transportation Project-Level Carbon Monoxide Protocol
ROGs	Reactive organic gases
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
SB	Senate Bill

Term	Definition
SIP	State Implementation Plan
SO_2	Sulfur dioxide
TACs	Toxic air contaminants
TDM	Transportation Demand Management
TSM	Transportation System Management
TIP	Transportation Improvement Program
USC	United States Code
USDOT	United States Department of Transportation
U.S. EPA	United States Environmental Protection Agency
UV	Ultraviolet
VHT	Vehicle hours traveled
VMT	Vehicle miles traveled
VOCs	Volatile organic compounds

1. Project Description

1.1 Introduction

The City of Long Beach (City), in cooperation with California Department of Transportation (Caltrans), is proposing to replace the Shoemaker Bridge (West Shoreline Drive) in the City of Long Beach, California. The Shoemaker Bridge Replacement Project (Project) is an Early Action Project (EAP) of the Interstate 710 (I-710) Corridor Project and is located at the southern end of State Route 710 (SR-710) in the City of Long Beach, bisected by the Los Angeles River (LA River). The City is the lead agency under the California Environmental Quality Act (CEQA), and Caltrans is the lead agency under the National Environmental Policy Act (NEPA), as assigned by the Federal Highway Administration (FHWA), in accordance with NEPA (42 United States Code [USC] 4321 et seq.) and the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508).

1.2 Location and Background

The proposed Project is included in the 2019 Federal Transportation Improvement Program (FTIP) and the Southern California Association of Government's (SCAG) 2016 Regional Transportation Plan (RTP) for Los Angeles County as Project ID: LA0G830. The regional vicinity and project location are showing in Figure 1-1 and Figure 1-2, respectively.

1.3 Purpose and Need

1.3.1 Purpose of the Project

The purpose of the proposed Project is to:

- Provide a structure and highway facility that meets current structural and geometric design standards
- Provide a facility that is compatible with planned freeway improvements and downtown development projects
- Improve connectivity from the downtown area to surrounding communities and adjacent recreational use areas
- Improve safety and operations for all modes of transportation

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Shoemaker Bridge Replacement Project

Figure 1-1. Regional Location

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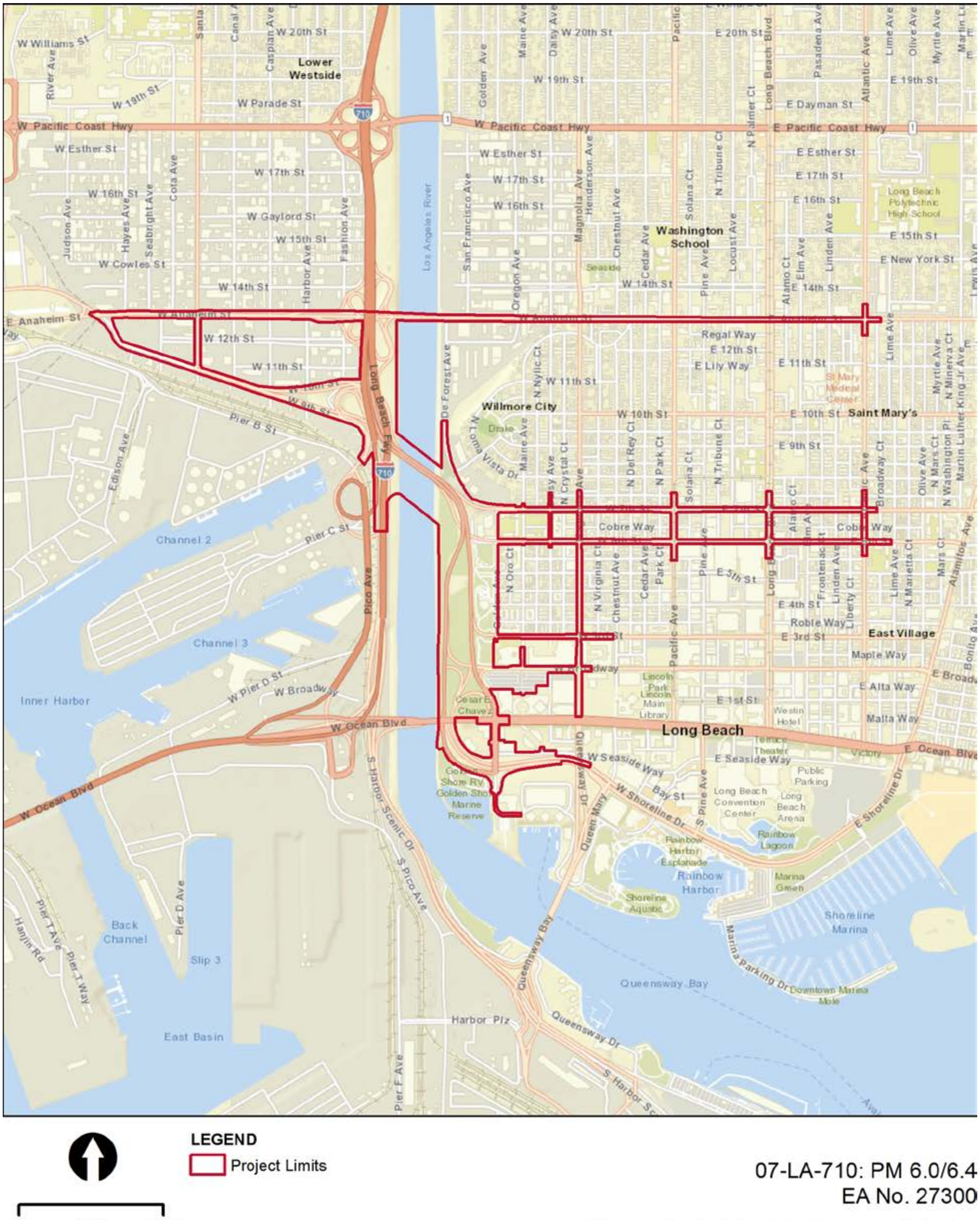

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Shoemaker Bridge Replacement Project
Figure 1-2. Project Location

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The Project limits are generally bounded by 9th and 10th Street ramp connections and West Shoreline Drive to the west, Magnolia Avenue to the east, Ocean Boulevard and West Shoreline Drive to the south, and Anaheim Street to the north. The Project limits on the east side extend beyond Magnolia Avenue along Anaheim, 6th and 7th Streets to Atlantic Boulevard. These limits provide the logical termini to facilitate the replacement of the existing bridge and accommodate planned City improvements, as well as the proposed improvements in the I-710 Corridor Project.

1.3.2 Need for the Project

The existing Shoemaker Bridge has structural deficiencies and a high accident rate due to nonstandard geometric features that cannot be upgraded to current State highway standards. The Project is needed to improve safety, operations, and connectivity between downtown Long Beach and regional transportation facilities. It is also needed to accommodate planned improvements in the area, such as the City's planned expansion of Cesar E. Chavez and Drake Parks.

If the existing Shoemaker Bridge were to continue to be used for vehicular traffic, the nonstandard features would remain, and the existing bridge alignment would preclude planned improvements by other locally- and regionally-significant projects, specifically, the I-710 Corridor Project. Implementation of the proposed Project would provide consistency with the improvements proposed as part of the I-710 Corridor Project and the Mobility Element of the *City of Long Beach General Plan* (City of Long Beach 2013), in addition to meeting the needs for traffic safety and accommodating the projected increase in demand for the City's nonmotorized transportation facilities.

1.4 Baseline and Forecasted Conditions for No-Build and Project Alternatives

Three alternatives, a No Build Alternative (Alternative 1), and two build alternatives (Alternatives 2 and 3) are being evaluated as part of the proposed Project. Alternatives 2 and 3 would replace the existing Shoemaker Bridge over the LA River with a new bridge constructed just south of the existing bridge. In both Alternatives 2 and 3, the Shoemaker Bridge would accommodate bicycle and pedestrian use and include the evaluation of design options for a roundabout (Design Option A) or a "Y" intersection (Design Option B) at the easterly end of the new bridge. The primary difference between Alternatives 2 and 3 is Alternative 2 includes repurposing a portion of the existing Shoemaker Bridge for nonmotorized transportation and recreational use, and Alternative 3 includes the removal of the existing Shoemaker Bridge in its entirety.

Alternatives 2 and 3 would also provide improvements to associated roadway connectors to downtown Long Beach and along West Shoreline Drive from SR-710, as well as improvements along portions of 3rd, 6th, and 7th Streets, and West Broadway from Cesar E. Chavez Park to Magnolia Avenue. The proposed improvements may include additional street lighting; restriping; turn lanes; and bicycle, pedestrian, and streetscape improvements. The Project also includes the removal of the Golden Shore grade separation over West Shoreline Drive and modifications along Golden Shore to create a new controlled intersection at Golden Shore and West Shoreline Drive. Additionally, the Project would evaluate street improvements on 6th and 7th Streets from Magnolia Avenue to Atlantic Avenue and on Anaheim Street between 9th and Atlantic Avenue. As an EAP of the I-710 Corridor Project, Alternatives 2 and 3 would evaluate the impacts from the closure of the 9th and 10th Street ramp connections into downtown Long Beach. The limits are shown in Figure 1-3.

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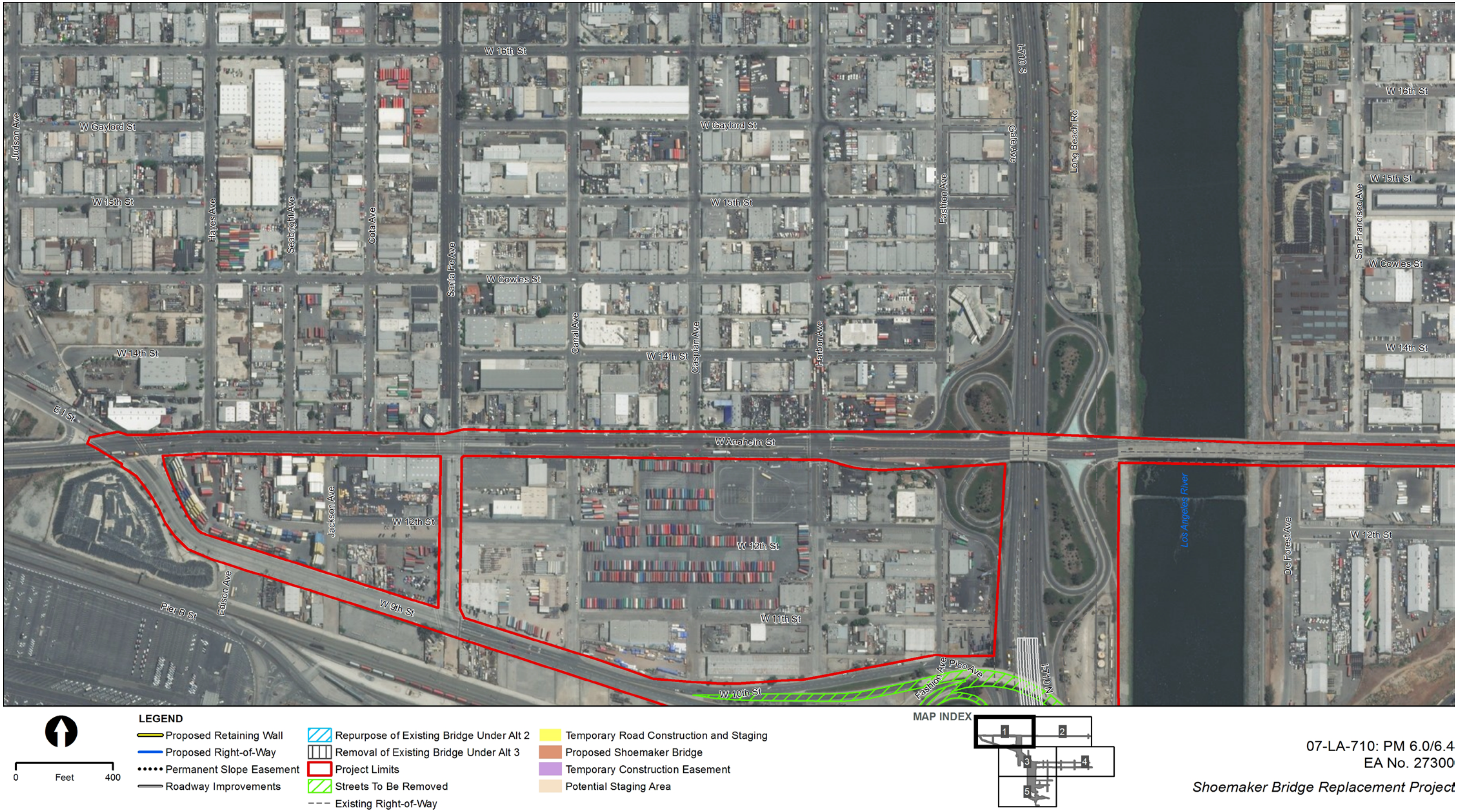

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Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 1 of 5)

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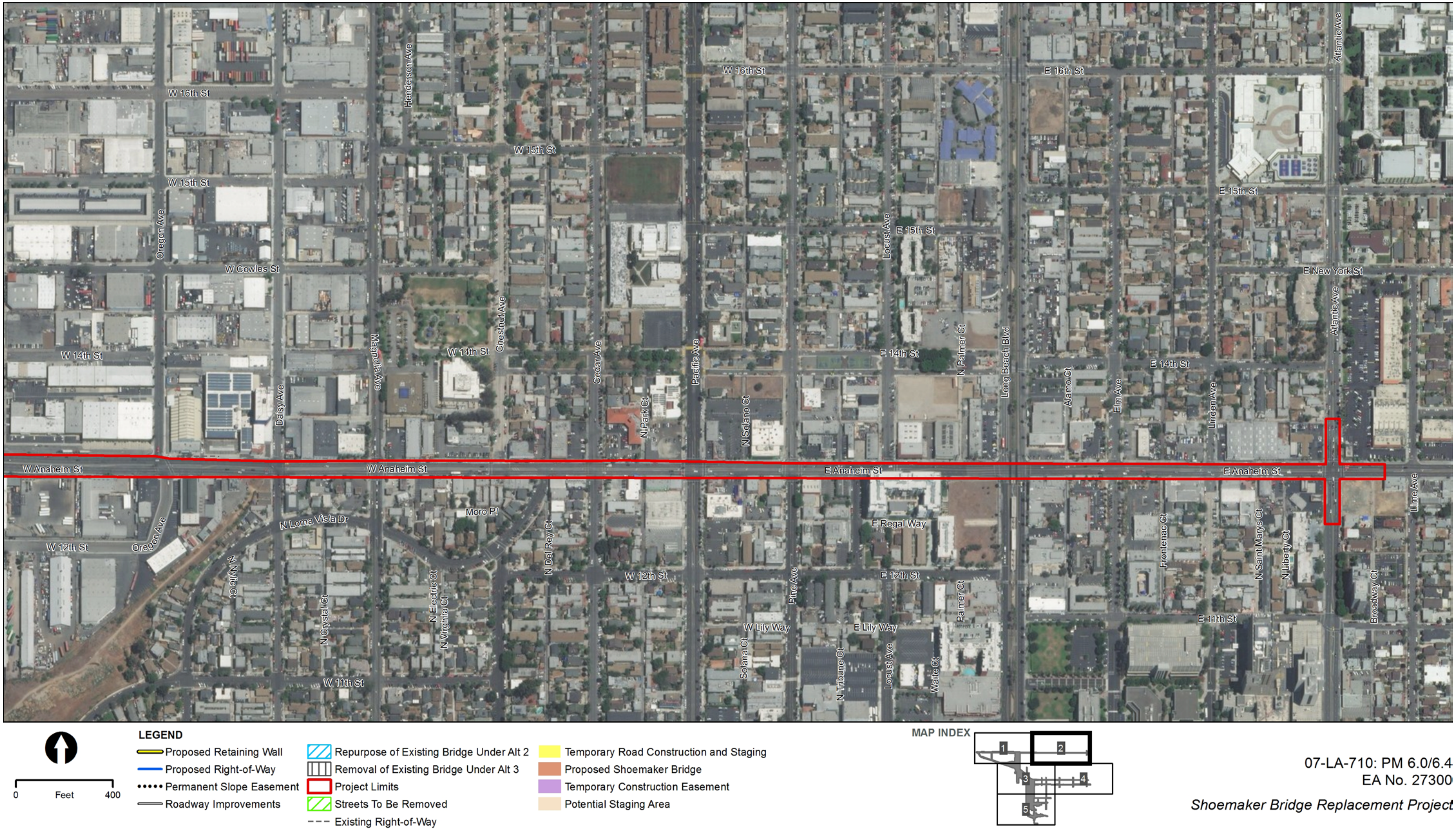

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Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 2 of 5)

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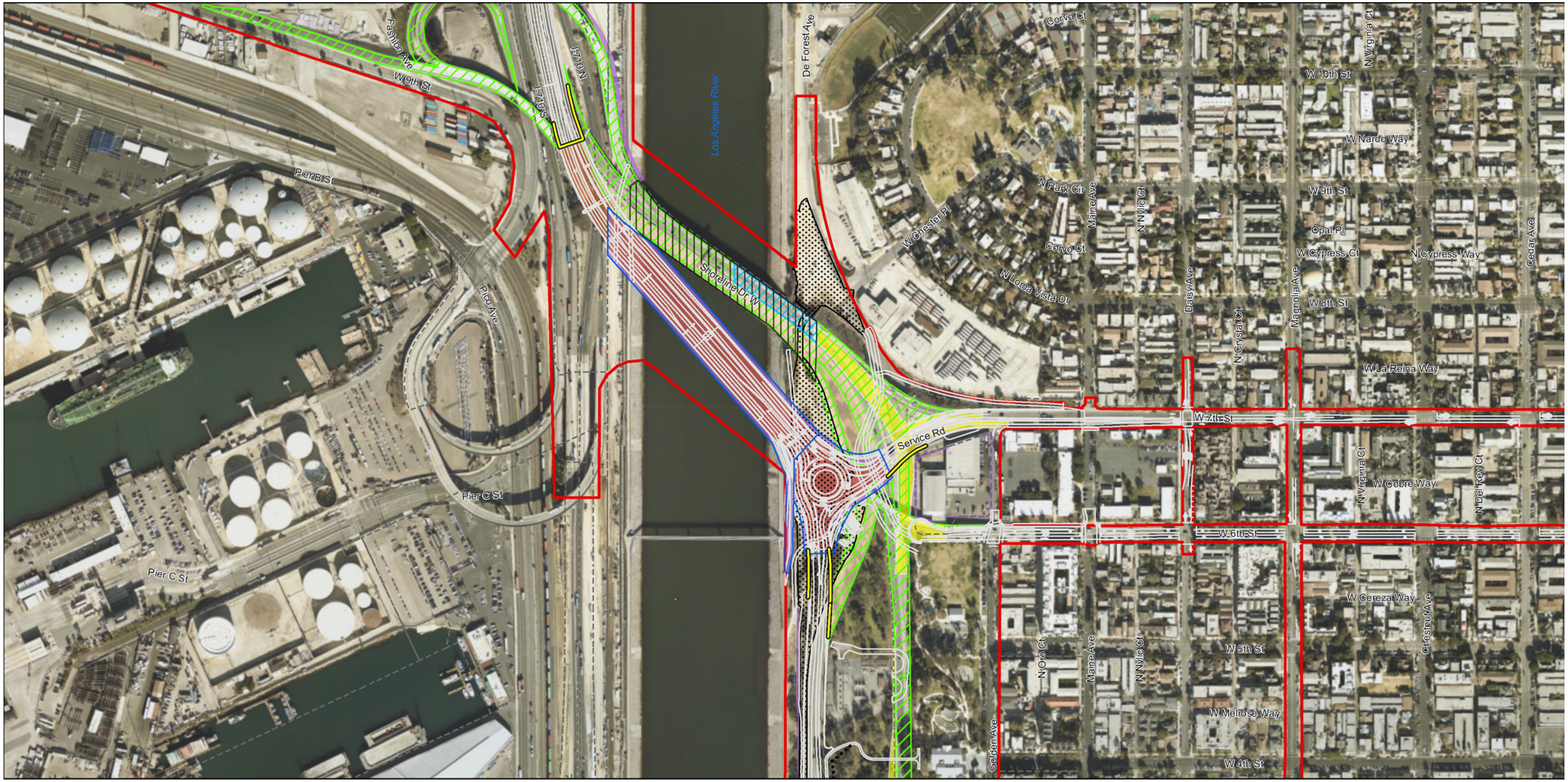

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LEGEND

- Proposed Retaining Wall
- Proposed Right-of-Way
- Permanent Slope Easement
- Roadway Improvements
- Repurpose of Existing Bridge Under Alt 2
- Removal of Existing Bridge Under Alt 3
- Project Limits
- Streets To Be Removed
- Existing Right-of-Way
- Temporary Road Construction and Staging
- Proposed Shoemaker Bridge
- Temporary Construction Easement
- Potential Staging Area
- Long Beach MUST Project

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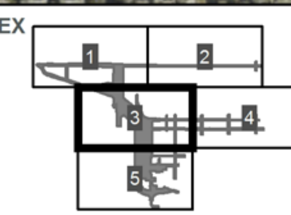

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Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 3A of 5)

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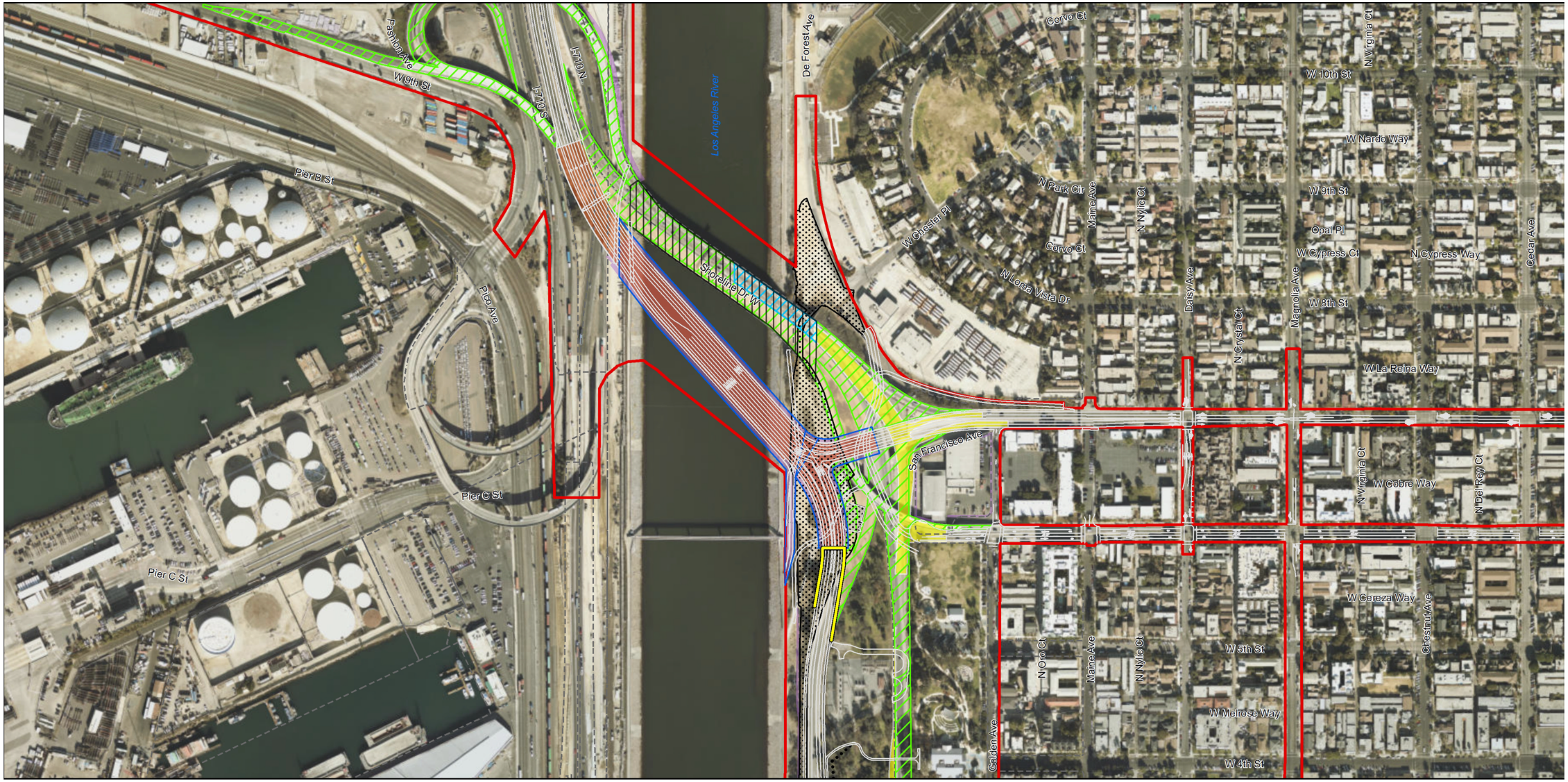

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LEGEND

- Proposed Retaining Wall
- Proposed Right-of-Way
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- Proposed Shoemaker Bridge
- Temporary Construction Easement
- Potential Staging Area
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1 2 3 4 5

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Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 3B of 5)

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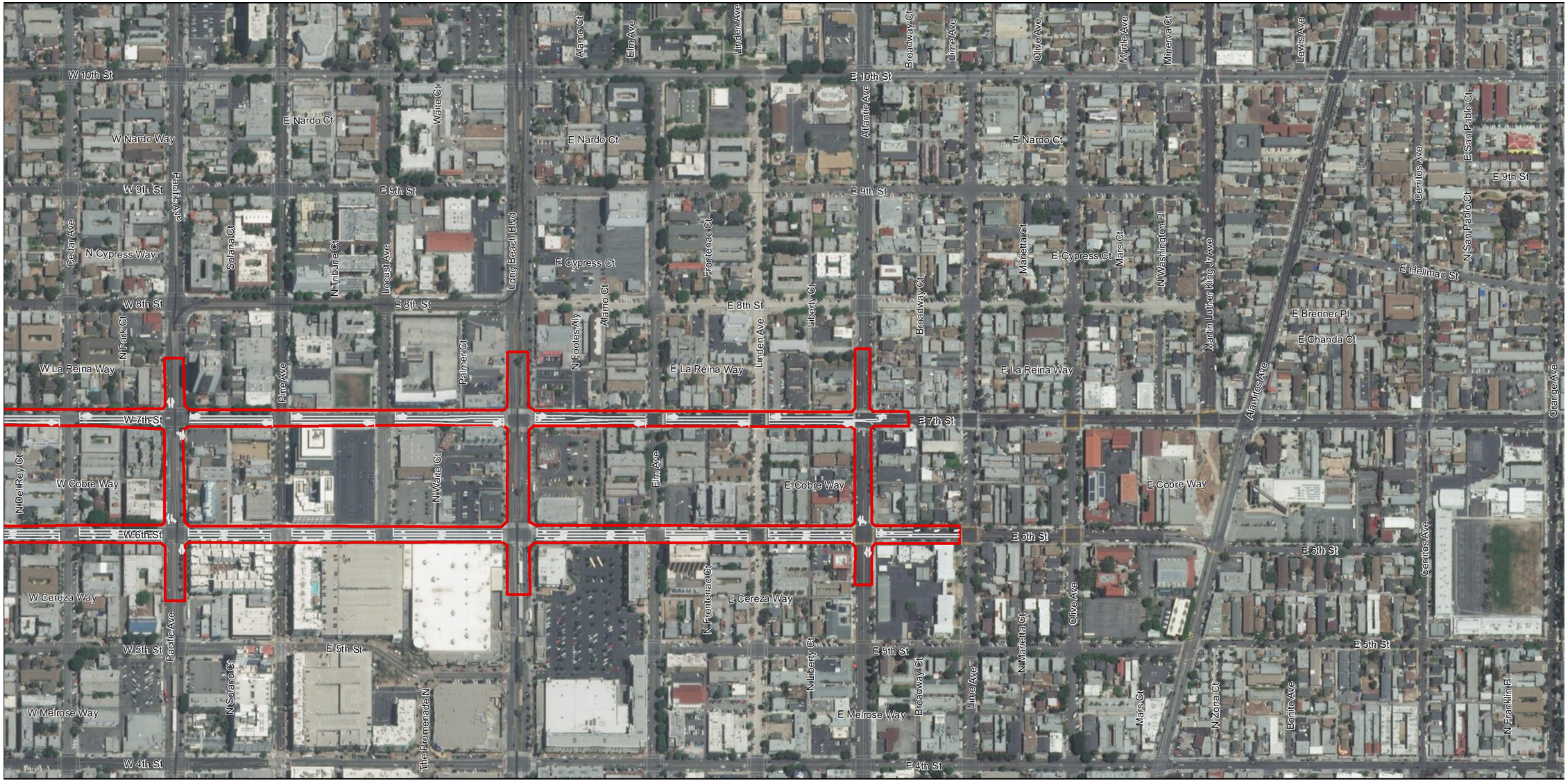

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LEGEND

- Proposed Retaining Wall
- Proposed Right-of-Way
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- Existing Right-of-Way
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- Temporary Construction Easement
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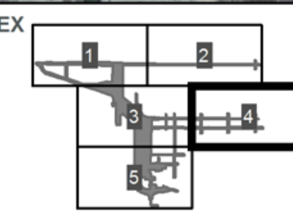

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Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 4 of 5)

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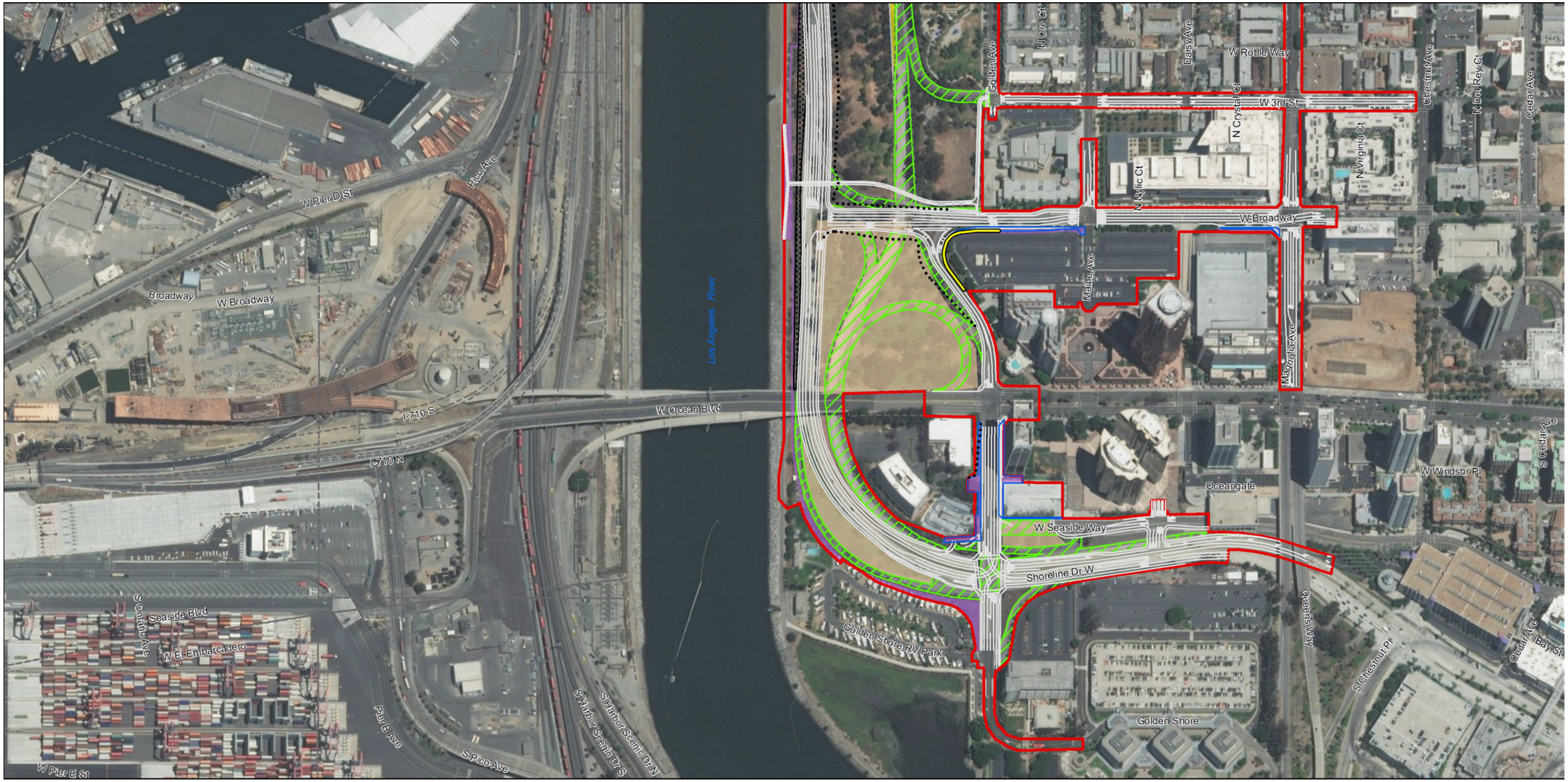

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LEGEND

- Proposed Retaining Wall
- Proposed Right-of-Way
- Permanent Slope Easement
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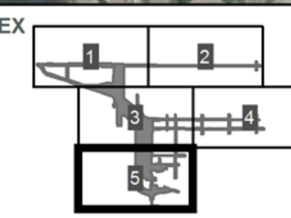

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Shoemaker Bridge Replacement Project

Figure 1-3. Project Design Features of Alternatives 2 and 3 (Sheet 5 of 5)

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Although most of the modifications and construction would occur within the existing Caltrans or City right-of-way (ROW), a partial property acquisition, aerial easement, and temporary construction easements (TCE) from the Los Angeles Flood Control District (LACFCD) would be required as part of the proposed Project. In addition, a small partial acquisition and a TCE may be required from an existing parking lot to complete the downtown street modifications along West Broadway. To accommodate the removal of the grade separation at Golden Shore and West Shoreline Drive, TCEs may be required along the west and east side of Golden Shore north of West Shoreline Drive, and along the south side of West Shoreline Drive east of Golden Shore.

TCEs would be required along multiple portions of the LARIO Trail to accommodate for trail connections associated with the proposed Project, and along portions of 6th Street, 7th Street, Golden Avenue, and San Francisco Avenue. The TCEs required along 6th Street and 7th Street (between Golden Avenue and Daisy Avenue) would accommodate restriping, and curb and sidewalk improvements.

1.4.1 Existing Roadways and Traffic Conditions

This section discusses the existing intersection peak hour counts and average daily traffic (ADT) collected at 29 arterials within the Study Area. For each arterial segment, counts were collected over a 24-hour period, and reported in 15-minute intervals on weekdays either on Tuesday or Thursday. Table 1-1 presents the existing daily ADT counts for the 29 arterial segments, in two directions. Table 1-2 summarizes the existing vehicle miles traveled (VMT) and vehicle hours traveled (VHT) within the Study Area.

Table 1-1. Study Area Arterial Segment Existing Daily Volumes

ID	Segment	Description	Count
1	Anaheim Street	w/o Oregon Avenue	33,124
2	W 7th Street	e/o Shoreline Drive	12,641
3	W 7th Street	w/o Daisy Avenue	13,454
4	7th Street	w/o Magnolia Avenue	13,560
5	6th Street	w/o Magnolia Avenue	13,488
6	W 6th Street	w/o Daisy Avenue	16,316
7	W 6th Street	e/o Shoreline Drive	14,329
8	SB W Shoreline Drive	n/o Broadway Avenue	23,921
9	NB W Shoreline Drive	n/o 3rd Street	24,788
10	Golden Avenue	s/o 6th Street	589
11	Maine Avenue	s/o 6th Street	907
12	Daisy Avenue	s/o 6th Street	2,717
13	Magnolia Avenue	s/o 6th Street	9,419
14	3rd Street	e/o Maine Avenue	9,749
15	3rd Street	w/o Maine Avenue	9,568
16	W 3rd Street	w/o Golden Avenue	10,384
17	Broadway Avenue	e/o Shoreline Drive	13,220
18	Broadway Avenue	w/o Maine Avenue	14,764

Table 1-1. Study Area Arterial Segment Existing Daily Volumes

ID	Segment	Description	Count
19	Magnolia Avenue	n/o Ocean Boulevard	10,682
20	Ocean Boulevard	e/o Magnolia Avenue	35,065
21	Ocean Boulevard	w/o Magnolia Avenue	35,548
22	NB W Shoreline Drive	s/o 3rd Street	10,450
23	NB off-ramp	between Shoreline Drive and Ocean Boulevard	819
24	Ocean Boulevard	w/o Golden Shore	27,762
25	NB W Shoreline Drive	s/o Ocean Boulevard	6,293
26	SB W Shoreline Drive	n/o Ocean Boulevard	10,667
27	W Shoreline Drive	on Shoemaker Bridge	75,651
28	Golden Shore Street	b/w Ocean Boulevard and W Shoreline Drive	6,287
29	Golden Shore Street	s/o W Shoreline Drive	5,325

Table 1-2. Summary of Existing Study Area Traffic Conditions

Scenario/ Analysis Year	Location	Daily VMT (miles)	Daily VHT (hours)	Average Speed (mph)
Existing	Study Area	50,706	2,956	17.5

1.4.2 Alternative 1 (No Build)

Under the Alternative 1 (No Build), the proposed Project improvements would not be implemented; therefore, no construction activities would occur. The existing structure and highway facility would not meet current structural and geometric design standards and, thus, safety and connectivity would not be improved within the Project area. Table 1-3 presents the 2025 and 2035 No Build daily ADT counts for the 29 arterial segments, in two directions. Table 1-4 summarizes the No Build VMT and VHT within the Study Area.

Table 1-3. Study Area Arterial Segment No Build Daily Volumes

ID	Segment	Description	2025 Count	2035 Count
1	Anaheim Street	w/o Oregon Avenue	34,800	36,500
2	W 7th Street	e/o Shoreline Drive	13,000	13,300
3	W 7th Street	w/o Daisy Avenue	13,800	14,100
4	7th Street	w/o Magnolia Avenue	13,900	14,200
5	6th Street	w/o Magnolia Avenue	13,800	14,200
6	W 6th Street	w/o Daisy Avenue	16,500	16,700

Table 1-3. Study Area Arterial Segment No Build Daily Volumes

ID	Segment	Description	2025 Count	2035 Count
7	W 6th Street	e/o Shoreline Drive	14,500	14,700
8	SB W Shoreline Drive	n/o Broadway Avenue	25,700	27,400
9	NB W Shoreline Drive	n/o 3rd Street	26,500	28,200
10	Golden Avenue	s/o 6th Street	600	600
11	Maine Avenue	s/o 6th Street	1,000	1,100
12	Daisy Avenue	s/o 6th Street	2,800	2,900
13	Magnolia Avenue	s/o 6th Street	9,600	9,800
14	3rd Street	e/o Maine Avenue	10,000	10,300
15	3rd Street	w/o Maine Avenue	9,800	10,100
16	W 3rd Street	w/o Golden Avenue	10,600	10,900
17	Broadway Avenue	e/o Shoreline Drive	13,600	13,900
18	Broadway Avenue	w/o Maine Avenue	15,100	15,500
19	Magnolia Avenue	n/o Ocean Boulevard	10,800	11,000
20	Ocean Boulevard	e/o Magnolia Avenue	36,700	38,300
21	Ocean Boulevard	w/o Magnolia Avenue	37,400	39,300
22	NB W Shoreline Drive	s/o 3rd Street	10,700	11,000
23	NB off-ramp	between Shoreline Drive and Ocean Boulevard	900	900
24	Ocean Boulevard	w/o Golden Shore	29,000	30,300
25	NB W Shoreline Drive	s/o Ocean Boulevard	7,200	8,200
26	SB W Shoreline Drive	n/o Ocean Boulevard	12,000	13,400
27	W Shoreline Drive	on Shoemaker Bridge	77,300	78,900
28	Golden Shore Street	b/w Ocean Boulevard and W Shoreline Drive	6,400	6,600
29	Golden Shore Street	s/o W Shoreline Drive	5,500	5,600

Table 1-4. Summary of No Build Study Area Traffic Conditions

Scenario/ Analysis Year	Location	Daily VMT (miles)	Daily VHT (hours)	Average Speed (mph)
2025 No Build	Study Area	53,454	3,713	14.40
2035 No Build	Study Area	56,202	4,470	12.57

1.4.3 Project Build Alternatives

Alternative 2

Build Alternative 2 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. This alternative would evaluate the roundabout design option (Design Option A) and the "Y" interchange design option (Design Option B) at the east end of the proposed bridge. The new bridge would consist of multiple structures, with numerous spans that cross the LA River, the northbound (NB) lanes of SR-710, and the LA River and Rio Hondo (LARIO) Trail. The new ramps would be located approximately 500 feet (measured from centerline) south of the existing Shoemaker Bridge. A portion of the existing bridge would be repurposed into a nonmotorized recreational public space maintained by the City. The bottom of the new river-spanning structures would exceed the existing 43-foot mean high water level (MHWL).

The deck of the new bridge would accommodate two through ramp lanes in each direction, shoulders, barriers, and a bicycle and pedestrian path on the south side of the bridge. Under Design Option B, the bridge would also include two turn lanes in the southbound (SB) direction. On the west side of the river, the ramps would connect on the left side of the freeway, at approximately the same merge and diverge existing ramp locations. On the east side of the river, a roundabout or controlled intersection would be provided at the ramp termini. The ramp termini would be located at or near the eastern abutment of the river-spanning section of the new Shoemaker Bridge.

Local Streets

As shown in Figure 1-3, the build alternatives include modifications to nine local streets, including West Shoreline Drive, Ocean Boulevard, Golden Shore/Golden Avenue, West Broadway, 3rd Street, 6th Street, 7th Street, 9th Street, 10th Street, and Anaheim Street.

West Shoreline Drive

At the eastern end of the new bridge, a new roundabout or controlled intersection would be constructed to allow West Shoreline Drive and 7th Street ingress and egress. The existing NB and SB West Shoreline Drive is currently separated by Cesar E. Chavez Park and the Southern California Edison (SCE) Seabright Substation. The NB roadbed would be removed and integrated into Cesar E. Chavez Park. The existing SB roadbed, located adjacent to the LA River, would be reconfigured and widened to allow two-way traffic and access from the newly configured West Shoreline Drive to the substation. A new controlled intersection would be introduced at West Shoreline Drive and the termini of West Broadway. The loop ramp connector between NB West Shoreline Drive and Ocean Boulevard would be removed and converted into park space. The existing Golden Shore Bridge that crosses over West Shoreline Drive would be removed, and a new controlled intersection would be created at West Shoreline Drive and Golden Shore.

3rd Street

The existing 3rd Street alignment curves to the north through Cesar E. Chavez Park and merges onto NB West Shoreline Drive. The proposed realignment of 3rd Street would be revised to end at Golden Avenue, and the 3rd Street section that curves into the park would be removed and converted into park space. The street, which currently carries one-way traffic in the westbound (WB) direction, would be reconfigured to allow for two-way traffic between Golden and Magnolia Avenues.

Ocean Boulevard

The loop ramp connecting NB West Shoreline Drive and Ocean Boulevard would be removed and converted into park space. The Ocean Boulevard and Golden Shore intersection would be modified to accommodate two-way traffic on Golden Shore between Ocean Boulevard and West Broadway.

Golden Shore/Golden Avenue

Golden Shore is currently a two-way street from Queensway Drive to Ocean Boulevard. North of Ocean Boulevard, Golden Shore becomes Golden Avenue and the roadway splits, providing connections to and from NB West Shoreline Drive and West Broadway. The proposed Project would eliminate the existing Golden Shore Bridge over West Shoreline Drive and reconstruct the street at a lower elevation to create a new controlled intersection at West Shoreline Drive. The connector ramps from SB West Shoreline Drive to Golden Shore and from NB Golden Shore to eastbound (EB) West Shoreline Drive would be removed. The intersection of Golden Shore and West Seaside Way would be eliminated. The proposed Project would also eliminate the ramp connection from NB West Shoreline Drive and realign Golden Avenue to provide connections to and from West Broadway. Access from West Broadway to Golden Avenue would be limited to right-in and right-out only.

West Seaside Way

West Seaside Way between Golden Shore and Queens Way would be reconfigured, and the controlled intersection at Golden Shore would be eliminated. The street would continue to provide access to parking structures and local office buildings. A new intersection allowing access between West Shoreline Drive and West Seaside Way would be constructed approximately 675 feet east of Golden Shore.

West Broadway

The existing terminus of West Broadway is uncontrolled and diverges from the left side of SB West Shoreline Drive. The portion of West Broadway from West Shoreline Drive to Maine Avenue, including its grade separation structure, would be removed. The connection would be replaced by a controlled intersection at West Shoreline Drive and West Broadway. West Broadway would be configured for two-way traffic from West Shoreline Drive to Magnolia Avenue. Traveling EB, a right turn pocket would be provided on West Broadway at the approach to Magnolia Avenue.

6th Street

The existing terminus of 6th Street is uncontrolled and diverges from the right side of SB West Shoreline Drive, on the Shoemaker Bridge. The existing grade separated structure would be removed. The portion of 6th Street from SB West Shoreline Drive to Golden Avenue would be reconfigured to provide access to the warehouse properties located at Topaz Court and Golden Avenue and would not provide connectivity to West Shoreline Drive. 6th Street would be converted from one-way WB to two-way traffic flow between Golden Avenue and Atlantic Avenue. Additionally, a new bicycle path would extend from the new 6th Street terminus, providing connections to the LARIO Trail and the proposed Shoemaker Bridge. A new roadway would also extend from the existing 6th Street terminus to provide access to Drake Park.

7th Street

The existing terminus of 7th Street is uncontrolled and merges on the right side of NB West Shoreline Drive, on the Shoemaker Bridge. The portion of 7th Street from Golden Avenue to West Shoreline Drive, including its grade separation structure, would be removed and reconstructed. The connection would be replaced by a roundabout or Y intersection at West Shoreline Drive. 7th Street would be reconfigured from one-way EB to two-way traffic between West Shoreline Drive and Atlantic Avenue and would feature two lanes in each direction.

9th Street

The existing terminus of 9th Street is uncontrolled and merges on the right side of SB West Shoreline Drive, on the Shoemaker Bridge. The portion of 9th Street from Fashion Avenue to West Shoreline Drive, including its grade separation structure, would be removed. The connection would not be replaced. The Project would also evaluate traffic calming and signal improvements on 9th Street between Caspian Avenue and Anaheim Street.

10th Street

The existing terminus of 10th Street is uncontrolled and diverges from the right side of NB West Shoreline Drive, on the Shoemaker Bridge. The portion of 10th Street from West Shoreline Drive to Fashion Avenue, including its grade separation structure, would be removed. The connection would not be replaced.

Anaheim Street

The Project would evaluate traffic calming and signal improvements on Anaheim Street between West 9th Street and Atlantic Avenue.

Ramps/Connectors

The new ramps would be operated and maintained by Caltrans. The area owned and maintained by Caltrans after completion of the proposed Project would include the new Shoemaker Bridge terminus on the east of the LA River, the main span over the LA River to SR-710, the structure spanning the NB lanes of SR-710, and the roadbed connecting to SR-710.

Table 1-5 presents the 2025 and 2035 Alternatives 2 and 3 daily ADT counts for the 29 arterial segments, in two directions. Table 1-6 summarizes the Alternatives 2 and 3 VMT and VHT within the Study Area. The data presented in Table 1-5 and Table 1-6 are applicable to Design Options A and B.

Table 1-5. Study Area Arterial Segment Alternatives 2 and 3 (Design Options A and B) Daily Volumes.

ID	Segment	Description	2025 Count	2035 Count
1	Anaheim Street	w/o Oregon Avenue	45,000	46,900
2	W 7th Street	e/o Shoreline Drive	14,100	14,600
3	W 7th Street	w/o Daisy Avenue	14,000	14,400
4	7th Street	w/o Magnolia Avenue	13,200	13,500
5	6th Street	w/o Magnolia Avenue	900	900
6	W 6th Street	w/o Daisy Avenue	500	500
7	W 6th Street	e/o Shoreline Drive	N/A	N/A
8	SB W Shoreline Drive	n/o Broadway Avenue	24,600	26,100
9	NB W Shoreline Drive	n/o 3rd Street	N/A	N/A
10	Golden Avenue	s/o 6th Street	600	600
11	Maine Avenue	s/o 6th Street	2,800	3,000
12	Daisy Avenue	s/o 6th Street	2,800	2,800
13	Magnolia Avenue	s/o 6th Street	16,900	17,600
14	3rd Street	e/o Maine Avenue	4,900	5,100
15	3rd Street	w/o Maine Avenue	700	900
16	W 3rd Street	w/o Golden Avenue	N/A	N/A
17	Broadway Avenue	e/o Shoreline Drive	13,100	13,700
18	Broadway Avenue	w/o Maine Avenue	15,900	13,700
19	Magnolia Avenue	n/o Ocean Boulevard	19,400	20,000
20	Ocean Boulevard	e/o Magnolia Avenue	44,200	46,000
21	Ocean Boulevard	w/o Magnolia Avenue	39,000	40,600
22	NB W Shoreline Drive	s/o 3rd Street	N/A	N/A
23	NB off-ramp	between Shoreline Drive and Ocean Boulevard	N/A	N/A
24	Ocean Boulevard	w/o Golden Shore	30,100	31,200
25	NB W Shoreline Drive	s/o Ocean Boulevard	10,700	12,200
26	SB W Shoreline Drive	n/o Ocean Boulevard	12,400	13,300
27	W Shoreline Drive	on Shoemaker Bridge	76,000	79,500
28	Golden Shore Street	b/w Ocean Boulevard and W Shoreline Drive	6,600	6,600
29	Golden Shore Street	s/o W Shoreline Drive	6,500	6,500

Table 1-6. Summary of Alternative 2 and 3 (Design Options A and B) Study Area Traffic Conditions

Scenario/ Analysis Year	Location	Daily VMT (miles)	Daily VHT (hours)	Average Speed (mph)
2025 Alternative 2 and 3	Study Area	55,006	3,654.5	15.05
2035 Alternative 2 and 3	Study Area	59,307	4,353.0	13.62

Alternative 3

Similar to Alternative 2, Alternative 3 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. It would also evaluate both Design Options A and B at the east end of the proposed bridge. In addition, similar to Alternative 2, the bridge under Alternative 3 with Design Option B would include two turn lanes in the SB direction. On the west side of the river, the ramps would connect on the left side of the freeway, at the same merge and diverge locations of the existing ramps. On the east side of the river, a roundabout (Design Option A) or a controlled intersection (Design Option B) would be provided at the ramp termini. The ramp termini are located at or near the eastern abutment of the river-spanning section of the new Shoemaker Bridge. Local street improvements described under Alternative 2 would also apply under Alternative 3. The difference between Alternatives 2 and 3 is the removal of the existing Shoemaker Bridge. The same ramp/connectors proposed under Alternative 2 would apply under Alternative 3. The traffic data included in Table 1-5 and Table 1-6 for Alternative 2 also apply to Alternative 3.

1.5 Construction Activities and Schedule

The length of the project construction period is approximately 2 years. The schedule for all improvements is anticipated to begin in 2022 and end in 2024.

2. Regulatory Setting

Many statutes, regulations, plans, and policies have been adopted at the federal, state, and local levels to address air quality issues related to transportation and other sources. The proposed project is subject to air quality regulations at each of these levels. This section introduces the pollutants governed by these regulations and describes the regulation and policies that are relevant to the proposed project.

2.1 Pollutant-Specific Overview

Air pollutants are governed by multiple federal and state standards to regulate and mitigate health impacts. At the federal level, there are six criteria pollutants for which National Ambient Air Quality Standards (NAAQS) have been established: CO, Pb, NO_2, O_3, PM ($PM_{2.5}$ and PM_{10}), and SO_2. The U.S. EPA has also identified nine priority mobile source air toxics: 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/). In California, sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride are also regulated.

2.1.1 Criteria Pollutants

The Clean Air Act requires the U.S. EPA to set National Ambient Air Quality Standards (NAAQS) for six criteria air contaminants: ozone, particulate matter, carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. It also permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain pollutants. Table 2-1 documents the current air quality standards while Table 2-2 summarizes the sources and health effects of the six criteria pollutants and pollutants regulated in the state of California.

Table 2-1. State and Federal Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	**Averaging Time**	**California Standards[1]**		**National Standards[2]**		
		Concentration[3]	**Method[4]**	**Primary[3,5]**	**Secondary[3,6]**	**Method[7]**
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 μg/m^3)		0.070 ppm (137 μg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 μg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	12.0 μg/m^3	15 μg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 μg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 μg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)		0.053 ppm (100 μg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 μg/m^3)	Ultraviolet Fluorescence	75 ppb (196 μg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 μg/m^3)	
	24 Hour	0.04 ppm (105 μg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 μg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 μg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 μg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 μg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 μg/m^3)	Gas Chromatography			

See footnotes on next page ...

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1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, 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.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. 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 a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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Accessed April 2018, www.arb.ca.gov/research/aaqs/aaqs2.pdf.

Table 2-2. State and Federal Criteria Air Pollutant Effects and Sources

Pollutant	Principal Health and Atmospheric Effects	Typical Sources
Ozone (O_3)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.
Respirable Particulate Matter (PM_{10})	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke & vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.
Fine Particulate Matter ($PM_{2.5}$)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic and other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and ROG.
Carbon Monoxide (CO)	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Nitrogen Dioxide (NO_2)	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain & nitrate contamination of stormwater. Part of the “NOx” group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.
Sulfur Dioxide (SO_2)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.
Lead (Pb)	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.
Visibility-Reducing Particles	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air	See particulate matter above. May be related more to aerosols than to solid particles.

Table 2-2. State and Federal Criteria Air Pollutant Effects and Sources

Pollutant	Principal Health and Atmospheric Effects	Typical Sources
(VRP)	Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas. However, some issues and measurement methods are similar.	
Sulfate	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.
Hydrogen Sulfide (H_2S)	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.
Vinyl Chloride	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes.

2.1.2 Mobile Source Air Toxics

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. EPA regulate 188 air toxics, also known as hazardous air pollutants. The U.S. EPA has assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of U.S. EPA's Integrated Risk Information System (IRIS) (https://www.epa.gov/iris). In addition, the U.S. EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-hazard contributors from the 2011 National Air Toxics Assessment (NATA) (https://www.epa.gov/national-air-toxics-assessment). These are *1,3-butadiene*, *acetaldehyde*, *acrolein*, *benzene*, *diesel particulate matter (diesel PM)*, *ethylbenzene*, *formaldehyde*, *naphthalene*, and *polycyclic organic matter*. While the Federal Highway Administration (FHWA) considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future U.S. EPA rules.

The 2007 U.S. EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using U.S. EPA's MOVES2014a model, even if vehicle activity (vehicle-miles traveled, VMT) increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emission rate for the priority MSATs is projected for the same time period, as shown in Figure 2-1.

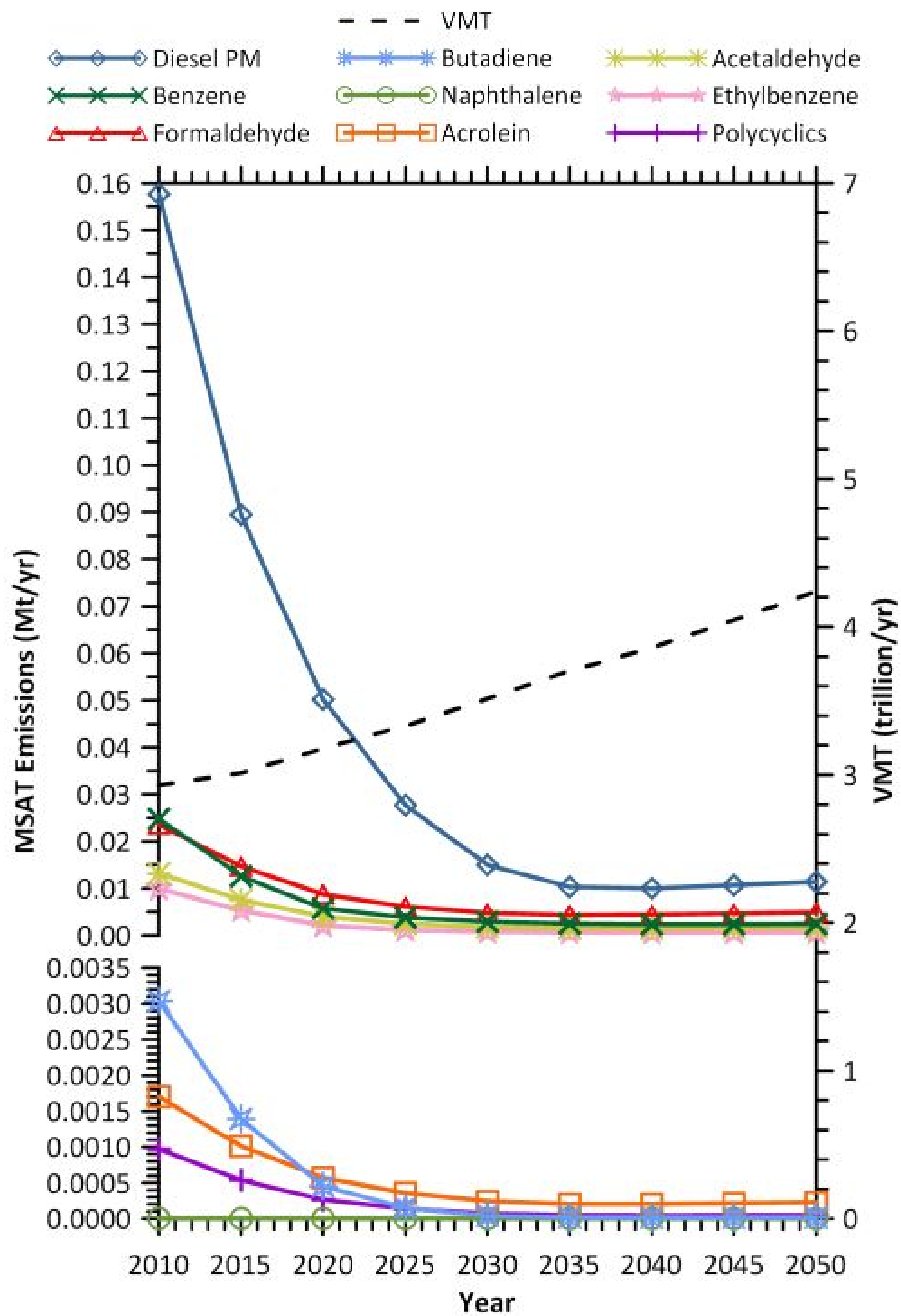
2.1.3 Greenhouse Gases

The term greenhouse gas (GHG) is used to describe atmospheric gases that absorb solar radiation and subsequently emit radiation in the thermal infrared region of the energy spectrum, trapping heat in the Earth's atmosphere. These gases include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and water vapor, among others. A growing body of research attributes long-term changes in temperature, precipitation, and other elements of Earth's climate to large increases in GHG emissions since the mid-nineteenth century, particularly from human activity related to fossil fuel combustion. Anthropogenic GHG emissions of particular interest include CO_2, CH_4, N_2O, and fluorinated gases.

GHGs differ in how much heat each traps in the atmosphere (global warming potential, or GWP). CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent" (CO_2e). The global warming potential of CO_2 is assigned a value of 1, and the warming potential of other gases is assessed as multiples of CO_2. For example, the 2007 International Panel on Climate Change *Fourth Assessment Report* calculates the GWP of CH_4 as 25 and the GWP of N_2O as 298, over a 100-year time horizon.[1] Generally, estimates of all GHGs are summed to obtain total emissions for a project or given time period, usually expressed in metric tons ($MTCO_2e$), or million metric tons ($MMTCO_2e$).[2]

[1] See Table 2.14 in IPCC Fourth Assessment Report: Climate Change 2007 (AR4): The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA. http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf.

[2] See http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/CEQA-Guidance-Tools.



(Source:https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/)

Figure 2-1. Projected National MSAT Trends, 2010-2050

As evidence has mounted for the relationship of climate changes to rising GHGs, federal and state governments have established numerous policies and goals targeted to improving energy efficiency and fuel economy, and reducing GHG emissions. Nationally, electricity generation is the largest source of GHG emissions, followed by transportation. In California, however, transportation is the largest contributor to GHGs.

At the federal level, the National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level. However, the U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) issued the first corporate fuel economy (CAFE) standards in 2010, requiring cars and light-duty vehicles to achieve certain fuel economy targets by 2016, with the intention of gradually increasing the targets and the range of vehicles to which they would apply.

California has enacted aggressive GHG reduction targets, starting with Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 is California's signature climate change legislation. It set the goal of reducing statewide GHG emissions to 1990 levels by 2020, and required the ARB to develop a Scoping Plan that describes the approach California will take to achieve that goal and to update it every 5 years. In 2015, Governor Jerry Brown enhanced the overall adaptation planning effort with Executive Order (EO) B-30-15, establishing an interim GHG reduction goal of 40 percent below 1990 levels by 2030, and requiring state agencies to factor climate change into all planning and investment decisions.

Senate Bill (SB) 375, the Sustainable Communities and Climate Protection Act of 2008, furthered state climate action goals by mandating coordinated transportation and land use planning through preparation of sustainable communities strategies (SCS). The ARB sets GHG emissions reduction targets for passenger vehicles for each region. Each regional metropolitan planning organization must include in its regional transportation plan an SCS proposing actions toward achieving the regional emissions reduction targets.[3]

With these and other State Senate and Assembly bills and executive orders, California advances an innovative and proactive approach to dealing with GHG emissions and climate change.

2.1.4 Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the ARB in 1986. All types of asbestos are hazardous and may cause lung disease and cancer.

Asbestos can be released from serpentine and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos-bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

[3] https://www.arb.ca.gov/cc/sb375/sb375.htm

Serpentine may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. The California Department of Conservation, Division of Mines and Geology has developed a map showing the general location of ultramafic rock in the state (www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/index.aspx).

2.2 Regulations

2.2.1 Federal and California Clean Air Act

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws and related regulations by the U.S. EPA and the (ARB) set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

2.2.2 Transportation Conformity

The conformity requirement is based on Federal Clean Air Act Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional—or, planning and programming level—and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. The U.S. EPA regulations at 40 CFR 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California), sulfur dioxide (SO_2). California has attainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP), and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the Clean Air Act and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), FHWA, and Federal Transit Administration (FTA), make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and the TIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP and the project has a design concept and scope[4] that has not changed significantly from those in the RTP and TIP. If the design concept and scope have changed substantially from that used in the RTP Conformity analysis, RTP and TIP amendments may be needed. Project-level conformity also needs to demonstrate that project analyses have used the latest planning assumptions and U.S. EPA-approved emissions models; the project complies with any control measures in the SIP in PM areas. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.2.3 National Environmental Policy Act (NEPA)

NEPA requires that policies and regulations administered by the federal government are consistent with its environmental protection goals. NEPA also requires that federal agencies use an interdisciplinary approach to planning and decision-making for any actions that could impact the environment. It requires environmental review of federal actions including the creation of Environmental Documents (EDs) that describe the environmental effects of a proposed project and its alternatives (including a section on air quality impacts).

2.2.4 California Environmental Quality Act (CEQA)

CEQA[5] is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. CEQA documents address CCAA requirements for transportation projects. While state standards are often more strict than federal standards, the state has no conformity process.

2.2.5 Local

The U.S. EPA has delegated responsibility to air districts to establish local rules to protect air quality. Caltrans' Standard Specification 14-9.02 (Caltrans, 2015) requires compliance with all applicable air quality laws and regulations including local and air district ordinances and rules.

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[4] "Design concept" means the type of facility that is proposed, such as a freeway or arterial highway. "Design scope" refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

[5] For general information about CEQA, see: http://resources.ca.gov/ceqa/more/faq.html.

South Coast Air Quality Management District

The 1977 Lewis Air Quality Management Act created the South Coast Air Quality Management District (SCAQMD) to coordinate air quality planning efforts throughout Southern California. This Act merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. Under the Act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the region. Specifically, the SCAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain State and federal ambient air quality standards in the district. Programs that were developed include air quality rules and regulations that regulate stationary sources, area sources, point sources, and certain mobile source emissions. The SCAQMD is also responsible for establishing stationary source permitting requirements and for ensuring that new, modified, or relocated stationary sources do not create net emission increases.

Air Quality Management Plan

All areas designated as nonattainment under the CCAA are required to prepare plans showing how the area would meet the CAAQS by its attainment dates. The Air Quality Management Plan (AQMP) is the SCAQMD plan for improving regional air quality. It addresses CCAA requirements and demonstrates attainment with State and federal ambient air quality standards. The AQMP is prepared by SCAQMD and the Southern California Association of Governments (SCAG). The AQMP provides policies and control measures that reduce emissions to attain both State and federal ambient air quality standards by their applicable deadlines. Environmental review of individual projects within the SCAB must demonstrate that daily construction and operational emissions thresholds, as established by the SCAQMD, would not be exceeded. The environmental review must also demonstrate that individual projects would not increase the number or severity of existing air quality violations.

The 2016 Air Quality Management Plan was adopted by the SCAQMD Governing Board on March 3, 2017. It incorporates the latest scientific and technological information and planning assumptions, including the 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and updated emission inventory methodologies for various source categories. The 2016 AQMP includes the integrated strategies and measures needed to meet the NAAQS.

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3. Affected Environment

The proposed project is located in the Long Beach region of Los Angeles County, an area within the South Coast Air Basin (SCAB), which includes Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. Air quality regulation in the SCAB is administered by the South Coast Air Quality Management District (SCAQMD), a regional agency created for the Basin.

3.1 Climate, Meteorology, and Topography

Meteorology (weather) and terrain can influence air quality. Certain weather parameters are highly correlated to air quality, including temperature, the amount of sunlight, and the type of winds at the surface and above the surface. Winds can transport ozone and ozone precursors from one region to another, contributing to air quality problems downwind of source regions. Furthermore, mountains can act as a barrier that prevents ozone from dispersing.

The SCAB climate is determined by its terrain and geographical location. The SCAB is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary, and high mountains surround the rest of the SCAB. The region lies in the semi permanent high pressure zone of the eastern Pacific. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s (measured in degrees Fahrenheit [°F]). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site monitoring temperature is the San Pedro Station.[1] The annual average maximum temperature recorded at this station is 68.7°F, and the annual average minimum is 54.4°F. January is typically the coldest month in this area of the Basin.

The majority of rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern part of the Basin along the coastal side of the mountains. The climatological station closest to the project limits that monitor precipitation is the same San Pedro Station. Average rainfall measured at this station varied from a high 2.37 inches in February to 0.25 inch or less between May and September, with an average annual total of 10.69 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The SCAB experiences a persistent temperature inversion (increasing 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, allowing vertical mixing with the lower layer. This phenomenon is observed from midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Inversion layers are essential in determining O_3 formation. O_3 and its precursors will mix and react to produce higher concentrations under an inversion. The inversion will also simultaneously trap and

[1] Western Regional Climatic Center. 2018. http://www.wrcc.dri.edu (accessed April 2018).

hold directly emitted pollutants such as CO. PM_{10} is both directly emitted and created indirectly in the atmosphere as a result of chemical reactions. Concentration levels are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, when heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest concentration of pollutants. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are from CO and oxides of nitrogen (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

Figure 3-1 shows a wind rose illustrating the predominant wind patterns near the project.

3.2 Existing Air Quality

This section summarizes existing air quality conditions near the proposed project area. It includes attainment statuses for criteria pollutants, describes local ambient concentrations of criteria pollutants for the past 5 years, and discusses MSAT and GHG emissions. The closest monitoring stations to the project area are the Long Beach – Hudson Station, located at 2425 Webster Street and the South Long Beach Station located at 1305 East Pacific Coast Highway. The locations of the two stations are shown in Figure 3-2.

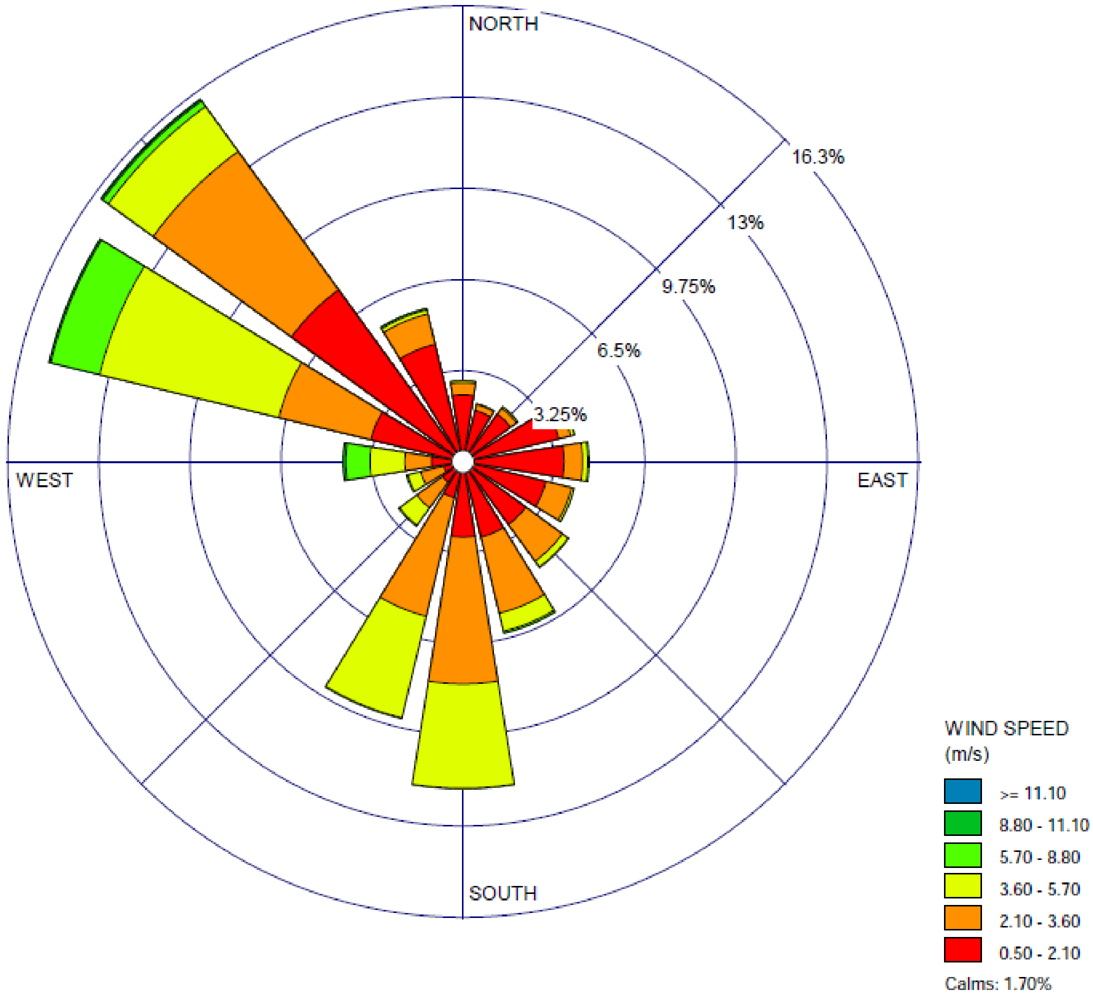


Figure 3-1. Predominant Wind Patterns Near the Project

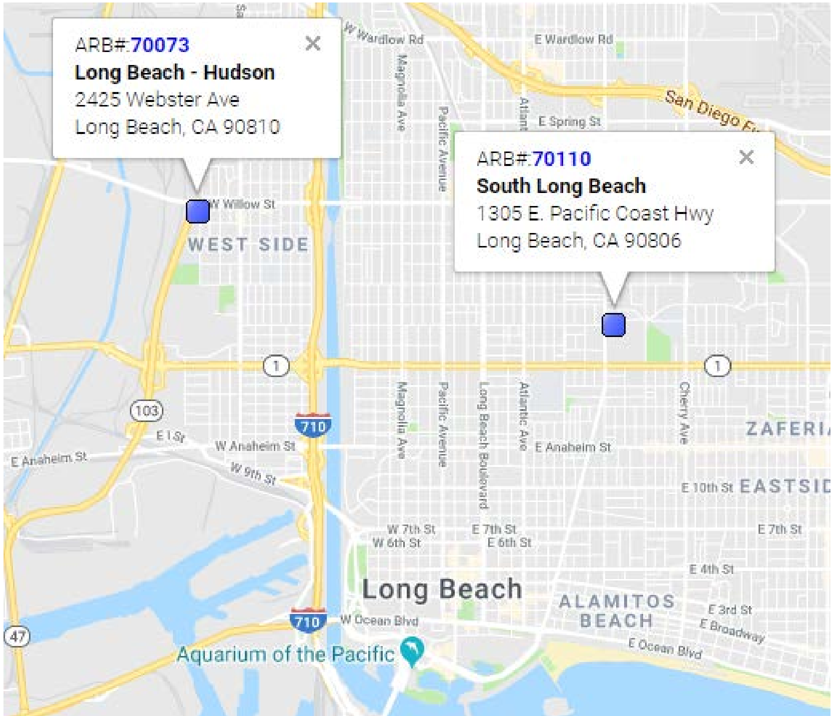


Figure 3-2. Map of Air Quality Monitoring Stations Located Near the Project

3.2.1 Criteria Pollutants and Attainment Status

The FCAA requires U.S. EPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The federal standards are summarized in Table 3-1. The U.S. EPA has classified the South Coast Air Basin (SCAB) as attainment/maintenance for CO, PM_{10}, and NO_2, and nonattainment for O_3 and $PM_{2.5}$.

The CCAA requires ARB to designate areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data shows that a State standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard and are not used as a basis for designating areas as nonattainment. Under the CCAA, the Los Angeles County portion of the Basin is designated as a nonattainment area for O_3, $PM_{2.5}$, and PM_{10}.

Table 3-1 lists the state and federal attainment status for all regulated pollutants. Table 3-2 lists air quality trends in data collected at the Long Beach stations for the past 5 years. Data from the Long Beach stations are included due to the proximity of the site to the project.

Table 3-1. State and Federal Attainment Status

Pollutant	State Attainment Status	Federal Attainment Status
Ozone (O_3)	Nonattainment (1-hour and 8-hour)	Extreme Nonattainment (8-hour)
Respirable Particulate Matter (PM_{10})	Nonattainment	Attainment/Maintenance
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Moderate Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment/Maintenance
Nitrogen Dioxide (NO_2)	Attainment	Attainment/Maintenance
Sulfur Dioxide (SO_2)	Attainment/Unclassified	Attainment/Unclassified
Lead (Pb)	Attainment	Nonattainment (Los Angeles County only)
Visibility-Reducing Particles	Attainment/Unclassified	N/A
Sulfates	Attainment/Unclassified	N/A
Hydrogen Sulfide	Attainment/Unclassified	N/A
Vinyl Chloride	Attainment/Unclassified	N/A

Table 3-2. Air Quality Concentrations for the Past 5 Years Measured at the Long Beach Stations

Pollutant	Standard	2013	2014	2015	2016	2017
Ozone[1]						
Max 1-hr concentration		0.090	0.087	0.087	0.079	0.082
No. days exceeded: State	0.09 ppm	0	0	0	0	0
Max 8-hr concentration		0.069	0.072	0.066	0.059	0.068
No. days exceeded: State Federal	0.070 ppm 0.070 ppm	0 0	0 1	0 0	0 0	0 0
Carbon Monoxide[1]						
Max 1-hr concentration		4.1	3.7	3.3	3.3	3.9
No. days exceeded: State Federal	20 ppm 35 ppm	0 0	0 0	0 0	0 0	0 0
Max 8-hr concentration		2.6	2.6	2.2	2.2	2.6
No. days exceeded: State Federal	9.0 ppm 9 ppm	0 0	0 0	0 0	0 0	0 0
PM_{10}[2]						
Max 24-hr concentration		54	59	62	56	70.9
No. days exceeded: State Federal	50 μg/m^3 150 μg/m^3	1 0	2 0	2 0	3 0	2 0
Max annual concentration		27.3	26.6	26.5	27.8	14.7
exceeded: State?	20 μg/m^3	Yes	Yes	Yes	Yes	No
$PM_{2.5}$[2]						
Max 24-hr concentration		42.9	52.2	48.3	28.9	56.3
No. days exceeded: Federal	35 μg/m^3	1	2	4	0	5
Max annual concentration		10.9	NA	10.2	9.5	11.0
exceeded: State? Federal?	12 μg/m^3 12.0 μg/m^3	No No	NA NA	No No	No No	No No
Nitrogen Dioxide[1]						
Max 1-hr concentration		81.2	135.9	101.8	75.6	89.5

Table 3-2. Air Quality Concentrations for the Past 5 Years Measured at the Long Beach Stations

Pollutant	Standard	2013	2014	2015	2016	2017
No. days exceeded: State Federal	180 ppb 100 ppb	0 0	0 2	0 1	0 0	0 0
Max annual concentration		21	21	21	19	18
exceeded: State? Federal?	30 ppb 53 ppb	No No	No No	No No	No No	No No

1. Monitored at the 2425 Webster Street, Long Beach Station
2. Monitored at the 1305 East Pacific Coast Highway, Long Beach Station

3.2.2 Mobile Source Air Toxics

The primary sources of MSAT in the project area are I-710 corridor and the Ports of Los Angeles and Long Beach. Ambient MSAT data measured at the North Long Beach Station are available from ARB’s website (http://www.arb.ca.gov/adam/toxics/toxics.html).

3.2.3 Greenhouse Gas and Climate Change

CO_2, as part of the carbon cycle, is an important compound for plant and animal life, but also accounted for 84% of California’s total GHG emissions in 2015. Transportation, primarily on-road travel, is the single largest source of CO_2 emissions in the state.

The proposed Project is located in the City of Long Beach in Los Angeles County and is included in the 2016 SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS).

On April 7, 2016, SCAG’s Regional Council adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS or Plan). The Plan is a long-range visioning plan that balances future mobility and housing needs with economic, environmental and public health goals. The Plan charts a course for closely integrating land use and transportation – so that the region can grow smartly and sustainably. It outlines more than $556.5 billion in transportation system investments through 2040.

The State of California has set targets for the SCAG region to reduce greenhouse gas emissions from passenger vehicles by 8 percent per capita by 2020 and 13 percent by 2035 (compared with a 2005 baseline). Reductions outlined in the RTP/SCS are projected to reach 13.6 percent by 2020 and 27.9 percent by 2040.

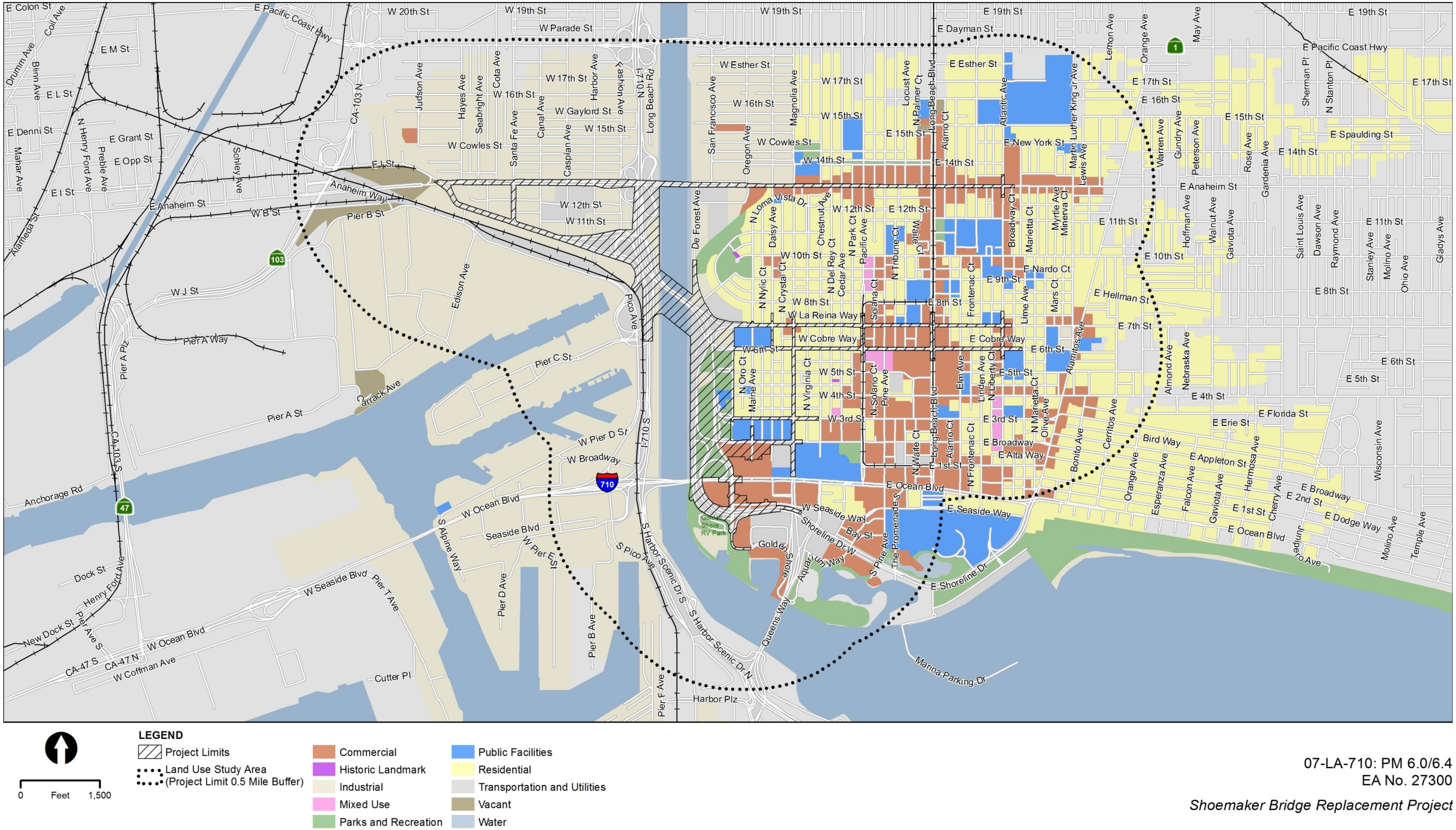
3.3 Sensitive Receptors

Sensitive land uses within the project area include schools, churches, residences, and parks. Figure 3-3 shows the locations of sensitive receptors relative to the Project limits.

3.4 Conformity Status

3.4.1 Regional Conformity

If a project is not exempt from conformity requirements and is regionally significant (40 CFR 93.101), it must come from a conforming RTP and TIP. Documentation of the nonattainment or maintenance status of the area, including SIP submittal/approval dates, is needed. Also, documentation of the RTP and TIP conformity status (most recent amendment dates, date of last full and updated conformity determinations) is needed. The Design Concept and Scope of the project must match the Design Concept and Scope used in the RTP and FTIP project listing. The Project is in the 2016 RTP, which was found to be conforming by the FHWA/Federal Transit Administration (FTA) on June 1, 2016. The 2016 RTP (Amendment 3) was found to conform by FHWA and FTA on December 17, 2018. The Project is also in the 2019 FTIP, which was found to be conforming by the FHWA/FTA on December 17, 2018 (Project ID: LA0G830; Description: I-710 Improvements/Shoemaker Bridge Replacement. Replace the existing Shoemaker Bridge with a new bridge. The new bridge will be reduced to have two mixed-flow lanes in the NB and in the SB directions to tie the flow into I-710. The new bridge will also include pedestrian and bicycle access. Additionally, bicycle, pedestrian, and street enhancements will be provided on adjacent thoroughfares.). The Build Alternatives are consistent with the scope of design concept of the FTIP. The project description and opening year are currently being amended in the RTP. Therefore, the Build Alternatives will not be in conformance with the SIP until the amendment is incorporated. The Project will also comply with all SCAQMD requirements. Conformity status information is summarized in Table 3-3. The 2016 RTP and 2019 FTIP listings are included in Appendix A.



07-LA-710: PM 6.0/6.4
EA No. 27300

Shoemaker Bridge Replacement Project

Figure 3-3. Sensitive Receptors Located Near the Proposed Project

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Table 3-3. Status of Plans Related to Regional Conformity

MPO	Plan/TIP	Date of adoption by MPO	Date of Approval by FHWA	Last Amendment	Date of Approval by FHWA of Last Amendment
SCAG	Regional Transportation Plan	4/7/16	6/1/16	Amendment 3	12/17/18
SCAG	Transportation Improvement Program (FSTIP approval)	9/17/18	12/17/18	Amendment 3	3/19/19

3.4.2 Project-Level Conformity

The Project is located in a federal nonattainment area for $PM_{2.5}$ and in an attainment/maintenance area for PM_{10} and CO, thus a project-level hot-spot analyses are required under 40 CFR 93.109. The Project does not cause or contribute to any new localized CO, $PM_{2.5}$, and/or PM_{10} violations, or delay timely attainment of any NAAQS or any required interim emission reductions or other milestones during the timeframe of the transportation plan (or regional emissions analysis).

3.4.3 Interagency Consultation

The project-level PM hot-spot analysis was presented to SCAG's Transportation Conformity Working Group (TCWG) for discussion and review on January 24, 2012. The proposed Project was listed on the SCAG's TCWG website under the project's previous FTIP/RTP project ID of LAE0266. This Project was approved and concurred upon by Interagency Consultation at the TCWG meeting as a project not having adverse impacts on air quality, and it meets the requirements of the CAA and 40 CFR 93.116.

An updated PM form was submitted to SCAG's TCWG on July 24, 2018. This form reflects the updated project description, limits, and traffic volumes and was listed under the current RTP/FTIP project ID. The TCWG determined that the Project is not a project of air quality concern (POAQC). A copy of the TCWG determination is included in Appendix E.

Table 3-4. Summary of Interagency Consultation Process

Date	Format	Participants	Discussion Summary	Outcomes
January, 24, 2012	PM Form	EPA, FHWA, Caltrans	None	Not POAQC
July 24, 2018	PM Form	EPA, FHWA, Caltrans	None	Not POAQC

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4. Environmental Consequences

This section describes the methods, impact criteria, and results of air quality analyses of the proposed project. Analyses in this report were conducted using methodology and assumptions that are consistent with the requirements of NEPA, CEQA, the CAAAs of 1990, and the CCAA of 1988. The analyses also use guidelines and procedures provided in applicable air quality analysis protocols, such as the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) (Garza et al., 1997), Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM_{10} and $PM_{2.5}$ Nonattainment and Maintenance Areas (U.S. EPA 2015), and the FHWA Updated Interim Guidance on Air Toxics Analysis in NEPA Documents (FHWA 2016).

4.1 Short-Term Effects (Construction Emissions)

4.1.1 Construction Equipment, Traffic Congestion, and Fugitive Dust

Site preparation and roadway construction will involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. During construction, short-term degradation of air quality is expected from the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment powered by gasoline and diesel engines are also anticipated and would include CO, NO_x, VOCs, directly emitted PM_{10} and $PM_{2.5}$, and toxic air contaminants (TACs) such as diesel exhaust particulate matter. Construction activities are expected to increase traffic congestion in the area, resulting in increases in emissions from traffic during the delays. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Under the transportation conformity regulations (40 CFR 93.123(c)(5)), construction-related activities that cause temporary increases in emissions are not required in a hot-spot analysis. These temporary increases in emissions are those that occur only during the construction phase and last five years or less at any individual site. They typically fall into two main categories:

- *Fugitive Dust*: A major emission from construction due to ground disturbance. All air districts and the California Health and Safety Code (Sections 41700-41701) prohibit "visible emissions" exceeding three minutes in one hour – this applies not only to dust but also to engine exhaust. In general, this is interpreted as visible emissions crossing the right-of-way line.
- Sources of fugitive dust include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site may deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions may vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

- *Construction equipment emissions*: Diesel exhaust particulate matter is a California-identified toxic air contaminant, and localized issues may exist if diesel-powered construction equipment is operated near sensitive receptors.

The construction emissions were estimated for the project using the Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model, Version 9.0.0. While the model was developed for Sacramento conditions in terms of fleet emission factors, silt loading, and other modeling assumptions, it is considered adequate for estimating road construction emissions by the SCAQMD in its CEQA guidance and is used for that purpose in this analysis. Construction-related emissions for Alternative 2 are presented in Table 4-1. Construction-related emissions for Alternative 3 are presented in Table 4-2. The emissions listed in Table 4-1 and Table 4-2 are applicable to both Design Option A and B. The results of the Sacramento model are included in Appendix B. The emissions presented below are based on the best information available at the time of calculations and assume that the schedule for all improvements is anticipated to begin in 2022 and end in 2024. Default equipment assumptions for the Road Construction Emissions Model were used in developing the emissions estimates; these estimates can be refined once final engineering has been completed for the project. As each phase of the project construction is expected to last less than 5 years, construction-related emissions were not considered in the conformity analysis.

Table 4-1. Construction Emissions for Alternative 2 (Design Options A and B).

	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	CO (lbs/day)	NO_x (lbs/day)	CO_2e (lbs/day)
Grubbing/Land Clearing	20.80	4.73	12.09	19.89	7,246.39
Grading/Excavation	23.94	7.57	68.54	96.72	20,711.04
Drainage/Utilities/Sub-Grade	22.61	6.41	49.05	64.57	15,582.23
Paving	0.82	0.58	15.18	18.28	7,173.12
Maximum daily or average daily	23.94	7.57	68.54	96.72	20,711.04
Project Total (tons)	5.22	1.56	12.95	17.85	4,169.94

Table 4-2. Construction Emissions for Alternative 3 (Design Options A and B).

	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	CO (lbs/day)	NO_x (lbs/day)	CO_2e (lbs/day)
Grubbing/Land Clearing	25.84	5.79	12.26	21.17	7,972.81
Grading/Excavation	28.94	8.61	68.54	96.72	20,711.04
Drainage/Utilities/Sub-Grade	27.61	7.45	49.05	64.57	15,582.23
Paving	0.82	0.58	15.18	18.28	7,173.12
Maximum daily or average daily	28.94	8.61	68.54	96.72	20,711.04
Project Total (tons)	6.34	1.79	12.95	17.89	4,189.12

Implementation of the following measures, some of which may also be required for other purposes such as storm water pollution control, will reduce air quality impacts resulting from construction activities. Please note that although these measures are anticipated to reduce construction-related emissions, these reductions cannot be quantified at this time.

- The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2015).
    - Section 14-9-02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
- Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and on all project construction parking areas.
- Trucks will be washed as they leave the right-of-way as necessary to control fugitive dust emissions.
- Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114.
- A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely re-vegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.
- Environmentally sensitive areas will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.
- Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.
- All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.
- Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions.
- To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown PM in the area.

4.1.2 Asbestos

The Project is located in Los Angeles County, which is among the counties listed as containing serpentine and ultramafic rock. However, the portion of the County in which the Project lies is not known to contain serpentine or ultramafic rock. Therefore, the impact from naturally occurring asbestos (NOA) during project construction would be minimal to none.

4.2 Long-Term Effects (Operational Emissions)

Operational emissions take into account long-term changes in emissions due to the project (excluding the construction phase). The operational emissions analysis compares forecasted emissions for existing/baseline, No-Build, and all Build alternatives. The regional VMT data for the existing, No Build, and build alternatives, along with the CT-EMFAC2017 emission rates, were used to calculate the CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions for the Existing (2015), 2025, and 2035 conditions. The results of the modeling are summarized in Table 4-3 and included in Appendix C. The traffic volumes listed in Table 4-3 are applicable to both design options and both build alternatives. As shown in Table 4-3, with the exception of PM_{10}, all of the future no build and build condition emissions are lower than the existing baseline. When compared to the no build conditions, the build alternatives would result in a minimal increase in emissions.

Table 4-3. Summary of Comparative Emissions Analysis

Scenario/ Analysis Year	CO (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	NO_x (surrogate for NO_2) (lbs/day)
Baseline (Existing Conditions) 2015	329.6	13.3	4.9	75.3
No-Build 2025	137.4	12.9	3.8	40.6
Build Alternative 2 and 3 2025	140.0	13.6	4.0	40.0
No-Build 2035	116.3	13.7	3.9	46.8
Build Alternative 2 and 3 2035	118.4	14.5	4.1	46.0

4.2.1 CO Analysis

The CO Protocol was developed for project-level conformity (hot-spot) analysis and was approved for use by the U.S. EPA in 1997. It provides qualitative and quantitative screening procedures, as well as quantitative (modeling) analysis methods to assess project-level CO impacts. The qualitative screening step is designed to avoid the use of detailed modeling for projects that clearly cannot cause a violation, or worsen an existing violation, of the CO standards. Although the protocol was designed to address federal standards, it has been recommended for use by several air pollution control districts in their CEQA analysis guidance documents and should also be valid for California standards because the key criterion (8-hour concentration) is similar: 9 ppm for the federal standard and 9.0 ppm for the state standard.

The methodology required for a CO local analysis is summarized in the Caltrans Transportation Project-Level Carbon Monoxide Protocol (Protocol), Section 3 (Determination of Project Requirements) and Section 4 (Local Analysis). In Section 3, the Protocol provides two conformity requirement decision flowcharts that are designed to assist the project sponsors in evaluating the requirements that apply to specific projects. The flowchart in Figure 1 (Appendix D of this report) of the Protocol applies to new projects and was used in this local analysis conformity decision. Below is a step-by-step explanation of the flow chart. Each level cited is followed by a response, which in turn determines the next applicable level of the flowchart for the project. The flowchart begins with Section 3.1.1:

- 3.1.1. Is this project exempt from all emissions analyses?

NO.

Table 1 of the Protocol is Table 2 of Section 93.126 of 40 CFR. Section 3.1.1 is inquiring if the project is exempt. Such projects appear in Table 1 of the Protocol. Although the proposed Project is a bridge reconstruction project, it alters the horizontal and vertical alignment of the roadway. Therefore, the Project is not exempt from all emissions analyses.

- 3.1.2. Is the project exempt from regional emissions analyses?

NO.

Table 2 of the Protocol is Table 3 of Section 93.127. The question is attempting to determine whether the Project is listed in Table 2. Projects that are included in Table 2 of the Protocol are exempt from regional conformity. The Project is a bridge reconstruction project that alters the horizontal and vertical alignment of the roadway. However, the Project will also alter the traffic flow on local streets within the project area. Therefore, it is not exempt from regional emissions analysis.

- 3.1.3. Is the project defined as regionally significant?

YES.

As discussed above, the Project will alter the traffic flow on local streets within the project area. Therefore, it is regionally significant.

- 3.1.4. Is the project in a federal attainment area?

NO.

The project is located within an attainment/maintenance area for the federal CO standard.

- 3.1.5. Are there a currently conforming Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP)?

YES.

Refer to Appendix A.

- 3.1.6. Is the project included in the regional emissions analysis supporting the currently conforming RTP and TIP?

YES.

The project is included in the SCAG 2016 RTP and the 2019 FTIP (Project ID: LA0G830; Description: I-710 Improvements/Shoemaker Bridge Replacement. Replace the existing Shoemaker Bridge with a new bridge. The new bridge will be reduced to have two mixed-flow lanes in the NB and in the SB directions to tie the flow into I-710. The new bridge will also include pedestrian and bicycle access. Additionally, bicycle, pedestrian, and street enhancements will be provided on adjacent thoroughfares.)

- 3.1.7. Has the project design concept and/or scope changed significantly from that in the regional analysis?

NO.

The proposed Build Alternatives are consistent with the project description in the 2016 RTP/2019 FTIP.

- 3.1.9. Examine local impacts.

Section 3.1.9 of the flowchart directs the project evaluation to Section 4 (Local Analysis) of the Protocol. This concludes Figure 1.

Section 4 contains Figure 3 (Local CO Analysis [Appendix D of this report]). This flowchart is used to determine the type of CO analysis required for the build alternatives. Below is a step-by-step explanation of the flowchart. Each level cited is followed by a response, which in turn determines the next applicable level of the flowchart for the build alternatives. The flowchart begins at level 1:

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

NO.

The Project site is located in an area that has demonstrated attainment with the federal CO standard.

- Level 1 (cont.). Was the area redesignated as “attainment” after the 1990 Clean Air Act?

YES.

- Level 1 (cont.). Has “continued attainment” been verified with the local Air District, if appropriate?

YES.

The South Coast Air Basin (SCAB) was designated as attainment/maintenance by the United States Environmental Protection Agency (EPA) on June 11, 2007. (Proceed to Level 7.)

- Level 7. Does the project worsen air quality?

YES.

Because two of the following conditions (listed in Section 4.7.1 of the CO Protocol) are met, the project would potentially worsen air quality.

a. The project significantly increases the percentage of vehicles operating in cold start mode. Increasing the number of vehicles operating in cold start mode by as little as 2 percent should be considered potentially significant.

The proposed Project would not generate new vehicular traffic trips since it would not construct new homes or businesses. In addition, the Project will decrease the number of parking spaces within the area. Therefore, it is assumed that the number of vehicles operating in cold start mode would remain the same or decrease slightly.

b. The project significantly increases traffic volumes. Increases in traffic volumes in excess of 5 percent should be considered potentially significant. Increasing the traffic volume by less than 5 percent may still be potentially significant if there is also a reduction in average speeds.

As shown in Table 4-4, the proposed Project would increase the traffic volumes along multiple local roads by more than 5 percent. The traffic volumes listed in Table 4-4 apply to both design options and both build alternatives. Therefore, this criterion is met.

c. The project worsens 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 intersection segments, a reduction in average speed or an increase in average delay should be considered as worsening traffic flow.

As shown in Table 4-5 through Table 4-8, the proposed Project would increase the peak hour delay at the Magnolia Avenue/Ocean Boulevard, Magnolia Avenue/Broadway, Maine Avenue/Broadway, Pacific Avenue/Anaheim Street, and Magnolia Avenue/Anaheim Street intersections. The traffic delay listed in Tables 4-5 through 4-8 apply to both design options and both build alternatives. Therefore, this criterion is met.

Table 4-4. Traffic Volumes (AM Peak/PM Peak)

Roadway	2025 No Build	2025 Build	2025 Percent Increase	2035 No Build	2035 Build	2035 Percent Increase
Anaheim	2,147/2,811	2,776/3,617	29.3/28.7	2,249/2,944	2,886/3,772	28.3/28.1
7th Street	1,295/791	1,558/634	20.3/-19.8	1,326/810	1,597/657	20.4/-18.9
6th Street	981/1,567	25/58	-97.5/-96.3	990/1,582	25/60	-97.5/-96.2
3rd Street	1,189/560	384/308	-67.7/-45.0	1,218/573	397/324	-67.4/-43.5
Broadway	1,229/906	1,209/1,014	-1.6/11.9	1,259/928	1,228/1,051	-2.5/13.3
Ocean Boulevard	2,757/3,433	2,874/3,750	4.2/9.2	2,900/3,612	2,959/3,985	2.0/10.3
Shoemaker Bridge	6,154/5,419	5,968/5,396	-3.0/-0.4	6,274/5,525	6,298/5,600	0.4/1.4

Source: HDR, August 2019

Table 4-5. 2025 No Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	9.1	A	12.4	B
2	Santa Fe Avenue/Anaheim Street	27.6	C	31.7	C
3	Santa Fe Avenue/9th Street	12.0	B	43.5	D
4	Pier B Street/Pico Avenue/I-710 Ramps/9th Street	>100	**F**	24.1	C
5	Pico Avenue/Ocean Boulevard Ramps	20.6	C	26.4	C

Table 4-5. 2025 No Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
6	Golden Shore/Ocean Boulevard	24.0	C	25.8	C
7	Magnolia Avenue/Queens Way/Ocean Boulevard	18.1	B	14.6	B
8	Magnolia Avenue/Broadway	20.0	B	20.2	C
9	Maine Avenue/Broadway	3.0	A	6.1	A
10	Golden Avenue/3rd Street	16.1	B	12.3	B
11	Maine Avenue/3rd Street	13.2	B	13.0	B
12	Magnolia Avenue/3rd Street	17.0	B	17.0	B
13	Magnolia Avenue/6th Street	17.2	B	29.0	C
14	Daisy Avenue/6th Street	6.5	A	5.8	A
15	Daisy Avenue/7th Street	16.0	B	13.8	B
16	Magnolia Avenue/7th Street	17.9	B	19.1	B
17	Magnolia Avenue/10th Street	13.3	B	14.0	B
18	Pacific Avenue/Anaheim Street	16.7	B	13.1	B
19	Magnolia Avenue/Anaheim Street	19.8	B	15.1	B
20	Oregon Avenue/Anaheim Street	4.2	A	14.6	B
21	Cedar Avenue/Anaheim Street	12.4	B	6.7	A
22	Pacific Avenue/7th Street	28.2	C	15.3	B
23	Pacific Avenue/6th Street	16.9	B	23.4	C
24	Pacific Avenue/3rd Street	22.9	C	12.4	B
25	Pacific Avenue/Broadway	18.4	B	18.4	B
26	Pacific Avenue/Ocean Boulevard	26.4	C	11.4	B
27	Atlantic Avenue/Anaheim Street	25.2	C	28.3	C
28	Atlantic Avenue/7th Street	21.2	C	16.4	B
29	Atlantic Avenue/6th Street	18.5	B	23.6	C
30	Atlantic Avenue/3rd Street	11.9	B	20.2	C
31	Golden Shore/Broadway	NA	NA	NA	NA
32	Shoreline Drive/Broadway	NA	NA	NA	NA
33	Shoreline Drive/7th Street	NA	NA	NA	NA
34	Golden Shore Street/Shoreline Drive	NA	NA	NA	NA
35	Seaside Connector/Shoreline Drive	NA	NA	NA	NA

Table 4-5. 2025 No Build Condition Intersection Level of Service

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS

Source: HDR, August 2019
LOS = level of service sec = seconds

Table 4-6. 2025 Build Condition Intersection Level of Service

	Intersection	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	22.2	C	12.2	B
2	Santa Fe Avenue/Anaheim Street	44.2	D	42.5	D
3	Santa Fe Avenue/9th Street	31.7	C	22.7	C
4	Pier B Street/Pico Avenue/I-710 Ramps/9th Street	>100	**F**	24.1	C
5	Pico Avenue/Ocean Boulevard Ramps	20.6	C	26.3	C
6	Golden Shore/Ocean Boulevard	22.3	C	19.9	B
7	Magnolia Avenue/Queens Way/Ocean Boulevard	47.5	D	36.4	D
8	Magnolia Avenue/Broadway	33.0	C	35.3	D
9	Maine Avenue/Broadway	25.0	C	18.9	B
10	Golden Avenue/3rd Street	9.2	A	8.7	A
11	Maine Avenue/3rd Street	17.3	B	16.2	B
12	Magnolia Avenue/3rd Street	27.8	C	20.8	C
13	Magnolia Avenue/6th Street	28.8	C	33.2	C
14	Daisy Avenue/6th Street	20.0	B	18.2	B
15	Daisy Avenue/7th Street	6.0	A	6.1	A
16	Magnolia Avenue/7th Street	46.7	D	29.7	C
17	Magnolia Avenue/10th Street	12.1	B	13.8	B
18	Pacific Avenue/Anaheim Street	24.4	C	20.9	C
19	Magnolia Avenue/Anaheim Street	18.0	B	27.1	C
20	Oregon Avenue/Anaheim Street	4.9	A	15.5	B
21	Cedar Avenue/Anaheim Street	9.5	A	16.0	B
22	Pacific Avenue/7th Street	40.7	D	35.7	D
23	Pacific Avenue/6th Street	12.0	B	19.9	B
24	Pacific Avenue/3rd Street	16.7	B	13.8	B

Table 4-6. 2025 Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
25	Pacific Avenue/Broadway	15.3	B	15.4	B
26	Pacific Avenue/Ocean Boulevard	24.1	C	15.7	B
27	Atlantic Avenue/Anaheim Street	21.5	C	23.6	C
28	Atlantic Avenue/7th Street	29.4	C	25.2	C
29	Atlantic Avenue/6th Street	10.3	B	23.7	C
30	Atlantic Avenue/3rd Street	10.2	B	15.2	B
31	Golden Shore/Broadway	14.8	B	14.1	B
32	Shoreline Drive/Broadway	10.8	B	25.7	C
33	Shoreline Drive/7th Street (Design Option A)	5.3	A	11.6	B
33	Shoreline Drive/7th Street (Design Option B)	54.8	D	57.6	E
34	Golden Shore Street/Shoreline Drive	27.7	C	18.1	B
35	Seaside Connector/Shoreline Drive	11.2	B	12.9	B

Source: HDR, August 2019
LOS = level of service sec = seconds

Table 4-7. 2035 No Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	9.2	A	12.5	B
2	Santa Fe Avenue/Anaheim Street	30.8	C	40.6	D
3	Santa Fe Avenue/9th Street	12.0	B	47.6	D
4	Pier B Street/Pico Avenue/I-710 Ramps/9th Street	>100	**F**	30.0	C
5	Pico Avenue/Ocean Boulevard Ramps	28.9	C	44.7	D
6	Golden Shore/Ocean Boulevard	24.2	C	26.2	C
7	Magnolia Avenue/Queens Way/Ocean Boulevard	18.3	B	15.1	B
8	Magnolia Avenue/Broadway	20.0	B	20.3	C
9	Maine Avenue/Broadway	3.0	A	6.1	A
10	Golden Avenue/3rd Street	16.1	B	13.4	B
11	Maine Avenue/3rd Street	13.4	B	13.2	B
12	Magnolia Avenue/3rd Street	17.2	B	17.2	B
13	Magnolia Avenue/6th Street	17.8	B	29.6	C

Table 4-7. 2035 No Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
14	Daisy Avenue/6th Street	6.5	A	5.9	A
15	Daisy Avenue/7th Street	16.2	B	14.8	B
16	Magnolia Avenue/7th Street	18.3	B	19.4	B
17	Magnolia Avenue/10th Street	13.4	B	14.0	B
18	Pacific Avenue/Anaheim Street	16.9	B	13.4	B
19	Magnolia Avenue/Anaheim Street	20.0	B	15.8	B
20	Oregon Avenue/Anaheim Street	4.3	A	15.9	B
21	Cedar Avenue/Anaheim Street	12.4	B	6.8	A
22	Pacific Avenue/7th Street	28.7	C	15.4	B
23	Pacific Avenue/6th Street	17.0	B	23.7	C
24	Pacific Avenue/3rd Street	23.0	C	12.4	B
25	Pacific Avenue/Broadway	18.5	B	18.5	B
26	Pacific Avenue/Ocean Boulevard	28.3	C	11.4	B
27	Atlantic Avenue/Anaheim Street	25.4	C	34.3	C
28	Atlantic Avenue/7th Street	21.3	C	16.8	B
29	Atlantic Avenue/6th Street	18.4	B	24.5	C
30	Atlantic Avenue/3rd Street	12.1	B	20.2	C
31	Golden Shore/Broadway	NA	NA	NA	NA
32	Shoreline Drive/Broadway	NA	NA	NA	NA
33	Shoreline Drive/7th Street	NA	NA	NA	NA
34	Golden Shore Street/Shoreline Drive	NA	NA	NA	NA
35	Seaside Connector/Shoreline Drive	NA	NA	NA	NA

Source: HDR, August 2019
LOS = level of service sec = seconds

Table 4-8. 2035 Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	22.3	C	12.5	B
2	Santa Fe Avenue/Anaheim Street	46.1	D	52.6	D
3	Santa Fe Avenue/9th Street	33.8	C	25.9	C

Table 4-8. 2035 Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
4	Pier B Street/Pico Avenue/I-710 Ramps/9th Street	>100	**<u>F</u>**	30.0	C
5	Pico Avenue/Ocean Boulevard Ramps	28.9	C	34.3	C
6	Golden Shore/Ocean Boulevard	22.7	C	21.0	C
7	Magnolia Avenue/Queens Way/Ocean Boulevard	51.4	D	38.6	D
8	Magnolia Avenue/Broadway	34.7	C	38.5	D
9	Maine Avenue/Broadway	25.4	C	21.5	C
10	Golden Avenue/3rd Street	9.2	A	8.7	A
11	Maine Avenue/3rd Street	17.6	B	16.7	B
12	Magnolia Avenue/3rd Street	28.4	C	21.1	C
13	Magnolia Avenue/6th Street	33.1	C	34.1	C
14	Daisy Avenue/6th Street	20.0	B	18.2	B
15	Daisy Avenue/7th Street	6.2	A	6.8	A
16	Magnolia Avenue/7th Street	51.7	D	31.4	C
17	Magnolia Avenue/10th Street	12.3	B	14.2	B
18	Pacific Avenue/Anaheim Street	25.1	C	21.6	C
19	Magnolia Avenue/Anaheim Street	19.6	B	33.5	C
20	Oregon Avenue/Anaheim Street	5.1	A	16.2	B
21	Cedar Avenue/Anaheim Street	9.6	A	18.3	B
22	Pacific Avenue/7th Street	41.4	D	38.7	D
23	Pacific Avenue/6th Street	13.6	B	20.3	C
24	Pacific Avenue/3rd Street	16.7	B	15.2	B
25	Pacific Avenue/Broadway	15.4	B	15.5	B
26	Pacific Avenue/Ocean Boulevard	25.6	C	16.3	B
27	Atlantic Avenue/Anaheim Street	22.2	C	26.1	C
28	Atlantic Avenue/7th Street	30.4	C	25.4	C
29	Atlantic Avenue/6th Street	10.4	B	23.7	C
30	Atlantic Avenue/3rd Street	10.4	B	15.2	B
31	Golden Shore/Broadway	15.7	C	14.5	B
32	Shoreline Drive/Broadway	16.4	B	25.7	C
33	Shoreline Drive/7th Street (Design Option A)	5.7	A	15.8	B
33	Shoreline Drive/7th Street (Design Option B)	68.8	E	64.4	E
34	Golden Shore Street/Shoreline Drive	28.8	C	18.2	B

Table 4-8. 2035 Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
35	Seaside Connector/Shoreline Drive	12.0	B	13.5	B

Source: HDR, August 2019
LOS = level of service sec = seconds

- Level 7 (cont.). Is the project suspected of resulting in higher CO concentrations than those existing within the region at the time of attainment demonstration?

NO.

CO concentrations at the intersections under study will be lower than those reported for the maximum of the intersections analyzed in the CO attainment plan because all of the following conditions, listed in Section 4.7.2 of the CO Protocol, are satisfied:

- The receptor locations at the intersections under study are at the same distance or farther from the traveled roadway than the receptor locations used in the intersections in the attainment plan. The attainment plan evaluates the CO concentrations at a distance of 10 ft from the edge of the roadways. The CO Protocol does not permit the modeling of receptor locations closer than this distance.
- The Project intersection traffic volumes and geometries are not substantially different from those included in the attainment plan. Also, the intersections under study have less total traffic and the same number of lanes or fewer than the intersections in the attainment plan.
- The assumed meteorology for the intersections under study is the same as the assumed meteorology for the intersections in the attainment plan. Both use the worst-case scenario meteorology settings in the CALINE4 and/or CAL3QHC models.
- As shown in Table 4-9, the intersection traffic lane volumes are similar to or lower for the intersections under study than those assumed for the intersection in the attainment plan. The intersections under study were selected based on their LOS and the proposed project's contribution to the total traffic volumes.
- The proposed Project would not generate new vehicular traffic trips since it would not construct new homes or businesses. Therefore, it is assumed that the Project would not change the number of vehicles operating in cold start mode.
- The percentages of heavy-duty gas trucks in the intersections under study are the same or lower than the percentages used for the intersections in the attainment plan analysis. It is assumed that traffic distribution at the intersections under study does not vary from the EMFAC standards.
- Average delay and queue length for each approach are the same or less for the intersections under study compared to those found in the intersections in the attainment plan. The predicted LOS for the intersections under study range from A to F. The LOS for the intersections in the attainment plan are not listed; however, the traffic counts and intersection geometries correspond to LOS F for three of the four intersections in the attainment plan.
- The background CO concentrations in the area of the intersections under study are 3.7 ppm for 1 hour and 2.6 ppm for 8 hours, which is lower than the background concentrations for the intersections in the attainment plan. These varied from 5.3 to 13.2 ppm for 1 hour and 3.7 to 9.9 ppm for 8 hours.

The Project is not expected to result in any concentrations exceeding the 1-hour or 8-hour CO standards. Therefore, a detailed Caline4 CO hot-spot analysis is not required.

Table 4-9. Intersection Traffic Lane Volume Comparisons

Attainment Plan Maximum Volumes	
INTERSECTION: Wilshire Blvd/Veteran Ave	
AM	**PM**
1,238	829

Condition	**INTERSECTION 1: Magnolia Avenue/ Ocean Boulevard**		**INTERSECTION 2: Magnolia Avenue/ Broadway**		**INTERSECTION 3: Pier B/Pico Avenue**		**INTERSECTION 4: Santa Fe Avenue/ Anaheim Street**	
	AM	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
2015 Existing	359	452	262	286	195	83	230	293
2025 No Build	374	483	275	291	208	106	242	311
2025 Alternative 2 and 3	478	552	525	554	208	106	329	311
2035 No Build	388	529	283	298	225	129	250	327
2035 Alternative 2 and 3	493	602	541	565	225	129	340	327

Source: HDR, August 2019.

4.2.2 PM Analysis

In November 2015, the U.S. EPA released an updated version of Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas (Guidance) for quantifying the local air quality impacts of transportation projects and comparing them to the PM NAAQS (75 FR 79370). The U.S. EPA originally released the quantitative guidance in December 2010, and released a revised version in November 2013 to reflect the approval of EMFAC 2011 and U.S. EPA's 2012 PM NAAQS final rule. The November 2015 version reflects MOVES2014 and its subsequent minor revisions such as MOVES2014a, to revise design value calculations to be more consistent with other U.S. EPA programs, and to reflect guidance implementation and experience in the field. Note that EMFAC, not MOVES, should be used for project hot-spot analysis in California. The Guidance requires a hot-spot analysis to be completed for a project of air quality concern (POAQC). The final rule in 40 CFR 93.123(b)(1) defines a POAQC as:

(i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

(ii) Projects affecting intersections that are at Level-of-Service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

(v) Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The proposed Project is within a nonattainment area for the federal $PM_{2.5}$ standards and within an attainment/maintenance area for the federal PM_{10} standards. Therefore, per 40 CFR, Part 93, analyses are required for conformity purposes. However, the EPA does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed in Section 93.123(b)(1) as an air quality concern. The Project does not qualify as a Project of Air Quality Concern (POAQC) because of the following reasons:

i) The proposed Project is not a new or expanded highway project. The proposed Project realigns Shoemaker Bridge and Shoreline Drive without increasing capacity. However, in addition to realigning Shoemaker Bridge, the Project will alter the traffic flow on local streets within the project area. As shown in Table 4-10, the proposed Project would increase the traffic volumes along multiple roads within the Project limits. While the number of diesel trucks would increase along these roadways, the future with project volumes would not exceed the 10,000 average daily truck trip criteria for a POAQC.

ii) The LOS conditions in the project vicinity with and without the proposed project are shown in Table 4-4 through Table 4-7. As shown, the realignment of Shoemaker Bridge would result in a small decrease in the level of service (LOS) at several intersections within the Project limits. However, as discussed above, the Project would not result in a significant increase in the number of diesel vehicles in the Project limits.

iii) The proposed Project does not include the construction of a new bus or rail terminal.

iv) The proposed Project does not expand an existing bus or rail terminal.

v) The proposed Project is not in or affecting locations, areas, or categories of sites that are identified in the PM2.5 and PM10 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Therefore, the proposed Project meets the CAA requirements and 40 CFR 93.116 without any explicit hot-spot analysis. The proposed Project would not create a new, or worsen an existing, PM_{10} or $PM_{2.5}$ violation.

Table 4-10. Traffic Volumes (ADT/Truck ADT/Truck Percentage)

Roadway	2025 No Build	2025 Build	2025 Percent Increase	2035 No Build	2035 Build	2035 Percent Increase
Anaheim	34,800/3,445/ 9.9	45,000/4,455/ 9.9	29.3	36,500/ 3,6149.9	46,900/4,554/ 9.9	28.5
7th Street	13,000/728/5. 6	14,100/790/ 5.6	8.5	13,300/202/ 5.6	14,600/818/ 5.6	9.8
6th Street	16,500/726/4. 4	900/40/ 4.4	-94.5	16,700/735/ 4.4	900/40/ 4.4	-94.6
3rd Street	10,600/254/ 2.4	4,900/118/ 2.4	-53.8	10,300/ 247/2.4	5,100/122/ 2.4	-50.5
Broadway	15,100/1,072/ 7.1	15,900/1,129/ 7.1	5.3	15,500/ 1,101/7.1	13,700/973/ 7.1	-16.1

Table 4-10. Traffic Volumes (ADT/Truck ADT/Truck Percentage)

Roadway	2025 No Build	2025 Build	2025 Percent Increase	2035 No Build	2035 Build	2035 Percent Increase
Ocean Boulevard	36,700/3,633/ 9.9	44,200/4,376/ 9.9	20.4	38,300/ 3,792/9.9	46,000/4,554/ 9.9	20.1
Shoemaker Bridge	77,300/2,164/ 2.8	76,000/2,128/ 2.8	-1.7	78,900/ 2,209/2.8	79,500/2,226/ 2.8	0.8

Source: HDR, August 2019

4.2.3 Mobile Source Air Toxics Analysis

FHWA released updated guidance in October 2016 (FHWA, 2016) for determining when and how to address MSAT impacts in the NEPA process for transportation projects. FHWA identified three levels of analysis:

- No analysis for exempt projects or projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; and
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Projects with no impacts generally include those that a) qualify as a categorical exclusion under 23 CFR 771.117, b) qualify as exempt under the FCAA conformity rule under 40 CFR 93.126, and c) are not exempt, but have no meaningful impacts on traffic volumes or vehicle mix.

Projects that have low potential MSAT effects are those that serve to improve highway, transit, or freight operations or movement without adding substantial new capacity or creating a facility that is likely to substantially increase emissions. The large majority of projects fall into this category.

Projects with high potential MSAT effects include those that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of Diesel Particulate Matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; and

Are proposed to be located in proximity to populated areas or, in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

MSAT emissions were estimated for Baseline, No-Build, and build alternatives for the opening year 2025 and horizon year 2035. Emissions factors for each of the MSATs were obtained for the Project limits using emission rates generated by CT-EMFAC2017 and the VMT associated with each of the Project alternatives. The modeling results for the Baseline, No-Build, and build alternatives are presented in Table 4-11 and Appendix C. The MSAT emissions listed in Table 4-11 apply to both design options and both build alternatives.

The analysis indicates that a substantial decrease in MSAT emissions can be expected between the existing (2015) and future (2025 and 2035) No Build Alternative conditions. This decrease is prevalent throughout the highest priority MSATs and the analyzed alternatives. In addition, all of the 2025 and 2035 build alternatives MSAT emissions are lower than the corresponding No Build Alternative emissions.

Table 4-11. Summary of Comparative MSAT Emissions Analysis (pounds per day)

Scenario/ Analysis Year	1,3-butadiene (lbs/day)	Acetal-dehyde (lbs/day)	Acrolein (lbs/day)	Benzene (lbs/day)	Diesel PM (lbs/day)	Ethyl-benzene (lbs/day)	Formal-dehyde (lbs/day)	Naph-thalene (lbs/day)	Polycyclic Organic Matter (lbs/day)
Baseline (Existing Conditions) 2015	0.13	0.55	0.03	0.85	1.38	0.56	1.31	0.05	0.03
No-Build 2025	0.05	0.11	0.01	0.35	0.09	0.30	0.29	0.03	0.01
Build Alternative 2 and 3 2025	0.05	0.10	0.01	0.33	0.09	0.28	0.27	0.02	0.01
No-Build 2035	0.04	0.15	0.01	0.31	0.09	0.26	0.36	0.02	0.01
Build Alternative 2 and 3 2035	0.04	0.13	0.01	0.30	0.09	0.24	0.33	0.02	0.01

4.2.4 Greenhouse Gas Emissions Analysis

The regional VMT data for the existing, No Build, and build alternatives, along with the CT-EMFAC2017 emission rates, were used to calculate the CO_2e emissions for the Existing (2015), 2025, and 2035 conditions. The results of the modeling are summarized in Table 4-12 and included in Appendix C. As shown in Table 4-12, all of the future no build and build condition emissions are lower than the existing baseline. When compared to the no build conditions, the build alternatives would result in a minimal increase in emissions. The GHG emissions listed in Table 4-12 apply to both design options and both build alternatives.

Table 4-12. Modeled Annual CO_2e Emissions and Vehicle Miles Traveled, by Alternative

Alternative	CO_2e Emissions (Metric Tons/Year)	Annual Vehicle Miles Traveled[1]
Existing/Baseline (2015)	10,662	17,785,832
Open to Traffic (2025)		
No Build	9,468	18,548,538
Build Alternative 2 and 3	9,475	19,620,768
Horizon/Design-Year (2035)		
No Build	9,010	19,502,094
Build Alternative 2 and 3	9,082	20,579,529

CO_2e = carbon dioxide equivalent
Source: CT-EMFAC2017
[1] Annual VMT values derived from Daily VMT values multiplied by 347, per ARB methodology (ARB 2008).

5. Minimization Measures

5.1 Short-Term (Construction)

The following minimization measures will be implemented during construction activities.

AQ-1 During clearing, grading, earthmoving, or excavation operations, fugitive dust emissions will be controlled by regular watering or other dust preventive measures using the following procedures, as specified in South Coast Air Quality Management District (SCAQMD) Rule 403. All material excavated or graded will be sufficiently watered to prevent excessive amounts of dust. Watering will occur at least twice daily with complete coverage, preferably in the late morning and after work is done for the day. All material transported on site or off site will be either sufficiently watered or securely covered to prevent excessive amounts of dust. The areas disturbed by clearing, grading, earthmoving, or excavation operations will be minimized so as to prevent excessive amounts of dust. These control techniques will be indicated in project specifications. Visible dust beyond the property line emanating from the project will be prevented to the maximum extent feasible.

AQ-2 Project grading plans will show the duration of construction. Ozone precursor emissions from construction equipment vehicles will be controlled by maintaining equipment engines in good condition and in proper tune per manufacturers' specifications.

AQ-3 All trucks that are to haul excavated or graded material on site will comply with State Vehicle Code Section 23114, with special attention to Sections 23114(b)(F), (e)(2), and (e)(4), as amended, regarding the prevention of such material spilling onto public streets and roads.

AQ-4 The contractor will adhere to Caltrans Standard Specifications for Construction (Section 14.9-02).

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6. Conclusions

Compliance with Caltrans Standard Specifications Sections 14.9-02 and the SCAQMD Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions.

The proposed Project would not generate new vehicular traffic trips since it would not construct new homes or businesses. However, there is a possibility that some traffic currently utilizing other routes would use the new facilities, thus resulting in increased VMT within the Project limits. Alternatives 2 and 3 would result in minimal increase in criteria pollutant and greenhouse gas emissions in the Project limits when compared to the No Build Alternative conditions.

The proposed Project is required to include an analysis of Mobile Source Air Toxics (MSAT) as part of the National Environmental Policy Act (NEPA) process for highways. Alternatives 2 and 3 would result in minimal decreases in MSAT emissions in the Project limits when compared to the No Build Alternative conditions.

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Appendix A – RTP and FTIP Project Listings

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TABLE 2 Financially-Constrained RTP/SCS Projects - Continued

System	Lead Agency	RTP ID	Route #	Route Name	From	To	Description	Completion Year	Project Cost ($1,000's)
County: Los Angeles									
LOCAL HIGHWAY	LONG BEACH	LA0C8129	0	VARIOUS	VARIES	VARIES	PORTS OF LONG BEACH AND LOS ANGELES ATMS/ATIS PROJECT TO IMPROVE TRAFFIC OPERATIONS ON THE: I-710, I-110, SR47/103.	2014	$11,410
LOCAL HIGHWAY	LONG BEACH	LA0G830	0	N/A	N/A	N/A	I-710 IMPROVEMENTS/SHOEMAKER BRIDGE - DOWNTOWN EXITS. THE PROJECT MAKES BICYCLE, PEDESTRIAN, AND STREETSCAPE IMPROVEMENTS ON MAJOR THOROUGHFARES.	2020	$85,000
LOCAL HIGHWAY	LONG BEACH	LAE0701	0	SHOEMAKER BRIDGE	710 FREEWAY	LONG BEACH BLVD.	DEVELOP AND IMPLEMENT TRAFFIC CALMING MEASURES FOR TRAFFIC EXITING THE I-710 INTO LONG BEACH	2015	$1,920
LOCAL HIGHWAY	LONG BEACH	LAE1296	0	ALL STREETS	CITY LIMIT	CITY LIMIT	LONG BEACH INTELLIGENT TRANSPORTATION SYSTEM	2015	$2,880
LOCAL HIGHWAY	LONG BEACH	LAE3793	0	CALIFORNIA AVE,	WILLOW AVE.	SPRING ST.	CALIFORNIA AVE WIDENING: FROM WILLOW AVE AND SPRING ST WIDEN CALIFORNIA AVE TO SECONDARY MODIFIED HIGHWAY STREET STANDARDS (NON-CAPACITY).	2015	$1,200
LOCAL HIGHWAY	LONG BEACH	1NL04-LAF3503	0	SOUTH WATERFRONT BIKE PATH	QUEENSWAY BRIDGE	QUEEN MARY	LONG BEACH SOUTH WATERFRONT BIKE PATH GAP CLOSURE. THE SOUTH WATERFRONT BIKE PATH CONNECTION PROPOSES A MAIN GAP-CLOSURE TO LONG BEACH'S PRIMARY BIKEWAY NETWORK. THIS CLASS I PATH INCLUDES A MID-BLOCK CROSSING AND WAYFINDING SIGNS.THE PROPOSED SOUTH WATERFRONT BIKE PATH STARTS AT THE NORTH END OF THE QUEENSWAY BRIDGE AT THE EXISTING TERMINUS OF THE CLASS I PATH. BIKE PATH DISTANCE .50 MILES.	2016	$885
LOCAL HIGHWAY	LONG BEACH	1NL04-LAF3518	0	6TH STREET	JUNIPERO	BELLFLOWER	DAISY CORRIDOR AND 6TH STREET BIKE BOULEVARD. CONSTRUCT TWO (2) BICYCLE BOULEVARDS ALONG TWO CORRIDORS KNOWN AS THE DAISY CORRIDOR AND 6TH STREET IN LONG BEACH. THE PROPOSED BIKE BOULEVARD ALONG THE DAISY CORRIDOR IS A NORTH-SOUTH ROUTE BETWEEN BROADWAY.	2016	$2,655

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2019 Federal Transportation Improvement Program

Los Angeles County
Local Highway
Including Amendments 1-8
(In $000`s)

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	Signage Begin	Signage End	System	Conformity Category	Amendment
LA0G830	Los Angeles	SCAB		LA0G830	CAX77						L	NON-EXEMPT	1
Description:							PTC	330,000			Agency	LONG BEACH	

I-710 Improvements/Shoemaker Bridge Replacement: Replace the existing Shoemaker bridge with a new bridge. The new bridge will be reduced to have two mixed-flow lanes in the NB and in the SB directions to tie the flow into I-710. The new bridge will also include pedestrian and bicycle access. Additionally, bicycle, pedestrian, and street enhancements will be provided on adjacent thoroughfares.

Fund	ENG	R/W	CON	Total	Prior	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Total
CITY FUNDS	2,664			2,664	2,664							2,664
MEASURE R 20H - HIGHWAY CAPITAL	11,000			11,000	5,500	5,500						11,000
STIP Advance Cons	14,000			14,000		14,000						14,000
LA0G830 Total	27,664			27,664	8,164	19,500						27,664

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	Signage Begin	Signage End	System	Conformity Category	Amendment
LAE0701	Los Angeles	SCAB		LAE0701	NCR30						L	EXEMPT - 93.126	0
Description:							PTC	1,920			Agency	LONG BEACH	

DEVELOP AND IMPLEMENT TRAFFIC CALMING MEASURES FOR TRAFFIC EXITING THE I-710 INTO LONG BEACH

Fund	ENG	R/W	CON	Total	Prior	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Total
DEMO-SAFETEA-LU			1,600	1,600		1,600						1,600
AGENCY	64		256	320	64	256						320
LAE0701 Total	64		1,856	1,920	64	1,856						1,920

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	Signage Begin	Signage End	System	Conformity Category	Amendment
LAF3615	Los Angeles	SCAB		1NL04	NCN27						L	EXEMPT - 93.126	0
Description:							PTC	2,521			Agency	LONG BEACH	

Long Beach Blvd. Pedestrian Improvement Project. Project provides pedestrian-oriented improvements to Long Beach Boulevard including pedestrian lighting, street trees, and crosswalk treatments.

Fund	ENG	R/W	CON	Total	Prior	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Total
STP LOCAL - REGIONAL			1,722	1,722		1,722						1,722
CITY FUNDS	200		599	799		799						799
LAF3615 Total	200		2,321	2,521		2,521						2,521

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	Signage Begin	Signage End	System	Conformity Category	Amendment
LAF5808	Los Angeles	SCAB		1O1009	NCR27						L	EXEMPT - 93.126	0
Description:							PTC	643			Agency	LONG BEACH	

Atlantic Avenue Streetscape Enhancements. This project is located in Long Beach along Atlantic Av between Market St and South St. It will install streetscape improvements, shade trees, pedestrian lighting and decorative pavement features. Funds are requested for design, construction and installation costs. The original scope of this project was reduced by eliminating the section between South St and Artesia Bl.

Fund	ENG	R/W	CON	Total	Prior	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	Total
CMAQ			322	322		322						322
CITY FUNDS	50		175	225		225						225
STATE CASH - RIP PRIOR	96			96	96							96
LAF5808 Total	146		497	643	96	547						643

Appendix B – Construction Emission Calculations

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Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Shoemaker Bridge - Alt 2

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.29	12.09	19.89	20.80	0.80	20.00	4.73	0.57	4.16	0.07	7,000.14	0.60	0.78	7,246.39
Grading/Excavation	8.46	68.54	96.72	23.94	3.94	20.00	7.57	3.41	4.16	0.21	20,323.10	4.71	0.91	20,711.04
Drainage/Utilities/Sub-Grade	5.69	49.05	64.57	22.61	2.61	20.00	6.41	2.25	4.16	0.15	15,263.48	2.74	0.84	15,582.23
Paving	1.20	15.18	18.28	0.82	0.82	0.00	0.58	0.58	0.00	0.07	6,931.33	0.58	0.76	7,173.12
Maximum (pounds/day)	8.46	68.54	96.72	23.94	3.94	20.00	7.57	3.41	4.16	0.21	20,323.10	4.71	0.91	20,711.04
Total (tons/construction project)	1.54	12.95	17.85	5.22	0.73	4.49	1.56	0.62	0.93	0.04	4,082.54	0.82	0.22	4,169.94

Notes:		
	Project Start Year ->	2022
	Project Length (months) ->	24
	Total Project Area (acres) ->	40
	Maximum Area Disturbed/Day (acres) ->	2
	Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	400	400	600	600	360	40
Grading/Excavation	400	400	600	600	1,280	40
Drainage/Utilities/Sub-Grade	400	400	600	600	880	40
Paving	400	400	600	600	480	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Shoemaker Bridge - Alt 2

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.03	0.32	0.53	0.55	0.02	0.53	0.12	0.02	0.11	0.00	184.80	0.02	0.02	173.55
Grading/Excavation	1.01	8.14	11.49	2.84	0.47	2.38	0.90	0.41	0.49	0.02	2,414.38	0.56	0.11	2,232.12
Drainage/Utilities/Sub-Grade	0.45	3.88	5.11	1.79	0.21	1.58	0.51	0.18	0.33	0.01	1,208.87	0.22	0.07	1,119.58
Paving	0.05	0.60	0.72	0.03	0.03	0.00	0.02	0.02	0.00	0.00	274.48	0.02	0.03	257.69
Maximum (tons/phase)	1.01	8.14	11.49	2.84	0.47	2.38	0.90	0.41	0.49	0.02	2414.38	0.56	0.11	2,232.12
Total (tons/construction project)	1.54	12.95	17.85	5.22	0.73	4.49	1.56	0.62	0.93	0.04	4082.54	0.82	0.22	3,782.95

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Shoemaker Bridge - Alt 3

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.31	12.26	21.17	25.84	0.84	25.00	5.79	0.59	5.20	0.08	7,694.03	0.60	0.89	7,972.81
Grading/Excavation	8.46	68.54	96.72	28.94	3.94	25.00	8.61	3.41	5.20	0.21	20,323.10	4.71	0.91	20,711.04
Drainage/Utilities/Sub-Grade	5.69	49.05	64.57	27.61	2.61	25.00	7.45	2.25	5.20	0.15	15,263.48	2.74	0.84	15,582.23
Paving	1.20	15.18	18.28	0.82	0.82	0.00	0.58	0.58	0.00	0.07	6,931.33	0.58	0.76	7,173.12
Maximum (pounds/day)	8.46	68.54	96.72	28.94	3.94	25.00	8.61	3.41	5.20	0.21	20,323.10	4.71	0.91	20,711.04
Total (tons/construction project)	1.54	12.95	17.89	6.34	0.73	5.61	1.79	0.62	1.17	0.04	4,100.86	0.82	0.23	4,189.12

Notes:
- Project Start Year -> 2022
- Project Length (months) -> 24
- Total Project Area (acres) -> 44
- Maximum Area Disturbed/Day (acres) -> 3
- Water Truck Used? -> Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	450	450	690	690	360	40
Grading/Excavation	400	400	600	600	1,280	40
Drainage/Utilities/Sub-Grade	400	400	600	600	880	40
Paving	400	400	600	600	480	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Shoemaker Bridge - Alt 3

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.03	0.32	0.56	0.68	0.02	0.66	0.15	0.02	0.14	0.00	203.12	0.02	0.02	190.95
Grading/Excavation	1.01	8.14	11.49	3.44	0.47	2.97	1.02	0.41	0.62	0.02	2,414.38	0.56	0.11	2,232.12
Drainage/Utilities/Sub-Grade	0.45	3.88	5.11	2.19	0.21	1.98	0.59	0.18	0.41	0.01	1,208.87	0.22	0.07	1,119.58
Paving	0.05	0.60	0.72	0.03	0.03	0.00	0.02	0.02	0.00	0.00	274.48	0.02	0.03	257.69
Maximum (tons/phase)	1.01	8.14	11.49	3.44	0.47	2.97	1.02	0.41	0.62	0.02	2414.38	0.56	0.11	2,232.12
Total (tons/construction project)	1.54	12.95	17.89	6.34	0.73	5.61	1.79	0.62	1.17	0.04	4100.86	0.82	0.23	3,800.35

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Appendix C – Regional Emission Summary

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Regional Emission Summary

	g/day					lb/day				
Polutant	**Existing**	**2025 NB**	**2025 B**	**2035 NB**	**2035 B**	**Existing**	**2025 NB**	**2025 B**	**2035 NB**	**2035 B**
PM2.5	2,210.20	1,724.30	1,801.40	1,770.20	1,855.20	4.87	3.80	3.97	3.90	4.09
PM10	6,029.70	5,859.20	6,173.40	6,230.70	6,561.00	13.29	12.92	13.61	13.74	14.46
NOx	34,131.90	18,412.70	18,139.90	21,220.90	20,849.70	75.25	40.59	39.99	46.78	45.96
CO	149,521.90	62,338.90	63,502.70	52,747.10	53,718.70	329.63	137.43	140.00	116.29	118.43
HC	20,006.10	10,118.10	9,554.10	8,912.60	8,538.80	44.11	22.31	21.06	19.65	18.82
TOG	22,220.80	10,918.80	10,298.50	9,668.30	9,250.40	48.99	24.07	22.70	21.31	20.39
ROG	18,378.70	9,062.10	8,490.90	7,842.80	7,444.80	40.52	19.98	18.72	17.29	16.41
1,3-Butadiene	60.7	22.00	20.90	20.10	19.50	0.13	0.05	0.05	0.04	0.04
Acetaldehyde	250.9	48.60	43.80	66.20	61.10	0.55	0.11	0.10	0.15	0.13
Acrolein	13	4.9	4.6	4.3	4.2	0.03	0.01	0.01	0.01	0.01
Benzene	386.1	159.4	150.2	142.7	136.4	0.85	0.35	0.33	0.31	0.30
Diesel PM	624	42	41.7	38.6	39	1.38	0.09	0.09	0.09	0.09
Ethylbenzene	256.2	137.3	128.9	116.1	110.4	0.56	0.30	0.28	0.26	0.24
Formaldehyde	594.4	131.9	120.6	162.1	151.1	1.31	0.29	0.27	0.36	0.33
Naphthalene	21.5	11.6	10.9	10.4	9.9	0.05	0.03	0.02	0.02	0.02
POM	14.8	4	3.8	3.5	3.4	0.03	0.01	0.01	0.01	0.01
DEOG	2,864.00	442.4	386.3	685.1	622.3	6.31	0.98	0.85	1.51	1.37
CO2	30,641,287.90	27,232,650.20	27,253,042.40	25,912,823.20	26,122,203.70	67551.34	60036.71	60081.66	57127.04	57588.63
N2O	1,565.90	1201	1208.3	1216.6	1223.4	3.45	2.65	2.66	2.68	2.70
CH4	3,572.00	2242.8	2168.2	2214.6	2170.8	7.87	4.94	4.78	4.88	4.79
BC	249.9	54	52	39	38	0.55	0.12	0.11	0.09	0.08
HFC	109.3	82.9	77.4	28.3	26.7	0.24	0.18	0.17	0.06	0.06
					CO2e (MT)	10662.20	9468.35	9474.80	9010.13	9082.42

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Appendix D – CO Hot-spot Analysis

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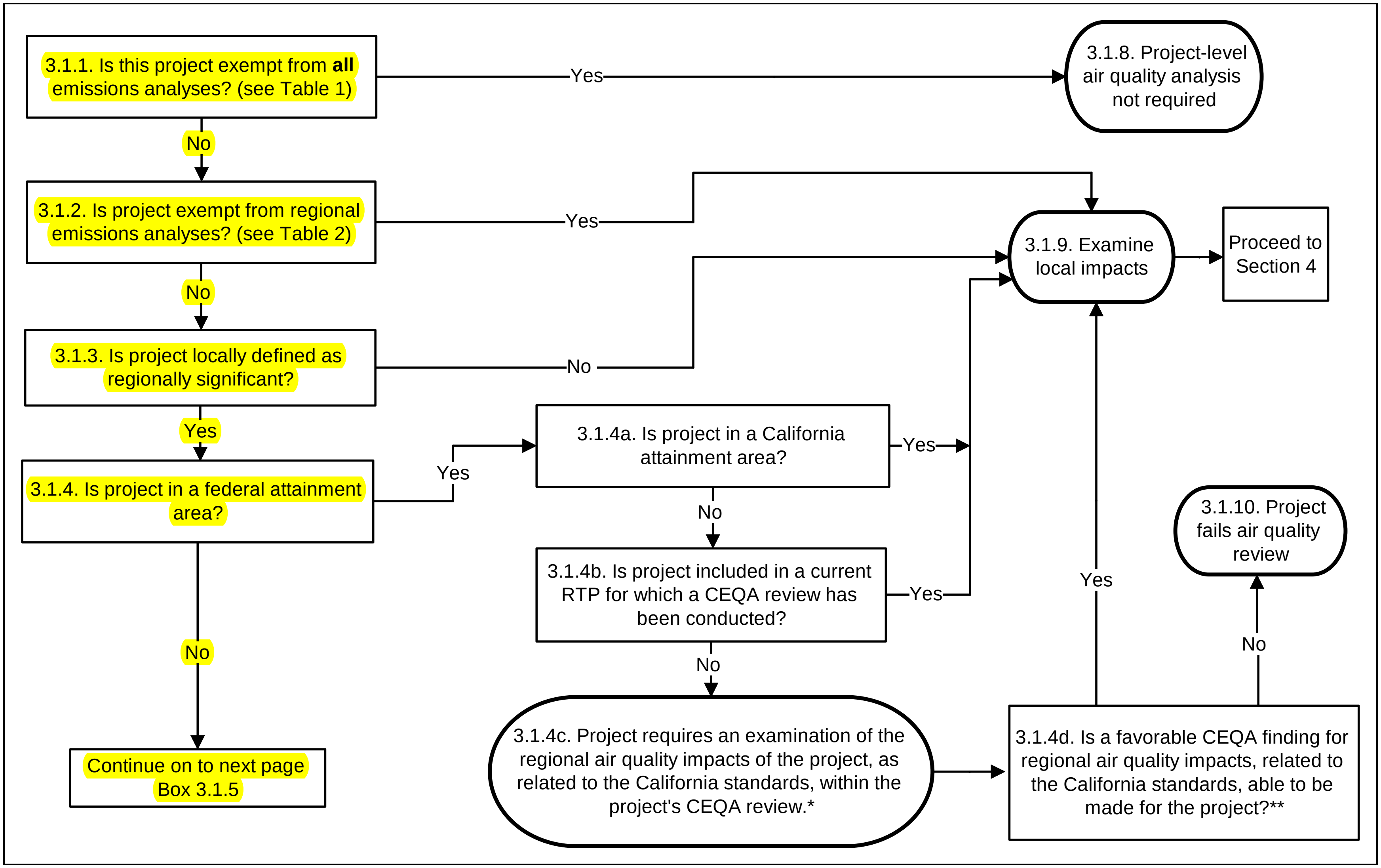

Figure 1. Requirements for New Projects

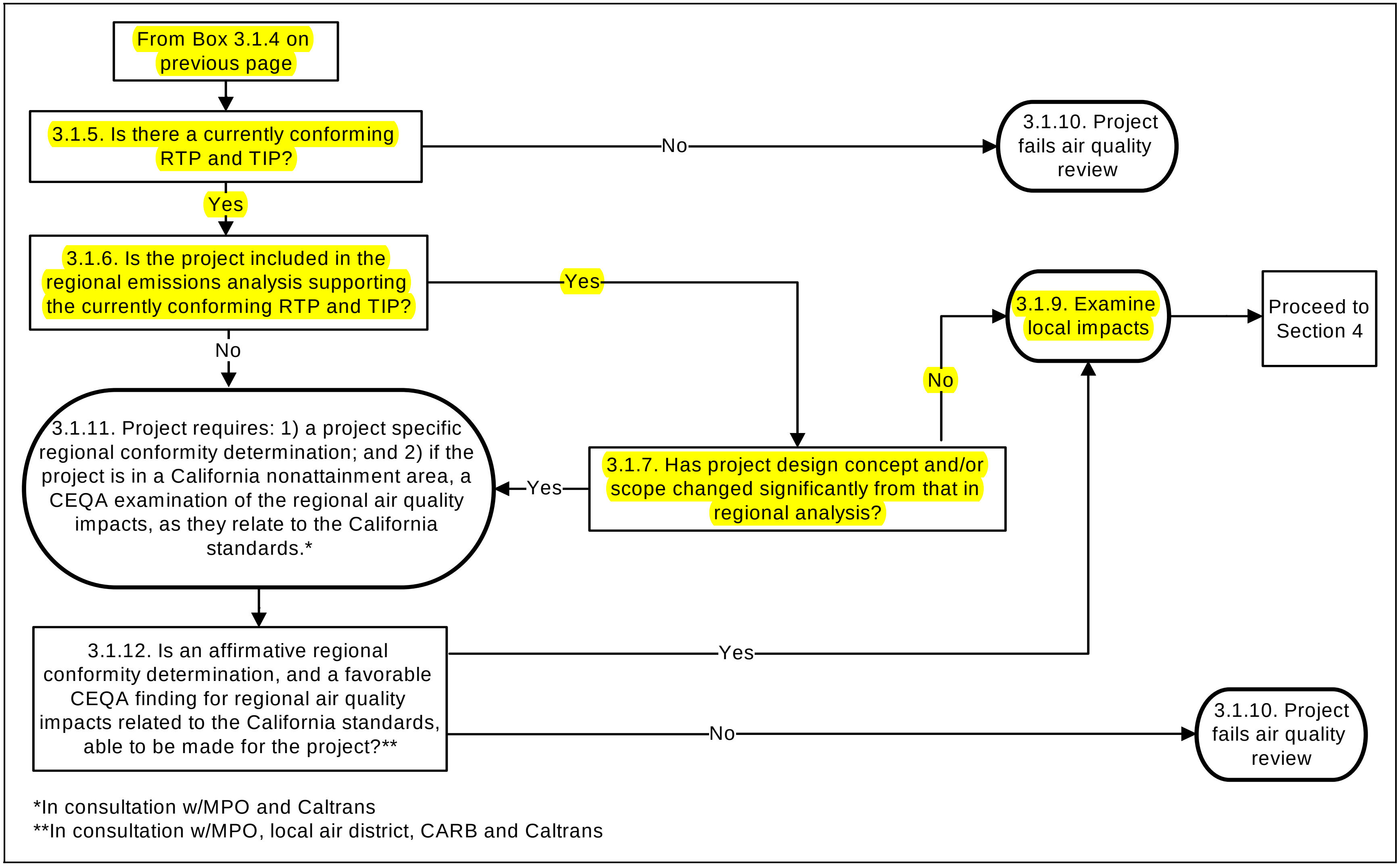

Figure 1 (cont.). Requirements for New Projects

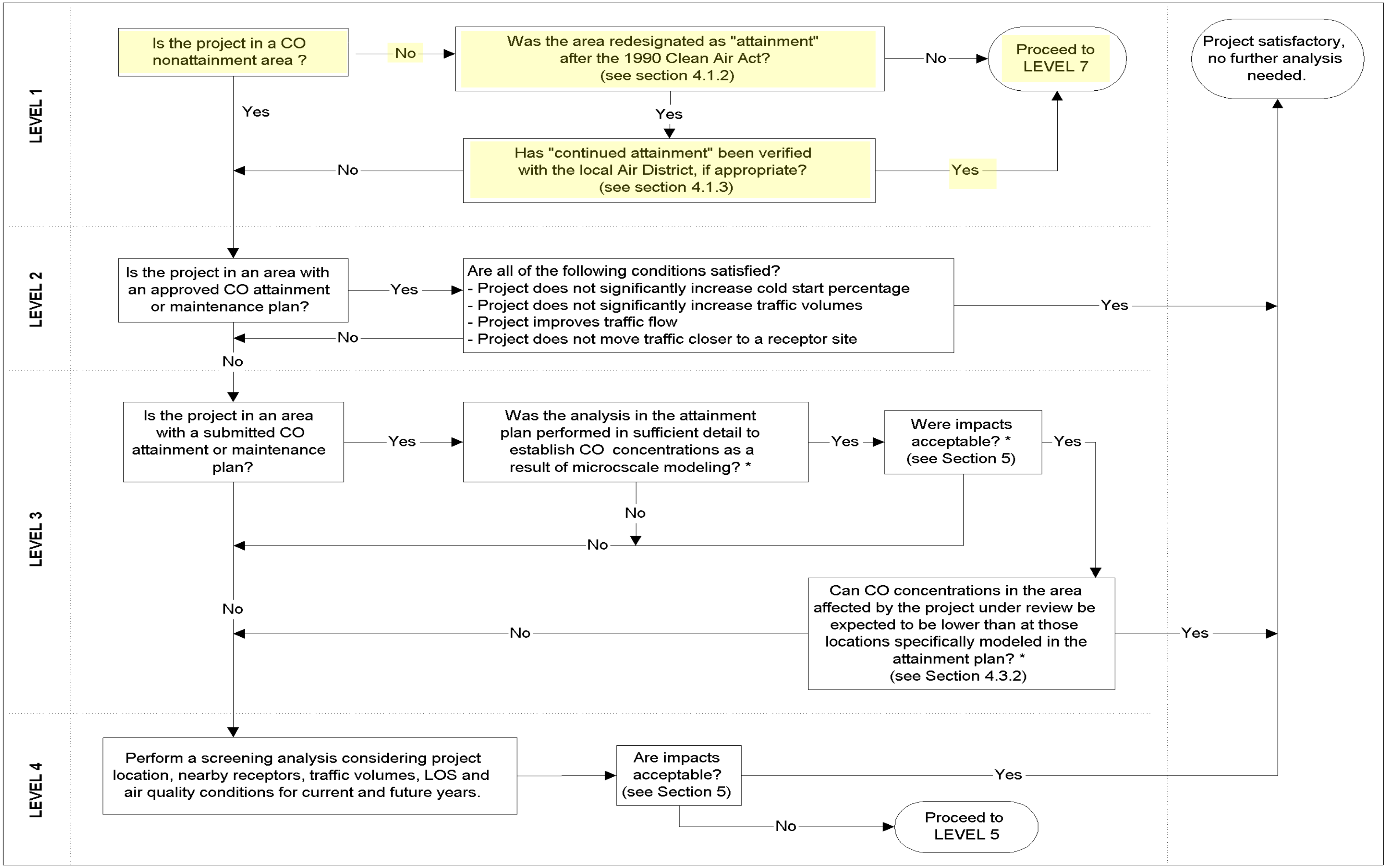

Figure 3. Local CO Analysis

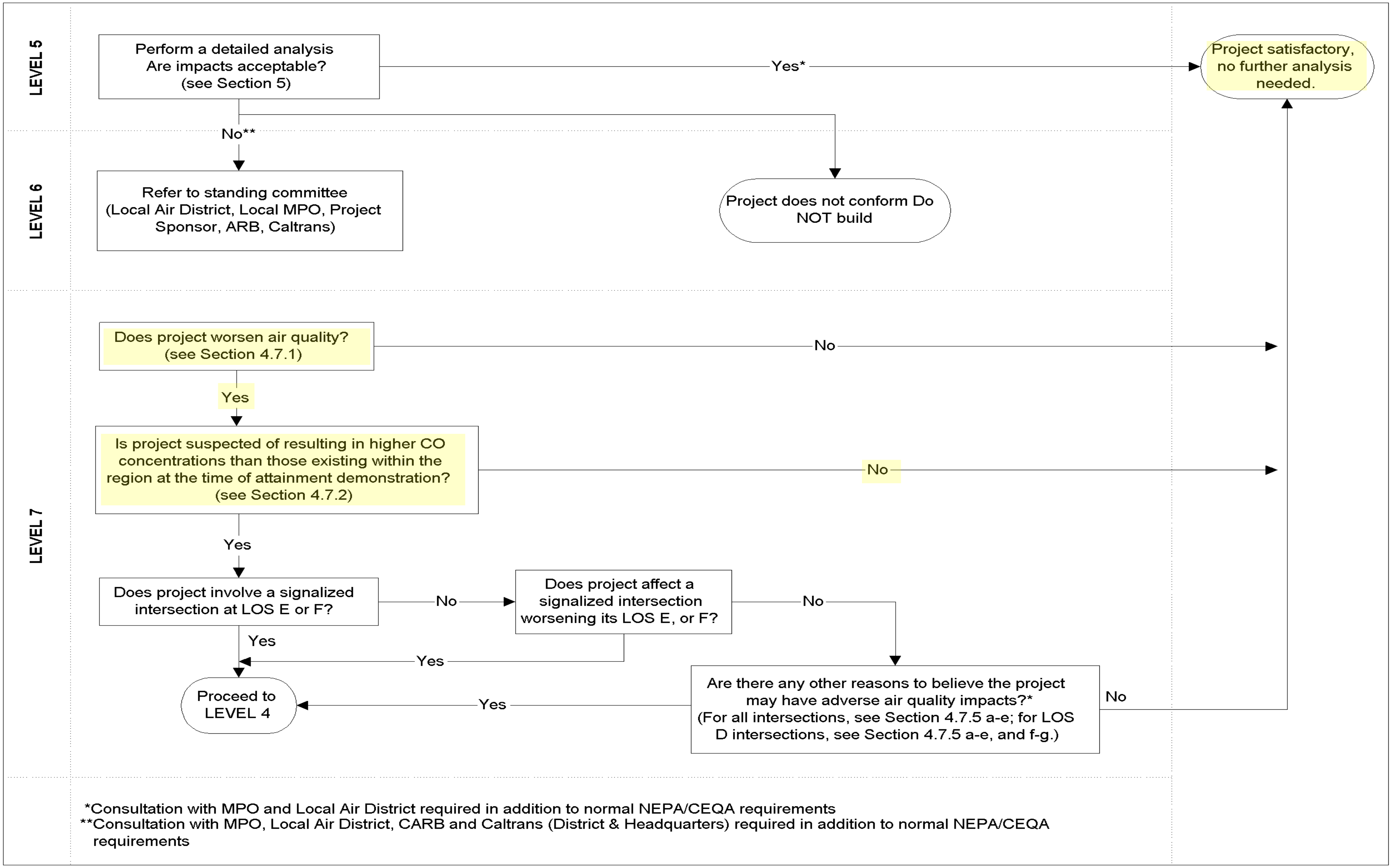

Figure 3 (cont.). Local CO Analysis

Appendix E – PM Hot-spot Analysis

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July 2018

PM Hot Spot Analysis Project Lists

Review of PM Hot Spot Interagency Review Forms

July, 2018	Determination
LA0G830 July 2018	Not a POAQC - Hot Spot Analysis Not Required

RTIP ID# *(required)* LA0G830

TCWG Consideration Date July 24, 2018

Project Description *(clearly describe project)*
The City of Long Beach (City), in cooperation with California Department of Transportation (Caltrans), is proposing to replace the Shoemaker Bridge (West Shoreline Drive) in the City of Long Beach, California. The Shoemaker Bridge Replacement Project (Project) is an Early Action Project (EAP) of the Interstate 710 (I-710) Corridor Project and is located at the southern end of State Route 710 (SR-710) in the City of Long Beach, bisected by the Los Angeles River (LA River). The City is the lead agency under the California Environmental Quality Act (CEQA) and Caltrans is the lead agency under the National Environmental Policy Act (NEPA).

Alternative 1 (No Build)
Under the Alternative 1 (No Build), the proposed Project improvements would not be implemented; therefore, no construction activities would occur. The existing structure and highway facility would not meet current structural and geometric design standards and, thus, safety and connectivity would not be improved within the Project area.

Alternative 2
Build Alternative 2 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. This alternative would evaluate the roundabout design option (Design Option A) and the "Y" interchange design option (Design Option B) at the east end of the proposed bridge. The new bridge would consist of multiple structures, with numerous spans that cross the LA River, the northbound (NB) lanes of SR-710, and the LA River and Rio Hondo (LARIO) Trail. The new ramps would be located approximately 500 feet (measured from centerline) south of the existing Shoemaker Bridge. A portion of the existing bridge would be repurposed into a nonmotorized recreational public space maintained by the City. The bottom of the new river-spanning structures would exceed the existing 43 foot mean high water level (MHWL).

The deck of the new bridge would accommodate two through ramp lanes in each direction, shoulders, barriers, and a bicycle and pedestrian path on the south side of the bridge. Under Design Option B, the bridge would also include two turn lanes in the southbound (SB) direction. On the west side of the river, the ramps would connect on the left side of the freeway, at approximately the same merge and diverge existing ramp locations. On the east side of the river, a roundabout or controlled intersection would be provided at the ramp termini. The ramp termini would be located at or near the eastern abutment of the river-spanning section of the new Shoemaker Bridge.

In addition to replacing the Shoemaker Bridge, Alternative 2 will include modifications to nine local streets, including West Shoreline Drive, Ocean Boulevard, Golden Shore/Golden Avenue, West Broadway, 3rd Street, 6th Street, 7th Street, 9th Street, 10th Street, and Anaheim Street.

West Shoreline Drive. At the eastern end of the new bridge, a new roundabout or controlled intersection would be constructed to allow West Shoreline Drive and 7th Street ingress and egress. The existing NB and SB West Shoreline Drive is currently separated by Cesar E. Chavez Park and the Southern California Edison (SCE) Seabright Substation. The NB roadbed would be removed and integrated into Cesar E. Chavez Park. The existing SB roadbed, located adjacent to the LA River, would be reconfigured and widened to allow two-way traffic and access from the newly configured West Shoreline Drive to the substation. A new controlled intersection would be introduced at West Shoreline Drive and the termini of West Broadway. The loop ramp connector between NB West Shoreline Drive and Ocean Boulevard would be removed and converted into park space. The existing Golden Shore Bridge that crosses over West Shoreline Drive would be removed, and a new controlled intersection would be created at West Shoreline Drive and Golden Shore.

3rd Street. The existing 3rd Street alignment curves to the north through Cesar E. Chavez Park and merges onto NB West Shoreline Drive. The proposed realignment of 3rd Street would be revised to end at Golden Avenue, and the 3rd Street section that curves into the park would be removed and converted into park space. The street, which currently carries one-way traffic in the westbound (WB) direction, would be reconfigured to allow for two-way traffic between Golden and Magnolia Avenues.

Ocean Boulevard. The loop ramp connecting NB West Shoreline Drive and Ocean Boulevard would be removed and converted into park space. The Ocean Boulevard and Golden Shore intersection would be modified to accommodate two-way traffic on Golden Shore between Ocean Boulevard and West Broadway.

Golden Shore/Golden Avenue. Golden Shore is currently a two-way street from Queensway Drive to Ocean Boulevard. North of Ocean Boulevard, Golden Shore becomes Golden Avenue and the roadway splits, providing connections to and from NB West Shoreline Drive and West Broadway. The proposed Project would eliminate the existing Golden Shore Bridge over West Shoreline Drive and reconstruct the street at a lower elevation to create a new controlled intersection at West Shoreline Drive. The connector ramps from SB West Shoreline Drive to Golden Shore and from NB Golden Shore to eastbound (EB) West Shoreline Drive would be removed. The intersection of Golden Shore and West Seaside Way would be eliminated. The proposed Project would also eliminate the ramp connection from NB West Shoreline Drive and realign Golden Avenue to provide connections to and from West Broadway. Access from West Broadway to Golden Avenue would be limited to right-in and right-out only.

West Seaside Way. West Seaside Way between Golden Shore and Queens Way would be reconfigured, and the controlled intersection at Golden Shore would be eliminated. The street would continue to provide access to parking structures and local office buildings. A new intersection allowing access between West Shoreline Drive and West Seaside Way would be constructed approximately 675 feet east of Golden Shore.

West Broadway. The existing terminus of West Broadway is uncontrolled and diverges from the left side of SB West Shoreline Drive. The portion of West Broadway from West Shoreline Drive to Maine Avenue, including its grade separation structure, would be removed. The connection would be replaced by a controlled intersection at West Shoreline Drive and West Broadway. West Broadway would be configured for two-way traffic from West Shoreline Drive to Magnolia Avenue. Traveling EB, a right turn pocket would be provided on West Broadway at the approach to Magnolia Avenue.

6th Street. The existing terminus of 6th Street is uncontrolled and diverges from the right side of SB West Shoreline Drive, on the Shoemaker Bridge. The existing grade separated structure would be removed. The portion of 6th Street from SB West Shoreline Drive to Golden Avenue would be reconfigured to provide access to the warehouse properties located at Topaz Court and Golden Avenue and would not provide connectivity to West Shoreline Drive. 6th Street would be converted from one-way WB to two-way traffic flow between Golden Avenue and Atlantic Avenue. Additionally, a new bicycle path would extend from the new 6th Street terminus, providing connections to the LARIO Trail and the proposed Shoemaker Bridge. A new roadway would also extend from the existing 6th Street terminus to provide access to Drake Park.

7th Street. The existing terminus of 7th Street is uncontrolled and merges on the right side of NB West Shoreline Drive, on the Shoemaker Bridge. The portion of 7th Street from Golden Avenue to West Shoreline Drive, including its grade separation structure, would be removed and reconstructed. The connection would be replaced by a roundabout or Y intersection at West Shoreline Drive. 7th Street would be reconfigured from one-way EB to two-way traffic between West Shoreline Drive and Atlantic Avenue and would feature two lanes in each direction.

9th Street. The existing terminus of 9th Street is uncontrolled and merges on the right side of SB West Shoreline Drive, on the Shoemaker Bridge. The portion of 9th Street from Fashion Avenue to West Shoreline Drive, including its grade separation structure, would be removed. The connection would not be replaced. The Project would also evaluate traffic calming and signal improvements on 9th Street between Caspian Avenue and Anaheim Street.

10th Street. The existing terminus of 10th Street is uncontrolled and diverges from the right side of NB West Shoreline Drive, on the Shoemaker Bridge. The portion of 10th Street from West Shoreline Drive to Fashion Avenue, including its grade separation structure, would be removed. The connection would not be replaced.

Anaheim Street. The Project would evaluate traffic calming and signal improvements on Anaheim Street between West 9th Street and Atlantic Avenue.

Alternative 3

Similar to Alternative 2, Alternative 3 includes the replacement of the ramp structures that connect to the downtown Long Beach roadway system. It would also evaluate both Design Options A and B at the east end of the proposed bridge. In addition, similar to Alternative 2, the bridge under Alternative 3 with Design Option B would include two turn lanes in the SB direction. On the west side of the river, the ramps would connect on the left side of the freeway, at the same merge and diverge locations of the existing ramps. On the east side of the river, a roundabout (Design Option A) or a controlled intersection (Design Option B) would be provided at the ramp termini. The ramp termini are located at or near the eastern abutment of the river-spanning section of the new Shoemaker Bridge. Local street improvements described under Alternative 2 would also apply under Alternative 3. The difference between Alternatives 2 and 3 is the removal of the existing Shoemaker Bridge. The same ramp/connectors proposed under Alternative 2 would apply under Alternative 3. The traffic data included in Tables 1-5 and 1-6 for Alternative 2 also apply to Alternative 3.

Type of Project *(use Table 1 on instruction sheet)*
Bridge replacement, local street modification

County Los Angeles	**Narrative Location/Route & Postmiles:** I-710 PM 6.0/6.4 **Caltrans Projects – EA#** 27300		
Lead Agency: Caltrans/City of Long Beach			
Contact Person Andrew Yoon	**Phone#** 213.897.6117	**Fax#** 213.897.1634	**Email** andrew_yoon@dot.ca.gov

Hot Spot Pollutant of Concern *(check one or both)* **PM2.5 x** **PM10 x**

Federal Action for which Project-Level PM Conformity is Needed *(check appropriate box)*

	Categorical Exclusion (NEPA)	x	**EA or Draft EIS**	**FONSI or Final EIS**	**PS&E or Construction**	**Other**

Scheduled Date of Federal Action: 2019

NEPA Assignment – Project Type *(check appropriate box)*

Exempt		**Section 326 –Categorical Exemption**	x	**Section 327 – Non-Categorical Exemption**

Current Programming Dates *(as appropriate)*

	PE/Environmental	ENG	ROW	CON
Start	2016	2019	2021	2022
End	2019	2021	2022	2024

Project Purpose and Need (Summary): *(attach additional sheets as necessary)*
Purpose

The purpose of the proposed Project is to:

- Provide a structure and highway facility that meets current structural and geometric design standards
- Provide a facility that is compatible with planned freeway improvements and downtown development projects
- Improve connectivity from the downtown area to surrounding communities and adjacent recreational use areas
- Improve safety and operations for all modes of transportation

Need

The existing Shoemaker Bridge has structural deficiencies and a high accident rate due to nonstandard geometric features that cannot be upgraded to current State highway standards. The Project is needed to improve safety, operations, and connectivity between downtown Long Beach and regional transportation facilities. It is also needed to accommodate planned improvements in the area, such as the City's planned expansion of Cesar E. Chavez and Drake Parks.

If the existing Shoemaker Bridge were to continue to be used for vehicular traffic, the nonstandard features would remain, and the existing bridge alignment would preclude planned improvements by other locally and regionally significant projects, specifically, the I-710 Corridor Project. Implementation of the proposed Project would provide consistency with the improvements proposed as part of the I-710 Corridor Project and the Mobility Element of the City of Long Beach General Plan (City of Long Beach 2013), in addition to meeting the needs for traffic safety and accommodating the projected increase in demand for the City's nonmotorized transportation facilities

Surrounding Land Use/Traffic Generators *(especially effect on diesel traffic)*
The existing land uses within the project area include schools, residences, public parks, and commercial structures.

Opening Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility
See attached analysis

RTP Horizon Year / Design Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility
See attached analysis

Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT
See attached analysis

RTP Horizon Year / Design Year: If facility is an interchange (s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT
See attached analysis

Describe potential traffic redistribution effects of congestion relief *(impact on other facilities)*
See attached analysis

Comments/Explanation/Details *(attach additional sheets as necessary)*
See attached analysis

$PM_{2.5}$/PM_{10} Hot-Spot Analysis

The Shoemaker Bridge project is located within a nonattainment area for federal $PM_{2.5}$ standards and within an attainment/maintenance area for the federal PM_{10} standards. Therefore, per 40 CFR Part 93 hot-spot analyses are required for conformity purposes. However, the EPA does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed in section 93.123(b)(1) as an air quality concern.

According to 40 CFR Part 93.123(b)(1), the following are Projects of Air Quality Concern (POAQC) :

i. New highway projects have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;
ii. Projects affecting intersections that are at a Level of Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level of Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
v. Projects in or affecting locations, areas or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The project does not qualify as a Project of Air Quality Concern (POAQC) because of the following reasons:

i) The proposed Project is not a new or expanded highway project. The proposed Project realigns Shoemaker Bridge and Shoreline Drive without increasing capacity. However, in addition to realigning Shoemaker Bridge, the Project will alter the traffic flow on local streets within the project area. As shown in Table A, the proposed Project would increase the traffic volumes along multiple roads within the Project limits. While the number of diesel trucks would increase along these roadways, the future with project volumes would not exceed the 10,000 average daily truck trip criteria for a POAQC.

ii) The LOS conditions in the project vicinity with and without the proposed project are shown in Tables B through E. As shown, the realignment of Shoemaker Bridge would result in a small decrease in the level of service (LOS) at several intersections within the Project limits. However, as discussed above, the Project would not result in a significant increase in the number of diesel vehicles in the Project limits.

iii) The proposed build alternatives do not include the construction of a new bus or rail terminal.

iv) The proposed build alternatives do not expand an existing bus or rail terminal.

v) The proposed build alternatives are not in or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Therefore, the proposed Project meets the CAA requirements and 40 CFR 93.116 without any explicit hot-spot analysis. The proposed Project would not create a new, or worsen an existing, PM10 or PM2.5 violation.

Table A. Traffic Volumes (ADT/Truck ADT/Truck Percentage)

Roadway	2025 No Build	2025 Build	2025 Percent Increase	2035 No Build	2035 Build	2035 Percent Increase
Anaheim	34,800/3,445/9.9	45,000/4,455/9.9	29.3	36,500/3,614/9.9	46,900/4,554/9.9	28.5
7th Street	13,000/728/5.6	14,100/790/5.6	8.5	13,300/202/5.6	14,600/818/5.6	9.8
6th Street	16,500/726/4.4	900/40/4.4	-94.5	16,700/735/4.4	900/40/4.4	-94.6
3rd Street	10,600/254/2.4	4,900/118/2.4	-53.8	10,300/247/2.4	5,100/122/2.4	-50.5
Broadway	15,100/1,072/7.1	15,900/1,129/7.1	5.3	15,500/1,101/7.1	13,700/973/7.1	-16.1
Ocean Boulevard	36,700/3,633/9.9	44,200/4,376/9.9	20.4	38,300/3,792/9.9	46,000/4,554/9.9	20.1
Shoemaker Bridge	77,300/2,164/2.8	76,000/2,128/2.8	-1.7	78,900/2,209/2.8	79,500/2,226/2.8	0.8

Source: HDR, June 2018

Table B. 2025 No Build Condition Intersection Level of Service

Intersection		A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	9.1	A	12.4	B
2	Santa Fe Avenue/Anaheim Street	27.6	C	31.7	C
3	Santa Fe Avenue/9th Street	12.0	B	43.5	D
4	Pier B Street/Pico Avenue/I-710 Ramps	197.8	**F**	24.1	C
5	Pico Avenue/Ocean Boulevard Ramps	20.6	C	26.4	C
6	Golden Shore/Ocean Boulevard	24.0	C	25.8	C
7	Magnolia Avenue/Queens Way/Ocean Boulevard	18.1	B	14.6	B
8	Magnolia Avenue/Broadway	20.0	B	20.2	C
9	Maine Avenue/Broadway	3.0	A	6.1	A
10	Golden Avenue/3rd Street	16.1	B	12.3	B
11	Maine Avenue/3rd Street	13.2	B	13.0	B
12	Magnolia Avenue/3rd Street	17.0	B	17.0	B
13	Magnolia Avenue/6th Street	17.2	B	29.0	C
14	Daisy Avenue/6th Street	6.5	A	5.8	A
15	Daisy Avenue/7th Street	16.0	B	13.8	B
16	Magnolia Avenue/7th Street	17.9	B	19.1	B
17	Magnolia Avenue/10th Street	13.3	B	14.0	B
18	Pacific Avenue/Anaheim Street	16.7	B	13.1	B
19	Magnolia Avenue/Anaheim Street	19.8	B	15.1	B
20	Oregon Avenue/Anaheim Street	4.2	A	14.6	B
21	Cedar Avenue/Anaheim Street	12.4	B	6.7	A
22	Pacific Avenue/7th Street	28.2	C	15.3	B
23	Pacific Avenue/6th Street	16.9	B	23.4	C
24	Pacific Avenue/3rd Street	22.9	C	12.4	B
25	Pacific Avenue/Broadway	18.4	B	18.4	B
26	Pacific Avenue/Ocean Boulevard	26.4	C	11.4	B
27	Atlantic Avenue/Anaheim Street	25.2	C	28.3	C
28	Atlantic Avenue/7th Street	21.2	C	16.4	B
29	Atlantic Avenue/6th Street	18.5	B	23.6	C
30	Atlantic Avenue/3rd Street	11.9	B	20.2	C
31	Golden Shore/Broadway	NA	NA	NA	NA
32	Shoreline Drive/Broadway	NA	NA	NA	NA
33	Shoreline Drive/7th Street	NA	NA	NA	NA
34	Shoreline Drive/Golden Shore	NA	NA	NA	NA

Source: HDR, June 2018

LOS = level of service sec = seconds

Table C. 2025 Build Condition Intersection Level of Service

	Intersection	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	22.2	C	12.2	B
2	Santa Fe Avenue/Anaheim Street	44.2	D	42.5	D
3	Santa Fe Avenue/9th Street	31.7	C	22.7	C
4	Pier B Street/Pico Avenue/I-710 Ramps	>100	**F**	24.1	C
5	Pico Avenue/Ocean Boulevard Ramps	20.6	C	26.3	C
6	Golden Shore/Ocean Boulevard	22.3	C	19.9	B
7	Magnolia Avenue/Queens Way/Ocean Boulevard	47.5	D	36.4	D
8	Magnolia Avenue/Broadway	33.0	C	35.3	D
9	Maine Avenue/Broadway	25.0	C	18.9	B
10	Golden Avenue/3rd Street	9.2	A	8.7	A
11	Maine Avenue/3rd Street	17.3	B	16.2	B
12	Magnolia Avenue/3rd Street	27.8	C	20.8	C
13	Magnolia Avenue/6th Street	28.8	C	33.2	C
14	Daisy Avenue/6th Street	20.0	B	18.2	B
15	Daisy Avenue/7th Street	6.0	A	6.1	A
16	Magnolia Avenue/7th Street	46.7	D	29.7	C
17	Magnolia Avenue/10th Street	12.1	B	13.8	B
18	Pacific Avenue/Anaheim Street	24.4	C	20.9	C
19	Magnolia Avenue/Anaheim Street	18.0	B	27.1	C
20	Oregon Avenue/Anaheim Street	4.9	A	15.5	B
21	Cedar Avenue/Anaheim Street	9.5	A	16.0	B
22	Pacific Avenue/7th Street	40.7	D	35.7	D
23	Pacific Avenue/6th Street	12.0	B	19.9	B
24	Pacific Avenue/3rd Street	16.7	B	13.8	B
25	Pacific Avenue/Broadway	15.3	B	15.4	B
26	Pacific Avenue/Ocean Boulevard	24.1	C	15.7	B
27	Atlantic Avenue/Anaheim Street	21.5	C	23.6	C
28	Atlantic Avenue/7th Street	29.4	C	25.2	C
29	Atlantic Avenue/6th Street	10.3	B	23.7	C
30	Atlantic Avenue/3rd Street	10.2	B	15.2	B
31	Golden Shore/Broadway	14.8	B	14.1	B
32	Shoreline Drive/Broadway	10.8	B	25.7	C
33	Shoreline Drive/7th Street	46.7	D	>100	**F**
34	Shoreline Drive/Golden Shore	27.7	C	18.1	B

Source: HDR, June 2018

LOS = level of service sec = seconds

Table D. 2035 No Build Condition Intersection Level of Service

	Intersection	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	9.2	A	12.5	B
2	Santa Fe Avenue/Anaheim Street	30.8	C	40.6	D
3	Santa Fe Avenue/9th Street	12.0	B	47.6	D
4	Pier B Street/Pico Avenue/I-710 Ramps	>100	**F**	30.0	C
5	Pico Avenue/Ocean Boulevard Ramps	28.9	C	44.7	D
6	Golden Shore/Ocean Boulevard	24.2	C	26.2	C
7	Magnolia Avenue/Queens Way/Ocean Boulevard	18.3	B	15.1	B
8	Magnolia Avenue/Broadway	20.0	B	20.3	C
9	Maine Avenue/Broadway	3.0	A	6.1	A
10	Golden Avenue/3rd Street	16.1	B	13.4	B
11	Maine Avenue/3rd Street	13.4	B	13.2	B
12	Magnolia Avenue/3rd Street	17.2	B	17.2	B
13	Magnolia Avenue/6th Street	17.8	B	29.6	C
14	Daisy Avenue/6th Street	6.5	A	5.9	A
15	Daisy Avenue/7th Street	16.2	B	14.8	B
16	Magnolia Avenue/7th Street	18.3	B	19.4	B
17	Magnolia Avenue/10th Street	13.4	B	14.0	B
18	Pacific Avenue/Anaheim Street	16.9	B	13.4	B
19	Magnolia Avenue/Anaheim Street	20.0	B	15.8	B
20	Oregon Avenue/Anaheim Street	4.3	A	15.9	B
21	Cedar Avenue/Anaheim Street	12.4	B	6.8	A
22	Pacific Avenue/7th Street	28.7	C	15.4	B
23	Pacific Avenue/6th Street	17.0	B	23.7	C
24	Pacific Avenue/3rd Street	23.0	C	12.4	B
25	Pacific Avenue/Broadway	18.5	B	18.5	B
26	Pacific Avenue/Ocean Boulevard	28.3	C	11.4	B
27	Atlantic Avenue/Anaheim Street	25.4	C	34.3	C
28	Atlantic Avenue/7th Street	21.3	C	16.8	B
29	Atlantic Avenue/6th Street	18.4	B	24.5	C
30	Atlantic Avenue/3rd Street	12.1	B	20.2	C
31	Golden Shore/Broadway	NA	NA	NA	NA
32	Shoreline Drive/Broadway	NA	NA	NA	NA
33	Shoreline Drive/7th Street	NA	NA	NA	NA
34	Shoreline Drive/Golden Shore	NA	NA	NA	NA

Source: HDR, June 2018
LOS = level of service sec = seconds

Table E. 2035 Build Condition Intersection Level of Service

	Intersection	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
1	Harbor Avenue/Anaheim Street	22.3	C	12.5	B
2	Santa Fe Avenue/Anaheim Street	46.1	D	52.6	D
3	Santa Fe Avenue/9th Street	33.8	C	25.9	C
4	Pier B Street/Pico Avenue/I-710 Ramps	>100	**F**	30.0	C
5	Pico Avenue/Ocean Boulevard Ramps	28.9	C	34.3	C
6	Golden Shore/Ocean Boulevard	22.7	C	21.0	C
7	Magnolia Avenue/Queens Way/Ocean Boulevard	51.4	D	38.6	D
8	Magnolia Avenue/Broadway	34.7	C	38.5	D
9	Maine Avenue/Broadway	25.4	C	21.5	C
10	Golden Avenue/3rd Street	9.2	A	8.7	A
11	Maine Avenue/3rd Street	17.6	B	16.7	B
12	Magnolia Avenue/3rd Street	28.4	C	21.1	C
13	Magnolia Avenue/6th Street	33.1	C	34.1	C
14	Daisy Avenue/6th Street	20.0	B	18.2	B
15	Daisy Avenue/7th Street	6.2	A	6.8	A
16	Magnolia Avenue/7th Street	51.7	D	31.4	C
17	Magnolia Avenue/10th Street	12.3	B	14.2	B
18	Pacific Avenue/Anaheim Street	25.1	C	21.6	C
19	Magnolia Avenue/Anaheim Street	19.6	B	33.5	C
20	Oregon Avenue/Anaheim Street	5.1	A	16.2	B
21	Cedar Avenue/Anaheim Street	9.6	A	18.3	B
22	Pacific Avenue/7th Street	41.4	D	38.7	D
23	Pacific Avenue/6th Street	13.6	B	20.3	C
24	Pacific Avenue/3rd Street	16.7	B	15.2	B
25	Pacific Avenue/Broadway	15.4	B	15.5	B
26	Pacific Avenue/Ocean Boulevard	25.6	C	16.3	B
27	Atlantic Avenue/Anaheim Street	22.2	C	26.1	C
28	Atlantic Avenue/7th Street	30.4	C	25.4	C
29	Atlantic Avenue/6th Street	10.4	B	23.7	C
30	Atlantic Avenue/3rd Street	10.4	B	15.2	B
31	Golden Shore/Broadway	15.7	C	14.5	B
32	Shoreline Drive/Broadway	16.4	B	25.7	C
33	Shoreline Drive/7th Street	55.8	E	>100	**F**
34	Shoreline Drive/Golden Shore	28.8	C	18.2	B

Source: HDR, June 2018
LOS = level of service sec = seconds

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