Oakland Alameda Access Project

ALAMEDA COUNTY, CALIFORNIA
DISTRICT 04 – ALA – 880, (PM 30.47/31.61)
DISTRICT 04 – ALA – 260, (PM R0.78/R1.90)
EA 04-0G360/PROJECT ID# 0400000326A
SCH# 2017092041

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

Prepared by:

State of California, Department of Transportation
and the
Alameda County Transportation Commission

The environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the FHWA and Caltrans.

September 2020

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General Information About This Document

What's in this document:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Draft Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Alameda County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and under the California Environmental Quality Act (CEQA). The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read this document.
- This document may be downloaded at the following websites:
  - OaklandAlamedaAccessProject.com
  - https://www.alamedactc.org/programs-projects/highway-improvement/oakland-alameda-access-project/
  - https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/d4-oaap/
- Attend the public hearing. Based on Governor Newsom's executive order, as well as recommendations from the California Department of Public Health to stay at home, except as needed, in-person public hearings will not be held to maintain social distancing requirements. However, you can join a live presentation with Q&A via the web at OaklandAlamedaAccessProject.com or phone (510) 880-4195 on October 20, 2020 from 5:30 to 7:30 pm.
- We'd like to hear what you think. If you have any comments about the proposed project, please attend the public hearing and/or send your written comments via postal mail or email to Caltrans by the deadline.
- Send comments via postal mail to: Lindsay Vivian, Chief, Office of Environmental Analysis, Caltrans District 4, 111 Grand Avenue, MS-8B, Oakland, CA 94612.
- Send comments via email to: Oakland.Alameda.Access@dot.ca.gov.
- Call in comments to (510) 880-4195.
- Be sure to send comments by the deadline: November 30, 2020.

What happens next:

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

Alternative Formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans District 4, Attention: Lindsay Vivian, Chief, Office of Environmental Analysis, Caltrans District 4, 111 Grand Avenue - MS 8B, 111 Grand Avenue, Oakland, CA 94612, the project phone number (510) 880-4195 (Voice), or use the California Relay Service 1 (800) 735-2929 (TTY to Voice), 1 (800) 735-2922 (Voice to TTY), 1 (800) 855-3000 (Spanish TTY to Voice and Voice to TTY), 1-800-854-7784 (Spanish and English Speech-to-Speech) or 711.

SCH# 2017092041

04-ALA–880 PM 30.47/31.61
04–ALA–260 PM R0.78/R1.90
EA: 0G360/Project ID# 0400000326

Improving connectivity and accessibility between Alameda and Interstate 880 (PM 30.47/31.61) by way of State Route 260 (PM R0.78/R1.90).

DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT and DRAFT INDIVIDUAL SECTION 4(f) EVALUATION

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C), 49 USC 303, and 23 USC 138

THE STATE OF CALIFORNIA
Department of Transportation
and Alameda County Transportation Commission

Responsible Agency:
California Transportation Commission

09/21/2020

Date

Tony Tavares
District 4 Director
California Department of Transportation
NEPA/CEQA Lead Agency

The following persons may be contacted for more information about this document:

Lindsay Vivian
Chief, Office of Environmental Analysis
Caltrans District 4
111 Grand Avenue, MS-8B
Oakland, CA 94612
Lindsay.Vivian@dot.ca.gov

Trinity Nguyen
Director of Project Delivery
Alameda County Transportation Commission
1111 Broadway, Suite 800
Oakland, CA 94607
tnguyen@alamedactc.org

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Summary

NEPA Assignment

California participated in the “Surface Transportation Project Delivery Pilot Program” (Pilot Program) pursuant to 23 United States Code (USC) 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a Memorandum of Understanding (MOU) pursuant to 23 USC 327 (NEPA Assignment MOU) with the FHWA. The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016, for a term of five years. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (U.S. DOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

The Proposed Project

Caltrans is the lead agency under NEPA and the CEQA. The project is in partnership with Alameda County Transportation Commission and is located in the cities of Oakland and Alameda in Alameda County along Interstate 880 (I-880) between post mile (PM) 30.47 and PM 31.61 and along State Route 260 (SR-260) between PM R0.78/realignment PM R1.90 (see Figure S-1).

Major actions proposed by other government agencies for the same general area as the proposed project that are either under construction or preparing an environmental review are:

- Lake Merritt Railroad Bridge Replacement
- Alameda Shipways Residential Project
- Oakland Waterfront Ballpark District
- 412 Madison Street
- BART Lake Merritt Transit-oriented Development
- Brooklyn Basin Project (formerly the Oak to Ninth Project)

The proposed project’s purpose is to improve multimodal safety for all users and reduce conflicts between regional and local traffic; enhance bicycle and pedestrian accessibility and connectivity within the project study area; improve mobility and accessibility between I-880, SR-260 (the Posey and Webster tubes [Tubes]), the City of Oakland downtown neighborhoods and the City of Alameda; and reduce freeway-bound regional traffic and congestion on local roadways and in area neighborhoods. The project study area established in the technical analyses includes the project footprint, which covers the extent of all proposed project improvements, ground disturbances activities, staging, and access areas.

Figure S-1. Project Footprint

The proposed action is needed because access between the freeway and the roadway networks between I-880 and the Tubes is limited and indirect, and access to/from the cities of Oakland and Alameda is circuitous. Existing access to I-880 from Alameda and the Jack London District requires loops through several local streets and intersections, routing vehicles through the downtown Oakland Chinatown neighborhood. The streets in and around the downtown Oakland Chinatown area have a high volume of pedestrian activity and experience substantial vehicle-pedestrian conflicts, and the I-880 viaduct limits bicycle and pedestrian connectivity between downtown Oakland and the Jack London District. SB I-880 traffic heading to Alameda must exit at the Broadway/Alameda off-ramp then travel south along 5th Street for more than a mile — through nine signalized and unsignalized intersections — before reaching the Webster Tube at 5th Street/Broadway. WB I-980 traffic heading to Alameda must exit at the Jackson Street off-ramp and circle back through Chinatown through seven signalized and unsignalized intersections to reach the Webster Tube. NB I-880 traffic heading to Alameda must exit at the Broadway off-ramp and form a queue on Broadway between 5th and 6th streets, which backs up onto the ramp. Alternatively, drivers may loop through Chinatown to access the Webster Tube.

Two alternatives are under consideration for the proposed project, the No-Build Alternative and the Build Alternative. Under the Build Alternative Caltrans and Alameda CTC propose to remove and modify existing freeway ramps, modify the connection from the Posey Tube to I-880, construct Class IV two-way cycle tracks in Oakland, implement various “complete streets” improvements, implement bicycle and pedestrian improvements at the approaches to the Tubes, and open the Webster Tube’s westside walkway to bicyclists and pedestrians. Caltrans Complete Streets policy provides for transportation facilities that are planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility. Incorporation of complete streets elements would improve multimodal safety and mobility, and includes elements such as sidewalks, bike lanes, crosswalks, and landscaping.

Under the No-Build Alternative there would be no action. The local streets in the project study area would continue to be congested during the morning and evening peak commute hours, and there would be no connectivity improvements to bicycle and pedestrian facilities in the area.

Joint CEQA/NEPA Document

The proposed project is a joint project by Caltrans and the FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the CEQA and the NEPA. Caltrans is the lead agency under NEPA and the lead agency under CEQA. In addition, FHWA’s responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the MOU dated December 23, 2016, and executed by FHWA and Caltrans.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the Project as a whole, often a “lower level” document is prepared for NEPA. One of the most common joint document types is an Environmental Impact Report/Environmental Assessment (EIR/EA).

After receiving comments from the public and reviewing agencies, a Final EIR/EA will be prepared. Caltrans may prepare additional environmental and/or engineering studies to address comments. The Final EIR/EA will include responses to comments received on the Draft EIR/EA and will identify the preferred alternative. If the decision is made to approve the proposed project, a Notice of Determination will be published for compliance with CEQA and decide whether to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement (EIS) for compliance with NEPA. A Notice of Availability of the FONSI will be sent to the affected units of federal, state, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

This Draft EIR/EA addresses the proposed project’s potential to impact the environment. Potential impacts, avoidance and minimization measures (AMM), and mitigation measures (MM) are summarized in Table S-1. Construction of the Build Alternative will take approximately 36 months. Construction would be phased so not all of the project footprint would be under construction simultaneously. Temporary lane closures, ramp closures, and detours would occur. Temporary closures of existing bicycle or pedestrian facilities and temporary rerouting of transit service could also be required. Construction work for the Build Alternative would be done primarily during the daytime from 7 am to 6 pm. However, nighttime work would be used to minimize construction impacts on traffic. The full list of the proposed project’s AMMs are in Appendix D. Resource area significance determinations are discussed further in Chapter 3 under the CEQA Environmental Checklist section.

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Table S- 1. Summary of Environmental Impacts

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
Existing and Future Land Use	No impacts	The Build Alternative would result in minimal conversion of land (0.03 acre) to a transportation-related land use. A permanent maintenance easement from Laney College would also be required along the I-880 Oak Street off-ramp. Temporary construction staging and access would primarily be located in existing Caltrans and City right-of-way (ROW).	None
Parks and Recreational Facilities	No impacts	The Build Alternative would not result in land acquisition from parks or recreational facilities. The addition of new pedestrian and bicycle facilities, such as the continuous sidewalks around Chinese Garden Park and the widened sidewalk in Neptune Park, would improve access and mobility to recreational facilities within or adjacent to the project footprint.	*Construction Measure*: Caltrans will require restoration of disturbed areas within Neptune Park at the completion of construction. Access to the park will be maintained at all times during construction (AMM-PRF-1 Neptune Park Restoration, Chapter 2, Section 2.3.4).
Farmlands/ Timberlands	No impacts	The Build Alternative does not contain farmland or timberland.	None
Growth	No impacts	The Build Alternative would not trigger redevelopment opportunities in the surrounding area. The project would not include the construction of new access points.	None

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
Community Character and Cohesion	Under the No-Build Alternative, there would be no benefits associated with reduced congestion on local roadways or improvements in bicycle/pedestrian infrastructure. As conditions worsen, there could be negative impacts on community cohesion.	The Build Alternative would not displace residences, businesses, or community facilities. It would not divide neighborhoods, change social patterns, or impede access to neighborhoods for those living in, working in, or visiting the project study area. The community would benefit from the reduced traffic congestion, improved access, connectivity, and cohesion due to bicycle/pedestrian infrastructure improvements and improvements around and adjacent to Chinese Garden and Neptune parks. There would be a permanent loss of approximately 156 on-street and 128 off-street parking spaces (Caltrans leased parking lots under I-880). On-street parking loss is partially associated with proposed bike lanes along 6th and Oak streets. The loss of publicly available on-street parking could potentially cause localized impacts to area businesses. Portions of Caltrans ROW are associated with sanctioned and unsanctioned unsheltered population encampments, which may require removal prior to the start of construction.	To offset potential localized impacts to area businesses associated with the loss of publicly available on-street parking, Caltrans and Alameda CTC will continue to coordinate with the City of Oakland to develop mitigation to address localized impacts to area businesses (MM-CCC-1 Parking Spaces, Chapter 2, Section 2.4.4). *Construction Measures:* Prior to construction, information will be provided to neighborhoods and businesses regarding changes in parking and available alternate transportation options (AMM-TRF-1 Parking Restrictions, AMM-TRF-2 Temporary Parking Removal Notification, Chapter 2, Section 2.8.4). Access and circulation within Laney College's parking lot will be maintained during construction (AMM-TRF-3 Laney College, Chapter 2, Section 2.8.4). Advance notifications of temporary bus stop relocations will be provided to AC Transit (AMM-TRF-4 AC Transit, Chapter 2, Section 2.8.4). Notices to vacate will be conspicuously posted in and approaching property owned by Caltrans, the City of Oakland, and the City of Alameda 72 hours prior to construction to provide adequate notice for unsheltered occupants to leave (AMM-CCC-1 Notice to Vacate, Chapter 2, Section 2.4.4).
Relocations and Real Property Acquisition	No impacts	The Build Alternative would not result in the displacement of businesses or require full property acquisitions. Only one partial property acquisition would occur from a commercial property in Alameda.	None

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
Environmental Justice	No impacts	The Build Alternative would not result in disproportionate or adverse effects to minority or low-income populations. The proposed project would benefit those who live and work in the project study area by improving congestion on local roadways, improving bicycle/pedestrian infrastructure, improving access and connectivity to parks, and removing barriers between neighborhoods.	None
Utilities/Emergency Services/Public Services (Other)	No impacts	The Build Alternative would improve congestion along local roadways, ultimately improving emergency service response times. New traffic signals, bicycle signals, ramp meters, and street lighting are proposed. Utilities within the project footprint (Pacific Gas & Electric [PG&E], American Telephone and Telegraph Company [AT&T], East Bay Municipal Utility District [EBMUD], and City of Oakland) would either need to be protected in place or relocated. Relocations may result in temporary outages to customers.	None

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
Traffic and Transportation/ Pedestrian and Bicycle Facilities	Under the No-Build Alternative, local streets in the project study area would remain congested during morning and evening peak commute hours. There would be no improvements to pedestrian and bicycle facilities. The Oakland Chinatown area would continue to experience vehicle-pedestrian conflicts, and high accident locations would remain.	The Build Alternative would result in decreased traffic and congestion on local roadways. The proposed bicycle and pedestrian infrastructure would improve safety and enhance access and connectivity for bicyclists and pedestrians.	Prior to construction, information will be provided to neighborhoods and business in the project study area regarding changes in parking and available alternate transportation options (AMM-TRF-1 Parking Restrictions, AMM-TRF-2 Temporary Parking Removal Notification, Chapter 2, Section 2.8.4). *Construction Measures:* Caltrans will coordinate with Laney College to maintain access and circulation within their parking lot during construction (AMM-TRF-3 Laney College, Chapter 2, Section 2.8.4). Similar coordination will be done with AC Transit to provide advance notifications of temporary bus stop relocations (AMM-TRF-4 AC Transit, Chapter 2, Section 2.8.4).
Visual/Aesthetics	No impacts	The Build Alternative would have a moderate to low level of visual impact on the overall character and quality of existing views from roadways, neighborhoods, and recreation facilities. The majority of the visual impacts would enhance the overall visual environment, including expansion of views of the horizon, the addition of natural elements (such as landscaping), and the reduction of light shadowing. The Build Alternative would impact the balustrade walls associated with the Posey Tube, a historic resource. The proposed project would have a less than significant impact to scenic resources with mitigation incorporated under CEQA.	Measures for landscaping and aesthetic treatments will minimize permanent visual impacts. Context sensitive retaining wall treatments will be implemented where feasible to reduce visual impacts, glare, and potential for graffiti (AMM-VA-4 Aesthetic Treatments, Chapter 2, Section 2.9.4). Alameda CTC and Caltrans will use context sensitive architectural treatments for new retaining walls. The Posey Tube Portal building balustrade walls and related architectural features will be compatible with the original historic design elements and in accordance with Section 106 of the National Historic Preservation Act (NHPA) (MM-VA-1 Posey Tube and Approaches Aesthetic Treatments, Chapter 2, Section 2.9.4). Consultation regarding the adverse effects to historic properties will be conducted with

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			consulting parties (MM-CUL-1 Section 106 Consultation, Chapter 2, Section 2.10.4). *Construction Measures:* Vegetation removal would be minimized (AMM-VA-1 Vegetation Removal Measures, Chapter 2, Section 2.9.4). Disturbed areas will be treated with hydroseed erosion control grasses and locally native grasses (AMM-VA-3 Revegetation Planting, Chapter 2, Section 2.9.4). Construction measures for material and equipment storage, construction lighting, replacing impacted vegetation and irrigation systems, avoiding work in tree drip lines, and providing street and highway tree plantings will minimize temporary impacts to the visual environment (AMM-VA-5 Construction Impact Measures, Chapter 2, Section 2.9.4). Aesthetic impacts will be minimized by protecting remaining trees and replacing trees removed by the project (AMM-AS-4 Evaluate and Replace Trees, Chapter 2, Section 4.1.3). Removed shrubs will be replaced within Caltrans ROW (AMM-VA-2 Vegetation Replacement, Chapter 2, Section 2.9.4).
Cultural Resources/ Section 4(f)	No impacts	The Build Alternative would result in an adverse effect to both the Posey Tube and the Oakland Waterfront Warehouse District. The Oakland Portal Building, a part of the Posey Tube, is listed in the National Register of Historic Places (NRHP) as a contributor to the Oakland Waterfront Warehouse District. The Posey Tube is determined individually eligible for listing on the NRHP and is listed in the California Register of Historical Resources (CRHR). The Oakland Waterfront Warehouse District is also listed in the CRHR.	*Historic Built Environmental Resources and Section 4(f) resources:* Caltrans will pursue consultation regarding the adverse effects to historic properties through preparation of a Memorandum of Agreement (MOA) in consultation with SHPO and other consulting parties. The MOA will result in the development of mitigation measures (MM-CUL-1 Section 106 Consultation, Chapter 2, Section 2.10.4). *Construction Measures: Archaeological Resources:* Before commencing construction, a qualified Caltrans-approved archaeologist will

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
		The Build Alternative would also result in an adverse effect and use under Section 4(f) to both the George A. Posey Tube and the Oakland Waterfront Warehouse District. Impacts to both resources would be significant and unavoidable under CEQA.	conduct a worker environmental awareness training (WEAT) program discussing cultural resources, laws, and project protocols for all on-site construction personnel; a record of the trained personnel will be kept on-site (AMM-CUL-1 WEAT and Sensitivity Training, Chapter 2, Section 2.10.4).
Hydrology and Floodplain	No impacts	The Build Alternative would add less than one acre of impervious surface area, which represents an insignificant change to the watershed's impervious area. The project would not significantly encroach upon a floodplain. The proposed project would not affect sea-level rise (SLR).	The project may consider adding trash capture inserts at drainage inlets (AMM-WQ-1 Trash Inserts, Chapter 2, Section 3.2.4). *Construction Measure:* Silt and environmentally sensitive area (ESA) fences and other construction site Best Management Practices (BMP) will be placed at the project footprint near wetlands and existing permanent treatment BMPs prior to work in the vicinity (AMM-WW-1 Silt and ESA Fence, Chapter 2, Section 4.2.4).
Water Quality and Stormwater Runoff	No impacts	Water quality impacts associated with the Build Alternative's added impervious area would be minimized through the implementation of permanent stormwater measures. Operation of the proposed project would not result in an increase in the production of pollutants associated with transportation corridors. Temporary BMPs would be implemented during construction to prevent contaminated stormwater runoff. Design features to address water quality impacts are a condition of the Caltrans Municipal Separate Storm Sewer Systems (MS4) Permit, Municipal Regional Permit (MRP), Construction General Permit (CGP), and other regulatory agency requirements.	The project may consider adding trash capture inserts at drainage inlets (AMM-WQ-1 Trash Inserts, Chapter 2, Section 3.2.4). *Construction Measure:* A silt fence, an ESA fence, and other construction site BMPs will be installed near wetlands and existing permanent treatment BMPs prior to work in the vicinity (AMM-WW-1 Silt and ESA Fence, Chapter 2, Section 4.2.4).

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
Geology/Soils/ Seismic/Topography	No impacts	The primary seismic hazards in the study area are strong shaking and liquefaction. Caltrans seismic design procedures would be used to ensure that all built features are structurally sound. The project contains potentially liquefiable soils. Additional soil testing would occur during the design phase to verify the liquification potential of the site. Foundation design or soil amendments would be used to address liquefaction concerns, if necessary.	None
Paleontology	No impacts	Construction of the Build Alternative could encounter geologic units that could potentially contain scientifically important paleontological resources. Potential impacts to paleontological resources would be less than significant.	Prior to construction, the Paleontological Mitigation Plan (PMP) will be updated (AMM-PAL-1 PMP, Chapter 2, Section 3.4.4). *Construction Measures:* All construction crews must receive a paleontologically focused worker's environmental awareness training (AMM-PAL-2 WEAT, Chapter 2, Section 3.4.4). A qualified paleontological monitor will be on-call to inspect excavation greater than 10 feet below the ground surface. If fossils are found, construction will halt and the PMP will be followed (AMM-PAL-3 Paleontological Monitoring, Chapter 2, Section 3.4.4). A 100-foot-wide ESA buffer and implementation of salvage and recovery methods described in the PMP would be implemented if paleontological resources are discovered (AMM-PAL-4 Salvage and Recovery Operations, Chapter 2, Section 3.4.4). Donation of recovered paleontological specimens to a recognized repository institution will follow the protocol outlined in the PMP (AMM-PAL-5 Donation to Repository Institution, Chapter 2, Section 3.4.4). As required by the PMP, a paleontological mitigation report will be prepared at the end of project construction

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			(AMM-PAL-6 Paleontological Mitigation Report, Chapter 2, Section 3.4.4).
Hazardous Waste/Materials	No impacts	Contamination by petroleum hydrocarbons is reported from commercial and industrial sources within the study area. Impacts from hazardous waste/materials could occur if contaminated media is encountered during excavations associated with retaining wall foundations, Jackson Street off-ramp bents and abutments, light pole foundations, utility relocations, and drainage system improvements. Other sources of potential contamination include aerially deposited lead, asbestos-containing material, and yellow thermoplastic paint.	A preliminary site investigation will be conducted during the design phase to assess contaminants associated with historical pollutant releases (AMM-HW-4 Contaminant Characterization, Chapter 2, Section 3.5.4). The preliminary site investigation will include an investigation for lead in areas near roadways or painted structures where surface soil will be disturbed (AMM-HW-1 Lead in Soils and AMM-HW-3 Lead Abatement, Chapter 2, Section 3.5.4). An asbestos investigation will be performed as well (AMM-HW-2 ACM Investigation, Chapter 2, Section 3.5.4). *Construction Measures:* If hazardous contamination is encountered during construction, contaminated media will be appropriately handled and disposed (AMM-HW-5 Unexpected Contamination, AMM-HW-6 Contaminated Soil Handling, and AMM-HW-7 Dewatering Treatment and Disposal, Chapter 2, Section 3.5.4).
Air Quality	No impacts	The Build Alternative would alleviate traffic congestion. Overall, emissions would slightly decrease or remain the same following project implementation. Proposed bicycle and pedestrian infrastructure may have additional air quality benefits. During construction, the contractor would comply with Caltrans Standard Specifications and require compliance with all applicable laws and regulations related to air quality. The Build Alternative is not a project of air quality concern.	*Construction Measures:* Measures will be implemented during construction to control fugitive dust and particulate matter to minimize visible dust (AMM-AQ-1 Dust Control, Chapter 2, Section 3.6.4). Exhaust emissions will be minimized (AMM-AQ-2 Exhaust Emissions, Chapter 2, Section 3.6.4).

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
Noise and Vibration	No impacts	Noise modeling results indicated noise levels would not substantially increase between existing conditions and the design year. However, the noise levels in the design year are predicted to approach or exceed the Noise Abatement Criteria (NAC). Noise barrier walls were considered at eight locations. Only three of these barriers were feasible. However, the estimated cost to construct each barrier exceeded its reasonable allowance. Therefore, no noise barriers are recommended for construction. During construction, vibration threshold levels in Oakland may be exceeded at adjacent properties.	*Construction Measures:* Measures will be employed to limit construction-related noise. Unnecessary idling of internal-combustion engines within 100 feet of residences will be prohibited (AMM-NOI-1 Equipment Idling, Chapter 2, Section 3.7.4). Stationary noise-generating equipment will be located away from sensitive receptors. The contractor will use "quiet" air compressors and other "quiet" equipment where such technology exists (AMM-NOI-2 Stationary Equipment, Chapter 2, Section 3.7.4). A noise monitoring program will be instituted if construction work occurs outside of the daytime hours specified in applicable local ordinances (AMM-NOI-3 Noise Monitoring Program, Chapter 2, Section 3.7.4). Vibratory pile driving activities will be limited to daytime hours only (8 am to 4 pm). Impact pile driving will not be used (AMM-NOI-4 Vibratory Pile Driving, Chapter 2, Section 3.7.4). Internal-combustion engine driven equipment will be equipped with intake and exhaust mufflers (AMM-NOI-5 Equipment Muffling, Chapter 2, Section 3.7.4). Construction equipment will not be stored within 200 feet of residences and all stationary, noise-generating construction equipment will be stored as far as practicable from noise sensitive receptors (AMM-NOI-6 Construction Staging, Chapter 2, Section 3.7.4). Property owners and occupants located within 300 feet of construction will be notified in advance of noise generating activities (AMM-NOI-7 Notification Requirements, Chapter 2, Section 3.7.4). The project will prevent vibration impacts to historic buildings. Where hydraulic breakers are proposed within 25 feet of structures on 125

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			historic properties, the project will consider alternative construction methods (AMM-VIB-1 Hydraulic Breakers, Chapter 2, Section 3.7.4). Structural conditions will be documented at all buildings located within 25 feet of heavy construction and within 75 feet of vibratory pile driving prior to, during, and after vibration-generating construction activities. Claims of vibration damage will be investigated and damage that has occurred as a result of project construction will be repaired (AMM-VIB-2 Vibration Monitoring, Chapter 2, Section 3.7.4).
Energy	No impacts	The Build Alternative would not result in wasteful, inefficient, or unnecessary consumption of energy. It would not add roadway capacity and would reduce local traffic and congestion, thus reducing energy consumption Improvements to bicycle and pedestrian infrastructure would enhance access and connectivity and encourage walking and bicycling which would lower fossil-fuel-related energy consumption. High-efficiency lighting technology would be used for any replaced or modified traffic signals and pedestrian-scale lighting.	*Construction Measures:* Energy consumption by the Build Alternative will be minimized by maintaining proper tire pressure in construction vehicles (AMM-GHG-1 Tire Pressure, Chapter 3, Section 3.4), maximizing waste diversion to compost and recycling (AMM-GHG-2 Recycling, Chapter 3, Section 3.4), using local sources for materials and disposal sites (AMM-GHG-3 Local Sourcing, Chapter 3, Section 3.4), and using energy-efficient lighting and traffic signals (AMM-GHG-5 Lighting, Chapter 3, Section 3.4). Coordination will occur with AC Transit to provide advance notifications of temporary bus stop relocations (AMM-TRF-4 AC Transit, Chapter 2, Section 2.8.4).Measures will be implemented during construction to limit burning of fossil fuels (AMM-AQ-2 Exhaust Emissions, Chapter 2, Section 3.6.4).
Natural Communities	No impacts	The Build Alternative would not result in impacts to sensitive habitats or natural communities. The project would result in the removal of approximately 35 trees.	*Construction Measure:* Impacts to trees will be minimized during design and construction. Three native trees will be replaced for each one removed. Non-native trees will be replaced (AMM-AS-4 Evaluate and Replace Trees, Chapter 2, Section 4.4.4).

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
Wetlands and Other Waters	No impacts	The Build Alternative would not result in impacts to streams, wetlands, or other waters.	*Construction Measure:* Silt fencing, ESA fencing, and other construction site BMPs will be placed near wetlands and existing permanent treatment BMPs prior to work in the vicinity (AMM-WW-1 Silt and ESA Fence, Chapter 2, Section 4.2.4).
Plant Species	No impacts	No impacts	None
Animal Species	No impacts	Construction-related disturbance has the potential to result in the take of nests, eggs, young, or individuals of protected species.	Efforts will be taken to avoid and minimize impacts to animal species that occupy the area. Pre-construction nesting bird surveys will be conducted to avoid impacting active bird nests (AMM-AS-1 Pre-construction Nesting Bird Surveys, Chapter 2, Section 4.4.4). Pre-construction bat surveys will be done of trees and structures that may contain bat roosts (AMM-AS-2 Pre-construction Bat Survey, Chapter 2, Section 4.4.4). If a protected species is discovered, the resident engineer and project biologist will implement avoidance measures (AMM-AS-3 Protected Species, Chapter 2, Section 4.4.4). Impacts to trees will be minimized during design and construction. Three native trees will be replaced for each one removed for a total of six native replanted trees. Non-native trees will be replaced where feasible (AMM-AS-4 Evaluate and Replace Trees, Chapter 2, Section 4.4.4). Biological resources will be addressed as a topic in the worker environmental awareness training conducted for all on-site construction personnel (AMM-AS-5 WEAT, Chapter 2, Section 4.4.4).
Threatened and Endangered Species	No impacts	The Build Alternative would not affect threatened or endangered species. There are	None

Affected Resource	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative	Avoidance, Minimization, and Mitigation Measures
		no designated critical habitats within the project study area.	
Invasive Species	No impacts	Implementation of the Build Alternative has the potential to result in the spread invasive species by spreading seeds during earthwork or equipment transport to/from the project. Additionally, invasive species can be included in seed mixtures or construction materials. Construction food waste will be managed so that it does not attract invasive animal species.	None
Cumulative Impacts	No impacts	No impacts	None
Climate Change	No impacts	The Build Alternative would release greenhouse gasses during construction. The Build Alternative would not result in additional GHG emissions during project operation.	*Construction Measures:* Impacts to trees will be minimized during design and construction. Six native trees will be planted. Non-native trees will be replaced where feasible (AMM-AS-4 Evaluate and Replace Trees). GHG emissions will be minimized during construction by maintaining proper tire pressure in construction vehicles (AMM-GHG-1 Tire Pressure, Chapter 3, Section 3.4), maximizing waste diversion to compost and recycling (AMM-GHG-2 Recycling, Chapter 3, Section 3.4), and by using local sources for materials and disposal sites (AMM-GHG-3 Local Sourcing, Chapter 3, Section 3.4). GHG emissions will be minimized during project operation by landscaping medians and roadsides (AMM-GHG-4 Landscaping, Chapter 3, Section 3.4) and by using energy-efficient lighting and traffic signals (AMM-GHG-5 Lighting, Chapter 3, Section 3.4).

Coordination with Public and Other Agencies

The following permits, licenses, agreements, and certifications (PLACs) will need to be obtained for project implementation:

Agency	PLAC	Status
FHWA	Air Quality Conformity Determination	• Proposed project is not considered a project of air quality concern (POAQC) regarding particulate matter ($PM_{2.5}$) as defined in 40 Code of Federal Regulations (CFR) 93. • Interagency consultation was completed on December 12, 2019. • Project revisions do not trigger the need for additional consultation. • Air quality conformity concurrence will be requested from FHWA after the public comment period for the proposed project has closed. • Request for conformity determination will be requested following selection of the preferred alternative.
State Water Resources Control Board (SWRCB)	CGP for stormwater discharges, Section 402 National Pollutant Discharge Elimination System (NPDES) Permit for greater than 1 acre (Order No. 2012-0011-DWQ)	• Obtain coverage under the CGP by preparing and submitting a Notice of Intent before starting construction.
State Historic Preservation Officer (SHPO)	Concurrence with the proposed project's historic property eligibility determination, Finding of Effect (FOE), and MOA	• SHPO concurrence on the Historic Property Survey Report (HPSR) was received on June 8, 2020. • SHPO FOE concurrence and approval of MOA expected after circulation of the Draft EIR/EA and selection of a preferred alternative.
SHPO/U.S. Department of the Interior	Draft Individual Section 4(f) concurrence from the official with jurisdiction	• Consultation with the official with jurisdiction was initiated on September 29, 2020 for the Draft Individual Section 4(f) Evaluation.
City of Alameda	Section 4(f) No Use Determination	• Concurrence from the official with jurisdiction for exception to use.

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Chapter 1 - Proposed Project

Section 1.0. Introduction and Background

The California Department of Transportation (Caltrans), in partnership with the Alameda County Transportation Commission (Alameda CTC), proposes to improve mobility and accessibility, traffic operations, and bicycle and pedestrian facilities through the Oakland Alameda Access Project (proposed project) on State Route 260 (SR-260) (post mile [PM] realignment [R] 0.78 to PM R1.90) and on Interstate 880 (I-880) (PM 30.47 to PM 31.61) in the cities of Oakland and Alameda in Alameda County, California. Section 1.1. Existing Facility shows the project location map (Figure 1-2) and the proposed project footprint (Figure 1-3) that includes the extent of all proposed project improvements, ground disturbance, staging, and access areas.

This Draft Environmental Impact Report/Environmental Assessment (EIR/EA) has been prepared in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Caltrans is the lead agency, as assigned by the Federal Highway Administration (FHWA) under NEPA and Caltrans is the lead agency under CEQA.

The Oakland Alameda Access Project, formerly known as the Broadway/Jackson Interchange Project and then the Broadway/Jackson Street Interchange Improvements Project, has been studied for over 20 years. To date, through a robust stakeholder engagement process, three Project Study Reports (PSR), a Project Report (PR), and a Feasibility Study evaluated numerous alternatives to address the purpose and need (see Table 1-7). A Draft PSR was prepared in 1997, a subsequent PSR was completed in 2000, and a PR was completed in 2002 for the Broadway/Jackson Street Interchange Improvements Project. However, the recommended alternative did not have the support of the local community, particularly among key stakeholders in Chinatown, so it did not proceed. In 2006, the City of Alameda revisited the project by completing a *Feasibility Study* for the I-880/Broadway-Jackson Interchange Improvements Project. The *Feasibility Study* recommended several new alternatives and a PSR-Project Development Support (PDS)-Project Initiation Document (PID) for the I-880/ Broadway-Jackson Interchange Improvements Project was prepared as a result. This study was approved by Caltrans in March 2011. The alternatives from these previous documents are discussed in Section 4.4. A timeline of prior efforts is shown in Figure 1-1.

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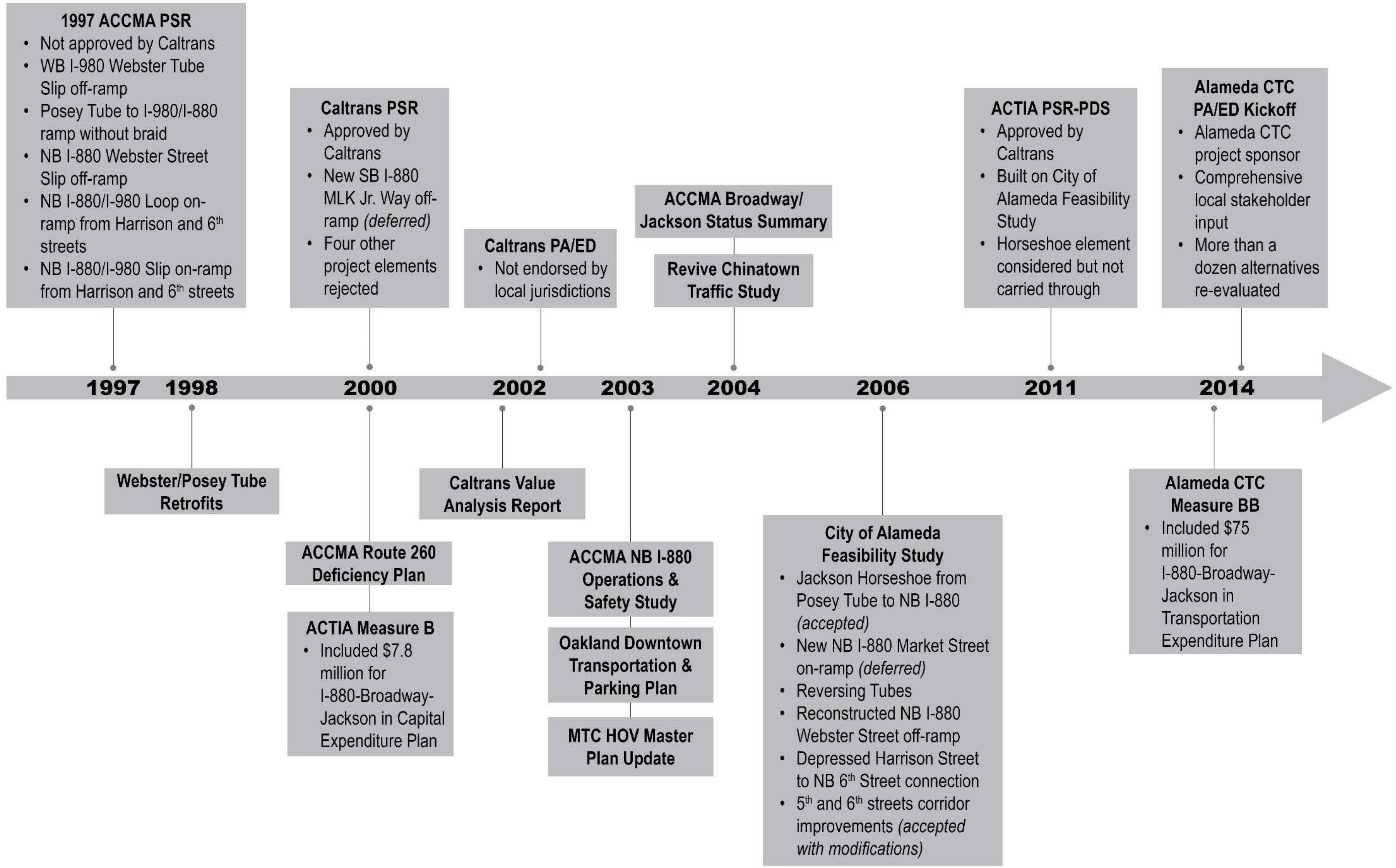

Legend:

ACCMA = Alameda County Congestion Management Agency
ACTIA = Alameda County Transportation Improvement Authority
HOV = High-occupancy Vehicle
MTC = Metropolitan Transportation Commission
PA/ED = Project Approval/Enviromental Document

Figure 1-1. Timeline of Prior Efforts

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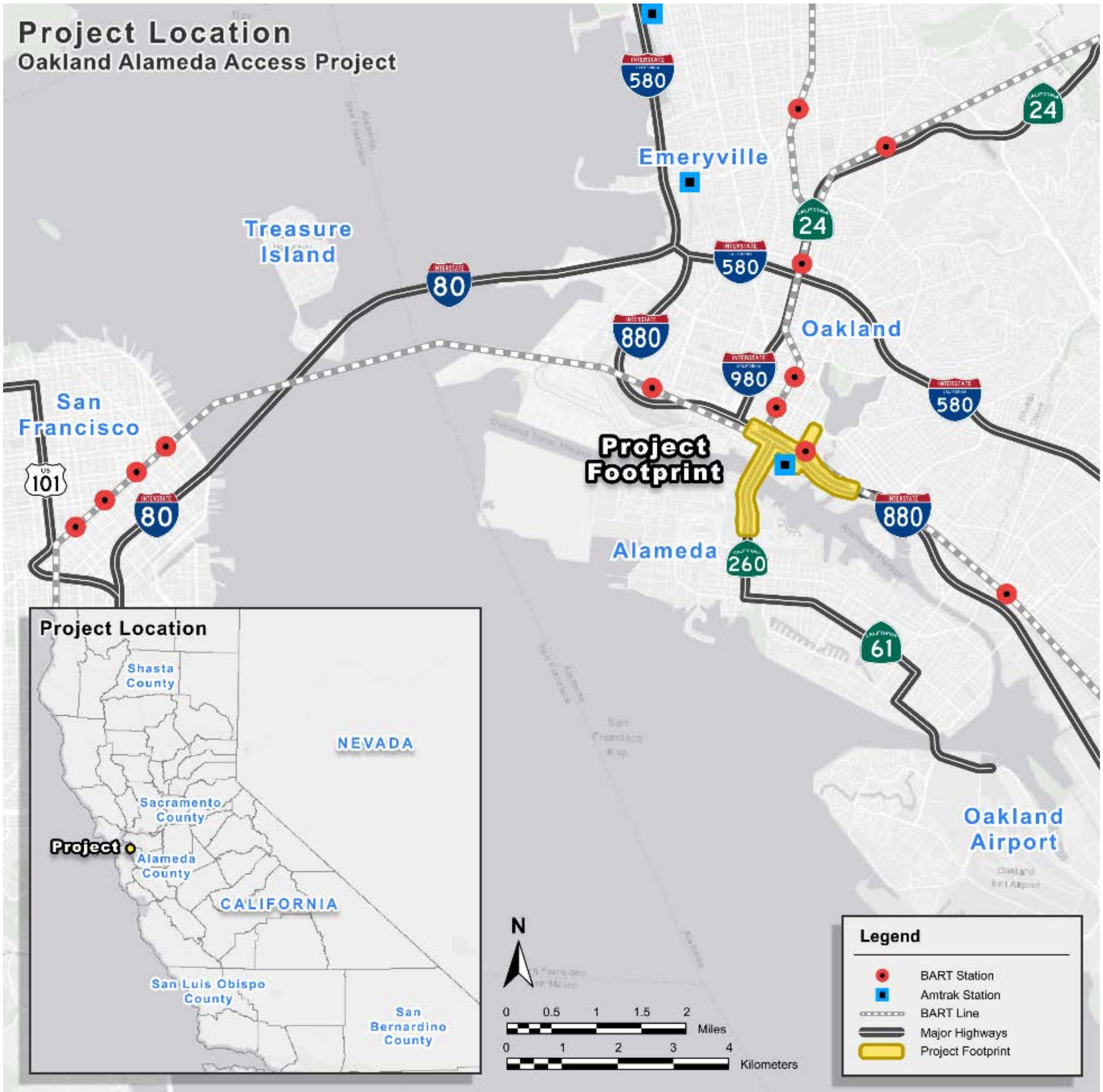
1.1. EXISTING FACILITY

I-880 is a major north-south freeway that extends from San Jose at the southern end to Oakland at the northern end. The freeway serves as a major route for the movement of goods and materials, as well as commuter traffic in the San Francisco Bay Area. I-880 is also a major East Bay commute route passing through several cities and neighborhoods along its length and connecting to major east-west highways, such as I-80, I-238, SR-92, and SR-84. At its northern end through downtown and West Oakland, I-880 connects to I-980 which connects to I-580 and SR-24 and to I-80 which goes across the San Francisco-Oakland Bay Bridge to San Francisco. Within the project footprint, which contains all proposed project improvements, ground disturbance activities, staging, and access areas, I-880 is a divided freeway consisting of four mixed-flow lanes northbound (NB) and three to five mixed-flow lanes southbound (SB). In the project footprint, the freeway is entirely on a viaduct (elevated bridge-like structure) or on retaining walls. Auxiliary lanes are provided for NB I-880 from the Jackson Street on-ramp to the I-980 connector and for SB I-880 from the Oak Street on-ramp toward westbound (WB) I-980 (see Figure 1-2). Note that some technical analyses refer to a project study area, which is a broader area evaluated for potential impacts associated with the project and includes the project footprint.

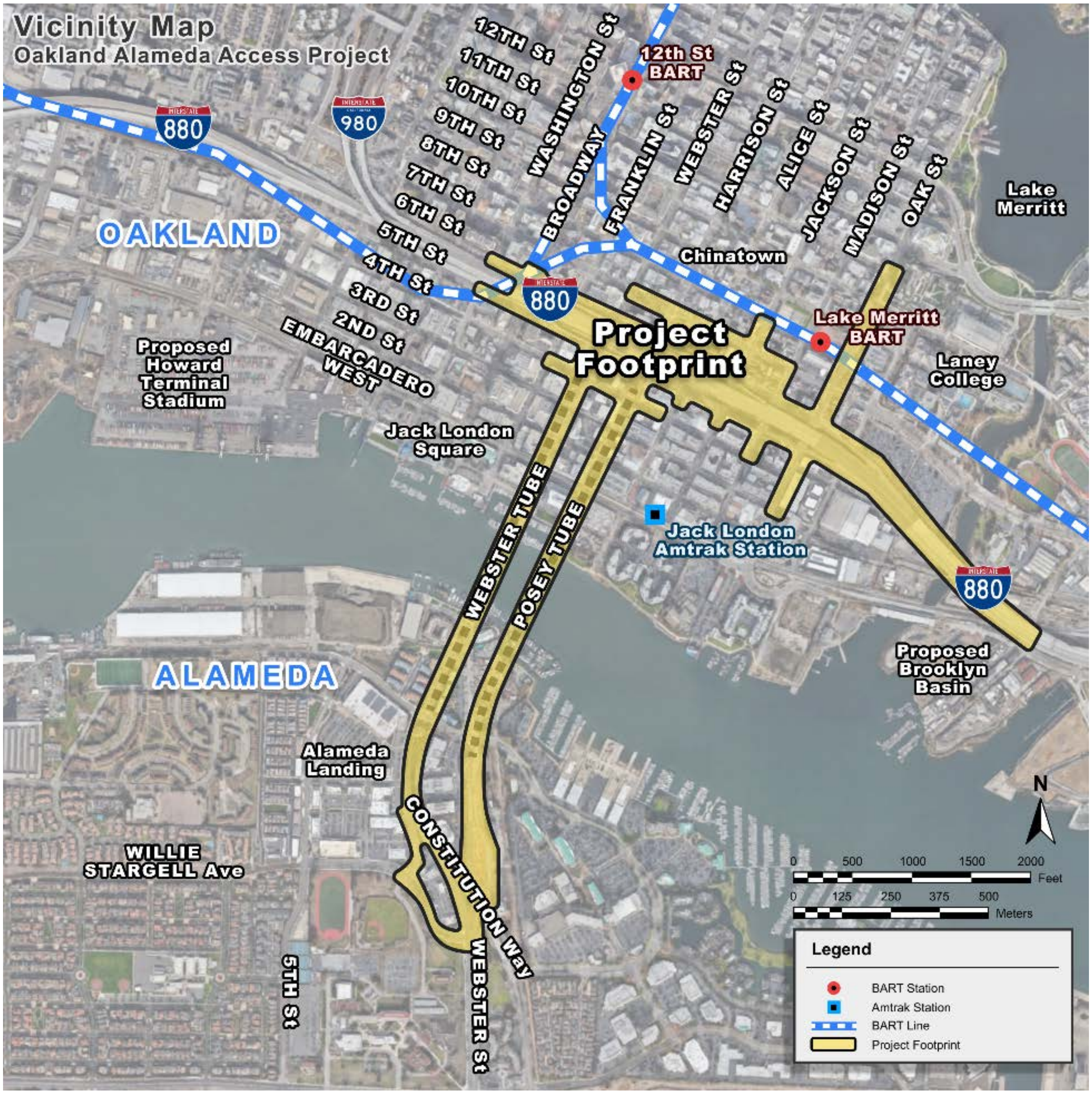
SR-260 is a four-lane state route comprised of the Posey and Webster tubes (Tubes) that provides access between the cities of Oakland and Alameda. The SR-260/Posey Tube consists of two one-way northbound lanes that provide access to Oakland from Alameda; the SR-260/ Webster Tube consists of two one-way southbound lanes that provide access from Oakland to Alameda. Both Tubes are under the Oakland Inner Harbor. In Oakland, the SR-260 designation continues along Harrison Street from the Posey Tube Portal to 6th Street. Two-directional pedestrian and bicycle access along this segment of SR-260 is only permitted in the Posey Tube along a walkway on the east side (right side direction of travel). The Webster Tube does not allow for pedestrian or bicycle access.

Local streets near I-880 connect to freeway on-/off-ramps and the SR-260/Tubes to and from Alameda. Multiple streets cross under the freeway and some are one-way (e.g., Madison Street), partially one-way (e.g., Webster Street), or flow into on-/off-ramps or the Tubes (e.g., Harrison Street). Freeway-bound traffic from Alameda on Oakland Chinatown streets, notably Harrison/7th/Jackson streets (the existing “racetrack”), has resulted in numerous vehicle-pedestrian conflicts. 6th Street is a multi-lane, east-west local road that runs parallel to I-880 on the north side and mainly provides access to several local businesses, as well as the Oakland Police Department. 5th Street is a multi-lane, east-west local road that runs parallel to I-880 on the south side, and it is the main access road from SB I-880 to Alameda and the Jack London District. Neither 5th or 6th streets are continuous between Oak Street and Broadway. They are obstructed by the Broadway off-ramp, I-880 viaduct on 6th Street, and the Tubes on 5th Street (see Figure 1-3).



Source: HNTB (2020)

Figure 1-2. Project Location



Source: HNTB (2020)

Figure 1-3. Proposed Project Footprint

1.2. FUNDING

The proposed project is funded by the State Transportation Improvement Program (STIP) and Regional Transportation Plan (RTP). Local sources of funding including Alameda County Measure BB funds ($75 million) and Measure B funds ($8 million) have been allocated (see Section 2.2.3. Legislation). Additionally, $9 million in funds has been allocated to the Plans, Specifications, and Estimates (PS&E) phase of the project. Federal funds are anticipated, but a source has not been identified. The proposed project is included in the Metropolitan Transportation Commission's (MTC) RTP, *Plan Bay Area 2040* (RTP ID 17-01-0030). It also is included in MTC's financially constrained *2019 Transportation Improvement Program* (TIP ID ALA 070009). Project construction is expected to start in mid-2023.

Section 2.0. Purpose and Need

2.1. PURPOSE

The purpose of the proposed project is to:

- Improve multimodal safety and reduce conflicts between regional and local traffic.
- Enhance bicycle and pedestrian accessibility and connectivity within the project study area.
- Improve mobility and accessibility between the I-880, SR-260 (Tubes), City of Oakland downtown neighborhoods, and City of Alameda.
- Reduce freeway-bound regional traffic and congestion on local roadways and in area neighborhoods.

2.2. NEED

Access between the freeway and the roadway networks between I-880 and the Tubes is limited and indirect, and access to/from the cities of Oakland and Alameda is circuitous (see Figure 1-4). Existing access to I-880 from Alameda and the Jack London District requires loops through several local streets and intersections, routing vehicles through the downtown Oakland Chinatown neighborhood, which has the following operational impacts on local streets:

- Streets in and around the downtown Oakland Chinatown area have a high volume of pedestrian activity and experience substantial vehicle-pedestrian conflicts, and the I-880 viaduct limits bicycle and pedestrian connectivity between downtown Oakland and the Jack London District.
- SB I-880 traffic heading to Alameda must exit at the Broadway/Alameda off-ramp, then travel south along 5th Street for more than a mile — through nine signalized and unsignalized intersections — before reaching the Webster Tube at 5th Street/Broadway.
- WB I-980 traffic heading to Alameda must exit at the Jackson Street off-ramp and circle back through Chinatown through seven signalized and unsignalized intersections to reach the Webster Tube.
- NB I-880 traffic heading to Alameda must exit at the Broadway off-ramp and form a queue on Broadway between 5th and 6th streets, which backs up onto the ramp. Alternatively, drivers may loop through Chinatown to access the Webster Tube.

Note: Graphic not to scale

Figure 1-4. Existing Travel Route between I-880 and the Tubes

2.2.1. Safety, Capacity, and Transportation Demand

SAFETY

State Highways

Accident data was collected over a three-year period for SR-260 showing there were 33 accidents in the Posey Tube (NB) and 22 accidents in the Webster Tube (SB). Some SR-260 segments within the project study area have accident rates greater than the statewide average (see Table 1-1). In the Posey Tube, the most common collision types were rear-ends and sideswipes. In the Webster Tube, the most common collision types were sideswipes and hit objects. It is likely sudden traffic backups and limited sight distances were contributing factors. To address these conditions, the speed limits inside the Tubes would be lowered, and safety features such as lighting, warning signs, flashing beacons, loop detectors, variable message signs, and rumble strips would be installed as part of the proposed project.

Table 1-1. SR-260 Traffic Accident Rates

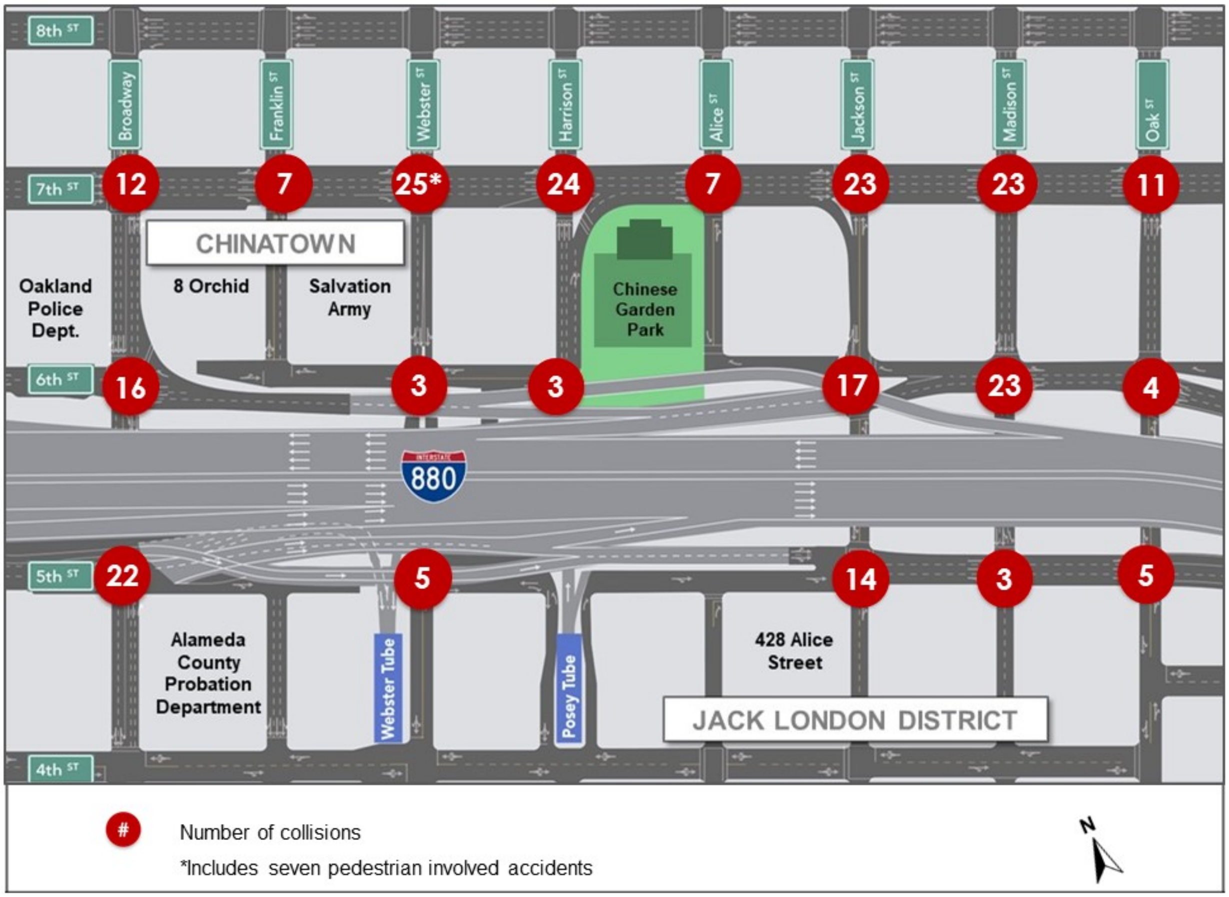
Accident Rate	Location			
	NB SR-260 Mainline (PM R0.640 to R0.837	**SB SR-260 Mainline (PM R0.640 to R0.837)**	**NB SR-260 Posey Tube (PM R0.838R to R1.923R)**	**SB SR-260 Webster Tube (PM R0.838L to R1.923L)**
Actual (per million vehicle miles)				
Fatalities	0	0	0	0
Fatalities + Injuries	**0.91**	**0.91**	**0.36**	0.14
TOTAL	**2.12**	**2.42**	**0.91**	**0.61**
Statewide Average (per million vehicle miles)				
Fatalities	0.008	0.008	0.004	0.004
Fatalities + Injuries	0.61	0.61	0.18	0.18
TOTAL	1.28	1.28	0.51	0.54

Source: Traffic Operation Analysis Report (TOAR) (January 2020)/Caltrans TASAS for the period of January 1, 2015 to December 31, 2017

*Note: numbers are above the statewide average are denoted in **bold**.*

<u>Local Streets</u>

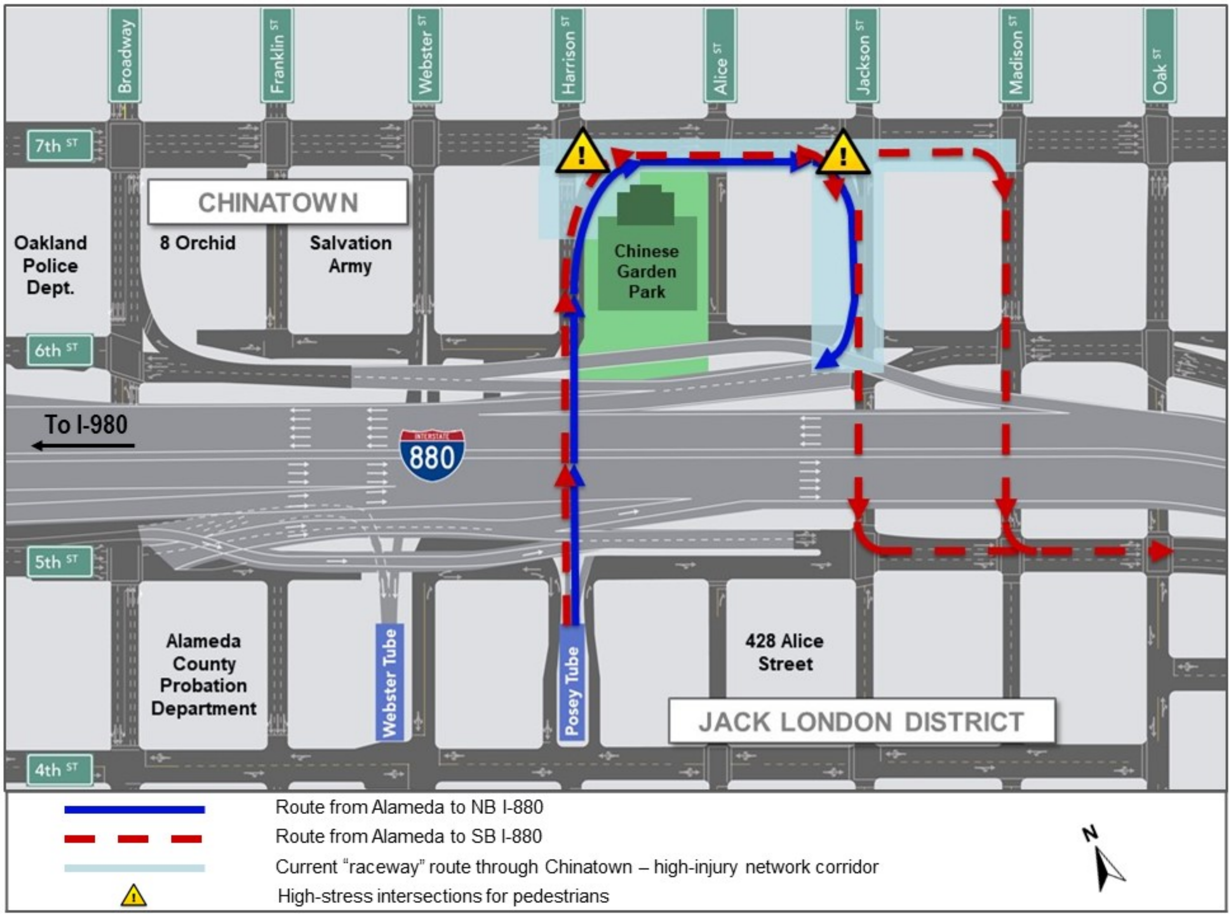
Results of the traffic analysis for the existing and proposed conditions are detailed in the *Traffic Operations Analysis Report* (TOAR March 2020). As part of the TOAR, a collision history analysis was performed for state highways and local streets for a three-year period. The accident history includes total number of vehicular accidents, accidents with injury, accidents with property damage only and accidents involving bicyclists and pedestrians. The intersections with the highest total accident rates and the highest pedestrian-involved accident rates on local streets are shown in Figure 1-5.



Source: TOAR (January 2020)/The City of Oakland Statewide Integrated Traffic Records System (SWITRS)
Note: Graphic not to scale

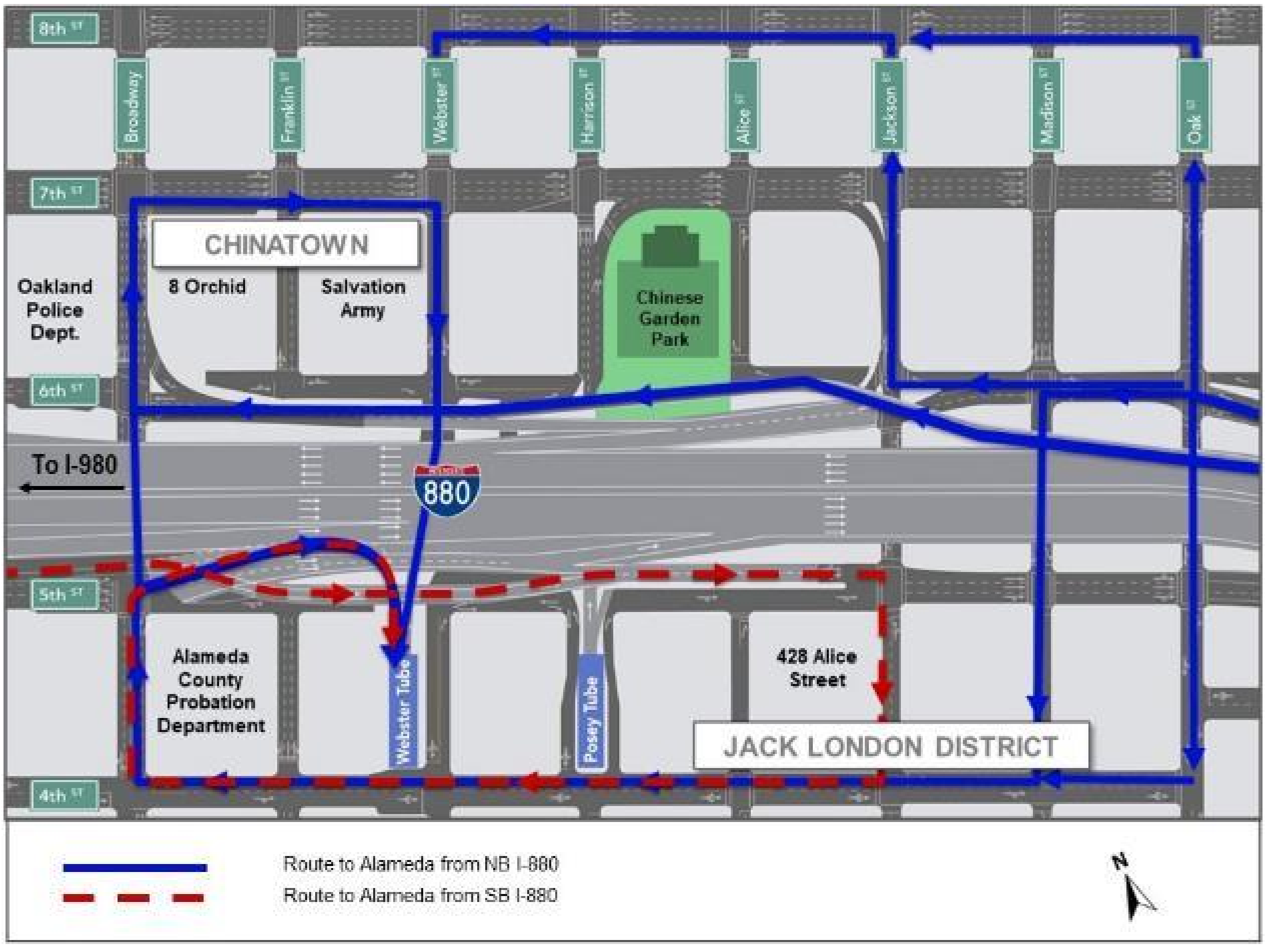
Figure 1-5. Total Number of Collisions at Local Intersections (2016-2018)

Currently, traveling between regional routes from Alameda to I-880 and I-980 and I-880 and I-980 to Alameda (see Figure 1-6 and Figure 1-7) requires driving through neighborhood streets that serve as freeway access routes. This roadway network was identified in the City of Oakland *Pedestrian Plan 2017* as a pedestrian high-injury network corridor. According to the City of Oakland SWITRS, this area includes high-stress intersections for pedestrians with a high incidence of vehicle-pedestrian conflicts. Roadway network modifications that are part of the proposed project, including the new horseshoe ramp under I-880 at Jackson Street, would lead to decreased traffic volumes along 7th, 8th, Broadway, Webster, Harrison, and Jackson streets in downtown Oakland and Chinatown. For some segments, forecasted decreases would be as high 1,500 vehicles per hour in the 2025/2045 AM peak hour.



Note: Graphic not to scale

Figure 1-6. Routes from Alameda to Access I-880 and I-980



Note: Graphic not to scale

Figure 1-7. Routes to Alameda from I-880

In addition to the volume reductions on several local streets, the proposed project includes a number of safety enhancements for bicyclists and pedestrians. Proposed curb extensions or bulb-outs would improve safety by shortening pedestrian crossing distances and by reducing pedestrian exposure to conflicts with vehicles. Separate/protected signal phase improvements would further prioritize bicycle and pedestrian movements and improve safety by reducing or eliminating potential conflicts with vehicular traffic. The construction of Class I multi-use paths, Class II bike lanes and Class IV cycle tracks would provide improved separation between vehicles on the roadway and bicycle and pedestrian traffic in the area, reducing conflicts and increasing user confidence and safety. The Caltrans Local Roadway Safety Manual considers some improvements to reduce crashes by a variety of percentages: curb extensions (30%), leading pedestrian intervals (LPI) (10-15%), pedestrian hybrid beacons (PHB) (55%) and bike (35%). All of these improvements are elements of this proposed project.

INTERSECTION CAPACITY

Level of Service (LOS) is a congestion rating that varies from LOS A to F. LOS A represents stable flow and very slight delays. LOS E represents unstable flow, poor progression, and long cycle lengths, and LOS F represents forced flow or jammed conditions and is considered over capacity. LOS was used to evaluate the existing operating capacity of intersections within the project study area.

Within the project study area, I-880 is a divided freeway consisting of four mixed-flow lanes. In the PM peak period, there is no congestion in the northbound direction. However, the southbound direction is heavily congested due to a bottleneck downstream of the study segment. During the PM peak hour, the queue associated with this bottleneck extends to and beyond the connector from WB I-980. The traffic simulation model for this period shows all but the segment north of the I-980 connector operating at LOS F for some portion of the peak period.

Fifty-six intersections were analyzed within the project study area to understand volumes and patterns, including 25 core intersections that fell within or adjacent to the project study area (see Figure 2-14). Per the TOAR (Caltrans 2020), six intersections operate at an unacceptable LOS E or F during the PM peak periods.

The proposed project would improve travel times and operating conditions on local streets. In the morning peak hour, travel times through the Posey Tube to NB I-880 decrease by up to three minutes. Travel times to the Webster Tube may decrease by up to eight minutes during the PM peak hour. With respect to mobility on local streets, operating conditions on local streets with the proposed project improve as a greater number of core study area intersections improve from LOS E or F to LOS D or better.

TRANSPORTATION DEMAND

Based on the data projections from the Association of Bay Area Governments (ABAG), the cities of Oakland and Alameda and Alameda County will continue to see population, housing, and employment growth over the next 20 years. Oakland's population is projected to increase by about 35% from 2020 to 2040, which is at a faster rate than that of Alameda County (22%).The City is in the process of completing the *Downtown Oakland Specific Plan* (DOSP) that would change land use designations to allow for increased housing densities to accommodate forecasted growth.

Within the project study area, a low transportation demand is anticipated around I-880 especially in the AM peak direction (NB) where the freeway is already congested, and it is likely a higher demand will occur in the AM off-peak direction (SB) and along I-980. High demand is anticipated on arterial roads to the south heading in and out of downtown Oakland (e.g., 7th Street/8th Street, 10th Street, Lake Merritt Boulevard) due to nearby freeway links operating at or near capacity, which increases travel time on those facilities. Although near capacity, the AM peak direction in the Posey Tube is anticipated to have low demand; however, in the AM off-peak direction (Webster Tube), higher transportation demand is forecasted due to job growth in Alameda, most notably at Alameda Point (see Table 1-2).

Table 1-2. Estimated Traffic Demand Growth (AM Peak Hour)

	2015 Existing	2025 No-Build	2025 % Change from Existing	2045 No-Build	2045 % Change from Existing
NB I-880 Jackson Street to I-980	7,985	8,103	+1.5%	8,754	+9.6%
Posey Tube	2,573	2,740	+6.5%	3,089	+20.0%
SB I-880 south of Oak Street	6,156	6,991	+13.6%	7,802	+26.7%
Webster Tube	2,055	2,569	+25.0%	3,105	+51.1%

EXISTING ROADWAY CONDITIONS

The road network in the project study area contains the following design conditions that would need to be evaluated under the proposed project:

- Super-elevation (how the roadway cross-slopes to the right) and curve geometry (length and radius) on the Jackson Street and Broadway on-ramps that do no match current standards; and
- Lane widths and shoulders in the Tubes are narrower than current standards.

To address these conditions, the on-ramps would be restriped to meet current standards. Speed limits would be reduced inside the Tubes, and features such as lighting, warning signs, flashing beacons, loop detectors, variable message signs, and rumble strips would be installed.

EXISTING PEDESTRIAN AND BICYCLE FACILITY CONDITIONS

Current design and connectivity issues that impede bicycle and pedestrian travel in the project study area include:

- Gaps in non-Americans with Disabilities Act (ADA) compliant sidewalks along 5th and 6th streets;
- Limited bicycle facilities south of 8th Street and in the north-south direction;
- Limited connectivity between the cities of Oakland and Alameda for bicycles and pedestrians; and
- Limited bicycle and pedestrian connectivity between downtown Oakland and the Jack London District.

To address these issues, new or enhanced bicycle and pedestrian connections between Oakland and Alameda, between downtown Oakland and the Jack London District, and across downtown Oakland would be added.

2.2.2. Social Demands or Economic Development

The City of Oakland is undergoing rapid change and is in the process of completing the DOSP; adoption is expected in 2020. It would change land use designations to allow for increased housing densities to accommodate forecasted growth. It includes multiple goals and the most relevant to the proposed project is mobility. The DOSP identifies three fundamental mobility objectives:

1. To improve pedestrian access and safety;

2. To create a world class transit network that links residents to downtown; and

3. To develop a connected bicycle network with low-stress facilities.

To achieve these objectives, the DOSP identifies a number of supporting strategies to enhance the local pedestrian and bicycle, transit, and vehicular networks. This includes implementing pedestrian and bicycle programs/policies and implementing transit priority treatments. Directly related to the proposed project, the DOSP calls for decreasing freeway traffic on local streets, and specifically calls for "addressing congestion issues around the I-880 ramps and the Tubes through the Oakland Alameda Access Project."

The City of Alameda's *Transportation Choices Plan: Transit and Transportation Demand Management* (2018) cites access constraints associated with the existing bridges, Tubes, and ferry services. These constraints limit the connectivity of Alameda to adjacent communities and transportation infrastructure (e.g., I-880 and nearby Bay Area Rapid Transit [BART] stations). The plan specifically cites existing congestion issues at the Tubes. In Alameda, housing demand is expected to increase 7% over the next 10 years along with a 30% increase in job growth. Portions of Alameda immediately west of the Tubes have been designated as a priority housing development area with several defined development projects that will add over a thousand housing units in the next decade. To address this growth, a primary strategy identified by this plan is to increase walking, bicycling, transit, and carpooling between Oakland and Alameda. Trips between these two cities account for approximately 50% of weekday trips for Alameda residents with 25% of these trips directly to the downtown region of Oakland. Proposed bike infrastructure in the Tubes was one program identified by the City to address this strategy. Other city strategies include improving bicycle/pedestrian safety and improving mobility for all modes of transportation within the City.

2.2.3. Legislation

The proposed project would use local, regional, and state funding sources with the potential for supplemental federal funds. It would use STIP-RTP funds and Alameda County Measure BB and Measure B funds. Measure B, passed in 2000, implemented a 20-year ½-cent sales tax and authorized Alameda CTC's collection and distribution in accordance with the Transportation Expenditure Plan (TEP). Measure BB, passed in 2014, implemented a 30-year TEP by renewing Measure B's 0.5% transportation sales tax and by increasing that tax by 0.5% to a full 1.0%. The 30-year TEP is managed by Alameda CTC, which has proposed spending $7.8 billion to improve and maintain transportation infrastructure and systems in Alameda County.

2.2.4. Modal Interrelationships and System Linkages

INTERSTATE

I-880 (Nimitz Freeway) is an 8-lane north-south freeway that connects I-80 in Oakland to I-280 and SR-17 in San Jose. Access points to and from the project study area include the Jackson Street on-ramp and the Oak Street and Broadway off-ramps in the northbound direction and the Oak Street on-ramp in the south.

STATE ROUTE

SR-260 (Tubes) connects downtown Oakland and Alameda under the Oakland Inner Harbor. Each Tube is a 2-lane connector road. To connect to I-880 via the Posey Tube, vehicles must turn right onto 7th Street to access the Jackson Street or Oak Street on-ramp after exiting the Tube in Oakland. Webster and Harrison streets connect to the Webster and Posey tubes respectively.

ARTERIAL ROADS

Broadway is a major north-south arterial between Jack London Square to the south and SR-24 to the north. Broadway provides two to three travel lanes in each direction in the project study area.

Webster and Harrison streets are north-south collector roads (low to moderate capacity roads that move traffic from local streets to arterial roads) providing access between the Tubes and downtown Oakland. South of 10th Street, Webster and Harrison streets operate as a one-way couplet (two one-way streets whose flows combine on one or both ends into a single two-way street) with Harrison Street continuing northbound from the Posey Tube to Oakland and Webster Street continuing southbound to the Webster Tube to Alameda. In Alameda, Webster Street continues as a two-way arterial to areas south of the project study area.

Madison and Oak streets are north-south collector roads providing access between Jack London Square, I-880, and the Lake Merritt area. North of I-880, both Madison (southbound) and Oak (northbound) streets operate as parallel one-way streets, and they provide two travel lanes in each direction within the project study area. South of I-880, Madison Street continues as a one-way street while Oak Street is a two-way street.

7th and 8th streets are east-west streets operating as one-way streets that both provide four travel lanes in each direction through the project study area.

MASS TRANSIT

Alameda-Contra Costa Transit District (AC Transit) provides bus transit service to 13 cities, as well as unincorporated areas in Alameda and Contra Costa counties. As of 2019, AC Transit has 158 bus lines and 635 vehicles, and it serves approximately 1.5 million people within its 364-square-mile service area (AC Transit 2020). There are multiple AC Transit routes within the study area with Broadway as its primary corridor in the project study area. Other roadways with numerous bus routes include Webster and Harrison streets (north-south), the Tubes, and 7th, 8th, 11th, and 12th streets (east-west). The Lake Merritt BART Station serves four routes, and the 12th St./Oakland City Center Station (just north of the project study area) serves 11 routes.

BART provides regional rapid transit and connects Alameda, Contra Costa, San Francisco, and San Mateo counties. The Lake Merritt Station is near Oakland Chinatown, Laney College, and the Oakland Museum of California, and it is the only station located in the project study area.

The 12th St./Oakland City Center Station is located just north of the project study area on Broadway and 12th Street.

Amtrak is a heavy rail provider that provides service in the project study area at the Oakland Jack London Square Station, which is served by Capitol Corridor, San Joaquin, and Coast Starlight trains. Capitol Corridor provides daily service between Auburn and San Jose (nine trains per day) with additional trains operating between Sacramento and San Jose. San Joaquin (four trains per day) and Coast Starlight (one train per day) operate less frequently than Capitol Corridor.

San Francisco Bay Ferry Service provides year-round, daily trips to/from the Oakland Jack London Square terminal to Alameda, San Francisco Ferry Building, and Pier 41 with service to the Chase Center and Oracle Park during their respective sports seasons or special events. Ferry riders receive free parking (up to 12 hours) at a parking garage located two blocks east of the terminal on Washington Street.

Free Broadway Shuttle (Broadway "B" Shuttle) operates on weekdays between 7 am and 7 pm from Jack London Square to Grand Avenue; after 7 pm service extends past Grand Avenue to 27th Street. Depending on the time of day, the shuttles run every 11-15 minutes, and most stops are located on Broadway. The shuttle provides connections to other public transit services located in the project study area. Services are provided by the City of Oakland and AC Transit.

2.2.5. Air Quality Improvements

PLAN BAY AREA

Senate Bill (SB) 375 requires that Bay Area regional planning agencies include "sustainable community strategies" in their RTP updates to describe how greenhouse gas (GHG) emission reductions set by the California Air Resources Board (CARB) would be met through land use and transportation planning. The proposed Build Alternative, included in the 2019 TIP, is part of the *Plan Bay Area 2040* transportation network, and it would provide a more direct vehicle route from Oakland to Alameda and improve bicycle and pedestrian facilities. Air quality improvements would be expected from more efficient vehicular travel and increased non-motorized travel.

California has enacted aggressive GHG reduction targets. Assembly Bill (AB) 32 set the goal of reducing statewide GHG emissions to 1990 levels by 2020. It required CARB to develop a scoping plan detailing the approach California will take to achieve that goal and update the plan every five years. SB 743 requires vehicle miles traveled (VMT) to be used to assess the impacts of capacity-increasing projects with the potential to increase VMT, effective July 1, 2020.

BAY AREA 2017 CLEAN AIR PLAN

The *Bay Area 2017 Clean Air Plan* (CAP) is a multi-pollutant plan prepared by the Bay Area Air Quality Management District (BAAQMD) that addresses GHG emissions along with other air emissions in the San Francisco Bay Area Air Basin. This basin includes the nine counties that surround the Bay, including Alameda County. The Build Alternative would be consistent with the CAP.

2.2.6. Independent Utility and Logical Termini

FHWA regulations (23 Code of Federal Regulations [CFR] 771.111[f]) require that the action being evaluated connect logical termini (FHWA defines logical termini as the rational end points for a transportation improvement and its environmental impact review) and be of sufficient length to address environmental matters on a broad scope. The proposed project possesses logical termini because it focuses on reducing congestion on city streets while improving mobility and access to and from Alameda and I-880. The Build Alternative also includes several elements intended to fill gaps in or expand the bicycle and pedestrian networks within the project study area. Potential environmental impacts were considered when defining the project study area to ensure permanent and temporary and direct and indirect impacts were captured.

Independent utility is a FWHA requirement that highway projects are usable and a reasonable expenditure even if no additional transportation improvements are made. FHWA states that "as long as a project would serve a significant function by itself (i.e., it has independent utility), there is no requirement to include separate but related projects in the same analysis." The Build Alternative has independent utility because the proposed project fully addresses the purpose and need, and it is sufficient to ensure that no additional investment would be required following project completion. The proposed project also would not restrict the consideration of alternatives for other reasonably foreseeable transportation improvements.

Section 3.0. Project Description

This section describes the proposed action and the project alternatives that were developed to meet the purpose and need while avoiding or minimizing environmental impacts. The proposed project is located in the cities of Oakland and Alameda in Alameda County, California. Caltrans and Alameda CTC are proposing to improve access along I-880 and in and around the Tubes, downtown Oakland, and the City of Alameda. Within the approximately 1-mile-long project, I-880 (ALA PM 30.47 to PM 31.61) and SR-260 (ALA PM R0.78 to PM R1.90) are major transportation corridors. Also, the I-880 freeway viaduct is a physical barrier, limiting bicycle and pedestrian connectivity between downtown Oakland and Chinatown to the north and the Jack London District and Oakland Estuary to the south. Existing local street patterns across I-880 are intertwined with on- and off-ramps and the Tubes connecting Oakland and Alameda affecting the cross-freeway circulation of motorists, bicyclists, and pedestrians.

3.1. PROJECT ALTERNATIVES

Two alternatives were developed, the No-Build Alternative and the Build Alternative. The Build Alternative is the proposed project, and it was developed with extensive public and agency input (refer to Chapter 4 - Comments and Coordination for additional details). The alternatives were evaluated equally based on the proposed project's potential impacts to the human, physical, and biological environments. Construction-related and cumulative impacts were considered as well (see Chapter 2, Section 5.0 and Section 6.0).

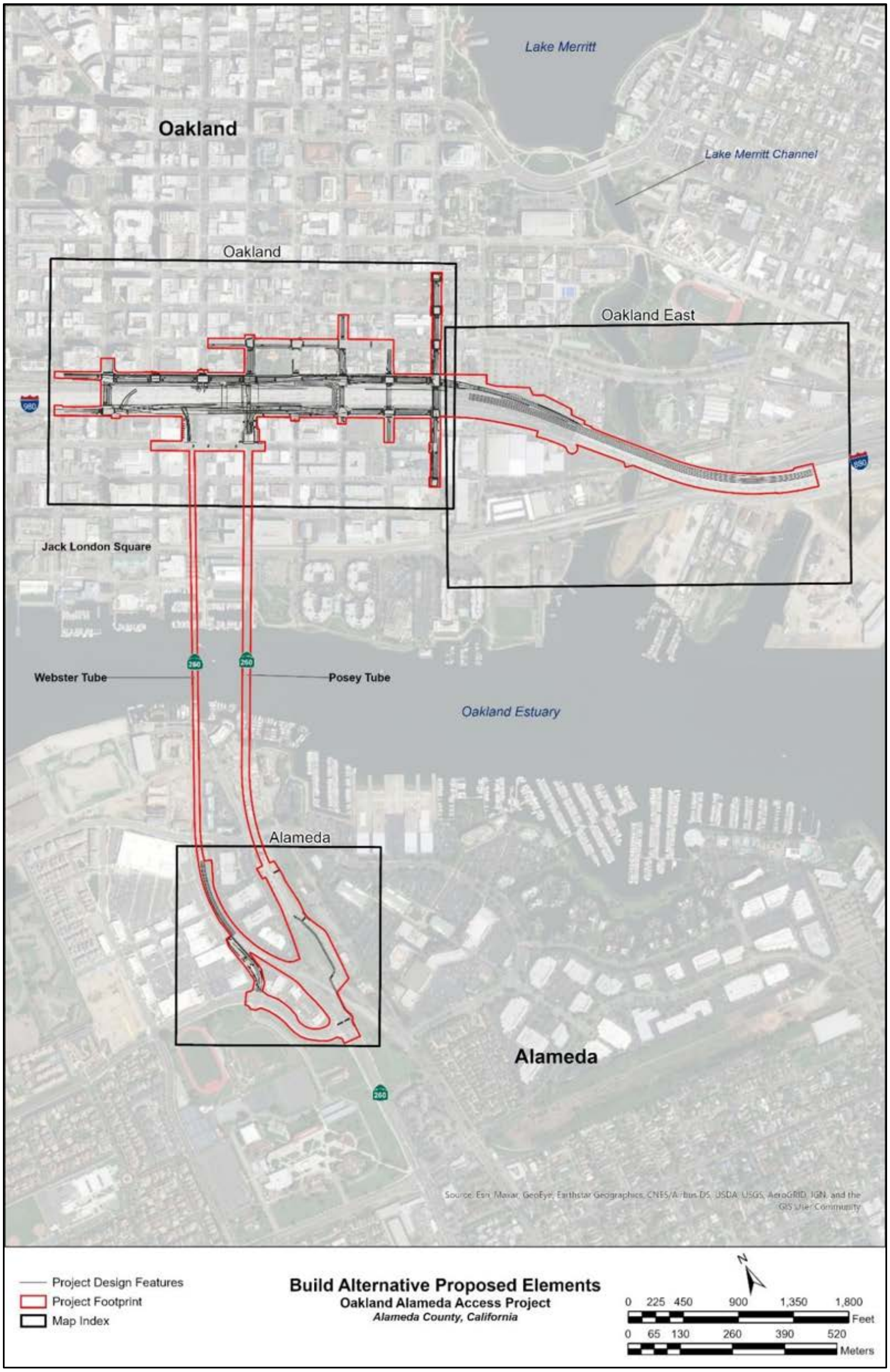
3.1.1. Build Alternative

Under the Build Alternative, Caltrans and Alameda CTC propose to remove and modify the existing freeway ramps and to modify the Posey Tube exit in Oakland. The Build Alternative would improve access to NB and SB I-880 from the Posey Tube via a right-turn-only lane from the Posey Tube to 5th Street and a new horseshoe connector at Jackson Street below the I-880 viaduct that would connect to the existing NB I-880/Jackson Street on-ramp. The existing WB I-980/Jackson Street off-ramp would be reconstructed and shifted to the south.

The Webster Tube entrance at 5th Street and Broadway would be shifted to the east to create more space for trucks to make the turn from Broadway into the Webster Tube. A bulb-out would be constructed to extend the sidewalk, reducing the crossing distance and allowing improved visibility of pedestrians on the southeast corner.

The NB I-880/Broadway off-ramp would be removed and the NB I-880/Oak Street off-ramp to 6th Street would be widened. The NB I-880/Oak Street intersection would become the main NB I-880 off-ramp to downtown Oakland and to Alameda. 6th Street would become a one-way through street from Oak Street to Harrison Street and a two-way street from Harrison Street to Broadway.

The proposed project would include the addition of a Class IV two-way cycle track on 6th Street between Oak and Washington streets and on Oak Street between 3rd and 9th streets. Bicycle and pedestrian improvements would be constructed at the Tubes' approaches in Oakland and Alameda, and the Webster Tube westside walkway would be opened to pedestrians. This would improve connectivity to existing and future planned bicycle paths in the City of Oakland and implement various "complete streets" improvements to create additional opportunities for non-motorized vehicles and pedestrians to cross under I-880 between downtown Oakland, the Jack London District, and Alameda. See Figure 1-8, Figure 1-9, Figure 1-10, and Figure 1-11 for proposed elements of the Build Alternative.



Source: HNTB (2020)

Figure 1-8. Build Alternative Proposed Elements, Project Overview

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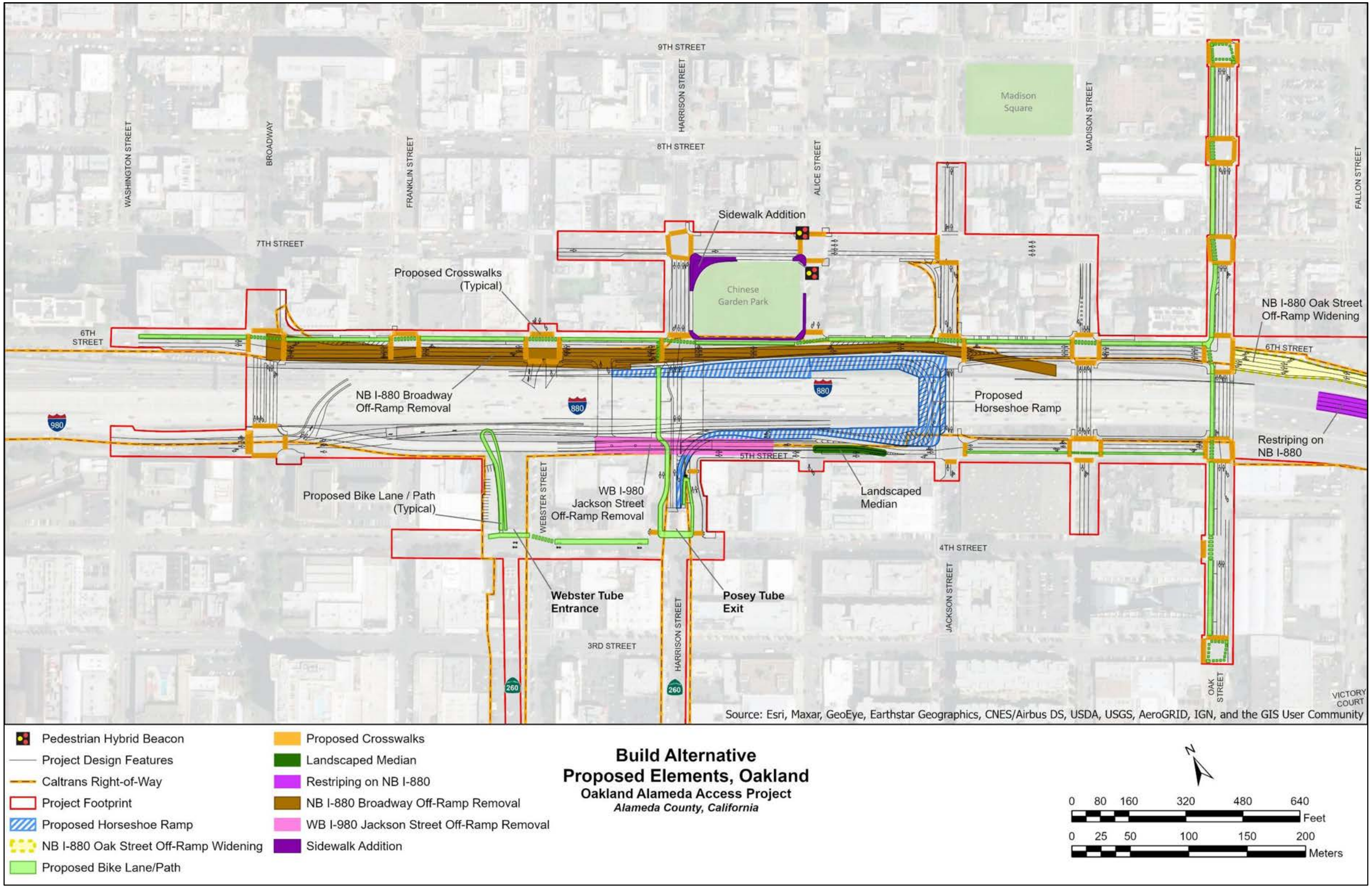
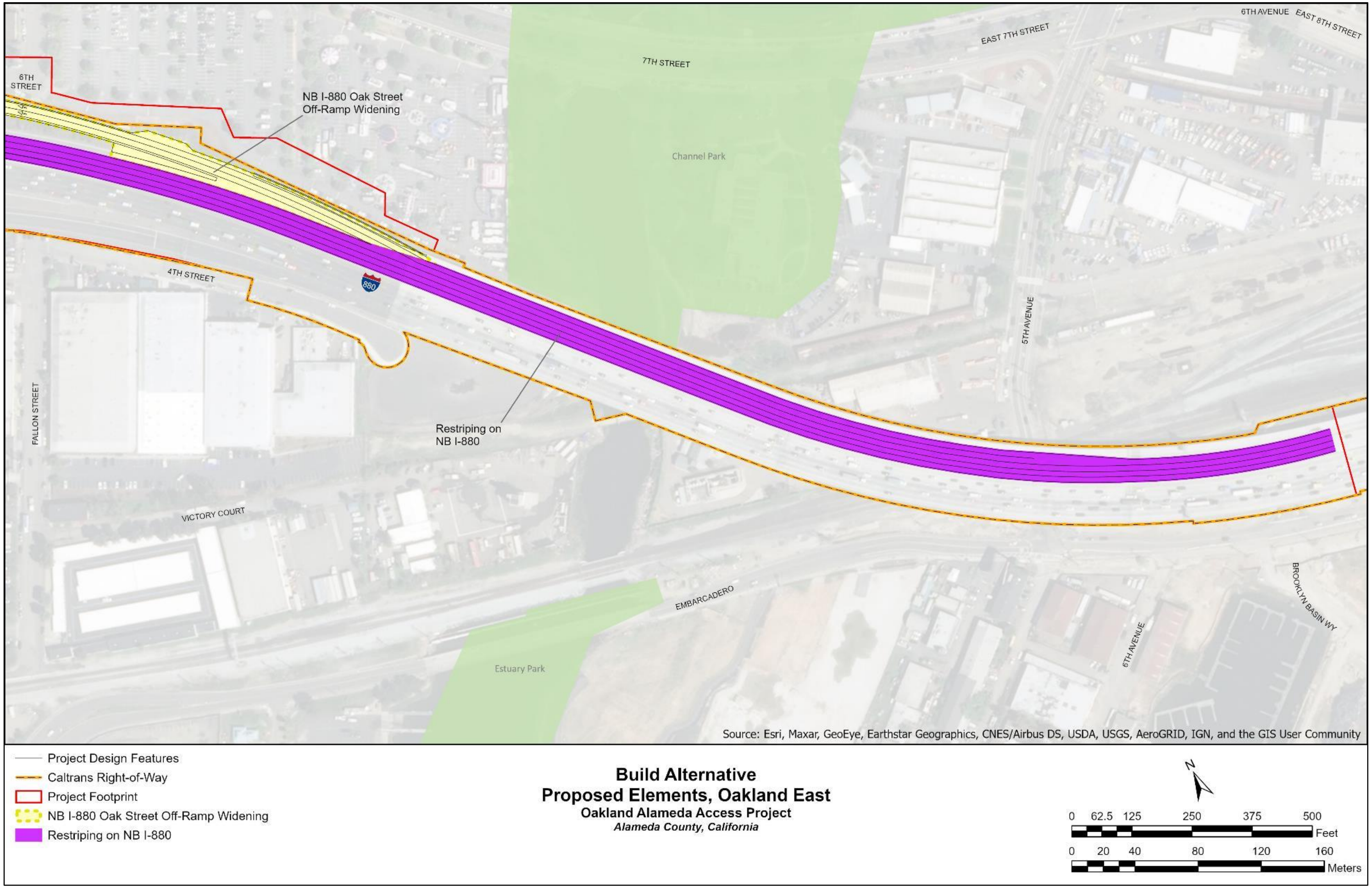


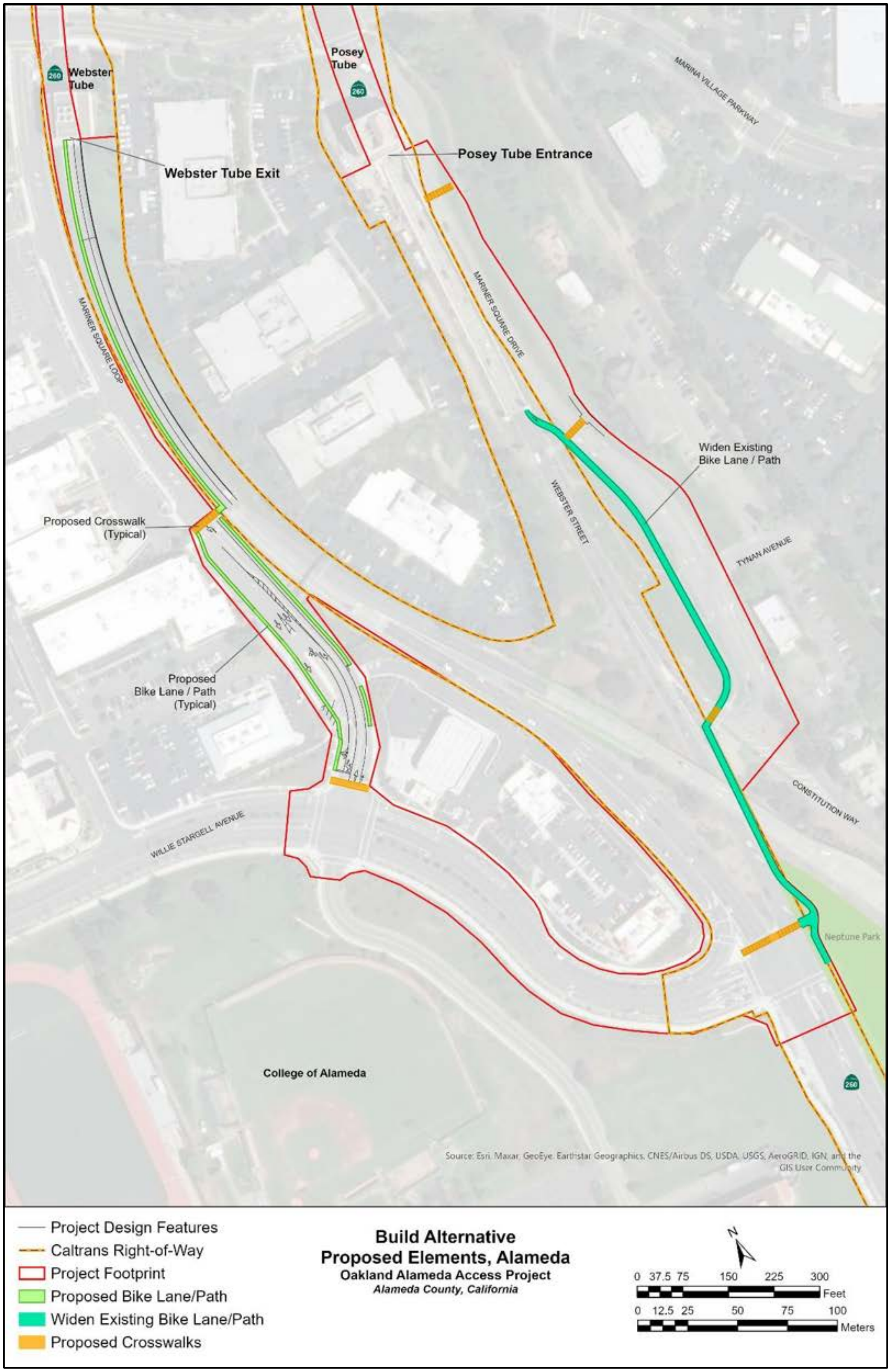
Source: HNTB (2020)

Figure 1-9. Build Alternative Proposed Elements, Oakland



Source: HNTB (2020)

Figure 1-10. Build Alternative Proposed Elements, Oakland East



Source: HNTB (2020)

Figure 1-11. Build Alternative Elements, Alameda

Additional details on the Build Alternative improvements:

1. Construction of a new horseshoe connector under I-880 at Jackson Street.

Vehicles exiting the Posey Tube would have direct access to NB I-880 via the proposed horseshoe connector. Vehicles heading to NB and SB I-880 would use the right-turn-only lane at the Posey Tube exit to turn onto eastbound 5th Street. Access to a new horseshoe connector would be provided from the left side of 5th Street and would loop below the I-880 viaduct to connect to the existing NB I-880/Jackson Street on-ramp. Traffic heading to SB I-880 would continue eastbound on 5th Street to the SB I-880/Oak Street on-ramp. Figure 1-9 shows the new horseshoe connector under I-880 at Jackson Street.

Construction of the new right-turn-only lane onto 5th Street would require new retaining walls along the right side of the Posey Tube exit replacing the historic Posey Tube wall. The horseshoe connector would provide a direct route between the Posey Tube and NB I-880/ EB I-980 and SB I-880, substantially improving connectivity and minimizing the need for freeway-bound vehicles to travel through Chinatown to access the ramps. This configuration would also reduce intersection and bicycle-pedestrian conflicts.

Posey Tube traffic heading to Chinatown and downtown Oakland would remain in the left lane and continue onto Harrison Street or turn left onto 6th Street to reach downtown via Broadway. A new left-turn pocket to accommodate the turn onto 6th Street would be constructed requiring removal of a section of the historic Posey Tube western exit wall.

2. Reconstruction of the existing WB I-980/Jackson Street off-ramp.

To provide space for unimpeded movement from the Posey Tube to the new horseshoe connector, the WB I-980/Jackson Street off-ramp would be realigned to the south. Figure 1-9 shows the relocated Jackson Street off-ramp. The realigned off-ramp would touch down at-grade on 5th Street at the Alice Street intersection. Off-ramp and 5th Street traffic would continue to be separated by a landscaped median past the condominium building at 428 Alice Street. 5th Street would be converted to a two-way street to accommodate condominium residents allowing vehicles to turn left or right onto 5th Street.

3. Removal of the existing NB I-880/Broadway off-ramp viaduct structure including the bridge deck and supporting columns.

Removing the NB I-880/Broadway off-ramp structure would provide the space for complete street improvements on 6th Street. It would also restore an element of the City of Oakland's street grid system by providing a continuous 6th Street between Oak Street and Broadway. Figure 1-9 shows where the existing NB I-880/Broadway off-ramp would be removed. This would provide for a more efficient street network, and it would allow traffic to be more evenly distributed on Oakland city streets. Also, it would improve traffic operations at the Broadway/6th Street and Broadway/5th Street intersections by eliminating the stream of traffic exiting the Broadway off-ramp and heading to the Webster Tube entrance. Instead, this traffic would use 6th Street and turn left at Webster Street to access the Webster Tube.

4. Widening of the NB I-880/Oak Street off-ramp.

The existing Oak Street off-ramp would be widened from a one- to a two-lane exit by restriping the NB I-880 mainline and reconfiguring the ramp terminus. Figure 1-10 shows the proposed widening at the NB I-880/Oak Street off-ramp and restriping on NB I-880. At the Oak Street intersection, the ramp would be further widened from one left-turn-only pocket lane, one through and left-turn lane, and one through and right-turn lane to provide one left-turn-only (SB) pocket lane, one through (WB) lane, one through (WB) and right-turn (NB) lane, and one right-turn-only (NB) lane. Two new retaining walls would be constructed along the widened ramp's new edge of the shoulder. In advance of the Oak Street exit, NB I-880 would be restriped from four to five lanes, including a standard 1,400-foot-long auxiliary lane to accommodate the additional traffic resulting from the Broadway off-ramp removal.

5. Modification of 5th Street/Broadway access to the Webster Tube.

The 5th Street/Broadway entrance to the Webster Tube would be moved slightly east (refer to Figure 1-9). Also, the 5th Street crosswalk on the east side of Broadway would be shifted east and considerably shortened, and the signal phasing would be modified to include a pedestrian-led signal phase for eastbound pedestrian traffic. This would improve safety by giving pedestrians priority over turning traffic. Also, this would improve truck access to the Webster Tube and minimize conflicts with other vehicular traffic.

6. Construction of a new through 6th Street connecting Oak Street to Broadway.

Improvements to 6th Street would be accomplished by turning the street into a one-way street in the westbound direction from Oak Street to Harrison Street and a two-way street from Harrison Street to Broadway (refer to Figure 1-9). The lanes would be a minimum of 11 feet wide. There would be a minimum of two through lanes with additional turn pockets at intersections in the westbound direction. There would be one lane in the eastbound direction from Harrison Street to Broadway.

A new sidewalk would be constructed along the south side between Broadway and Oak Street. Segments of the existing sidewalk along the north side between Oak Street and Broadway would be reconstructed to a minimum of 10 feet wide between Harrison and Alice streets to provide continuity for pedestrians. A continuous Class IV two-way cycle track would also be provided between Oak and Washington streets. Parking spaces would be provided along portions of this roadway.

7. Construction of a two-way bicycle/pedestrian path and walkway from Webster Street in Alameda to 6th Street in Oakland through the Posey Tube and from 4th Street in Oakland through the Webster Tube to Mariner Square Loop in Alameda.

The path would begin at Webster Street and Constitution Way in Alameda, would continue through the Posey Tube on the existing eastside walkway, and would exit the Tube via a new ramp with a hairpin turn at 5th Street. Figure 1-11 shows the proposed bicycle and pedestrian improvements. The path in Alameda connecting to the Posey Tube would be realigned and widened. The path in Oakland would wrap around the back of the Portal building on 4th Street and continue onto Harrison Street. It would continue onto a Class I two-way bicycle/pedestrian path under I-880 just west of Harrison Street and connect to the Class IV two-way cycle track on 6th Street between Oak and Washington streets. The new bicycle and pedestrian ramp exit from the Posey Tube would require removal of the existing historic Posey Tube staircase to provide street level ADA-compliant access from the Tube.

The proposed project would improve access between Oakland and Alameda by opening the Webster Tube maintenance walkway to bicycle and pedestrian travel. The walkway would connect to the proposed path under I-880 at 4th Street (near the Posey Tube Portal building). It would continue onto 4th Street to Webster Street, and it would turn north through the existing parking lot on the west side of the Webster Tube entrance before making a hairpin turn to connect to the westside walkway inside the Tube.

On the Alameda side, the walkway would connect to existing bicycle and pedestrian facilities at Mariner Square Loop and Willie Stargell Avenue. The existing sidewalk within Neptune Park would be widened to match the proposed sidewalk to the north. Improvements inside the Tube would include widening the existing walkway, upgrading the existing railings, and relocating call boxes and fire extinguishers.

8. **Modification of 5th, 7th, Madison, Jackson, Harrison, Webster, Oak, and Franklin streets.**

   The street modifications (refer to Figure 1-9) would include replacing the dual right turns at the 7th Street/Harrison Street intersection with a single right-turn-only lane and removing the free right turn (where the island allows cars to turn right without stopping) at the 7th Street/ Jackson Street intersection. These would no longer be needed because Alameda traffic bound for NB/SB I-880 would be better served by the right turns from the Posey Tube to 5th Street. With the removal of the free right turns, vehicles would observe the traffic signal before turning right. With the curb extension proposed at this location, the pedestrian crossing distance would be shortened, which would decrease vehicle-pedestrian conflicts. In addition, a PHB would be installed on 7th Street across the street from the Chinese Garden Park. There would also be restrictive right-turn movements to reduce bicycle and vehicle conflicts at the 5th/Broadway, 6th/Webster, 6th/Harrison, 6th/Jackson, 6th/Madison, 5th/Jackson, 8th/Oak, and 7th/Oak intersections.

   A continuous sidewalk would be installed along the perimeter of Chinese Garden Park. Additional improvements, including landscaping modifications, could occur adjacent to the southern boundary of the park and would be coordinated through the City of Oakland.

   Jackson Street between 5th and 6th streets would be converted from two- to one-way travel lanes in the northbound direction, and it would provide an emergency-only access lane.

RETAINING WALLS AND EXCAVATION

The proposed improvements would include construction of several new retaining walls along the NB I-880 Jackson Street on-ramp, WB I-980 Jackson Street off-ramp, NB I-880 Oak Street off-ramp, and new horseshoe connector. Retaining wall construction would minimize the need for right-of-way (ROW) acquisition. Thirteen retaining walls are proposed in Oakland. No retaining walls are planned for Alameda. Proposed retaining walls range from 60 to 150 feet in length, 4 to 32 feet in height, and they would require 2 to 44 feet of excavation.

Other project features in Oakland include bicycle/pedestrian paths, roadway work, viaduct columns (bents), and abutments; they are expected to be excavated to depths up to 50 feet.

Other project features in Alameda include bicycle/pedestrian paths, roadway work, and a sign foundation; they are expected to be excavated to depths up to 20 feet.

PROPERTY ACQUISITIONS

The proposed project would require the transfer of ROW from the following public entities: City of Oakland and City of Alameda. It would also require a permanent maintenance easement from Laney College to maintain a retaining wall for the Oak Street off-ramp. The Build Alternative would not result in the displacement of any residences or businesses.

UTILITIES

Existing Pacific Gas and Electric (PG&E) overhead distribution electric lines along 5^{th} and Harrison streets would be relocated as part of the Build Alternative. Some of these overhead lines would be placed underground. Utility relocations may require trenching to a depth of approximately 6 feet. Positive location (potholing) would be performed to verify the location of mapped utilities. Table 1-3 lists proposed utility work for the Build Alternative. See Chapter 2, Section 2.7. Utilities/Emergency Services for additional details.

Table 1-3. Proposed Utilities, Operational Elements, and Drainage Systems

Location	Type of Work	Utility/Service System	Size
Harrison Street from 4^{th} to 5^{th} streets	Relocate existing overhead utilities underground.	*PG&E:* Electric *American Telephone and Telegraph Company (AT&T):* Telecom	Overhead lines (both)
	Relocate fire hydrant.	*East Bay Municipal Utility District (EBMUD):* Water	6” water line
5^{th} Street from Harrison to Jackson streets	Protect existing underground utilities in place. Possible permanent relocation.	*EBMUD:* Water *City of Oakland:* Sewer and storm drain *PG&E:* Gas *AT&T:* Fiber optic	4”, 6” water lines 8” sewer lines 21”, 24” storm drain 2” gas lines
5^{th} Street from Webster to Harrison streets	Protect existing underground utilities in place. Possible temporary relocation.	*EBMUD:* Water *City of Oakland:* Sewer and storm drain *PG&E:* Gas	4”, 6” water lines 8” sewer lines 24” storm drain 1-1/4” gas lines
Posey Tube Walkway	Protect existing underground utilities in place. Possible permanent relocation.	*EBMUD:* Water *City of Oakland:* Sewer and storm drain *PG&E:* Gas *AT&T:* Fiber optic	10” water lines 8” sewer lines 24” storm drain 1-1/4”, 2” gas lines
	Install new lines.	*Caltrans:* Street lighting and drainage	New – TBD

Location	Type of Work	Utility/Service System	Size
6th Street from Oak Street to Broadway	Install new lines.	*EBMUD:* Water *City of Oakland:* Sewer and storm drain *PG&E:* Gas	New – TBD Existing lines will be relocated if is determined they are in conflict.
	Protect in place.	*PG&E:* 115 kilovolt (kV) Electric	Unknown size
Jackson Street Horseshoe	Install new lines.	*Caltrans:* Street lighting and storm drains	New – TBD
Intersections • 3rd/Oak • 5th/Broadway • 5th/Jackson • 5th/Oak • 6th/Harrison • 6th/Broadway • 7th/Harrison • 7th/Jackson • 7th/Oak • 8th/Oak • 9th/Oak	Modify traffic and bicycle signals.	*City of Oakland:* Traffic signals and lighting	N/A
Intersections • 6th/Jackson • 6th/Webster • 6th/Franklin • 6th/Oak • 7th/Alice	Install new traffic signals. Install a PHB at 7th/Alice.	*City of Oakland:* Traffic signals and lighting	N/A

CONTEXT SENSITIVE SOLUTIONS

Aesthetic features are planned for the proposed project that would serve as contextual elements to help retain the community's unique character, and they may help generate public acceptance. These elements would include textured retaining walls and paving, balustrades, highway plantings, and complete street improvements. Caltrans Complete Streets policy provides for transportation facilities that are planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility. Examples of complete street features proposed for this project include ADA-compliant sidewalks, safe pedestrian crosswalks, bike lanes, curb extensions, and landscaping to increase safety and enhance the environment for those who walk and bicycle. Bicycle and pedestrian improvements are described in Section 4.1.5 Transportation System Management and Transportation Demand Management. Pedestrian safety features are illustrated in Figure 2-17 and proposed bicycle and pedestrian improvements are shown in Figures 1-14 and 1-15.

TRANSPORTATION SYSTEM MANAGEMENT AND TRANSPORTATION DEMAND MANAGEMENT

Transportation System Management (TSM) strategies increase the efficiency of existing facilities. They are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. TSM also promotes automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Modal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and mass transit.

Although TSM measures alone could not satisfy the purpose and need of the proposed project, the following TSM measures have been incorporated into the Build Alternative:

- Add an auxiliary lane on NB I-880 in advance of the Oak Street off-ramp widening.
- Ramp meter improvements for the Jackson Street NB I-880 on-ramp.
- Signal coordination on 6th Street from Oak Street to Broadway.

Transportation Demand Management (TDM) focuses on regional means of reducing the number of vehicle trips and miles traveled and increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding transportation options in terms of travel method, time, route, costs, quality, and convenience. A typical activity would be providing funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals.

The following TSM/TDM measures have been incorporated into the Build Alternative.

<u>Bicycle and Pedestrian Facilities</u>

Bicycle, pedestrian, and multimodal elements are part of the Build Alternative in compliance with Caltrans' Complete Streets Policy to improve safety and increase modality options on local streets (Figure 1-12 and Figure 2-17). The incorporation of bicycle and pedestrian elements were selected based on the communities' needs (see Chapter 4 for information on the coordination conducted during project development). They will result in improved safety and enhanced modality options within the communities and neighborhoods in Oakland and improved connectivity between Oakland and Alameda.

Bicycle and pedestrian facilities include:

- Construction of a continuous two-way Class IV cycle track (on-street dedicated bikeways with physical separation from traffic) with additional treatments such as bicycle boxes on the west side of Oak Street from 3rd Street to 9th Street.
- Creation of a bike lane on the south side of 5th Street from Jackson to Oak streets.
- Bicycle facilities and ADA-compliant pedestrian facilities would be constructed on 5th Street, 6th Street, Oak Street, and SR-260 through the Tubes to provide better connectivity within Oakland and to/from Alameda.

Select intersections would have “no turn on red” to provide protected bicycle/pedestrian phases (traffic is completely stopped to accommodate crossings through the intersection) at the following locations:

- Eastbound right turn at 5th/Jackson/I-980 off-ramp
- Eastbound right turn at 5th/Oak
- Southbound right turn at 6th/Madison
- Southbound right turn at 6th/Jackson
- Southbound right turn at 6th/Harrison
- Southbound right turn at 6th/Jackson
- Southbound and westbound right turns at 6th/Broadway
- Eastbound left turn at 7th/Oak
- Northbound left turn at 8th/Oak

Curb extensions or bulb-outs would be constructed to shorten crossing distances and reduce pedestrian exposure to vehicular conflict at the southwest and northeast corners at 5th/Jackson/I-980 off-ramp to shorten south and east leg crossings.

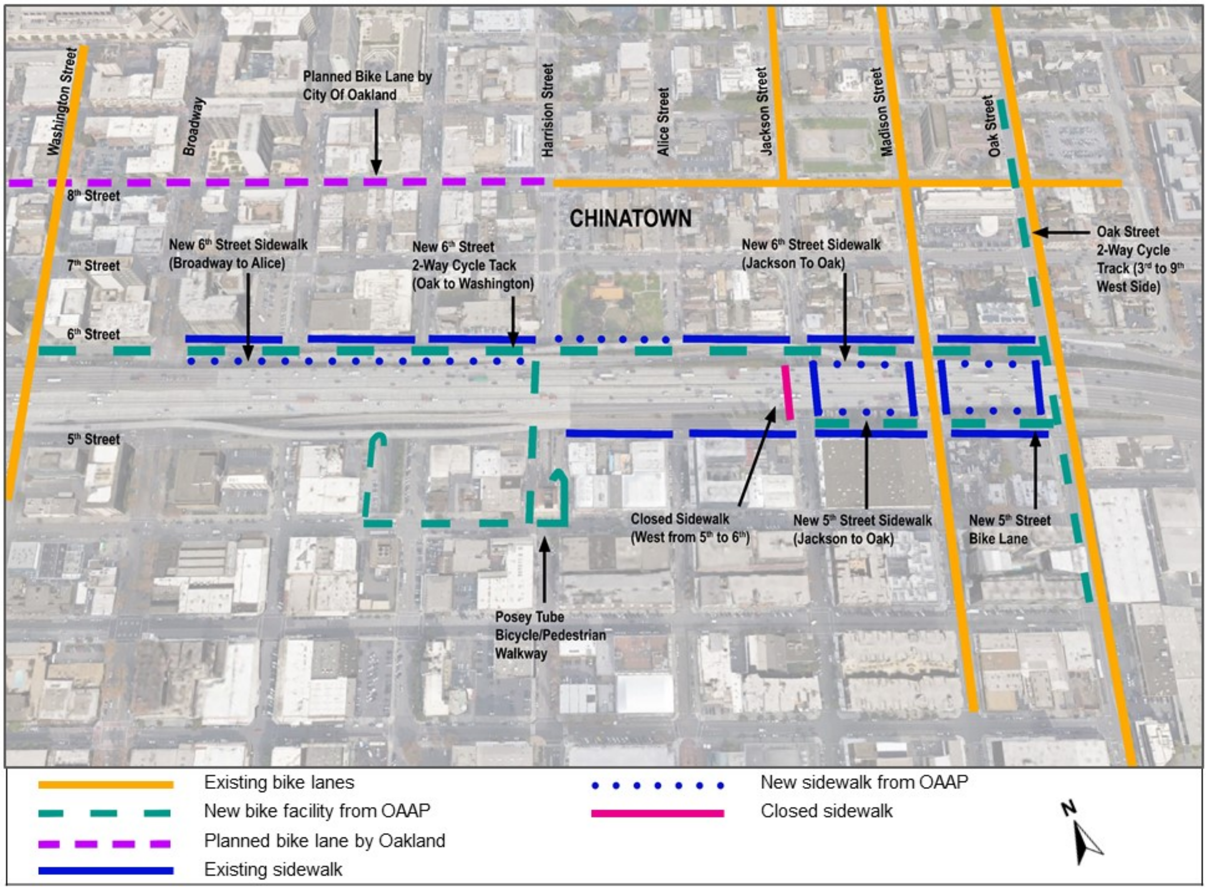
1. Southeast corner at 7th/Harrison to shorten south and east leg crossings
2. Southwest corner of 7th/Jackson to shorten south leg crossing

Protected pedestrian phases (traffic is completely stopped to accommodate crossings through the intersection) would be implemented at:

- South leg of 5th/Jackson/I-980 off-ramp;
- North leg of 6th/Broadway; and
- PHB would be installed on 7th Street at Alice Street.

Traffic signal timing modifications would be implemented at the following new or modified intersections:

- *5th Street and Jackson Street:* Protected pedestrian phase.
- *5th Street/Broadway:* Modified phasing and splits to incorporate LPIs. The 5th Street crosswalk on the east side of Broadway would be shifted east and shortened considerably. The signal phasing would be modified to include a pedestrian-led signal phase for the east leg of pedestrian traffic. This would improve safety by giving pedestrians priority over turning traffic. This would also improve truck access to the Webster Tube and minimize conflicts with other vehicular traffic.
- *8th Street/Oak Street:* Modified phasing and splits to accommodate protected phases for the cycle track and northbound left turn.



Note: Graphic not to scale

Figure 1-12. Summary of Proposed Bicycle and Pedestrian Features in Oakland

CONSTRUCTION SCHEDULE

Construction activities would last approximately 36 months. Construction is expected to begin in mid-2023. There would be two major stages with several phases in each. The first stage would include construction of the Jackson Street horseshoe and associated improvements on the southside of I-880 as well as the widening of the walkway in the Webster Tube. The second stage would include widening of the NB I-880/Oak Street off-ramp, removal of the Broadway NB I-880 off-ramp, and construction of 6th Street improvements with associated elements on the northside of I-880.

Construction equipment would be staged in areas underneath I-880 that are owned by Caltrans and currently leased as parking lots. Construction activities would primarily be completed during the day; however, nighttime work would be needed to minimize impacts to traffic, especially in the Webster Tube. Caltrans would continue to coordinate with the cities of Oakland and Alameda to develop and implement a Transportation Management Plan (TMP) and other measures to minimize construction impacts on the human and natural environment. As part of the TMP, a shuttle may be needed to transport bicyclists and pedestrians between Oakland and Alameda during construction.

The proposed project contains a number of standardized project measures which are employed on most, if not all, Caltrans projects. They were not developed in response to any specific environmental impacts resulting from the proposed project. These measures are addressed in more detail in the Environmental Consequences sections in Chapter 2.

3.1.2. No-Build (No-Action) Alternative

The No-Build Alternative consists of future conditions with transportation improvements that are planned and programmed currently for funding. Also, it provides a basis for comparing the Build Alternative because under NEPA the No-Build Alternative can be used as the baseline for comparing environmental impacts. Under CEQA, the baseline for environmental impact analysis consists of the existing conditions when the Notice of Preparation (NOP) was issued (September 15, 2017). Under the No-Build Alternative, there would be no action and the improvements associated with the Build Alternative would not be constructed. It would not provide improvements to access, and it would not provide any transportation benefits for the traveling public. Over time, the local streets would continue to experience congestion and intersection LOS would deteriorate further during peak commute hours due to I-880 traffic that must travel back and forth and up to a mile through city streets for access to and from the cities of Oakland and Alameda.

Under year 2045 conditions, weekday PM peak hours and LOS at Oakland intersections would deteriorate and delays would increase (see Table 1-4).

Table 1-4. Intersections Performing at LOS E/F Under Year 2045 No-Build Conditions

Intersection	Year 2045 No-Build Conditions
4th/Broadway	LOS **F** continues; delay increases (two-way stop) at WB 4th Street
5th/Oak	LOS **F** continues; delay increases
6th/Washington	LOS deteriorates from **E** to **F**
6th/Broadway	LOS deteriorates from D to **E**
7th/Washington	LOS deteriorates from D to **F**
7th/Broadway	LOS deteriorates from B to **E**
7th/Webster	LOS deteriorates from C to **E**
8th/Harrison	LOS deteriorates from B to **E**
8th/Webster	LOS deteriorates from D to **E**
8th/Broadway	LOS deteriorates from B to **E**

Source: TOAR (January 2020)
*Note: Unacceptable LOS (E or F) are denoted in **bold**.*

Under the No-Build Alternative, there would be no improvements to bicycle or pedestrian connectivity or safety. Freeway traffic to/from the cities of Oakland and Alameda would continue to use city streets through Oakland and Chinatown, which are areas with a high volume of pedestrian activity. Vehicle-pedestrian and vehicle-bicycle conflicts through city streets would continue. The I-880 viaduct would continue to impede connectivity between downtown Oakland and the Jack London District, and access would not be improved for bicycles and pedestrians traveling between Oakland and Alameda.

3.1.3. Comparison of Alternatives

No-Build Alternative

Under the No-Build Alternative, issues related to safety, accessibility, and mobility, as well as stakeholder concerns and preferences would not be addressed, and conditions would either stay the same or worsen. A high number of collisions occur at many intersections on the streets that serve as freeway access routes. Crash rates are dependent on many factors, among them the volume of vehicular traffic, the number of pedestrians, and the physical and operational configuration of the intersections.

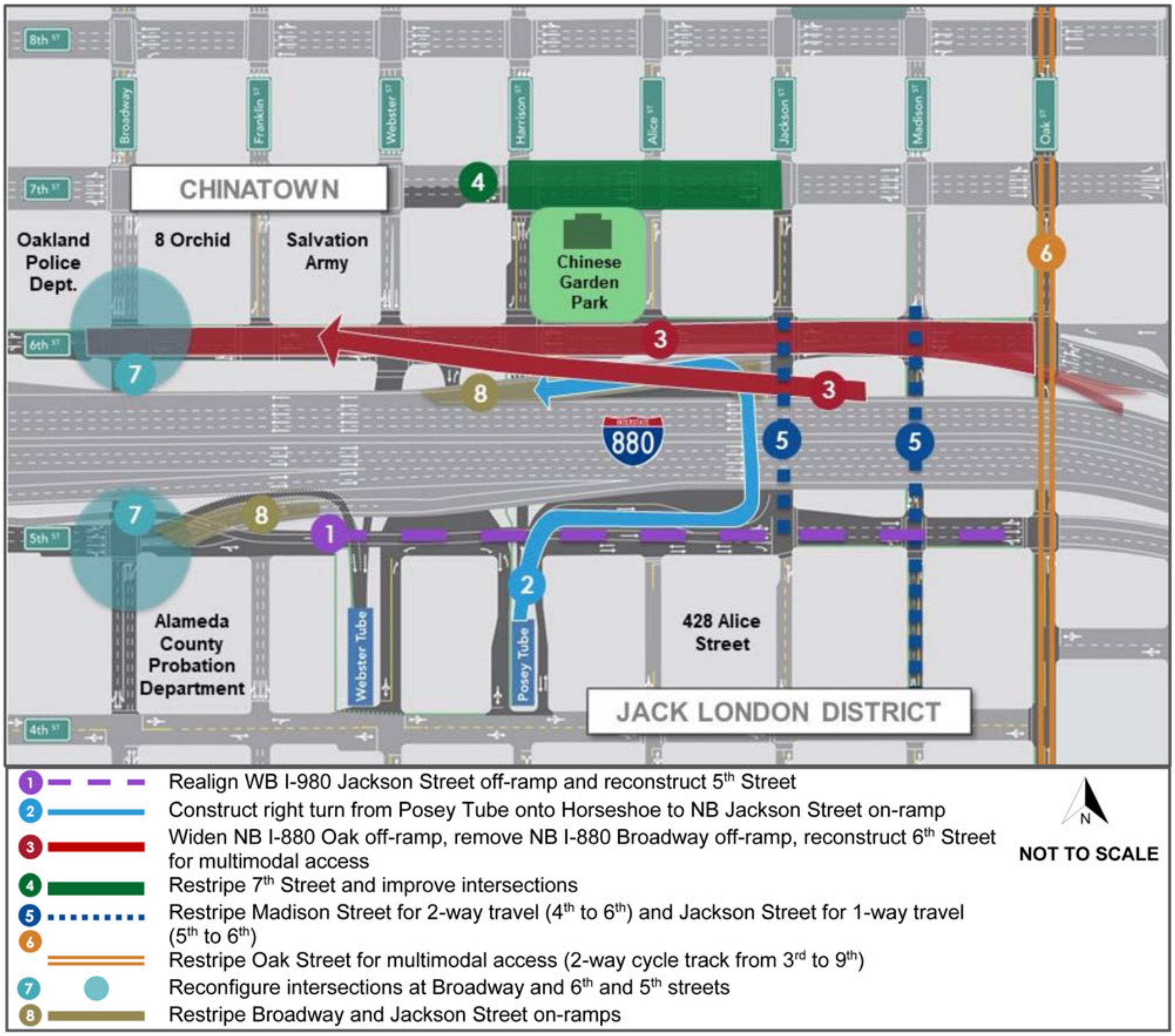
Traffic demand on arterials parallel to I-880 and on arterial roads to the south heading into and out of downtown would grow significantly by 2025 and grow further by 2045. Freeway segments currently operate at or near capacity, thus increasing travel times on those facilities. For example, on 8th Street approaching Webster, AM peak hour demand is estimated to increase 25% by the year 2025 and 67% by the year 2045 (compared to existing peak hour volumes). Even more dramatically, in the PM peak hour at the same location demand is expected to increase 69% by the year 2025 and 151% by the year 2045. These large increases in traffic volumes on local streets would severely exacerbate safety issues in the neighborhoods adjacent to the freeway. Multimodal safety would worsen. No new bicycle/pedestrian paths or sidewalks would be constructed and the limited bicycle and pedestrian connectivity in downtown Oakland and Alameda would remain.

Build Alternative

Under the Build Alternative, the project team conducted extensive stakeholder engagement and public outreach (a detailed discussion of outreach can be found in Chapter 4) to develop key design features that address the stakeholders' and the communities' numerous concerns and preferences and that meet the purpose and need. Stakeholder outreach is ongoing. Table 1-5 shows how the project elements align with the purpose and need. Major project features addressing the purpose and need are further illustrated in Figure 1-13 and Figure 1-14.

Table 1-5. Major Project Features that Address the Purpose and Need

Purpose and Need	Major Project Features
Mobility	• Horseshoe connector from the Posey Tube to NB I-880 Jackson • Extension of 6th Street providing direct access to the Webster Tube
Safety	• Signal operations measures: PHB, LPI, protected pedestrian phases • Reconfiguration of Broadway intersections at 5th and 6th streets • Reconfiguration of Jackson/5th Street intersection • Restripe 7th Street and improve intersections • No turn-on-red restrictions
Connectivity/Accessibility	• 6th Street extension with multimodal access; two-way between Washington and Harrison streets • Cycle track on Oak Street • Webster Tube bicycle/pedestrian walkway widening • Madison Street conversion to two-way from 4th to 6th streets • Harrison Street conversion to two-way from 6th to 7th streets • Crosswalk connecting Posey Tube stairs to bicycle/pedestrian path



Note: Graphic not to scale

Figure 1-13. Build Alternative Proposed Elements that Address the Purpose and Need

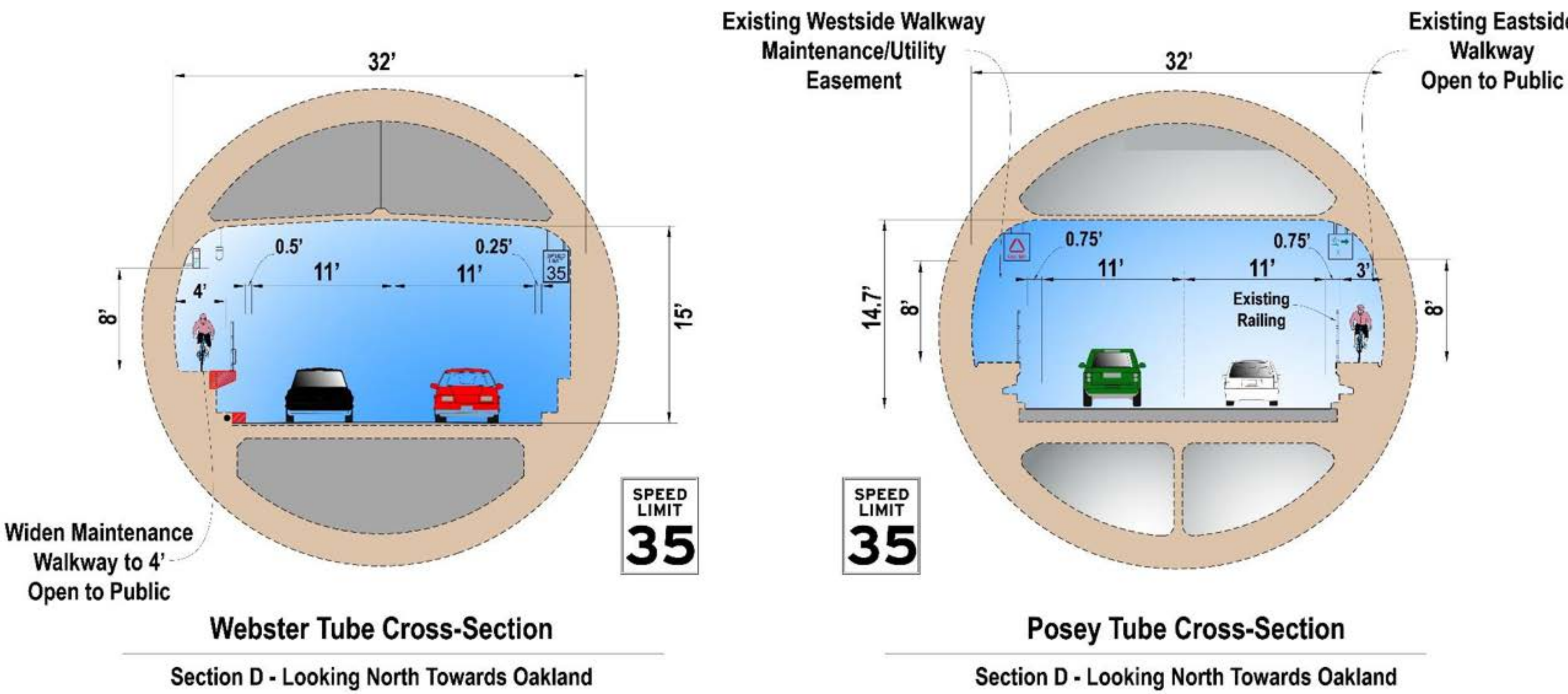


Figure 1-14. Webster and Posey Tube Proposed Connectivity/Accessibility Improvements

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3.1.4. Operational Improvements

The proposed project's effect on mobility, safety, and connectivity/accessibility were analyzed and the effects are categorized in Table 1-6 by facility type. Although some trade-offs are necessary and unavoidable, the aggregate operational benefits of the Build Alternative outweigh the operational tradeoffs. With the exception of a slight effect on northbound vehicular freeway travel, the Build Alternative improves safety, mobility, and connectivity/accessibility for all transportation modes and achieves the goals defined in the purpose and need (Tables 1-6 and 1-7).

The tradeoffs are summarized in Table 1-6. The summary shows the beneficial effects to local streets and the Tubes and the slight decrease to operations on NB I-880 traffic for automobiles, transit, and freight.

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Table 1-6. Build Alternative Summary of Effects (Compared to No-Build)

		SAFETY	CONNECTIVITY/ACCESSIBILITY	MOBILITY
Autos	**Freeway**	**+** Slight improvement based on addition of auxiliary lane, reduction of conflict points and improvement of gore geometry.	**+/–** Removal of Broadway off-ramp; offset by extended 6th Street.	**–** NB I-880 weave between Jackson and I-980 degrades slightly.
	Streets	**+** Substantial reduction in auto/pedestrian conflicts; intersection improvements.	**+** Enhanced circulation; accommodates future DOSP circulation.	**+** Volume decrease will lead to reduced delays.
	Tubes	**+/–** Non-standard curves offset by safety features and speed limit reduction.	**+** More direct access to/from I-880; less conflict with local traffic.	**+** Reduced peak period congestion and delays.
Peds	**Streets**	**+** PHB at 7th and Alice streets, pedestrian signal timing improvements, intersection upgrades, reduced auto volumes.	**+** Pedestrian scale lighting; reduced shadow effect along 6th Street.	**+** New sidewalks on 5th and 6th Streets and Mariner Square Loop.
	Tubes	**+** Approaches incorporate crosswalks and are separated from vehicles.	**+** New connectivity between walkways, 6th Street, 4th Street, Mariner Square Loop.	**+** Webster Tube bicycle/ pedestrian walkway.
Bikes	**Streets**	**+** Higher standard bicycle facilities, no turn-on-red restrictions.	**+** Expanded bike lane network; integration with City's planned lanes.	**+** Expanded bike lane network.
	Tubes	**+** One-way bicycle circulation to reduce head-on conflicts.	**+** New connectivity between walkways, 6th Street, 4th Street, Mariner Square Loop.	**+** Webster Tube bicycle/ pedestrian walkway.
Transit	**Freeway**	**+** Slight improvement based on addition of auxiliary lane, reduction of conflict points and improvement of gore geometry.	**+/–** Removal of Broadway off-ramp; offset by extended 6th Street.	**–** NB I-880 weave between Jackson and I-980 degrades slightly.
	Streets	**+** Deceased conflicts with regional auto traffic.	**+** Compatible with future DOSP transit lanes.	**+** Volume decrease leads to reduced delays; compatible with DOSP.
	Tubes	**+/–** Non-standard curves offset by safety features and speed limit reduction.	**+** More direct access to/from I-880; less conflict with local traffic.	**+** Reduced peak period congestion and delays.

		SAFETY	CONNECTIVITY/ACCESSIBILITY	MOBILITY
Freight	**Freeway**	**+** Slight improvement based on addition of auxiliary lane, reduction of conflict points and improvement of gore geometry.	**+/–** Removal of Broadway off-ramp; offset by extended 6th Street.	**–** NB I-880 weave between Jackson and I-980 degrades slightly.
	Streets	**+** Substantial reduction in truck/ pedestrian conflicts; intersection improvements.	**+** Enhanced circulation; fewer delivery conflicts.	**+** Volume decrease will lead to reduced delays.
	Tubes	**+/–** Non-standard curves offset by safety features and speed limit reduction.	**+** More direct access to/from I-880; less conflict with local traffic.	**+** Volume decrease will lead to reduced delays.

The Build Alternative components and purpose and need are shown in Table 1-7. This table connects the project components to the specific purpose and need goals and objectives.

Table 1-7. How Project Elements Align with the Purpose and Need

	PROJECT PURPOSE AND NEED			
PROJECT COMPONENTS	**Improve multimodal safety and reduce conflicts between regional and local traffic**	**Enhance bicycle and pedestrian accessibility and connectivity**	**Improve mobility and accessibility between I-880, SR-260, downtown Oakland, and Alameda**	**Reduce freeway-bound regional traffic and congestion on local roadways**
Horseshoe from Posey Tube to NB I-880 Jackson	✓		✓	✓
Extension of 6th Street	✓	✓	✓	✓
Realign SB I-980 Jackson off-ramp; reconstruct 5th Street			✓	
Remove NB I-880 Broadway off-ramp; reconstruct 6th Street	✓	✓		✓
Restripe 7th Street and improve intersections	✓	✓		✓
Reconfigure Broadway/6th and Broadway/5th	✓	✓	✓	
Restripe Harrison and Madison for two-way travel			✓	
Bike lanes on Oak, 6th, 5th; multi-use path on Harrison		✓		
New sidewalks on 5th and 6th streets		✓		
Widen path through Webster Tube to Mariner Square		✓	✓	
Crosswalk connecting Posey Tube stairs to bicycle/ pedestrian path		✓	✓	
Improve bike lanes on Willie Stargell and Mariner Square		✓		

3.1.5. Environmental Process

Following circulation of the draft environmental document, careful evaluation of all comments received, and in consideration of the whole record, Caltrans would make a final determination of the proposed project's effect on the environment based on the engineering and environmental technical analysis and comments and concerns expressed during the public review period. A preferred alternative would be identified, and Caltrans would certify the proposed project complies with CEQA. Caltrans would prepare findings for all significant impacts identified and a Statement of Overriding Considerations for impacts that would not be mitigated below a level of significance, and it would certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. Caltrans would then file a Notice of Determination with the State Clearinghouse that would identify whether the proposed project would have significant impacts and verify that mitigation measures were included as conditions of project approval, findings were made, and a Statement of Overriding Considerations was adopted. Similarly, if Caltrans, as assigned by the FHWA, determines the NEPA action does not significantly impact the environment, Caltrans would issue a Finding of No Significant Impact (FONSI). If it is determined the proposed project would have a significant effect on the environment, an Environmental Impact Statement would be prepared.

3.2. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER DISCUSSION

The alternatives described in the following sections were considered but eliminated due to their failure to meet the purpose and need, were infeasible, or would have significant environmental impacts. After 20 years of project development and planning, the proposed Build Alternative was the only alternative to receive consensus based on extensive stakeholder outreach efforts. Outreach efforts are documented in Chapter 4 – Comments and Coordination.

2020 Final Value Analysis Study Report

A value analysis (VA) workshop was conducted by Alameda CTC and Caltrans between December 9 and 13, 2019. The VA team evaluated previously proposed design elements and developed additional project alternatives or elements that would add increased value to the proposed project. The *Final Value Analysis Study Report* was approved in March 2020.

<u>Alternative 1: Reverse the Tubes and Connect to New NB I-880 On-ramp at Market/6th Streets</u>

This alternative would reverse the direction of traffic in the Tubes. Oakland-bound traffic would use the Webster Tube that feeds onto 6th Street and Alameda-bound traffic would use the Posey Tube via Harrison Street. This alternative would require traffic signal modification for Oakland and Alameda street systems, and it would include a new NB I-880 on-ramp at Market Street/6th Street. Additionally, two roundabouts would be constructed at Willie Stargell Avenue/Webster Street and Constitution Way/Marina Village Parkway. This alternative would not impact the historic Posey Tube wall or require the relocation of the Jackson Street off-ramp. This alternative was dismissed because of the overall increase in construction costs, impacts to businesses due to the new NB I-880 on-ramp, restrictions to truck turning movements, and safety impacts from keeping the racetrack (Harrison Street/7th Street/Jackson Street) through Chinatown.

Design Element 1: Improve Pedestrian Access from Downtown Oakland to Jack London Square

Starting at 8th Street and Madison Street, this design element would include removal of the Class II bike lane and the widening of the sidewalk to 8 feet. Parking would be maintained but would be shifted further into the street. The sidewalk enhancement would continue onto Madison Street to 2nd Street. Improvements would only occur on the west side of Madison. Then, sidewalk enhancements would continue on the north side of 2nd Street connecting to Jackson Street. Along with the proposed sidewalk improvements, this design element would include landscaping improvements similar to what is proposed on 6th Street. This element was not included in the proposed project. The City of Oakland could consider implementing this as part of a redevelopment project along Madison Street. The City would need to go through a public process prior to removal of the bike lane.

Design Element 2: Re-sequence Demolition of Off-ramps; Reduce Off-ramp Demolition Costs

This design element would simultaneously demolish the entire NB I-880 Broadway off-ramp, (approximately 2,000 feet in length) and the last frame of the SB I-880/Jackson Street off-ramp (approximately 330 feet in length). Both the 5th Street/horseshoe and the 6th Street extension would be constructed simultaneously causing a greater disruption to local traffic patterns. However, this would reduce the construction schedule by approximately one year. Construction methodologies would need to consider potential noise/vibration impacts due to the close proximity of adjacent structures. The Project Development Team (PDT) agreed with this recommendation and will evaluate removing both off-ramps at the same time. A TMP would be developed to evaluate the impacts to traffic operations and circulation due to these closures.

Design Element 3: Review Countermeasures to Improve Horseshoe Operations

This design element considered countermeasures that would improve the horseshoe and Tube operations. Measures at the Alameda approach to the Posey Tube would include installation of lane assignment signs, speed feedback signs, and dynamic warning devices for queuing conditions in the tunnel. Measures within the tunnel would include installation of rumble strips, optical bar pavement markings, in-road warning flashing lights, and white edge lines. Measures near the horseshoe entrance would include installation of pavement markings to warn motorists of reduced speed, bump markings, speed feedback signs, and lane assignment signs. Measures within the horseshoe would include friction treatment to the pavement within the curve and installation of reflective material and lighting. The PDT agreed with this recommendation and will evaluate technologies that can be used during the design phase.

2007-2011 PSR-PDS

In 2007, Alameda CTC (formerly ACTIA) initiated a PSR-PDS that expanded on the City of Alameda's *Feasibility Study* with input and collaboration from Caltrans, cities of Oakland and Alameda, and community advisory committees. The PSR-PDS further analyzed the elements identified in the *Feasibility Study*. Detailed traffic analyses were performed, including origin and destination studies, to ensure traffic patterns were understood clearly and modeled correctly. Additional preliminary engineering studies were performed, including, but not limited to, design refinement, ROW assessment, environmental screening, and bridge advanced planning. The PSR-PDS Build Alternative did not have the support of the local community, particularly key stakeholders in Chinatown, and it did not proceed.

Reconstructed NB I-880 Webster Street Off-ramp

The 2011 PSR-PDS proposed modifying the existing NB I-880 Broadway off-ramp to touch down at Webster and 6th streets, which would allow traffic to make a left turn directly into the Webster Tube. This differed from the 1997 Webster Street off-ramp because the rest of the off-ramp from Webster Street to Broadway would be eliminated and traffic would proceed on a surface street via 6th Street. This modification would require depressing Harrison Street to achieve vertical clearance. This alternative was rejected because concentrating traffic at the Webster Street and 6th Street intersection would have created a bottleneck.

Depressed Harrison Street to NB 6th Street Connection

In tandem with the modified NB I-880 Webster Street off-ramp discussed previously, the 2011 PSR-PDS proposed depressing Harrison Street between 6th and 7th streets and passing it under the lowered Webster Street off-ramp. A new connector in a trench would diverge to the left just after passing under the freeway and the Webster off-ramp, and it would return to grade at the Webster Street and 6th Street intersection. Although this connector improved on the design proposed by the 1997 PSR and did not require demolishing buildings on 6th Street, it would adversely impact adjacent properties by removing access from 6th Street. Also, concentrating traffic from this connector and the proposed Webster Street off-ramp at the Webster Street and 6th Street intersection would have created a bottleneck.

5th and 6th Streets Corridor Improvements

The 2011 PSR-PDS proposed improvements to 5th and 6th streets, which would have improved their function as frontage roads for I-880 by using signal timing, more consistent geometry, fixed number of lanes, and uniform lane and shoulder widths. However, these improvements were contingent on constructing the new on- and off-ramps at Market Street and Martin Luther King (MLK) Jr. Way which were not included in the proposed project. Since the Jackson Street Horseshoe would divert most of the freeway traffic away from 6th Street, proposed improvements would allow it to function as a multimodal corridor rather than as a high-volume frontage road to I-880.

2006 City of Alameda Feasibility Study

In 2003, with Measure B funds, the City of Alameda revisited the proposed project by performing a preliminary engineering analysis of new project concepts and by committing to community involvement. The cities of Oakland and Alameda, Caltrans, and other public and private stakeholders provided input. The *Feasibility Study* was completed in April 2006 and recommended the following elements.

New NB I-880 Market Street On-ramp

This was a new NB I-880 on-ramp beginning at the intersection of Market and 6th streets to provide new access to NB I-880 for motorists traveling from Alameda, downtown Oakland, or West Oakland. While the proposed project does not preclude constructing this ramp in the future, the on-ramp was not included due to cost. The cost in 2006 was estimated at $8.7 million. The escalated cost is estimated at $20 million (assuming 5% annual construction cost escalation from 2006 to 2023). The NB I-880 Market Street on-ramp has not been planned, programmed, or funded.

Reversing the Tubes

This was a concept that would reverse the direction of travel through the Tubes. The benefit was that the historic Posey Tube approach in Oakland would not need to be modified. Traffic exiting the Webster Tube would access NB I-880 by turning left on 6th Street and by using the proposed NB I-880 Market Street on-ramp. SB I-880 access would be via a new horseshoe exit out of the Webster Tube to the existing on-ramp at 5th Street. However, this concept presented substantial traffic and construction challenges. Also, it included a number of irregular intersections that would create safety and operational issues.

On the Oakland side, the opposite legs of Webster Street at 6th, Harrison, and 8th streets would be one-way in opposite directions. On the Alameda side, traffic on Webster Street at Willie Stargell Avenue and Constitution Way would have to move from one side of the road to the other through the intersection. There would need to be numerous changes to signs and signals to modify traffic flow on these streets. The public would need to be alerted to the changes through education and outreach campaigns.

Eliminating direct access from eastbound 5th Street at Broadway into the Webster Tube towards Alameda would result in this traffic having to divert to either 7th Street through the heart of Chinatown or to the Jackson Street off-ramp which is already congested. There would be potential impacts to Neptune Park in Alameda requiring Section 4(f) documentation. Given the significant disruption caused by reconfiguring the Tubes and surrounding streets, high cost, and comparatively little improvement to travel times and safety this concept was rejected.

2000 PSR

In 2000, a second PSR was approved by Caltrans to address issues and deficiencies with the 1997 Draft PSR. This approval allowed Caltrans to proceed to the Project Approval/ Environmental Documentation (PA/ED) phase. In 2002, Caltrans made minor revisions to the purpose and need and recommended alternatives and approved a PR. However, with little input solicited from the public, the project alternatives were not supported by the local jurisdictions leading to a standstill on how the project should be delivered. Some alternative elements were deferred instead of rejected; they are not included in the proposed project.

New SB I-880 Martin Luther King Jr. Way Off-ramp

The off-ramp would braid over the existing Adeline Street on-ramp and cross above Market, Brush, and Castro streets before touching down at MLK Jr. Way and 5th Street. Traffic would have the option to turn left onto MLK Jr. Way or continue eastbound on 5th Street. The new ramp would reduce travel times to West Oakland, downtown Oakland, Jack London District, and Alameda from San Francisco. The 2000 PSR estimated the cost at $11 million for the off-ramp. The escalated cost is estimated to be $34 million (assumes a 5% annual construction cost escalation from 2000 to 2023). The new off-ramp was deferred due to cost; however, the proposed project's improvements would not preclude its future construction. The SB I-880 MLK Jr. Way off-ramp has not been planned, programmed, or funded.

1997 Project Study Report

A Draft PSR was initiated in 1997, but the proposed elements were considered infeasible from a design, operational, safety, or cost standpoint. The 1997 Draft PSR rejected the following potential alternatives.

WB I-980 Webster Tube Slip Off-ramp

This was a proposed connector from the WB I-980 Jackson Street off-ramp to the Webster Tube, which would have a stop-controlled intersection. It was rejected due to a steep grade, nonstandard design speed, and excessively sharp horizontal curve with limited sight distance at the Portal. Also, the stop-controlled intersection had the potential to cause traffic backups from the relatively short ramp.

Posey Tube to I-880/I-980 On-ramp without Braid

This was a proposed connector from the Posey Tube that branched to the right and terminated at Jackson and 5th streets, similar to the first leg of the Jackson Street Horseshoe. The proposed configuration did not modify the WB I-980 Jackson Street off-ramp, and it was rejected due to a conflicting turn movement at the Jackson Street and 5th Street intersection. The 2000 PSR raised additional concerns about sight distance as traffic approached from the Tube.

NB I-880 Webster Street Slip Off-ramp

This was a new NB I-880 off-ramp terminating at Webster and 6th streets that would branch off from the existing NB I-880 Broadway off-ramp, which would be maintained. It was rejected due to the steep grade and excessive cost given the anticipated demand.

NB I-880/I-980 Loop On-ramp from Harrison and 6th Streets

This was a proposed loop on-ramp from the Posey Tube that branched to the right and merged onto NB I-880. It was rejected due to substantial environmental impacts to the surrounding neighborhoods and the Chinese Garden Park which is a 4(f) resource, and due to the cost to reconstruct the Broadway off-ramp.

NB I-880/I-980 Slip On-ramp from Harrison and 6th Streets

This was a proposed diagonal on-ramp from the Posey Tube that branched to the left and merged onto NB I-880. It was rejected due to substantial ROW impacts and nonstandard design speeds.

Depressing Harrison Street

Depressing Harrison Street was rejected because it would have considerable impacts on the surrounding neighborhood.

Section 4.0. Permits and Approvals Needed

The following permits, licenses, agreements, and certifications (PLACs) are required for project approval and construction (see Table 1-8).

Table 1-8. Permits and Approvals Needed for Project Approval and Construction

Agency	PLAC	Status
FHWA	Air Quality Conformity Determination	• Proposed project is not considered a project of air quality concern (POAQC) regarding particulate matter (PM2.5) as defined in 40 CFR 93. • Interagency consultation was completed on December 12, 2019. • Air quality conformity concurrence will be requested from FHWA after the Draft Environmental Document public comment circulation period has closed. • Request for conformity determination after selection of the preferred alternative.
State Water Resources Control Board (SWRCB)	Construction General Permit (CGP) for stormwater discharges, Section 402 NPDES Permit No. CAS000002 for greater than 1 acre (Order No. 2012-0006-DWQ)	• Obtain coverage under the CGP by preparing and submitting a Notice of Intent before starting construction.
San Francisco Bay Conservation and Development Commission (BCDC)	BCDC permit for activities in BCDC jurisdiction (Bay and 100-foot-wideshoreline band)	• Caltrans will obtain coverage under the BCDC Programmatic Maintenance agreement during the design phase.
State Historic Preservation Officer (SHPO)	Concurrence with the Historic Property Survey Report (HPSR) historic property eligibility determination, Finding of Effect (FOE), and Memorandum of Agreement (MOA)	• SHPO concurrence on the HPSR was received on June 8, 2020. • SHPO FOE concurrence and approval of MOA is expected after circulation of the Draft EIR/EA.
SHPO/U.S. Department of the Interior	Draft Individual Section 4(f) concurrence from the official with jurisdiction	• Consultation with the official with jurisdiction was initiated on September 29, 2020 for the Draft Individual Section 4(f) Evaluation.

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Chapter 2 - Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Section 1.0. Topics Considered But Determined Not To Be Relevant

As part of the scoping and environmental analysis carried out for the proposed project, the following environmental issues were considered but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document.

WILD AND SCENIC RIVERS

There are no wild and scenic rivers located in the project study area; therefore, no further analysis of impacts is required.

FARMLANDS/TIMBERLANDS

The project study area does not contain any farmland or Williamson Act contracts and does not contain timberlands. Therefore, it cannot affect farmlands or timberlands, and no further analysis of impacts is required.

GROWTH

The proposed project's modifications to accessibility would occur within a highly urbanized area. The area would continue to grow consistent with current planning documents and with population, household, and economic forecasts with or without the proposed project. Therefore, growth is not reasonably foreseeable as a result of the proposed project. The reduction of congestion on local roadways and improvements in bicycle connections would better enable the City of Oakland to accommodate planned growth. Therefore, growth-related impacts are not anticipated.

WILDFIRE

The proposed project is not in a very high fire hazard zone according to the California Department of Forestry and Fire Protection. The project is located approximately 2.4 miles from the nearest very high fire hazard zone. Wildfire is considered under Chapter 3, Section 2.0 CEQA Environmental Checklist.

Section 2.0. Human Environment

2.1. LAND USE

The following sections are summarized from the *Community Impact Assessment* (CIA) (September 2020).

2.1.1. Existing and Future Land Use

AFFECTED ENVIRONMENT

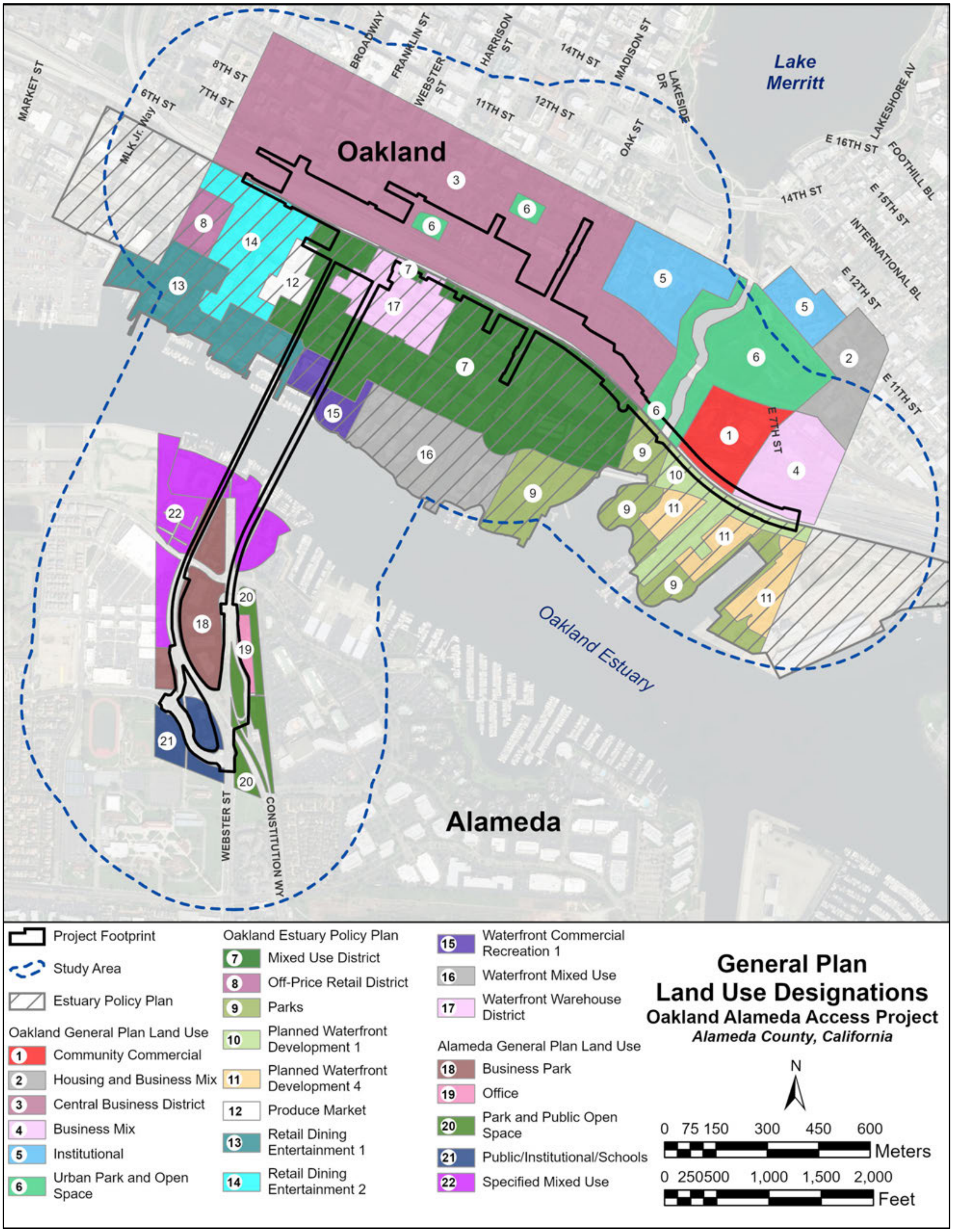
Local and regional land use plans, existing and future land uses, development trends, and major projects are addressed in this section. The project study area is located within Alameda County and within the cities of Oakland and Alameda.

The project study area is located within a highly developed, urbanized setting and existing land uses include mixed-use development, residential (single-family and multi-family), commercial, industrial, recreational, institutional, and transportation-related use areas. Most of the project footprint is in sections associated with transportation-related uses, primarily I-880 and SR-260, and local adjacent roadways including portions of 5th Street and 6th Street.

Oakland's future land uses are guided by the City of Oakland General Plan (1998) for areas north of I-880 and the City of Oakland Estuary Policy Plan (2000) for areas south of I-880. General Plan designations for the cities of Oakland and Alameda for the project footprint and areas adjacent are shown in Figure 2-1. The areas north of I-880 are largely within the Central Business District (CBD). The CBD's intent is to encourage and support a mix of uses at varying densities, depending on the specific zone, while preserving its distinct neighborhoods. The areas east of the CBD zone include designations related to parks and open spaces that are centered on the Lake Merritt Channel, and on areas east that allow for commercial-related development. Areas south of I-880 include a mixture of commercial-related uses along the waterfront within Jack London Square. Within Alameda, future land uses are associated primarily with office- and commercial-related uses, parks and open spaces, and institutional (City of Alameda General Plan 1991).

<u>Development Trends</u>

Oakland, Alameda, and Alameda County are projected to continue population, housing, and employment growth over the next 20 years based on data from MTC and ABAG's 2019 *Projections 2040* (MTC and ABAG 2019). The Oakland population is projected to increase by about 35% from 2020 to 2040 which is at a faster rate than Alameda County (about 22%). Additionally, by 2040, households are forecasted to increase by almost 30% compared to 12% for Alameda County, and over the next 20 years the number of jobs is forecasted to increase 10-11% in both Oakland and Alameda County. To accommodate the planned growth, several development projects have been completed recently or are being planned within approximately a half mile of the project footprint.



Source: CIA (September 2020)

Figure 2-1. General Land Use Designations

Major Projects

Table 2-1 provides information on major projects within a half mile of the proposed project footprint. Developments within a half mile of the project footprint were identified because they are the adjacent neighborhoods that could be affected. The proposed project would include modifying existing access to and from I-880, including removing and modifying freeway ramps that would reduce vehicle congestion on the local roadways, and improving pedestrian and bicyclist accessibility and connectivity in adjacent neighborhoods. Most of the developments identified are located within the City of Oakland and are associated with residential and mixed-use developments. Several developments are located within the Brooklyn Basin, which is located east of the Lake Merritt Channel, south of I-880, and on the Oakland Estuary. The developments in this area are located on approximately 64 acres of former industrial land.

Table 2-1. Major Projects within 0.5 Miles of the Project Footprint

Name	Jurisdiction	Proposed Activity/Uses	Status
Transportation			
Bridge Preservation	Oakland	• Replace Hanlon Lead railroad bridge • Near Lake Merritt Channel Bridge • Mitigation for EA 1706U	Under construction
Residential Developments			
Mirador	Oakland	• 48 market-rate residential units	Completed 2018
Prosperity Place	Oakland	• 70 affordable residential units	Completed 2016
Empyrean Towers	Oakland	• 66 affordable residential units	Under construction
Jack London Square Site D	Oakland	• 135 market-rate residential units	Application approved
Jack London Square Site F2	Oakland	• 338 market-rate residential units	Application approved
Brooklyn Basin Planned Unit Development	Oakland	• 465 low-income residential units	Application approved
Multi-use Developments			
Brooklyn Basin – Parcel A	Oakland	• 254 low-income residential units • 1,600 square feet of retail	Application approved
Brooklyn Basin – Parcel B	Oakland	• 241 market-rate residential units • 2,800 square feet of retail	Under construction
Brooklyn Basin – Parcel C	Oakland	• 241 market-rate residential units • 4,000 square feet of retail	Application approved

Name	Jurisdiction	Proposed Activity/Uses	Status
Brooklyn Basin – Parcel D	Oakland	• 243 market-rate residential units • 4,000 square feet of retail	Application submitted
Brooklyn Basin – Parcel F	Oakland	• 211 low-income residential units	Under construction
Brooklyn Basin – Parcel G	Oakland	• 356 market-rate residential units • 43,000 square feet of retail	Application under review
Brooklyn Basin – Parcel H	Oakland	• 380 market-rate residential units • 16,598 square feet of retail	Application submitted
Brooklyn Basin – Parcel J	Oakland	• 378 market-rate residential units • 2,700 square feet of retail	Application approved
377 2nd Street	Oakland	• 134 market-rate residential units • 5,500 square feet of retail	Under construction
150 & 155 4th Street (4th and Madison streets)	Oakland	• 330 market-rate residential units • 5,000 square feet of retail	Under construction
W-12 (Phase 1)	Oakland	• 333 market-rate residential units • 25,000 square feet of retail	Under construction
1314 Franklin Street	Oakland	• 607 market-rate residential units • 27 low-income residential units • 16,500 square feet of retail	Under construction
226 13th Street	Oakland	• 251 market-rate residential units • 16,500 square feet of retail	Under construction
101 E. 12th Street	Oakland	• 90 market-rate residential units • 47 moderate income residential units • 14 low-income residential units • 29 very low-income residential units • 1,500 square feet of retail	Application approved
412 Madison Street	Oakland	• 157 market-rate residential units • 3,000 square feet retail	Application approved
Balco	Oakland	• 380 market-rate residential units • 8,000 square feet of retail	Application approved
925 Fallon Street	Oakland	• 58 market-rate residential units	Application approved
East Bay Asian Local Development Corporation	Oakland	• 65 moderate income residential units • 3,500 square feet of retail	Application approved
T5/6 – 1100 Clay Street	Oakland	• 262 market-rate residential units • 5,000 square feet of retail	Application approved

Name	Jurisdiction	Proposed Activity/Uses	Status
Alameda Shipways Residential Project	Alameda	• 292 residential units • 2.5-acre public waterfront park	Planning
Monarch Tower (1251 Harrison Street)	Oakland	• 169 market-rate residential units • 16 very low-income residential units • 121,000 square feet of office	Application under review
459 8th Street	Oakland	• 50 market-rate residential units • 4,000 square feet of retail	Application approved
600 Castro Street	Oakland	• 373 market-rate residential units • 11,500 square feet of office	Application submitted
Lake Merritt Transit-oriented Development	BART	• 560 residential units • 570,000 square feet of commercial and retail spaces	Planning
Commercial/Office Developments			
Downtown Hampton Inn	Oakland	• Hotel	Completed 2019
Key System Building	Oakland	• 310,000 square feet of office • 10,000 square feet of retail	Completed 2020
T 12 601 12th Street	Oakland	• 600,000 square feet of office • 10,000 square feet of retail	Completed 2019
420 13th Street	Oakland	• 55,000 square feet of office	Application approved
Jack London Square Site F1	Oakland	• 250,000 square feet of office	Application approved
Jack London Square Site F3	Oakland	• Hotel - 155 rooms	Application submitted
Jack London Square Site C	Oakland	• 15,000 square feet of office • 15,000 square feet of retail	Application approved
Oakland Civic Auditorium	Oakland	• 76,900 square feet of office	Application approved
Other Developments			
Oakland A's Waterfront Ballpark District at Howard Terminal	Oakland	• New baseball stadium	Draft EIR being prepared
Parks and Recreation Projects			
Shoreline Park – Brooklyn Basin	Oakland	• Waterfront park on approximately 10 acres	Under construction

Name	Jurisdiction	Proposed Activity/Uses	Status
Channel Park – Brooklyn Basin	Oakland	• Waterfront park on approximately 10 acres	Application approved
Gateway and South Parks – Brooklyn Basin	Oakland	• Waterfront parks on approximately 10 acres	Application approved
East Bay Greenway	Oakland	• 16-mile regional trail connecting Lake Merritt to South Hayward BART stations	Final Design
Alameda Landing Waterfront	Alameda	• Waterfront plaza and promenade on approximately 4.5 acres	Planning
Cross Alameda Trail	Alameda	• 0.9-mile segment (Main Street to Constitution Way)	Completed 2020

Source: Caltrans (2019), Alameda CTC (2020), City of Oakland (2020), and City of Alameda (2020)

Note: Information for developments within the City of Oakland is based on available data from March 2020. As a result, there may have been changes in the status of the developments.

ENVIRONMENTAL CONSEQUENCES

No-Build Alternative

The No-Build would not convert existing land uses to transportation related uses, nor would it have direct effects on land uses in the project study area. Furthermore, the location, characteristics, and uses of existing land uses generally would not change.

Build Alternative

Permanent Impacts

The Build Alternative would require partial property acquisitions from one property, as described in Section 2.5. Relocations and Real Property Acquisition. In Alameda, the Build Alternative would convert commercial land associated with a gas station to a transportation related use. The conversion of land would be minimal (less than 0.001% of the total land available in Alameda) and would not affect the use of this property. The proposed project would also require a permanent maintenance easement within the Laney College parking lot in Oakland; however, this would not result in any changes in land use. The proposed project would also require the transfer of ROW from the City of Oakland to Caltrans; this is not an impact since the existing uses are already transportation related (Table 2-2). It would not result in changes to land use patterns because land acquisition is minor, and the proposed project does not construct additional interchanges that could lead to increased pressures for land use changes.

Construction Impacts

The majority of construction activities, including staging and access, would occur within Caltrans' ROW (Table 2-3). Activities would be conducted in the area under I-880 between Oak Street and Broadway in Oakland and the Caltrans ROW adjacent to the roadways in Alameda. As described in Section 2.5, temporary construction easements (TCE) would be needed from the property in the City of Alameda and in the Laney College parking lot in Oakland. In addition, another TCE would be required from the City of Alameda for work within Neptune Park, refer to

Appendix A-1. Resources Evaluated Relative to the Requirements of Section 4(f): No Use Determinations for more information.

Table 2-2. Permanent Easements and Property Acquisitions

Accessor Parcel No. (APN)	Current Owner	Existing Land Use	Row (acres)	Permanent Easement (acres)	New Land Use	Description of Transfer or Use
018-0455-015-02	Peralta Community College District	Institutional	0	0.1	No change	Maintenance of retaining wall
	City of Oakland	Transportation (Roadway)	1.4	0	No change	Transfer of Oakland city-owned intersections to Caltrans - Oak and 5th, Oak and 6th, 5th from Jackson to the Posey Tube, Harrison and 6th, Webster and 6th streets
	Caltrans	Transportation (Roadway)	1.72	0	No change	Transfer of I-880 off-ramp and 6th Street (Jackson Street to Broadway) to the City of Oakland.
074-1364-005-03	Shopping Center	Commercial	0.03	0	Transportation (Sidewalk)	ROW to be acquired by the City of Alameda for a new sidewalk

Table 2-3. Temporary Construction Easements

APN	Current Owner	Existing Land Use	TCE (acres)	New Land Use	Description of Temporary Use
018-0455-015-02	Peralta Community College District	Institutional	0.56	No change	Construction of a retaining wall
074-0906-005-06	City of Alameda	Park	0.1	No change	Neptune Park improvements
074-1364-005-03	Shopping Center	Commercial	0.02	Transportation (Sidewalk)	Construction of a new sidewalk

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The proposed project has been designed to fit within the existing ROW where feasible. Property acquisitions would comply with the requirements of the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended. Compensation for property to be acquired would be based on fair market value and would be part of the ROW acquisition. No additional avoidance and minimization measures are required.

2.1.2. Consistency with State, Regional, and Local Plans and Programs

The following section provides information on the applicable regional and local plans, and the goals and policies that are applicable to the proposed project and whether the Build Alternative and No-Build Alternative are consistent or not.

AFFECTED ENVIRONMENT

MTC Plan Bay Area was adopted in 2013 by MTC and ABAG, and it is the long-range transportation and land use planning document for the San Francisco Bay Area through 2040. The plan is intended to guide the Bay Area in accommodating growth while fostering an innovative, prosperous, and competitive economy; preserving a healthy and safe environment; and allowing all Bay Area residents to share the benefits of vibrant, sustainable communities that are connected by an efficient and well-maintained transportation network.

City of Oakland General Plan was first adopted in 1998 and defines the long-range goals and intentions of the community. The Land Use and Transportation section is applicable to the proposed project, which includes the *Bicycle Master Plan and Pedestrian Plan* and the *Estuary Policy Plan* (described in the following bullets).

- *Bicycle Master Plan* was first adopted in 1999 and updated in 2019 (2019 Oakland Bike Plan - Let's Bike Oakland!). The plan notes that residents in the downtown Oakland area tend to use transit, bicycle, and walk to a greater degree than the rest of Oakland.
- *Oakland Pedestrian Plan* was first adopted in 2002 and updated in 2017 (Oakland Walks!). The plan sets goals and policies to improve the pedestrian environment in Oakland.
- *Estuary Policy Plan* was adopted in 1999 and includes objectives and policies to enhance the area south of I-880 between Adeline Street and 66th Avenue in Oakland. The plan identifies improvements for open space and recreational opportunities along the shoreline and the need to connect waterfront uses with other parts of Oakland.

Downtown Oakland Specific Plan is expected to be adopted in 2020. It establishes policies to ensure downtown development over the next 20 years serves the broad needs of the entire community. Plan development began in 2015 and has included numerous opportunities for stakeholder and community involvement to help shape it. It includes goals and policies on economic opportunity, housing and affordability, mobility, cultural keeping, community health, land use and urban form, and implementation and engagement.

Lake Merritt Station Area Plan was adopted in 2014. It is a specific plan that encompasses the general area within 0.5 miles of the Lake Merritt BART station. The plan includes policies and programs that address land use, housing, design, circulation, transit improvements, streetscape improvements, and parks and public spaces, and it identifies actions for area improvements.

City of Alameda General Plan was adopted in 1991. It outlines goals and policies to guide Alameda's future conservation and development. Plan elements include land use; city design; transportation; open space and conservation; parks and recreation, shoreline access, schools, and cultural facilities; safety and noise; Alameda Point; northern waterfront amendment; and housing. Alameda is currently in the process of updating the *General Plan* for the period from

2020 to 2040. Elements of the plan are currently drafted except for transportation and mobility and housing which are anticipated to be complete in 2021.

City of Alameda Transportation Choices Plan: Transit and Transportation Demand Management was finalized in 2018 and was prepared to help guide future transportation decisions within Alameda. The plan identifies goals and objectives for implementing future transit and travel demand management projects that decrease drive alone trips at estuary crossings and increase walking, bicycling, bussing, and carpooling within Alameda.

San Francisco Bay Conservation District's San Francisco Bay Plan (Bay Plan) was adopted in 1968 with updates through 2012. The plan identifies policies to guide future uses of the San Francisco Bay and shoreline and priority use areas on and around the San Francisco Bay, including ports, water-related industry, airports, wildlife refuges, and water-oriented recreation.

ENVIRONMENTAL CONSEQUENCES

No-Build Alternative

The No-Build Alternative would be inconsistent with regional and local plans' goals and policies related to transportation facilities, such as reducing congestion for vehicles and improving bicycle and pedestrian facilities.

Build Alternative

Permanent Impacts

Table 2-4 provides information on the goals and polices that are applicable to the proposed project. The proposed project is consistent with local and regional plans, existing land use, and adopted goals and policies. The *Bay Plan* and the *City of Alameda Transportation Choices Plan* were reviewed, and there were no applicable goals and policies. The DOSP has not been adopted yet. However, the goals and policies were reviewed, but the consistency with this environmental document was not performed since the plan may change. The draft plan identifies goals and policies under the Mobility and Accessibility chapter related to improving safety and connections for those that travel through, to, and from downtown Oakland.

Table 2-4. Consistency with Regional and Local Plans

Goal/Policies	Build Alternative	No-Build Alternative
MTC Plan Bay Area		
Strategy 2. Modernize	**Consistent** • Would modify access to and from I-880 to reduce traffic and congestion on local roadways. • Includes pedestrian and bicycle improvements that improve safety and enhance access and connections within Oakland and between Oakland and Alameda, as well as to other transit modes.	**Not Consistent** • No improvements and vehicle congestion would continue to increase. • No pedestrian or bicycle improvements to reduce conflicts and improve connections.
City of Oakland General Plan (Land Use and Transportation)		
Policy T3.5. Including Bikeways and Pedestrian Walks. The City should include bikeways and pedestrian ways in the planning of new, reconstructed, or realigned streets wherever possible.	**Consistent** • Includes new bicycle facilities on 6th and Oak streets and improves the connection between Alameda and Oakland. • Includes curb extensions and PHB upgrades to improve safety at pedestrian crossings.	**Not Consistent** • No improvements to bicycle or pedestrian improvements.
Policy T3.7. Resolving Transportation Conflicts. The City, in constructing and maintaining its transportation infrastructure, should resolve any conflicts between public transit and single-occupancy vehicles in favor of the transportation mode that potentially provides the greatest mobility and access options for people, giving due consideration to the environmental, public safety, economic development, health, and social equity impacts.	**Consistent** • Would remove traffic coming and going to Alameda from local roadways, which would decrease traffic volumes and lead to reduced conflicts between vehicles, bicyclists, and pedestrians.	**Not Consistent** • No new or enhanced bicycle and pedestrian facilities that would improve connections to transit and improve safety. • Congestion would continue to worsen on local roadways and would not reduce conflicts between modes.

Goal/Policies	Build Alternative	No-Build Alternative
Objective T4. Increase use of alternative modes of transportation. Policy T4.10. Converting Underused Travel Lanes. Take advantage of existing transportation infrastructure and capacity that is underutilized, e.g., where possible and desirable, convert underused travel lanes to bicycle or pedestrian paths or amenities.	**Consistent** • Would connect 6th Street from Oak Street to Broadway. • Would extend 6th Street and add new bicycle and pedestrian facilities.	**Not Consistent** • No improvements to underutilized roadways.
Objective T6. Make streets safe, pedestrian accessible, and attractive.	**Consistent** • Would improve pedestrian safety at several locations by removing a free right turn, extending curbs, adding new sidewalks, and installing a PHB.	**Not Consistent** • Would not improve pedestrian facilities and conflict points would remain.
2019 Oakland Bike Plan – Let's Bike Oakland!		
Access		
Objective A. Increase access to jobs, education, retail, parks and libraries, recreational centers, and other neighborhood destinations.	**Consistent** • Includes new bicycle facilities on 6th and Oak streets that would provide new and improved connections in the project study area. • Includes the Chinese Garden Park, Oakland Museum, Laney College and neighborhoods within Oakland, such as Chinatown and the Jack London District. • Improves connections between Oakland and Alameda.	**Not Consistent** • Does not include additional bicycle facilities.
Health and Safety		
Objective A. Reduce bicycle crashes through safe and comfortable bikeways.	**Consistent** • Includes cycle track installation on 6th and Oak streets, which are Class IV bikeway types. • Would provide a physical separation between bicyclists and vehicles.	**Not Consistent** • Does not include additional bicycle facilities.

Goal/Policies	Build Alternative	No-Build Alternative
2017 Pedestrian Plan Update – Oakland Walks!		
Goal: Holistic Community Safety. Make Oakland's pedestrian environment safe and welcoming.	**Consistent** • Improvements including curb extension, PHB installation, and new sidewalks that would improve safety.	**Not Consistent** • Does not include improvements that would impact pedestrian connections or safety.
Estuary Policy Plan		
Objective C-6. Improve pedestrian and bicycle circulation. Bicycle and pedestrian networks should be extended throughout the waterfront.	**Consistent** • Improvements to the bicycle network, including a cycle track on Oak Street connecting to 3rd Street.	**Not Consistent** • Does not include additional bicycle facilities.
Lake Merritt Station Area Plan		
Open Space		
Policy OS-9. Pedestrian Connections to Chinese Garden Park. Improve pedestrian connections to Chinese Garden Park on 7th Street at Harrison and Alice streets as part of streetscape and circulation improvements in the planning area. Improved connections may involve removing the "soft right" turn from Harrison to 7th Street, installing a traffic signal at Alice and 7th streets, widening sidewalks, adding curb extensions for pedestrians, and adding clear and highly visible pedestrian signage for drivers.	**Consistent** • Removes the dual right turns at 7th/Harrison Street interchange. • Extends the curb reducing pedestrian crossing distance at the intersection. • Installs a PHB on 7th Street across the street from the Chinese Garden Park that would improve safety.	**Not Consistent** • Does not include improvements that would impact pedestrian connections or safety.

Goal/Policies	Build Alternative	No-Build Alternative
Streetscape and Circulation		
Policy C-16. Pedestrian Safety. Prioritize pedestrian improvements and traffic calming near locations where the safety of youth and elders would be most enhanced. These locations would include Lincoln Recreation Center, Chinese Garden Park, Oakland Unified School District Downtown Educational Center, and Madison Square Park.	**Consistent** • Improvements in the area around Chinese Garden Park. • Removes the dual right turns at 7th/Harrison Street interchange. • Extends the curb reducing pedestrian crossing distance. • Installs a PHB on 7th Street across the street from the Chinese Garden Park that would improve safety.	**Not Consistent** • Does not include improvements that would impact pedestrian connections or safety.
Policy C-25. Traffic signal at 7th and Alice streets. Study the implementation of a traffic signal at 7th and Alice streets to slow traffic and provide safe street crossings. If a traffic signal is not warranted, consider installation of additional traffic calming devices to encourage safe pedestrian crossing.	**Consistent** • Installs a PHB on 7th and Alice streets across the street from the Chinese Garden Park that would improve safety.	**Not Consistent** • Does not include improvements that would impact pedestrian connections or safety.
Policy C-32. Bike lanes and routes. Implement the policies and improvements of the City's Bicycle Master Plan in the planning area. New bike lane and route improvements in the Plan, include Class II bike lanes on Oak and Madison streets.	**Consistent** • Includes cycle track installation (Class IV bikeway types that provide a physical separation between bicyclists and vehicles) on Oak Street.	**Not Consistent** • Does not include additional bicycle facilities.
City of Alameda General Plan (Transportation Element)		
Policy 4.1.1.d. Provide a network of facilities to allow for the safe conveyance of bicycle traffic on all streets and in all sections of the city.	**Consistent** • Would improve safety for bicyclists traveling between Alameda and Oakland in the Posey and Webster tubes. • Would improve connections and safety to existing facilities in Alameda.	**Not Consistent** • No bicycle or pedestrian improvements. • Bicyclists and pedestrians would not realize improvements in accessibility and safety.

Goal/Policies	Build Alternative	No-Build Alternative
Objective 4.1.2. Protect and enhance the service level of the transportation system. Policy 4.1.2e. Work with regional, state, and federal agencies to develop plans for design, phasing, funding, and construction of facilities to enhance multimodal cross-estuary travel, such as increased access to I-880 (bridge, tunnel, or other vehicle connection) bicycle/pedestrian shuttles or high-occupancy vehicle only crossing, e.g., transit or carpool lane to Oakland.	**Consistent** • Provides a more direct connection to I-880 by avoiding the need to travel on local roadways. • Improves pedestrian and bicycle connections between Alameda and Oakland.	**Not Consistent** • Does not include roadway, bicycle, or pedestrian improvements that would enhance cross-estuary travel.
Objective 4.3.3. Promote and encourage bicycling as a mode of transportation. 4.3.3.b. Include improvements to bicycle facilities as part of City transportation improvement projects (streets, bridges, etc.).	**Consistent** • Would provide a new connection through the Webster Tube for bicycle and pedestrian travel. • Would improve bicycle and pedestrian facilities associated with the Posey Tube. • Improvements would connect to new bicycle facilities in Oakland.	**Not Consistent** • Does not include bicycle improvements that would encourage ridership through the Posey Tube.

Construction Impacts

Construction of the Build Alternative is not addressed in the regional or local plans; however, the proposed project would be consistent with applicable construction regulations and prior to construction obtain the necessary permits.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The proposed project is consistent with the adopted local and regional plans, and it has been designed to fit primarily within existing transportation land uses to minimize land use conversion to a transportation-related use. No avoidance, minimization, or mitigation measures are required.

2.2. PARKS AND COASTAL ZONE

2.2.1. Regulatory Setting

The proposed project has the potential to affect resources protected by the Coastal Zone Management Act of 1972 (CZMA). The CZMA is the primary federal law enacted to preserve and protect coastal resources. The CZMA sets up a program under which coastal states are encouraged to develop coastal management programs. States with an approved coastal management plan are able to review federal permits and activities to determine if they are consistent with the state's management plan.

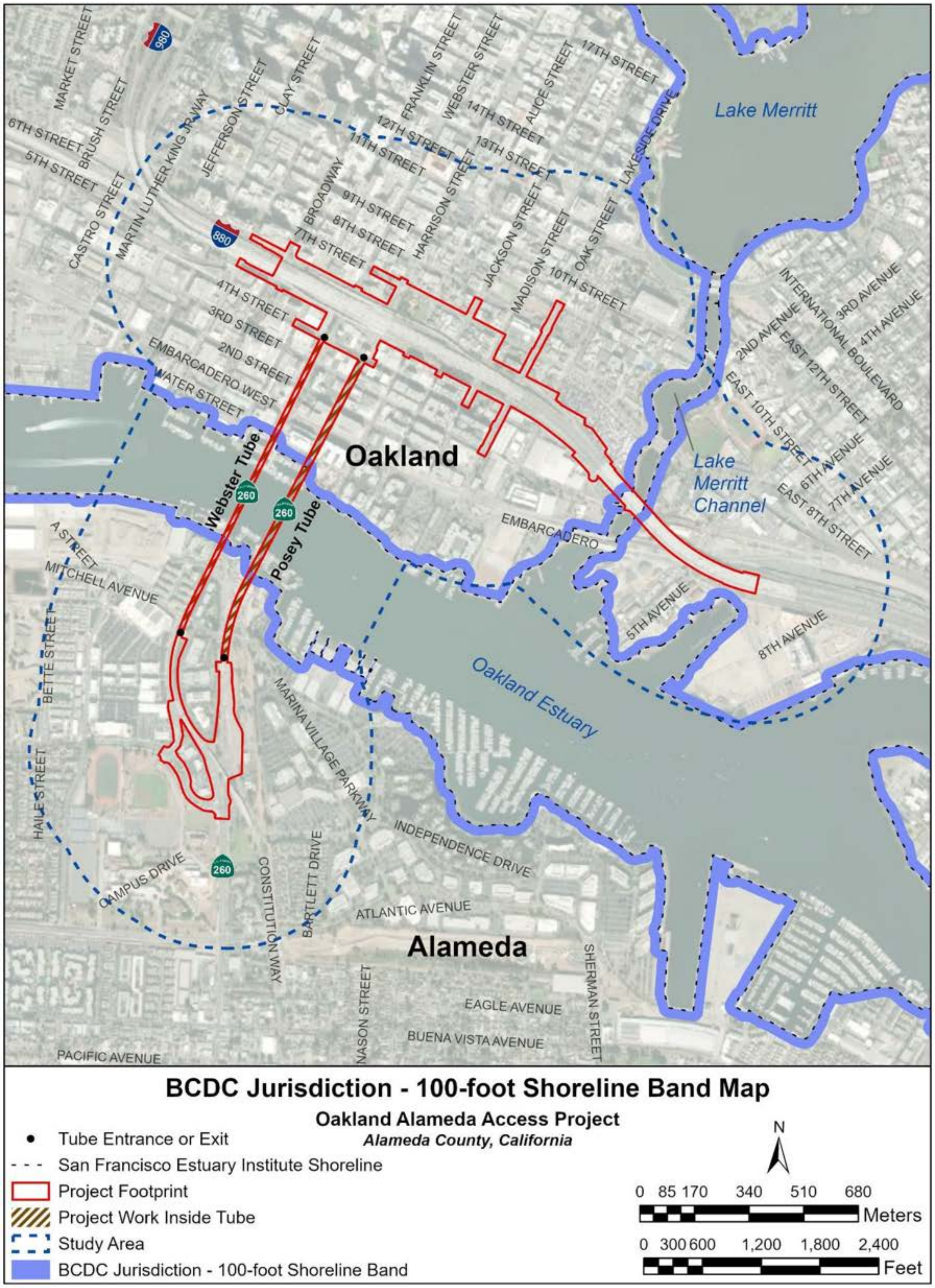
California developed a coastal zone management plan and enacted its own law, the California Coastal Act of 1976, to protect the coastline. The policies established by the California Coastal Act are similar to the CZMA: They include the protection and expansion of public access; the protection, enhancement, and restoration of environmentally sensitive areas; the protection of agricultural lands; the protection of scenic beauty; and the protection of property and life from coastal hazards. The California Coastal Commission is responsible for its implementation and oversight under the California Coastal Act.

The BCDC, created prior to the California Coastal Act, retains oversight and planning responsibilities for the development and conservation of coastal resources in the Bay Area. The regulatory authority for BCDC is the McAteer-Petris Act and the Suisun Marsh Protection Act.

BCDC regulates and establishes policy for Bay fill, use of the Bay and shoreline area, and public access to and along the Bay. BCDC jurisdiction includes open water, marshes, and mudflats of the greater San Francisco Bay; portions of most creeks, rivers, sloughs, and other tributaries subject to tidal action that flow into San Francisco Bay; and salt ponds, managed wetlands, and a shoreline band that extends inland for 100 feet from the San Francisco Bay shoreline. For a project within any portion of BCDC jurisdiction, a permit from BCDC may be required.

2.2.2. Affected Environment

The proposed project is not situated within the coastal zone. Some of the proposed project is located within the horizontal extent of BCDC jurisdiction. However, project work would be located entirely within Caltrans' ROW within the Tubes. Figure 2-2 illustrates the BCDC jurisdiction in relation to the project footprint. Between the entrances and exits to the Tubes, all work would be within the Tubes, which are located below ground and at the bottom of the Oakland Estuary. There is no work outside of the Tubes within the horizontal extent of BCDC's jurisdiction. Below the 100-foot-wide shoreline band, the Tubes are below ground and there would be no in-water work within the Oakland Estuary.



Source: CIA (September 2020)

Figure 2-2. BCDC Jurisdiction

2.2.3. Environmental Consequences

NO-BUILD ALTERNATIVE

The No-Build Alternative does not include any improvements in the coastal zone.

BUILD ALTERNATIVE

Permanent Impacts

There are no coastal zone impacts. The majority of the proposed project activities are outside of the 100-foot-wide shoreline band for the BCDC, and it would not result in shoreline band changes. The proposed project improvements in the Tubes are related to pedestrian and bicycle improvements within the existing ROW and are entirely within the existing Tubes, but they fall within BCDC jurisdiction. The proposed project does not require fill, dredge, or modifications to the shoreline or waterways.

Construction Impacts

Construction activities would be within BCDC and existing Caltrans ROW within the Tubes. The proposed project does not require fill, dredge, or other construction activities outside the Tubes in the BCDC jurisdiction. Because of the nature of the improvements, the location within existing Caltrans ROW and within BCDC jurisdiction, the proposed project would be covered under the BCDC Programmatic Maintenance agreement. Caltrans would obtain coverage during the design phase.

2.2.4. Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are required.

2.3. PARKS AND RECREATIONAL FACILITIES

2.3.1. Regulatory Setting

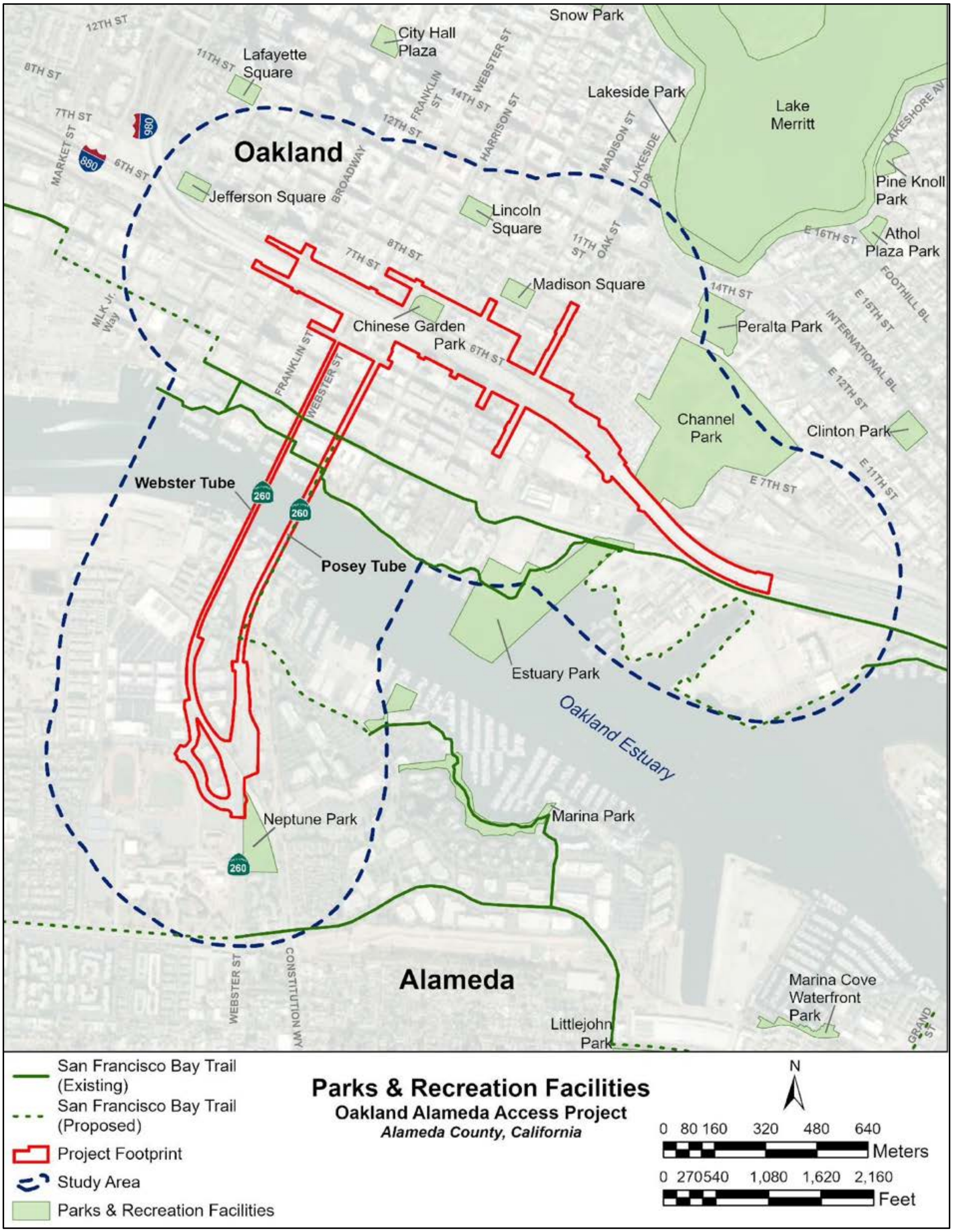
The Park Preservation Act (California Public Resources Code [PRC] Sections 5400-5409) prohibits local and state agencies from acquiring any property which is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land.

2.3.2. Affected Environment

The project study area includes parks and recreation facilities within the cities of Oakland and Alameda. The City of Oakland's Office of Parks and Recreation manages the facilities within the City's boundaries and the Alameda Recreation and Park Department manages facilities within Alameda. In addition, the San Francisco Bay Trail runs through the project study area on parts of Embarcadero Way and along the waterfront between the Jack London Square Ferry Terminal and Estuary Park outside of the project footprint. Parks and recreation facilities are shown in Figure 2-3. Parks and Recreation Facilities.

The parks closest to the proposed project include the Chinese Garden Park and Channel Park in Oakland and Neptune Park in Alameda. Chinese Garden Park is within the project footprint, adjacent to 6th Street, and amenities include open space with landscaping and paths, gazebo/ pagoda, and a building that is currently used as a community center (previously it provided senior and child care services). The community center is currently closed due to the COVID-19 pandemic. Channel Park is located just north of I-880 and spans either side of the Lake Merritt Channel; amenities include a paved walkway, benches, and public area. The paved walkway on the western side of the Lake Merritt Channel within Channel Park continues under I-880 and connects with 4th Street. Neptune Park amenities include walking trails and open space.

Parks and recreation facilities in the project study area have been identified as Section 4(f) resources. Refer to Appendix A, Section 4(f), for information on the Section 4(f) resources. None of the parks and recreation facilities in the project study area are subject to the Park Preservation Act because no property is acquired.



Source: CIA (September 2020)

Figure 2-3. Parks and Recreation Facilities

2.3.3. Environmental Consequences

NO-BUILD ALTERNATIVE

There would be no impacts to parks and recreation facilities under the No-Build Alternative, and it would not improve bicycle and pedestrian access in the project study area or provide increased opportunities to access parks and recreation facilities.

BUILD ALTERNATIVE

<u>Permanent Impacts</u>

The proposed project does not require permanent land acquisition from parks and recreation facilities. The majority of the parks and recreation facilities are located far enough away that operation would not result in proximity impacts (i.e., noise and visual). The addition of new pedestrian and bicycle facilities would improve access to parks and recreation facilities in the project study area.

The Chinese Garden Park, in Oakland, would realize a number of visual and accessibility benefits from the Build Alternative. The visual setting of the park would be permanently improved with the removal of the NB I-880/Broadway structure along the southern edge of the park. The addition of the cycle track on 6th Street would provide improved bicycle access to the park. The extension of the sidewalk on Alice Street would provide a connection to 6th Street, completing the sidewalk. With the improvements on 6th Street, the Build Alternative would provide a continuous sidewalk around the park. The pedestrian improvements on 7th Street including the addition of the PHB and removal of free right turns from Harrison Street would improve safety for pedestrians accessing the park. The removal of on-street parking along 6th Street would not result in impacts for park users because there is other on- and off-street parking available nearby. In addition, approximately 11 new parking spaces will be created directly adjacent to the park along Harrison and 7th streets (see Figure 2-6). The areas where improvements are proposed around the park are illustrated in Figure 2-4. While noise levels would decrease, they would still be above FHWA noise abatement criteria (NAC) within the park, however, noise levels are lower compared to the No-Build Alternative and would not impact the use of the park.

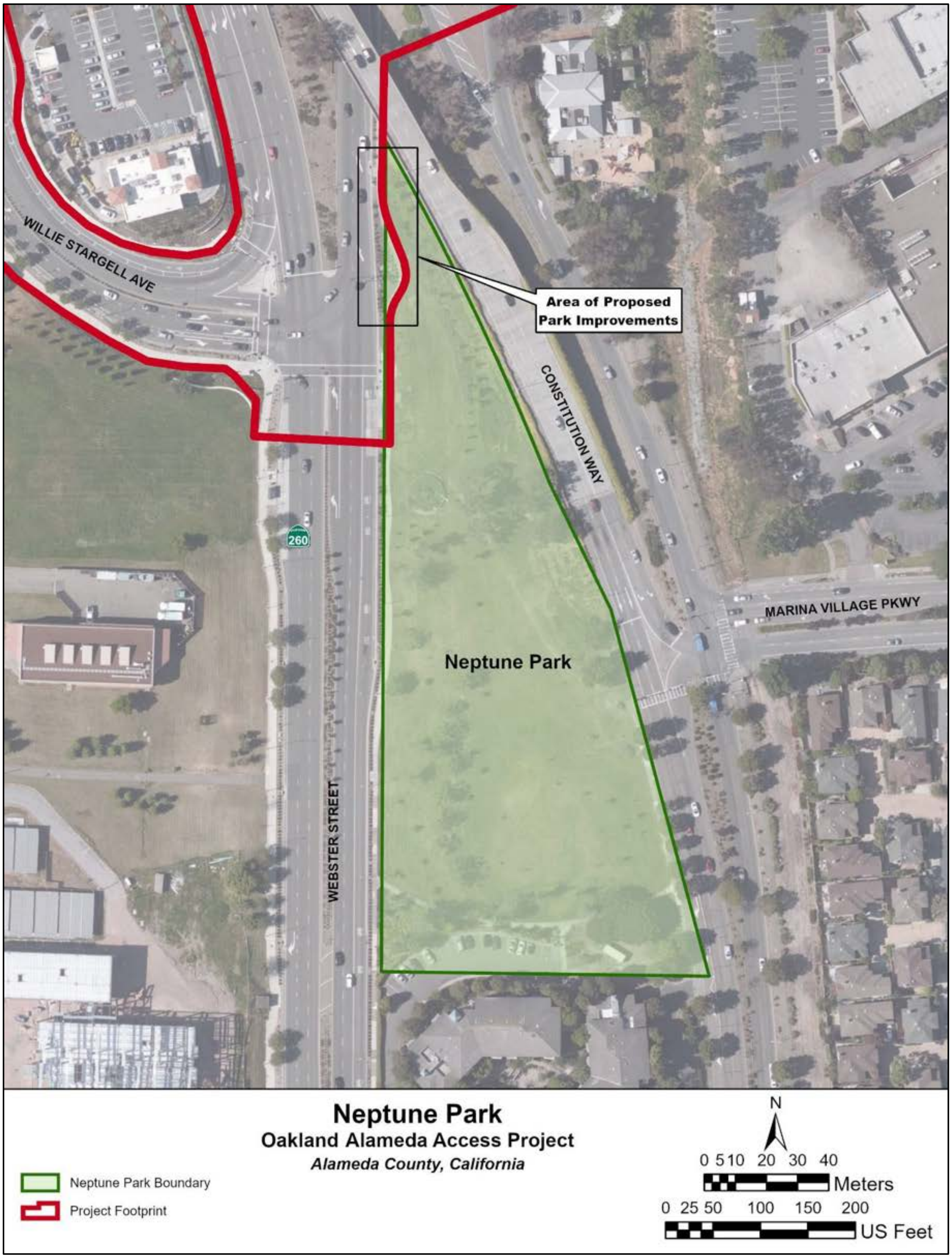
Source: CIA (September 2020)

Figure 2-4. Chinese Garden Park Adjacent Improvements

Neptune Park in Alameda is adjacent to the project footprint. There is an existing sidewalk that runs through the northern portion of the park that would realize benefits. The widening of the existing sidewalk within Neptune Park and the areas adjacent to it would improve access for pedestrians and bicyclists traveling within as well as to/from the park.

Construction Impacts

Construction activities would be adjacent to the Chinese Garden Park and in close proximity to Channel Park in Oakland but does not require construction activities within these two parks. There would potentially be temporary increases in noise, dust, and visual disturbance from construction equipment. These would mostly occur near the Chinese Garden Park with the removal of the elevated structure and sidewalk installation but access to the parks would be maintained throughout construction. Within Neptune Park a portion of the existing sidewalk would be widened from 8 feet to 10 feet (refer to Figure 2-5 for the area of the proposed park improvements) and this construction meets the temporary exception criteria in 23 CFR 774.13(d)(g) and would not result in a temporary use under Section 4(f) (Appendix A-1). The construction activities meet the exception criteria because the temporary occupancy during construction is temporary and does not result in changes in ownership, construction activities are minor in nature, construction does not result in permanent adverse physical impacts or interference with the protected activities, and the area would be restored after construction. The widening of the sidewalk is also considered a transportation enhancement activity. Refer to Appendix A-1 in the Section 4(f) for information on the temporary occupancy within Neptune Park and the required coordination with the City of Alameda, the owner with jurisdiction. Construction would not affect the use of the facilities, and the impacts would end once construction is complete. Other park and recreation facilities are far enough away, or the construction activities are limited that no other impacts are anticipated.



Source: CIA (September 2020)

Figure 2-5. Neptune Park Area of Proposed Improvements

2.3.4. Avoidance, Minimization, and/or Mitigation Measures

The temporary construction impacts to visual, air, and noise would be minimized with the avoidance and minimization measures described in Section 2.9. Visual/Aesthetics, Section 3.6. Air Quality, and Section 3.7. Noise. The TMP described in Section 2.8. Traffic and Transportation/Pedestrian and Bicycle Facilities will also avoid and/or minimize impacts on parks and recreation facilities during construction.

The following measure applies to temporary impacts in Neptune Park:

AMM-PRF-1 Neptune Park Restoration	Restore Neptune Park after construction and coordinate with the City of Alameda on the restoration of the disturbed areas. Access at all times will be maintained to Neptune Park during construction.

2.4. COMMUNITY CHARACTER AND COHESION

The following sections provide information on effects to the community as a result of the implementation of the proposed project. The analysis summarizes the results of the CIA (September 2020). Information in this section includes Community Character, Relocations and Real Property Acquisition, and Environmental Justice.

2.4.1. Regulatory Setting

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

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

2.4.2. Affected Environment

The proposed project is located in neighborhoods within the cities of Oakland and Alameda. The Oakland Inner Harbor is a barrier to interaction between the neighborhoods in Oakland and Alameda with the Webster and Posey tubes providing the linkages to interaction within the project study area. Within Oakland, the construction of I-880 in 1950 formed a barrier to interaction and acts as a boundary for the neighborhoods located north and south of the interstate. Within the project study area, the existing local street patterns are intertwined with freeway entrances and exit ramps that affect interaction between the neighborhoods, especially for pedestrians and bicyclists.

Within Oakland, the project study area includes the following neighborhoods: Chinatown, Jack London District, Old Oakland, Clinton, and the new and growing Brooklyn Basin. The Jack London District and Brooklyn Basin neighborhoods are located south of I-880 and Chinatown, Old Oakland, and Clinton to the north. The majority of the project footprint is within the Jack London District and Chinatown neighborhoods. Neighborhoods within the project study area in the City of Alameda include the West End and Marina Village. There are a number of community facilities, including religious institutions, educational facilities, community centers (includes senior and youth), parks, social service providers (includes shelters and foodbanks), cultural, libraries, and government offices within the neighborhoods with the majority in Oakland (refer to the CIA [September 2020]) for additional information on community facilities in the project study area). The neighborhoods in Oakland have a higher degree of community cohesion (defined as the degree to which residents have a sense of belonging to their neighborhood, a level of commitment to the community, or a strong attachment to neighbors, groups, and institutions, usually as a result of continued association over time) because of the community facilities, events, and mix of uses (residential and commercial) found in each neighborhood. Within Alameda, the project study area has a lower degree of cohesion because the portions of the neighborhood in the project study area are mainly associated with commercial and office-related uses.

Table 2-5 provides information on the demographic characteristics of the project study area compared to the cities of Oakland and Alameda and Alameda County. The project study area has a lower percentage of the population under 18 and greater percentage of the population 65 years and over. It has the highest percentage of minority populations with nearly 77% of the project study area identifying as a minority population. Refer to Section 2.6. Environmental Justice for additional information on minority populations in the project study area.

Table 2-5. Demographic Characteristics

Characteristic	Project Study Area	Oakland	Alameda	Alameda County
Total Population (# of people)	17,848	417,442	78,246	1,629,615
Under 18 (%)	13.7	20.0	20.2	21.2
65 Years and Over (%)	17.8	12.5	14.8	12.8
Median Age	42.0	36.4	41.0	37.3
Minority Population (%)	76.7	72.7	57.3	67.8

Source: U.S. Census Bureau (2018)

Areas of Caltrans' ROW under I-880 and City of Oakland ROW in the project footprint either are or have been associated with unsheltered population encampments. These encampments are typically not allowed within either ROW. Based on the latest count in 2019, the unsheltered population in Alameda County was 8,022 (Everyone Home 2019). Within Oakland the unsheltered population was 4,071 and in Alameda 231. Unsheltered populations are a major concern in Alameda County, and the City of Oakland has been working to address the issue by making investments in programs to provide housing. The City of Oakland recently opened a Community Cabin site and in the project footprint within Caltrans' ROW south of 6th Street and between Oak and Madison streets. This site has 19 two-person cabins that may require removal prior to project construction.

2.4.3. Environmental Consequences

NO-BUILD ALTERNATIVE

Under the No-Build Alternative, the proposed project would not be constructed. Without the proposed project, there are no benefits associated with reduced congestion on local roadways or improvements in bicycle facilities and connections and pedestrian improvements. As conditions continue to worsen it could have negative impacts on community cohesion.Build Alternative

<u>Permanent Impacts</u>

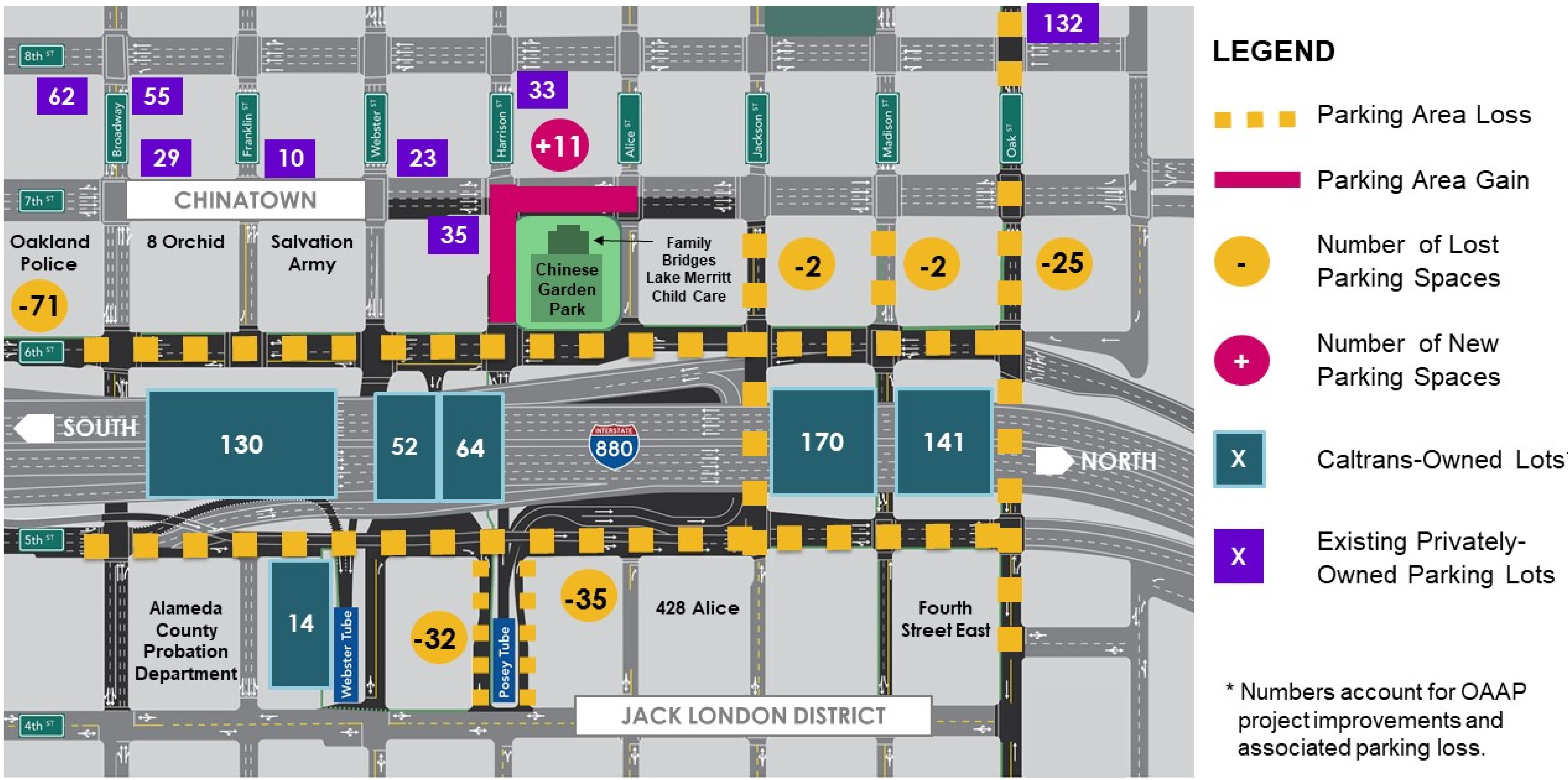
The character of the neighborhoods in the project study area would not change because of the proposed project. It would not result in the displacement of residences, businesses, or community facilities. It would not result in the division of neighborhoods, change social patterns, or impede access to neighborhoods or community facilities for those living in, working in, and visiting the project study area. The Build Alternative would improve bicycle and pedestrian access and connectivity near Chinese Garden (City of Oakland) and Neptune (City of Alameda) parks. Next to Chinese Garden Park, the Build Alternative would make the following improvements to bicycle and pedestrian access: make the sidewalk network continuous and ADA compliant (by connecting the sidewalks on Alice and 6th streets), install a PHB on 7th Street at Alice Street, remove free right turns on 7th Street, and add a cycle track on 6th Street. There would also be permanent visual setting improvements with the removal of the NB I-880/ Broadway structure along the south edge of the park. At Neptune Park, the Build Alternative would widen the existing sidewalk to improve bicycle and pedestrian access to and within the park. The removal of the elevated northbound Broadway off-ramp would narrow the barrier effect on neighborhoods created by I-880. The improvements in the local roadway would reduce congestion on the local roadway networks. Proposed improvements to the bicycle network would be beneficial to those living, working, and visiting the project study area. There would be new connections between Oakland and Alameda as well as to the larger bicycle network in Oakland and Alameda, and other transit modes improving both access and safety for bicyclists. The pedestrian network would see safety improvements.

The proposed project would not remove any parking in the City of Alameda. However, approximately 284 parking spaces within the City of Oakland would be removed. This would include 156 publicly available on-street spaces on local roadways and 128 spaces within six Caltrans parking lots that are located within Caltrans' ROW, primarily underneath I-880. On-street parking loss would include 5th Street (35 spaces to accommodate truck turning), 6th Street (71 spaces to accommodate a two-way cycle track), Oak Street (25 spaces to accommodate a two-way cycle track), and Harrison Street (18 spaces to accommodate a shared-use pathway). The remaining parking loss (7 spaces) would be lost due to project improvements on other local roadways within the project footprint. See Table 2-6 and Figure 2-6 for a full accounting of on- and off-street parking loss.

Table 2-6. Summary of On-street Parking Loss within the Project Footprint

Street	Number of Lost Parking Spaces	% of total Parking Removal
Oak Street	25	14.9
Harrison Street	32	19.2
Madison Street	2	1.2
Jackson Street	2	1.2
5th Street	35	21.0
6th Street	71	42.5
TOTAL*	**167**	**100.0**

**Note:11 parking spaces will be added to streets around Chinese Garden Park (Harrison and 7th streets) resulting in an overall proposed project loss of 156 on-street parking spaces.*



Note: Graphic not to scale

Figure 2-6. Parking Loss Within Downtown Oakland

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The type of parking loss was evaluated to identify potential community impacts. The majority of on-street parking loss would be controlled parking spaces (119 spaces representing 76% of the total proposed parking loss). This loss, in addition to the metered parking spaces lost (9) and the lost loading zone space, could potentially impact customer and employee parking for local area businesses. Potentially affected businesses in the project footprint include the following:

- Oak Street: a restaurant, warehouse, auto repair shop, and gas station
- 5th Street/Harrison Street: two breweries, a fitness center, and a warehouse
- 6th Street: Salvation Army and a warehouse

Per the City of Oakland's parking study (2016), several of the roadways with the highest number of parking loss (5th, 6th, and Harrison streets) currently operate near capacity during peak weekday hours. Based on the already limited capacity for parking on those roadways, additional parking loss associated with the proposed project could potentially result in localized impacts to businesses.

The study also found that available on-street parking capacity during peak weekend hours was approximately 51%. The proposed project assumed that uncontrolled parking spaces were more likely to be used by residents because they allow for day or overnight parking. This indicated existing parking capacity for residents within the project footprint would likely be sufficient. Therefore, the loss of uncontrolled parking spaces (27 spaces) is not anticipated to have an impact to residents.

Following construction of the proposed project, approximately 574 off-street parking spaces would remain in Caltrans-owned lots under I-880 (Figure 2-6). In addition, approximately 558 on-street parking spaces would remain within the project footprint. Privately owned and operated parking garages and lots within and adjacent to the project study area would remain available as well.

The proposed project would improve bicycle and pedestrian access throughout the project study area. Several studies in other cities have assessed business impacts associated with the removal of on-street parking and the addition of bicycle facilities (Drennen, 2003; Clifton et al., 2012; Toronto Center for Active Transportation, 2016; Stantec Consulting Ltd., 2011; Popovich and Handy, 2014; and Arancibia et al., 2019). Businesses in other cities have benefitted from the installation of bike lanes despite the loss of on-street parking. These changes could be potentially beneficial to the businesses located along 6th, Oak, and Harrison streets, where bicycle infrastructure improvements are proposed. In addition, the proposed project's bicycle infrastructure improvements would improve access throughout the project study area and improve connections to transit. This would allow some drivers to switch modes of transportation and potentially off-set some of the demand for parking.

The City of Oakland's 2016 parking study included establishing priority for curb space uses with bicyclists, pedestrians, and transit being the first priority and short- or long-term parking the last priority. The draft DOSP identified a strategy to actively manage curbside space and build upon the priorities identified in the study. These strategies would address potential cumulative impacts associated with other private development projects in downtown Oakland, which could either directly remove parking or indirectly remove parking through increased demand associated with additional residential units.

Caltrans and Alameda CTC would coordinate with the City of Oakland to offset potential localized impacts to area businesses associated with the loss of publicly available on-street parking.

No parking spaces will be permanently removed from the Laney College parking lot. No long-term impacts are anticipated on community events held in the Laney College parking lot because the maintenance easement would not impact the number of parking spaces, public access, or the size of the events (refer to Section 2.5 for information on the partial property acquisition).

The proposed project would result in the displacement of encampments in areas underneath I-880 that are owned by Caltrans. Areas under I-880 within Caltrans ROW would be needed permanently to accommodate project improvements. While unsheltered encampments are not legally permitted to be on Caltrans property, public outreach to address the concerns of the unsheltered populations would be conducted prior to displacement.

If, at a future date, unsheltered populations need to be relocated from Caltrans ROW, then established procedures will be followed. These procedures, which are usually carried out by Caltrans District Maintenance staff accompanied by California Highway Patrol or local law enforcement, include providing a “Notice to Vacate,” which provides an advance notice of the date belongings will be officially removed, information on where belongings will be stored and for how long, and information on where to access human and community services.

No indirect impacts on community cohesion are anticipated during operation. Existing access to I-880 is modified but maintained and there are no changes in access to community facilities. With the proposed project there would be benefits to the adjacent neighborhoods because of the reductions in congestion on local roadways and the improvements to pedestrian and bicycle facilities. The proposed project would not result in growth pressures and the area is planning for growth already. The removal of on-street parking could result in localized impacts to area businesses. There are other opportunities for on- and off-street parking in the area, and the proposed improvements would make it easier for people to use modes other than vehicles. However, to offset potential localized impacts to area businesses associated with the loss of publicly available on-street parking, Caltrans and Alameda CTC will continue to coordinate with the City of Oakland to develop mitigation to address localized impacts to area businesses.

Construction Impacts

Construction activities would result in temporary increases in construction-related noise and dust, traffic congestion and delays, and visual impacts. Because the proposed project is primarily located within the operational ROW, it would have limited construction effects on neighborhoods, and there no changes in access for residents or community facilities are expected during construction. Construction activities within the Laney College parking lot could affect negatively community events held in the Laney College parking lot by potentially having an impact on the vehicle access and circulation within the parking lot because of the required TCE (refer to Section 2.5 for information on the TCE), which would temporarily use circulation aisles. The TCE would be required for up to 36 months, but even with the TCE community events in the parking lot would continue to operate during construction, resulting in no impacts on the larger neighborhood or cohesion. Caltrans will coordinate with Laney College prior to construction activities on project features that would minimize the temporary impacts.

Project construction would last up to 36 months, and it would not occur in one area for the entire duration. Construction impacts would occur over a longer period near the interchange modifications. Construction staging within existing Caltrans ROW would temporarily reduce available on- and off-street parking, especially in areas under I-880 where Caltrans ROW is leased for off-street parking. It is anticipated that not all the parking under I-880 would be required and there are other off-street lots in the project study area as well as on-street parking that could be used by those affected by the temporary removal of parking under I-880. On local roadways, construction and equipment would be located adjacent to roadways with construction traffic entering and leaving the work zones, which could affect drivers on local streets and increase congestion. Construction activities associated with roadway, bicycle, and pedestrian improvements would affect local roadways. If possible, local roadway closures would occur during nights and weekends to minimize impacts. The proposed project would implement detours where feasible to alleviate construction-related congestion.

Caltrans and the City of Oakland discourage illegal encampments within their ROW. The goal is the removal of illegal encampments and the mitigation of health, safety, access, and concealment issues while respecting the rights of the occupants and informing them of alternatives within the community. Unsheltered encampments are likely to be located in construction areas when construction begins. If there is an unsheltered encampment that requires clearing, established procedures would be followed. For those unsheltered encampments within Caltrans ROW, coordination with the Caltrans Maintenance Homeless Encampment Coordinator or equivalent would occur prior to construction. Actions before clean-up include adequate prior notices, “Notice to Vacate.” In addition, a visual assessment would be conducted of the area to determine the specific needs for clearing an encampment. If required, the California Highway Patrol or local law enforcement would help.

For those unsheltered encampments within the City of Oakland ROW, the City’s policies and procedures would be followed. The procedures for closure of encampments includes providing 72-hour advance notice of closure at multiple visible locations, storing any property left at the site after closure other than property deemed unsafe or hazardous for 90 days, and posting information about where to retrieve belongings.

2.4.4. Avoidance, Minimization, and/or Mitigation Measures

The following mitigation measure will be implemented to address potential operational impacts that will be associated with parking removal.

MM-CCC-1 Parking Spaces	To offset potential localized impacts to area businesses associated with the loss of publicly available on-street parking, Caltrans and Alameda CTC will continue to coordinate with the City of Oakland to develop mitigation to address localized impacts to area businesses.

The temporary construction impacts associated with congestion on local roadways, temporary impacts on pedestrian and bicycle facilities, impacts associated with the parking lot at Laney College, and AC Transit would be minimized with AMM-TRF-1, AMM-TRF-2, AMM-TRF-3, and AMM-TRF-4 described in Section 2.8. Traffic and Transportation/Pedestrian and Bicycle Facilities. The temporary construction impacts to visual, air, and noise would be minimized with the avoidance and minimization measures described in Section 2.9. Visual/Aesthetics, Section 3.6. Air Quality, and Section 3.7. Noise. The following avoidance and minimization measure will be implemented as part of construction.

AMM-CCC-1 Notice to Vacate

For unsheltered occupancy, prior to construction, adequate prior notices will be conspicuously posted (no less than along all exterior boundaries and at all roads, sidewalks, and trails entering Caltrans' ROW, City of Oakland ROW, and City of Alameda ROW). For Caltrans' ROW, multiple Notices to Vacate allow 72-hours to give adequate notice for occupants to leave with their personal property. The Notice to Vacate is a template and as needed information will be added where social services and shelter may be obtained in the surrounding neighborhoods. For the City of Oakland ROW and City of Alameda ROW, notices will also posted 72-hours in advance with information on where belongings will be stored and how to retrieve them.

2.5. RELOCATIONS AND REAL PROPERTY ACQUISITION

2.5.1. Regulatory Setting

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

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age, or sex. Please see Appendix B for a copy of Caltrans' Title VI Policy Statement.

2.5.2. Affected Environment

The project footprint is within the cities of Oakland and Alameda, and it includes a mixture of land uses including transportation-related uses, residential, commercial, industrial, institutional, and parks and open space.

2.53. Environmental Consequences

NO-BUILD ALTERNATIVE

The No-Build Alternative would not result in any property acquisitions or displacements.

BUILD ALTERNATIVE

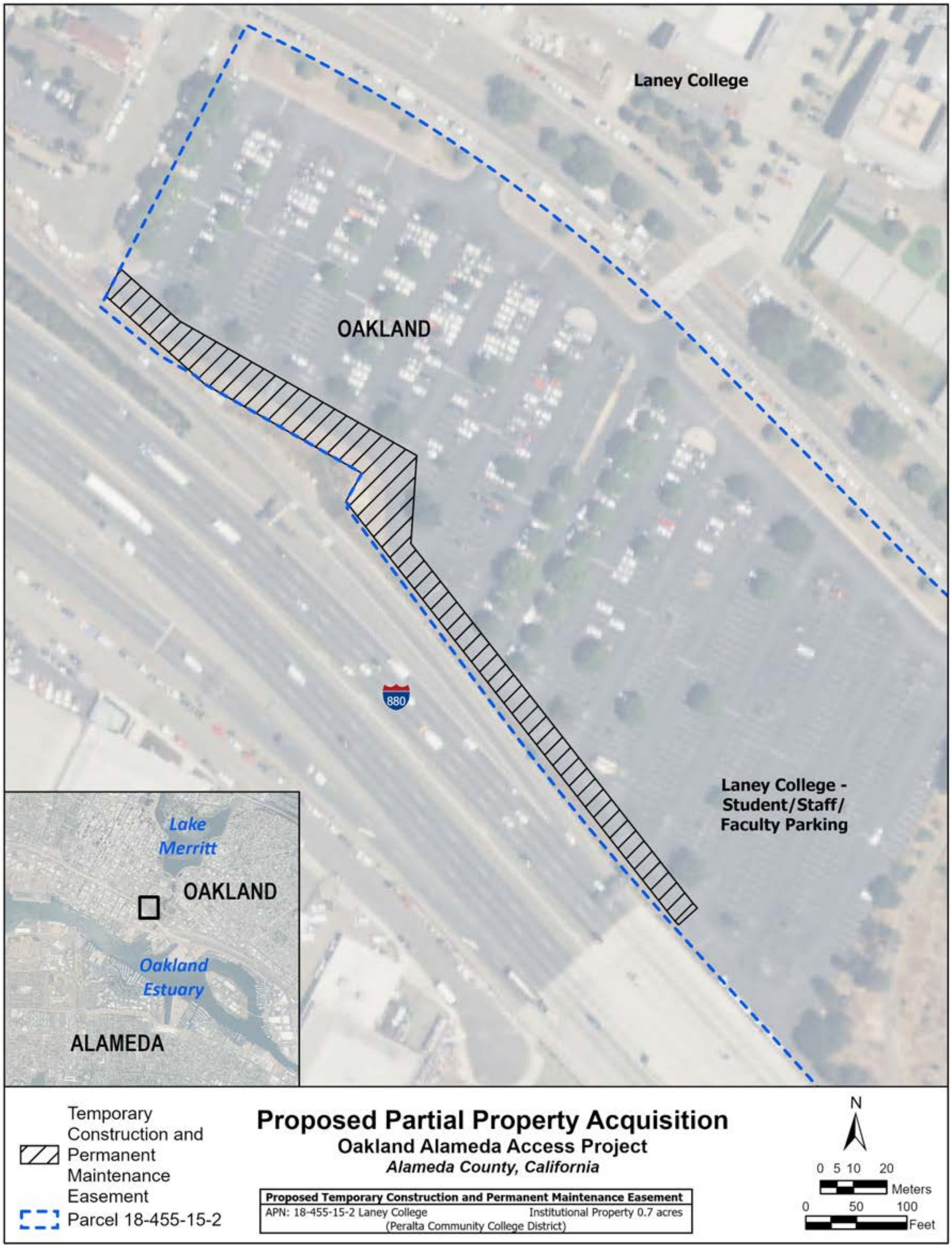
Permanent Impacts

The Build Alternative does not result in the displacement of residential or businesses and does not require full property acquisitions (see Table 2-2 and 2-3). Based on current design, the proposed project requires a partial property acquisition from a commercial property in Alameda. The partial property acquisition in Alameda requires a 0.03 acre strip of land from a commercial property (a gas station) along the northern portion of the property that is associated with landscaping and would not affect access to and from the property (Figure 2-8).

The proposed project would also require a permanent maintenance easement from Laney College to access and maintain the retaining wall along the NB I-880 Oak Street off-ramp at the south edge of the parking lot. The use of the Laney College parking lot by maintenance vehicles would not restrict or affect parking spaces or parking access by the College or other community events that take place in the parking lot. The Build Alternative would not result in impacts on the regional economy because the property impacts are limited, and the project would maintain or enhance the existing economic vitality of each jurisdiction. Property acquisitions would comply with the requirements of the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended. Compensation for property to be acquired would be based on fair market value and would be part of the ROW acquisition.

Construction Impacts

TCEs would be required to construct the proposed project (see Table 2-3). TCEs are located at Laney College in Oakland (Figure 2-7), the commercial property in Alameda (Figure 2-8), and in Neptune Park in Alameda (refer to the Section 4(f) Appendix for information on the Neptune Park TCE). The TCE at Laney College would be required for fence removal and construction of the retaining wall on the Oak Street off-ramp from Laney College and would be required for up to 36 months. It would be located within the faculty/student parking lot in the circulation aisle next to the Oak Street off-ramp. No parking spaces would be removed for the TCE. Circulation patterns within the parking lot would be modified in coordination with Laney College in order to maintain vehicle circulation and public access to the parking lot. The TCE within the commercial property in Alameda may also be required for up to 36 months but does not result in impacts because the existing access to and from the commercial property is not affected.



Source: CIA (September 2020)

Figure 2-7. Proposed Temporary Construction and Permanent Maintenance Easements - Oakland

Proposed Partial Property Acquisition
Oakland Alameda Access Project
Alameda County, California

Proposed Partial Property Acquisition
Proposed Temporary Construction Easement

Proposed Partial Property Acquisition	
APN: 74-1364-5-3 Shopping Center - Community	Commercial Property 0.03 acres
Proposed Temporary Construction Easement	
APN: 74-1364-5-3 Shopping Center - Community	Commercial Property 0.02 acres

N
0 1,000 2,000 Meters
0 25 50 Feet

Source: CIA (September 2020)

Figure 2-8. Proposed Property Acquisition - Alameda

2.5.4. Avoidance, Minimization, and/or Mitigation Measures

Avoidance and Minimization Measure AMM-COM-1 in Section 2.8. Traffic and Transportation/ Pedestrian and Bicycle Facilities will minimize impacts at Laney College and to community events held in the Laney College parking lot during construction due to the temporary use of the circulation aisles for construction.

2.6. ENVIRONMENTAL JUSTICE

2.6.1. Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low-income is defined based on the Department of Health and Human Services poverty guidelines. For 2020, this was $21,720 for a family of three and $12,760 for an individual living alone (Department of Health and Human Services 2020).

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

Minority and low-income are defined using information from U.S. DOT Order 5610.2(a):

- **Minority** means a person who is: 1) Black: a person having origins in any of the black racial groups of Africa; 2) Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race; 3) Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent; 4) American Indian and Alaskan Native: a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition; or 5) Native Hawaiian and Other Pacific Islander: people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. (U.S. DOT Order 5610.2[a] § Appendix 1[c]).
- **Low-income** is a household income that falls below the federal poverty guidelines, as defined by the U.S. Department of Health and Human Services (U.S. DOT Order 5610.2[a] § Appendix 1[b]).

2.6.2. Affected Environment

Demographic information was collected using data from the *2013-2017 American Community Survey (ACS) 5-year Estimates* at the census block-group level, which is the smallest geographical unit the U.S. Census Bureau publishes sample data (data collected from a fraction of all households). Data for the proposed project was collected for the cities of Oakland and Alameda as well as Alameda County. Demographic data on the project study area was collected for those census block groups that are located within or largely within 0.5 miles of the project footprint. According to the ACS data, the portion of people living in the project study area who identify as a minority (76.7%) is similar to Oakland (72.7%) and higher than both Alameda (57.3%) and Alameda County (67.8%), as shown in Table 2-7. The largest minority population in the project study area identifies as Asian. The highest concentrations of minority populations reside in the Chinatown neighborhood. Table 2-7 also includes information on limited English proficient (LEP) populations, which is defined as those who speak English less than well, and the data can be an indicator of minority populations and the need to translate materials. LEP populations in the project study area are higher, and more than double the LEP populations in Oakland, Alameda, and Alameda County. Of the non-English languages spoken in the project study area, Asian languages represent about 90% of the total LEP population. Because of the high LEP populations, materials for the proposed project have been translated to Spanish and Cantonese and translators are used at meetings, as needed. In addition, the project team works with regional and local media, including ethnic community papers such as local Chinese newspapers to build awareness of the proposed project. Meetings with stakeholders and other public meetings are held in project study area neighborhoods to minimize the need to travel and to ensure residents are able to attend. The low-income population in the project study area is almost 25% which is higher than Oakland and more than double that of Alameda and Alameda County. The median household income in the project study area is lower than Oakland, Alameda, and Alameda County.

Table 2-7. Minority and Low-income Populations

Characteristic	Project Study Area	Oakland	Alameda	Alameda County
Minority Population (%)	76.7	72.7	57.3	67.8
Black or African American (%)	9.0	23.6	7.3	10.7
American Indian or Alaska Native (%)	0.5	0.4	0.2	0.3
Asian (%)	53.2	15.8	31.1	28.7
Native Hawaiian and Other Pacific Islander (%)	0.6	0.6	0.6	0.8
Some Other Race (%)	0.1	0.4	0.5	0.3
Two or More Races (%)	3.8	5.0	6.0	4.4
Hispanic or Latino (%)	9.5	27.0	11.5	22.5
Limited-English Proficiency (%)	24.8	13.0	8.3	9.5
Individuals Below Poverty Threshold (%)	23.3	18.7	9.2	11.3
Median Household Income	$60,564	$63,251	$89,045	$85,743

Source: U.S. Census (2018)

2.6.3. Environmental Consequences

FHWA requires agencies to explicitly consider human health and environmental effects related to transportation projects that may have a disproportionately high and adverse effect on environmental justice populations. Because of the project study area demographics, there is the potential for effects on environmental justice populations.

Disproportionately high and adverse impacts are defined as:

An adverse impact that: 1) is predominately borne by a minority and/or a low-income population; or 2) will be suffered by the minority and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority and/or non-low-income population (as defined by U.S. DOT Order 5610.2[a] § Appendix 1[g]).

NO-BUILD ALTERNATIVE

The proposed project would not be constructed and there would be no environmental justice impacts. The No-Build Alternative would not provide the benefits associated with the proposed project, including improvements in the bicycle network and pedestrian safety.

BUILD ALTERNATIVE

Permanent Impacts

The analysis included a review of information prepared for the proposed project as part of the environmental analysis, including traffic operations, community impacts, noise, visual, and air quality. The proposed project does not require the displacement of residencies or businesses and is consistent with goals and policies.

As previously stated (Section 2.4.3), on-street parking removal would likely not affect downtown residents. However, removal of this publicly available parking for customers and/or employees could result in localized adverse impacts on area businesses. Parking removal was analyzed by census tract. This analysis confirmed that parking removal would be heavier in non-environmental justice communities (>60% of the total parking removal) than in environmental justice communities (<40% of total parking removal. Based on this, parking removal would not result in disproportionately high and adverse impacts.

The Build Alternative would not impact Laney College or community events held in the Laney College parking lot. No parking spaces would be removed from Laney College parking lot. The permanent maintenance easement would be needed for the existing circulation aisle adjacent to the Oak Street off-ramp. Caltrans maintenance would use this aisle to access and maintain the retaining wall on the north side of the Oak Street off-ramp. These maintenance activities would not affect parking, or any events held in the Laney College parking lot. The proposed project would also remove the chain link fence on the north side of the Oak Street off-ramp to allow Caltrans to access the retaining wall. This would not result in a change in the visual setting for Laney College.

The Build Alternative would increase noise levels by up to 1 to 2 dBA over existing conditions and would not result in measurable increases in noise levels that would be considered substantial. Overall, in Oakland noise levels would not be anticipated to increase measurably over existing conditions and in Alameda noise levels would increase by up to 1 decibel (dB) compared to existing conditions. In a few Oakland locations the existing noise levels and minor increase in noise levels with the Build Alternative would approach or be above FHWA's NAC for residences. However, the construction of noise barriers was not reasonable and feasible (see Section 3.7. Noise for more detailed information). As noted, the projected increases in noise levels would not be substantial compared to existing conditions. While projected impacts would be disproportionate on minority and low-income populations given the demographics of the project study area, the impacts are not considered disproportionately high and adverse. This is because the increases in traffic noise levels would impact all populations to the same degree and would not be greater in magnitude for minority and low-income populations.

Under environmental justice regulations, the benefits of transportation projects should be considered when determining if there are disproportionately high and adverse impacts on environmental justice populations. Proposed project operation would result in a number of benefits for the traveling public and those who live and work in the project study area, and the benefits would be felt by all populations. Proposed project benefits include:

- Improving traffic and congestion on local roadways by modifying the existing freeway ramps to provide more direct access from the Posey Tube to I-880.
- Improving bicycle access, connections and safety by constructing cycle tracks on 6th and Oak streets and through the Webster Tube.
- Improving pedestrian facilities' accessibility, connectivity, and safety by constructing new sidewalks, widening existing sidewalks, and upgrading signals. Sidewalk improvements associated with the proposed project would meet current ADA standards.
- Reducing the I-880 viaduct barrier effect on neighborhoods by removing the Broadway off-ramp.
- Removal of the Broadway off-ramp improves the visual setting in the areas adjacent allowing daylight to replace shadows from the removed highway structure. The addition of natural elements (such as landscaping) would also improve the visual setting in areas adjacent to I-880 and SR-260.
- Improving air quality is anticipated and would be lower compared to existing conditions largely because of improvements in vehicle technology. Even if the proposed project was not constructed air quality is anticipated to improve, but the proposed project would realize some additional benefits in lower emissions due to roadway improvements.

<u>Construction Impacts</u>

Construction would result in temporary increases in noise and dust, as well as visual impacts, traffic congestion, and delays. Construction would last approximately 36 months and would be constructed in two major stages with several phases in each stage. Construction would generally be located outside of but adjacent to neighborhoods, and it would not divide or impact community character. Construction impacts would occur over a longer time in areas associated with the on- and off-ramp modifications.

Although these impacts would be temporary it would affect those near to the construction. Construction impacts would affect both environmental justice and non-environmental justice communities equally. Heavy construction, which could generate noise, vibration, and air pollution, is spread across both communities. Noise would be lessened through minimization measures described in other sections including Section 2.9. Visual/Aesthetics, Section 3.6. Air Quality, and Section 3.7. Noise. The TMP, described in Section 2.9, would also minimize impacts during construction and would identify strategies to inform the public and others on construction activities. Given the demographics of the project study area, information about construction activities would be provided in English, Spanish, and Cantonese. Because construction would impact all nearby populations to the same degree, the impacts are not greater in magnitude for environmental justice populations compared to non-environmental justice populations, and it would not result in disproportionately high and adverse impacts.

The TCE within the Laney College parking would temporarily remove circulation aisles from use by community events. The impacts would be minimized through project features and are not anticipated to result in adverse impacts on community events.

2.6.4. Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the Build Alternative will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898. No further environmental justice analysis is required. The other measures for the proposed project would avoid or minimize impacts on all populations, and no specific avoidance, minimization, and/or mitigation measures related to environmental justice would be required.

2.7. UTILITIES/EMERGENCY SERVICES

2.7.1. Affected Environment

The information in this section is based on the CIA (September 2020).

EMERGENCY SERVICES

Emergency services are defined as police, fire, and emergency medical services. The Oakland and Alameda police departments serve the project study area. The Oakland Police Department headquarters are located within the project study area; the Alameda Police Department is outside the project study area. Also, California Highway Patrol provides services including enforcement, traffic control, and accident response on the state highways in the project study area through office (370) Oakland.

The Oakland and Alameda fire departments provide fire and emergency medical services within the project study area. The Oakland Fire Department is comprised of 29 fire stations; it provides fire protection and emergency medical services within a 78-square-mile area, and it serves a population of 406,253. The Alameda Fire Department is comprised of four stations. Within the project study area, Station No. 12 at 822 Alice Street (Oakland) and Station No. 2 at 635 Pacific Avenue (Alameda) would be the first responders.

UTILITIES AND SERVICE SYSTEMS

Utilities and service systems found within the project study area include water supply and treatment, and wastewater collection and treatment, solid waste disposal, electric, natural gas, and telecommunications.

<u>Water Service</u>

EBMUD is responsible for water treatment, supply, and distribution, and it provides water service for residents and businesses in the cities of Oakland and Alameda. EBMUD's water supply begins at the Mokelumne River watershed in the Sierra Nevada and extends 90 miles to the East Bay.

<u>Wastewater Treatment</u>

Oakland and Alameda own and maintain their local sewer lines. For both cities, wastewater is conveyed to the EBMUD wastewater interceptor system and treated at the main wastewater treatment plant located near the eastern terminus of the San Francisco-Oakland Bay Bridge.

<u>Stormwater Discharge</u>

Oakland and Alameda own and maintain the local storm drainage within their jurisdiction. Stormwater runoff is collected through the storm drain system and culverts, and it is directed towards outfalls in Lake Merritt (Oakland) and the San Francisco Bay (Oakland and Alameda).

Solid Waste Disposal and Recycling

Waste collection, recycling, and organics collection is provided by Waste Management of Alameda County (Oakland) and Alameda County Industries (Alameda).

Other Utilities

PG&E provides natural gas service within the project study area. PG&E and East Bay Community Energy provide electrical service to Oakland, and Alameda Municipal Power provides electrical service to Alameda (100% clean energy). AT&T maintains the local telephone service and Comcast is the main cable service provider.

2.7.2. Environmental Consequences

EMERGENCY SERVICES

No-Build Alternative

There would be no impacts to emergency services and facilities under the No-Build Alternative.

Build Alternative

Operations

The proposed project would improve congestion along the local roadways in the project footprint, ultimately improving emergency service travel and response times. It is not anticipated that congestion increases on NB I-880 would impact emergency service vehicles using the interstate, and it is anticipated that freeway operations degradation will be minor.

In addition, the proposed project would permanently relocate nine parking spaces reserved for City of Oakland police vehicles. Replacement of these parking spaces is targeted along Washington Street near its intersection with 6^{th} Street. However, coordination is ongoing with the City of Oakland Police Department regarding the suitability of these replacement parking spaces.

Construction

Construction activities would most likely cause temporary increases in congestion, which could impact emergency service providers' response and travel times.

UTILITIES AND SERVICE SYSTEMS

No-Build Alternative

There would be no impacts to utilities or service systems under the No-Build Alternative.

Build Alternative

The Build Alternative would require existing utilities and service systems to be relocated and new service system connections to be made for storm drains, traffic signals, and streetlights. Existing PG&E overhead distribution electric lines along 5th and Harrison streets would be relocated. Overhead utilities along Harrison Street would be undergrounded due to physical constraints. Some utilities and service systems may be placed underground alongside existing underground utilities, such as the EBMUD water lines and City of Oakland sewer lines and storm drains. PG&E gas and electric and AT&T fiber optics would be protected in place or temporarily or permanently relocated depending on the location. Under the proposed project, the following new service systems would be installed or modified:

- New traffic signals and lighting at four Oakland intersections, including one PHB at 7th and Alice streets.
- Modified traffic and bicycle signals at 14 Oakland intersections and one Alameda intersection.
- Modified ramp meters at two Caltrans on-ramps in Oakland.
- Caltrans street lighting and storm drains associated with the Jackson Street Horseshoe (Oakland) and the Posey Tube walkway (Oakland and Alameda).
- Traffic signals and lighting would require new electrical connections to existing service systems. Modifications to storm drainage systems would consist of connections to new drainage inlets.

Utilities and service systems within the project footprint that may need to be protected in place or modified as part of the Build Alternative are provided in Table 1-3. Utility and service system modifications may require trenching to a depth of approximately six feet and utility verification would be required. New service system connections and relocated utilities would be placed to avoid and minimize impacts to environmental resources. Installation of new service systems or relocated utilities would be installed within the project footprint and within areas that are already disturbed by the project where feasible.

Operation

The Build Alternative would not result in impacts to utilities or utility providers during operation.

Construction

Construction activities in Oakland would result in temporary impacts to both underground and overhead utilities, including protecting in place or relocating existing utilities and installing new service system connections. As part of project construction, utility and service system relocations will take place at the beginning of each construction phase. See Table 1-3 for locations of utilities and service systems that may be relocated or protected in place. There would be no construction-related utility impacts in Alameda.

Utility and service system installation, protection, or relocation may require temporary outages that could have short-term impacts on customers.

PROJECT FEATURES

The following project features will be implemented as part of the Build Alternative.

PF-COM-1 Utility Relocations	Caltrans will coordinate utility relocation work with the affected utility companies to minimize service disruption to area customers during construction. If previously unknown underground utilities are encountered, the contractor will notify the resident engineer. Caltrans will coordinate with the utility provider to develop plans to address the utility conflict, protect the utility if needed, and limit service interruptions.

PF-TRF-1 will be implemented, in which Caltrans will communicate with emergency service providers through the public information program to avoid emergency service delays by ensuring all providers are aware of lane closures well in advance of implementation. Also, a TMP will be developed as part of the project to address traffic impacts from staged construction, lane closures, and specific traffic handling concerns, such as emergency access during construction.

2.7.3. Avoidance, Minimization, and/or Mitigation Measures

The project features described above will help reduce potential impacts to public services and facilities.

2.8. TRAFFIC AND TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES

2.8.1. Regulatory Setting

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

In July 1999, the U.S. DOT issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the U.S. DOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 USC 794). The FHWA has enacted regulations for the implementation of ADA, including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

2.8.2. Affected Environment

This section describes the existing and planned transportation system within the project traffic study area, including the roadway network and local streets (Figure 2-8. Freeway Analysis Study Area and Figure 2-14. Project Study Area Intersections). Results of the traffic study are detailed in the *Traffic Operations Analysis Report* (TOAR March 2020). The transit services and bicycle and pedestrian facilities were studied within a 0.25-mile project study area that extended around the project footprint as defined in the CIA (September 2020). This section contains information summarized from the TOAR (March 2020) and the CIA (September 2020). Existing conditions are discussed in the next section.

ACCIDENT DATA

<u>Freeway/State Highway</u>

The collision history for I-880, I-980, and SR-260 within the project study area was reviewed based on data obtained from TASAS-TSN (Traffic Accident Surveillance and Analysis System–Transportation System Network). The TASAS-TSN report included accident data for the approximate three-year period from February 1, 2015 to December 31, 2017. For NB and SB I-880, the most common types of collision were rear-end (NB: 47.9%, SB: 48.6%) and sideswipe (NB: 29.3%, SB: 34.6%). The most common primary collision factors were speeding (NB: 45.4%, SB: 44.9%) and other violations (NB: 34.7%, SB: 32.2%). This is likely due to driver inattention to sudden stopped traffic backups ahead or aggressive maneuvers within short distances. These types of accidents typically occur where recurring traffic congestion is experienced. In the Posey Tube, the most common types of collision were rear-end (45.5%) and sideswipe (33.3%). In the Webster Tube, the most common types of collision were sideswipe (45.5%) and hit object (22.7%). Similarly, sudden stopped traffic backups and limited sight distances are likely contributing factors to some of these collisions.

There were 33 accidents in the Posey Tube (0 fatalities, 13 with injuries) and 22 accidents in the Webster Tube (0 fatalities, 5 with injuries). The total and combined fatal plus injury (F+I) accident rates for the Tubes are greater than the statewide average.

Local Streets

Local streets collision data were obtained from the Oakland SWITRS, which is a database that collects and processes information gathered from a collision scene. SWITRS data for intersections within the project study area were collected between February 1, 2016 and December 31, 2018. The intersections with the highest number of total accidents (Table 2-9) and pedestrian-involved accidents (Table 2-10) are summarized in Table 2-8.

Table 2-8. Oakland - Local Road Accident Data (2016-2018)

Street	Cross Street	Total Accident s	Fatal Accidents	Accidents with Injury	Accidents with PDO*	Bicycle Involved Accidents	Pedestrian Involved Accidents
8th Street	Alice Street	1	0	1	0	0	1
8th Street	Broadway	7	0	2	5	1	3
8th Street	Franklin Street	6	0	1	5	0	0
8th Street	Harrison Street	6	1	2	3	1	0
8th Street	Jackson Street	15	0	6	9	0	7
8th Street	Madison Street	14	0	10	4	0	4
8th Street	Oak Street	15	0	8	7	0	3
8th Street	Webster Street	9	0	2	7	0	1
7th Street	Alice Street	7	0	3	4	0	1
7th Street	Broadway	12	0	2	10	1	0
7th Street	Clay Street	5	0	1	4	0	0
7th Street	Fallon Street	11	0	7	4	1	2
7th Street	Franklin Street	7	0	2	5	0	3
7th Street	Harrison Street	24	0	10	14	0	3
7th Street	Jackson Street	23	0	12	11	1	3
7th Street	Madison Street	23	0	10	13	0	3
7th Street	Oak Street	11	0	4	7	0	0
7th Street	Washington Street	5	0	2	3	0	1
7th Street	Webster Street	25	0	14	11	1	7
6th Street	Broadway	16	0	3	13	1	1
6th Street	Harrison Street	3	0	2	1	0	0

Street	Cross Street	Total Accident s	Fatal Accidents	Accidents with Injury	Accidents with PDO*	Bicycle Involved Accidents	Pedestrian Involved Accidents
6th Street	Jackson Street	17	0	9	8	1	1
6th Street	Madison Street	23	0	13	10	1	1
6th Street	Oak Street	4	0	2	2	0	1
6th Street	Washington Street	8	0	3	5	0	3
6th Street	Webster Street	3	0	1	2	0	0
5th Street	Broadway	22	0	2	20	0	1
5th Street	Franklin Street	0	0	0	0	0	0
5th Street	Jackson Street	14	0	7	7	0	2
5th Street	Madison Street	3	0	2	1	1	1
5th Street	Oak Street	5	0	0	5	0	4
5th Street	Webster Street	5	0	0	5	0	0

Source: City of Oakland SWITRS for the period between January 1, 2016 and December 31, 2018
**PDO = property damage only*

As shown in Figure 1-5, a high-number collisions occur at many intersections on the streets that serve as freeway access routes. Crash rates are dependent on many factors, among them the volume of vehicular traffic, the number of pedestrians, and the physical and operational configuration of the intersections. The City of Oakland *Pedestrian Plan 2017 Update* identified Broadway, Franklin, Harrison, Jackson, Madison, 7^{th}, and 8^{th} streets as high-injury network corridors for pedestrians. The intersections with the highest total accident rates and pedestrian-involved accidents are shown in Table 2-9 and Table 2-10.

Table 2-9. Oakland Intersections with the Highest Number of Total Accidents

Intersection	Number of Accidents
7^{th} Street/Webster Street	25
7^{th} Street/Harrison Street	24
7^{th} Street/Jackson Street	23
7^{th} Street/Madison Street	23
6^{th} Street/Madison Street	23
5^{th} Street/Broadway	22

Table 2-10. Oakland Intersections with the Highest Number of Pedestrian-involved Accidents

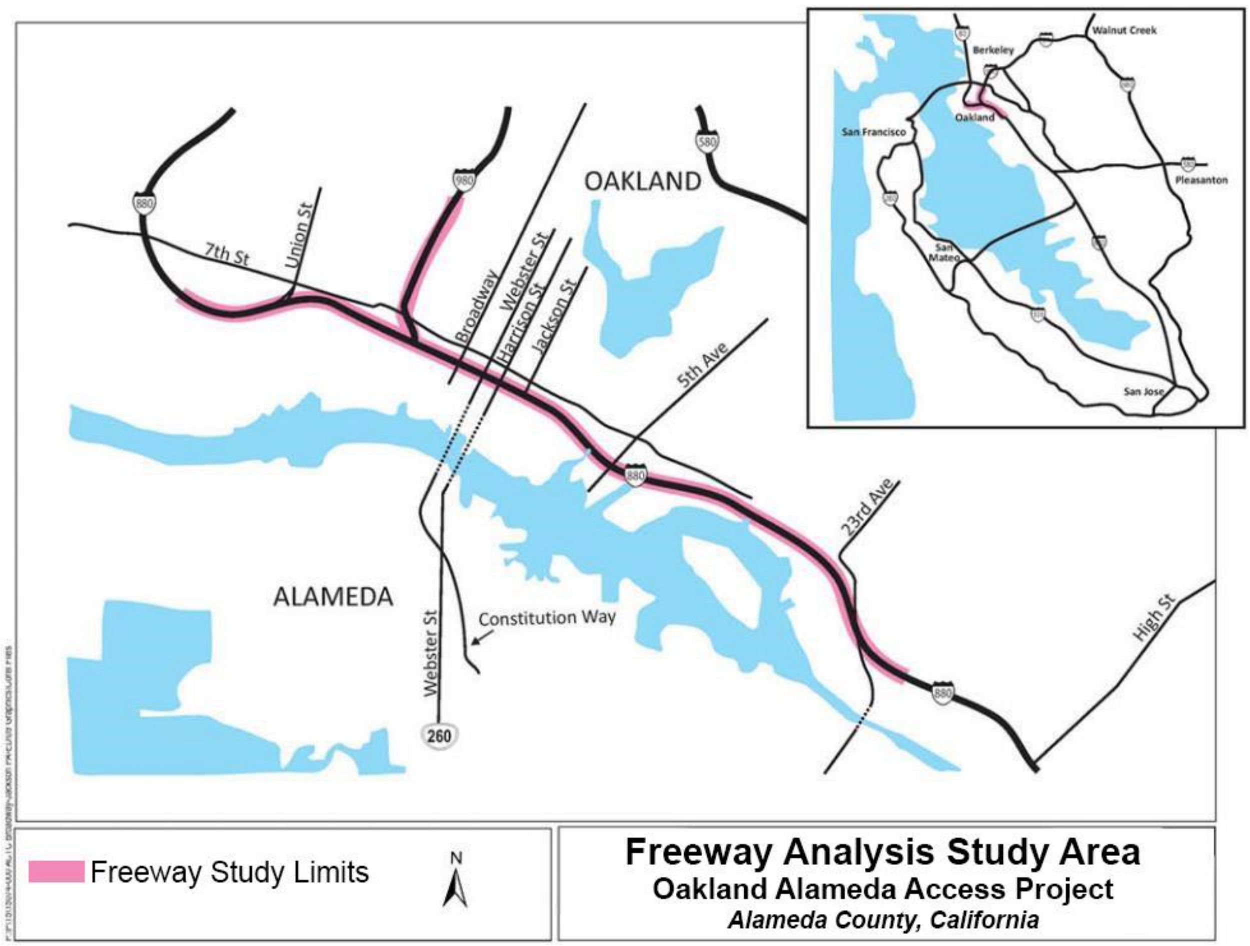
Intersection	Number of Accidents
8^{th} Street/Jackson Street	7
7^{th} Street/Webster Street	7

ACCESS AND CIRCULATION

Local streets in the project study area are congested during morning and evening peak commute hours. Under current conditions, access between the I-880 and I-980 freeways and the Tubes is limited and indirect, and access to and from the cities of Oakland and Alameda is circuitous, which causes local arterial congestion, bottlenecks (a localized disruption of vehicular traffic), and long travel delays (see Figure 1-4). Several of the local intersections are operating at deficient levels of service because of the high traffic volumes. The streets in and around the Oakland Chinatown area have a high volume of pedestrian activity and experience substantial vehicle-pedestrian conflicts. In addition, the I-880 viaduct limits bicycle and pedestrian connectivity between downtown Oakland and the Jack London District.

INTERSTATE ROUTE

I-880 is a major north-south freeway that extends from San Jose at the southern end to Oakland at the northern end. The freeway serves as a major route for the movement of goods and materials. I-880 is also a major East Bay commute route passing through several cities and neighborhoods along its length and connecting to major east-west highways, such as I-80, I-238, SR-92, and SR-84. At its northern end through downtown and West Oakland, I-880 connects to I-980 which connects to I-580 and SR-24 and to I-80 which goes across the San Francisco-Oakland Bay Bridge to San Francisco. Within the project study area, I-880 is a divided freeway consisting of four mixed-flow lanes northbound and three to five mixed-flow lanes southbound, and it is entirely on a viaduct (elevated bridge-like structure) or on retaining walls. Auxiliary lanes are provided for NB I-880 from the Jackson Street on-ramp to the I-980 connector and for SB I-880 from the Oak Street on-ramp toward the south for approximately 3,000 feet (see Figure 2-9).



Source: TOAR (March 2020); Note: Graphic not to scale

Figure 2-9. Freeway Analysis Study Area

STATE ROUTE

SR-260 is a four-lane state route comprised of the Posey and Webster tubes (Tubes) that provides access between the cities of Oakland and Alameda. The SR-260/Posey Tube consists of two one-way northbound lanes that provide access to Oakland from Alameda; the SR-260/ Webster Tube consists of two one-way southbound lanes that provide access from Oakland to Alameda. Both Tubes are under the Oakland Inner Harbor. In Oakland, the SR-260 designation continues along Harrison Street from the Posey Tube Portal to 6th Street. Two-directional pedestrian and bicycle access along this segment of SR-260 is only permitted in the Posey

Tube along a walkway on the east side (right side direction of travel). The Webster Tube does not allow pedestrian or bicycle access.

ARTERIAL/COLLECTOR ROADS

Local Streets

Local streets near I-880 connect to freeway on-/off-ramps and the SR-260/Tubes to and from Alameda. Multiple streets cross under the freeway and some are one-way (e.g., Madison Street), partially one-way (e.g., Webster Street), or flow into on-/off-ramps or the Tubes (e.g., Harrison Street). Freeway-bound traffic from Alameda on Oakland Chinatown streets, notably Harrison/7th/Jackson (the existing "racetrack"), has resulted in numerous pedestrian/vehicle conflicts. 6th Street is a multi-lane, east-west local road that runs parallel to I-880 on the north side and mainly serves to provide access to several local businesses, as well as the Oakland Police Department. 5th Street is a multi-lane, east-west local road that runs parallel to I-880 on the south side, and it is the main access road from SB I-880 to Alameda and the Jack London District. Neither 5th or 6th streets are continuous between Oak Street and Broadway. They are obstructed by the Broadway off-ramp viaduct on 6th Street and the Tubes on 5th Street.

Broadway is a major north-south arterial between Jack London Square to the south and SR-24 to the north. Broadway provides two to three travel lanes in each direction in the project study area.

Webster and Harrison streets are north-south collector roads (low to moderate capacity roads that move traffic from local streets to arterial roads) providing access between the Tubes and downtown Oakland. South of 10th Street, Webster and Harrison streets operate as a one-way couplet (two one-way streets whose flows combine on one or both ends into a single two-way street), with Harrison Street continuing northbound from the Posey Tube to Oakland and Webster Street continuing southbound to the Webster Tube to Alameda. In Alameda, Webster Street continues as a two-way arterial to areas south of the project study area.

Madison and Oak streets are north-south collector roads providing access between Jack London Square, I-880, and the Lake Merritt area. North of I-880, both Madison (southbound) and Oak (northbound) streets operate as parallel one-way streets, and they provide two travel lanes in each direction within the project study area. South of I-880, Madison Street continues as a one-way street while Oak Street is a two-way street.

7th and 8th streets are east-west streets operating as one-way streets that both provide four travel lanes in each direction through the project study area.

MASS TRANSIT

AC Transit provides bus transit service to 13 cities, as well as unincorporated areas in Alameda and Contra Costa counties. As of 2019, AC Transit has 158 bus lines and 635 vehicles, and it serves approximately 1.5 million people within its 364-square-mile service area (AC Transit 2020). There are multiple AC Transit routes within the study area. Broadway serves as AC Transit's primary corridor within the project study area with 69 bus transit stops along the roadway. Other roadways with numerous bus routes include Webster and Harrison streets (north-south), the Tubes, and 7th, 8th, 11th, and 12th streets (east-west). The Lake Merritt BART Station serves four routes, and the 12th St./Oakland City Center Station (just north of the project study area) serves 11 routes.

BART provides regional rapid transit and connects to Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties. The Lake Merritt Station is near Oakland Chinatown, Laney College, and the Oakland Museum of California, and it is the only BART station located in the project study area. The 12th St./Oakland City Center Station is located just north and outside of the project study area on Broadway and 12th Street.

Amtrak is a heavy rail provider that provides service in the project study area at the Oakland Jack London Square Station, which is served by Capitol Corridor, San Joaquin, and Coast Starlight trains. Capitol Corridor provides daily service between Auburn and San Jose (9 trains per day) with additional trains operating between Sacramento and San Jose. San Joaquin (four trains per day) and Coast Starlight (one train per day) operate less frequently than Capitol Corridor.

San Francisco Bay Ferry Service provides year-round, daily trips to/from the Oakland Jack London Square terminal to Alameda, San Francisco Ferry Building, and Pier 41 with service to the Chase Center and Oracle Park during their respective sports seasons or special events. Ferry riders receive free parking (up to 12 hours) at a parking garage located two blocks east of the terminal on Washington Street.

Free Broadway Shuttle (Broadway "B" Shuttle) operates on weekdays between 7 am and 7 pm from Jack London Square to Grand Avenue; after 7 pm service extends past Grand Avenue to 27th Street. Depending on the time of day, the shuttles run every 11-15 minutes, and most stops are located on Broadway. The shuttle provides connections to other public transit services located in the project study area. Services are provided by the City of Oakland and AC Transit.

BICYCLE AND PEDESTRIAN FACILITIES

Bicycle Facilities

The *2019 Oakland Bicycle Plan* indicated that downtown Oakland residents tend to walk, bicycle, or use transit more than the rest of the City. One of the plan's goals is to make Oakland a bicycle-friendly city that provides affordable, safe, and healthy mobility options for all residents. Oakland has six different classifications for bikeways (Table 2-11).

Table 2-11. Bikeway Types in Oakland

Bikeway Type	Description
Bike Paths (Class I)	Paved and completely separated from streets.
Bike Lanes (Class II)	On-street facility designated for bicyclists using either stripes or stencils.
Buffered Bike Lanes (Class IIB)	Buffer stripes provide separation between bicyclists and vehicles (parked and moving).
Bike Routes (Class III)	Streets designated for bicycles and shared with motor vehicles; marked with signs and/or pavement markings.
Neighborhood Bike Routes (Class IIIB)	Local residential streets that prioritize bicyclists.
Separated Bike Lanes (Class IV)	Provide physical separation between bicyclists and motor vehicle travel lanes, parking lanes, and sidewalks; also referred to as cycle tracks.

The existing and proposed bicycle facilities within the project study area are shown in Figure 2-10, which shows there are gaps in the existing bicycle facilities with limited bicycle facilities south of 8th Street, in the north-south direction in Oakland, and under I-880. The massive I-880 structure impedes bicycle connectivity between neighborhoods to the north and south. In addition to gaps in the network and connectivity, some of these roadways in the project vicinity were identified in the updated 2019 City of Oakland Bicycle Plan as high-injury corridors. These roadways are also used by bicyclists in the project study area and include 6th, 7th, 8th, and 11th streets (City of Oakland 2019). These roadways are also used by bicyclists in the project study area and include 6th, 7th, 8th, and 11th streets (City of Oakland 2019).

There are numerous locations that provide bicycle parking consisting of bicycle racks of bicycle racks installed by the City of Oakland in the Jack London District. Around the Lake Merritt BART Station there are bicycle racks and lockers that were installed by others, including BART. Within the Alameda project study area, bicycle facilities consist primarily of bike lanes and routes on most of the roadways. The Posey Tube has a shared walkway for bicyclists and pedestrians traveling between Oakland and Alameda. After exiting the Posey Tube, bicyclists can continue south of the Posey Tube to an off-street bi-directional multi-use path.

Source: CIA (September 2020)

Figure 2-10. Existing and Proposed Bicycle Facilities

Pedestrian Facilities

According to the *City of Oakland Pedestrian Plan* 2017 update, there are 1,120 miles of sidewalk and 31 miles of sidewalk gaps throughout the city, while 27% of all trips in the City of Oakland and 78% of trips to public transit are made on foot. On city streets within the project study area (excluding I-880 and the Tubes), sidewalks are found on at least one side of the roadway and most streets have them on both sides. Pedestrian trails/paths include the San Francisco Bay Trail and Lake Merritt Channel Trail.

Within the project study area, most of the sidewalk gaps are in the Jack London District towards the western edge where land uses are more industrial. Also, there are sidewalks along 5th and 6th streets that do not meet ADA standards. Although the sidewalk width is acceptable, there are several intersections that lack curb ramps and the sidewalk on 6th street is not continuous. In Chinatown there are pedestrian scrambles that stop vehicle traffic at all approaches and allow pedestrians to cross in all directions including diagonally during a single phase.

The plan also addressed pedestrian safety and identified a high-injury network. From 2008-2014, high-injury corridors in the Oakland project study area included 7th Street from Washington Street to 7th Street Bridge, 8th Street from Franklin Street to Fallon Street, and 9th Street from Franklin Street to Fallon Street. High-stress intersections included 7th Street/ Harrison Street, 7th Street/Jackson Street, and 5th Street/Madison Street/Broadway due to high vehicle turn volumes that create conflicts with pedestrians.

TRAFFIC OPERATIONS

Existing Congestion Patterns

There are bottlenecks on NB I-880 during the AM peak hour and on SB I-880 during the PM peak hour. Significant congestion also occurs on local streets, especially on routes between the I-880 and the Tubes. Access between I-880 and SR-260/Tubes is limited, indirect, and circuitous. Existing access between I-880 in Oakland to/from Alameda and the Jack London District is requires out of direction travel through several local streets and intersections throughout the downtown Oakland area and Chinatown neighborhoods (TOAR March 2020).

AM Peak Hour

- NB I-880 bottleneck is between the 23rd Avenue on-ramp to the 5th Street off-ramp. This bottleneck forms at approximately 7:30 am and does not dissipate until 10 am. During the peak hour, the end of the resulting queue (traffic back up) extends south well beyond Oakland's city limits.
- NB I-880 Jackson Street on-ramp is congested due to high demand. The congestion from this on-ramp overflows onto local streets, including Jackson Street, 6th Street, 7th Street, Harrison Street, and through the SR-260/Posey Tube into Alameda.
- Southbound traffic on Broadway between 5th and 6th streets backs up beyond the Broadway/6th Street intersection onto the NB I-880 Broadway off-ramp. This is due to the high volume of vehicles turning left into the Webster Tube or onto 5th Street to access SB I-880 and Jack London Square.

PM Peak Hour

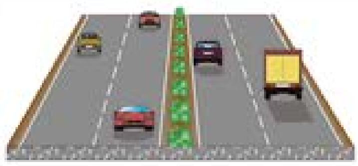
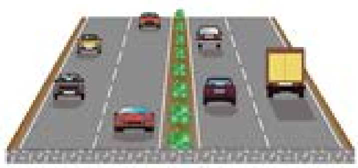
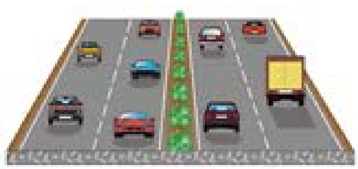
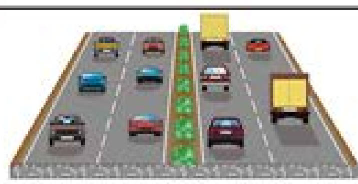
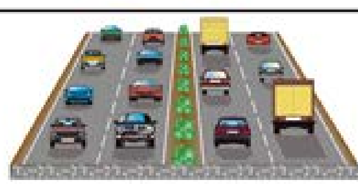
- SB I-880 bottleneck is far south of the project study area. The resulting queue spills into the project study area at approximately 4:30 pm and dissipates by 7 pm. At its peak, the queue overflows to the Union Street off-ramp. Since the I-880 mainline is heavily congested, commuters use alternate routes along surface streets causing them to become congested as well during these periods.
- WB-I-980 off-ramp to Jackson Street/5th Street is congested due to high demand and constraints at the intersection.
- 5th Street from Adeline Street to Broadway is congested due to SB I-880 traffic using 5th Street to access the Webster Tube and to travel into Alameda.
- NB I-880 Jackson Street on-ramp is congested due to high demand, the congestion from this on-ramp overflows onto local streets including Harrison Street, eastbound traffic on 7th Street and southbound traffic and queues extend to the Posey Tube.
- Southbound traffic on Webster Street in Oakland backs up from the Webster Tube to 8th and 9th streets in Chinatown.
- Southbound traffic on Broadway between 5th and 6th streets backs up beyond the Broadway/6th Street intersection onto the NB I-880 Broadway off-ramp.
- SB I-880 congestion can result in backups on the WB I-980 connector.

<u>Freeway Level of Service</u>

The freeway system was modeled using the FREQ modeling program, which is a simulation modeling software capable of analyzing freeway mainline, weaving areas, ramp junction, and ramp metering operations. FREQ models were developed for the weekday AM and PM peak periods, which were defined as 6-10 am and 3-7 pm respectively. The models encompassed the segment of I-880 from east of 23rd Avenue to west of Union Street. Although I-980 is included in the project study area, the proposed project would not involve physical or meaningful traffic demand changes to I-980. Therefore, operational analysis was not conducted for that segment of freeway.

For freeway facilities, LOS performance is based on density (vehicles per mile per lane [vpmpl]). The LOS rating for freeway congestion ranges from LOS A to LOS F. LOS A represents stable flow and no delay. LOS E represents unstable flow and significant delay, and LOS F represents very congested traffic with considerable delay as shown in Figure 2-11.

LEVELS OF SERVICE
for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

Source: 2000 Highway Capacity Manual, Exhibit 17-22

Figure 2-11. LOS Criteria for Freeways

During the AM peak period, congestion in the northbound direction is limited to the project study area's south end. A bottleneck with LOS E/F conditions occurs between the 23rd Avenue on-ramp and the 5th Street off-ramp and extends past the project study area. All model segments upstream of the bottleneck operate at LOS F during the AM peak hour. There is no congestion in the southbound direction during the AM peak.

During the PM peak period, there is no congestion in the northbound direction. However, the southbound direction is heavily congested due to a bottleneck downstream of the study area. The resulting traffic queue extends to and beyond the WB I-980 connector. Except for the segment north of the I-980 connector, all other segments currently operate at LOS F for a portion of the peak period. The existing AM/PM peak hour LOS analysis is shown in Table 2-12.

Table 2-12. I-880 Freeway Segment – Existing AM/PM Peak Hour LOS Analysis

Location	AM Peak Hour		PM Peak Hour	
	Density (vpmpl)	LOS	Density (vpmpl)	LOS
NB I-880				
Mainline start (PM 30.47) to 23rd Avenue off-ramp	75.5	**F**	29.5	D
23rd Avenue off-ramp to 23rd Avenue on-ramp (diagonal)	120.0	**F**	25.9	C
23rd Avenue EB on-ramp to 23rd Avenue WB on-ramp	91.6	**F**	29.3	D
23rd Avenue WB on-ramp to 5th Street off-ramp	39.0	**E**	32.4	D
5th Street off-ramp to Oak Street off-ramp	36.8	**E**	30.5	D
Oak Street off-ramp to Broadway off-ramp	30.2	D	27.7	D
Broadway off-ramp to Jackson Street on-ramp	29.8	D	23.9	C
Jackson Street on-ramp to I-980 off-ramp	27.7	D	25.2	C
I-980 off-ramp to Market Street off-ramp	21.0	C	15.6	B
Market Street off-ramp to merge	18.6	C	12.5	B
Merge to Union Street on-ramp	24.8	C	16.8	B
Union Street on-ramp to mainline end (PM 31.61)	20.4	C	13.8	B

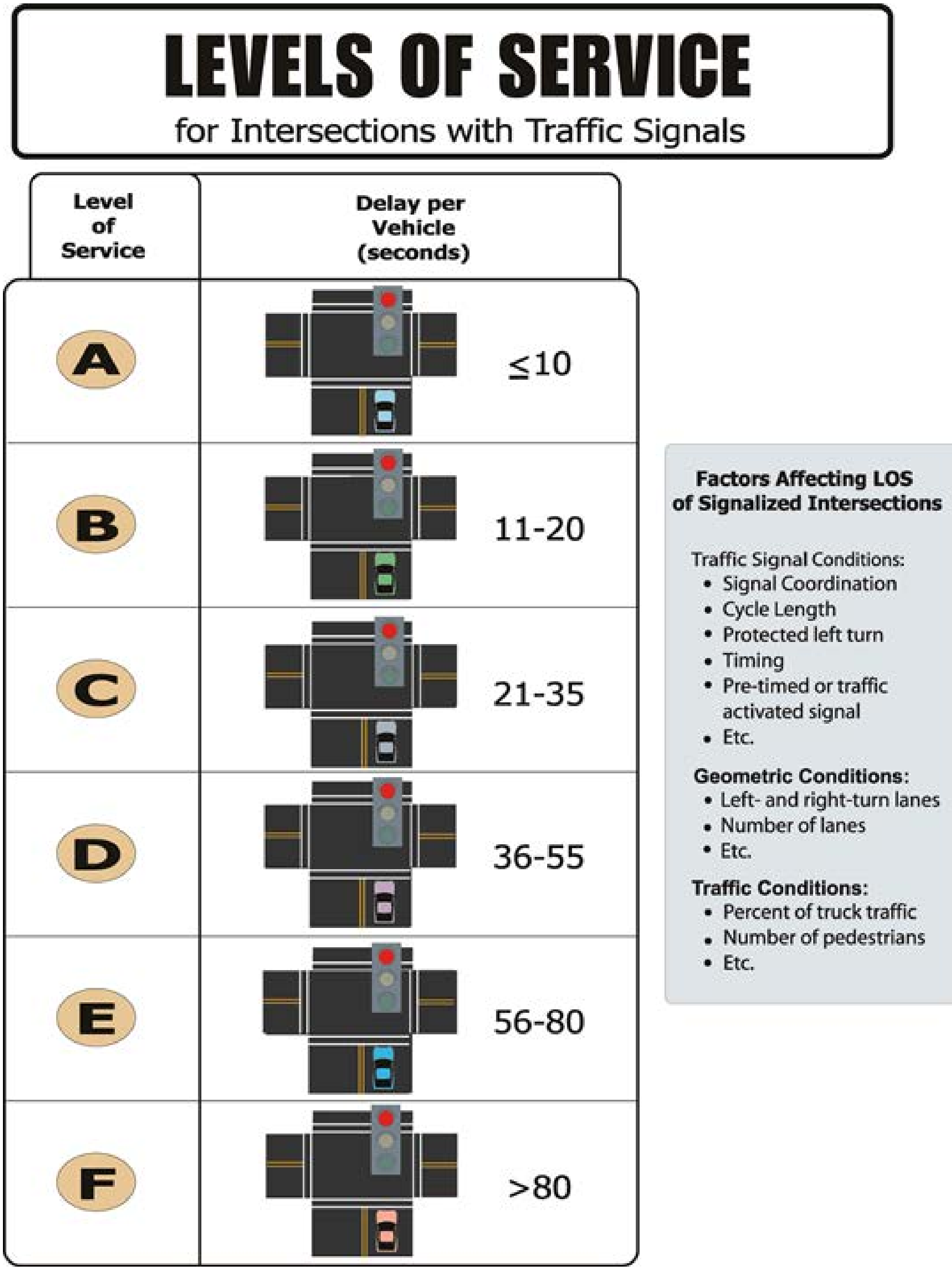
Location	AM Peak Hour		PM Peak Hour	
	Density (vpmpl)	LOS	Density (vpmpl)	LOS
SB I-880				
Mainline start (PM 30.47) to Union Street off-ramp	13.7	B	13.8	B
Union Street off-ramp to Union Street on-ramp	13.4	B	9.8	A
Union Street on-ramp to merge	11.0	B	8.4	A
Merge to I-980 on-ramp	14.6	B	11.2	B
I-980 on-ramp to merge	19.2	C	51.6	**F**
Merge to Broadway on-ramp	23.9	C	111.5	**F**
Broadway on-ramp to Oak Street on-ramp	24.9	C	149.5	**F**
Oak Street on-ramp to merge	22.4	C	165.8	**F**
Merge to Embarcadero on-ramp	28.0	D	136.1	**F**
Embarcadero on-ramp to Embarcadero off-ramp	29.4	D	122.2	**F**
Embarcadero off-ramp to 23rd Avenue off-ramp	28.0	D	130.5	**F**
23rd Avenue off-ramp to 23rd Avenue on-ramp	25.2	C	141.5	**F**
23rd Avenue on-ramp to mainline end (PM 31.61)	27.6	D	123.9	**F**

Source: TOAR (March 2020)

Intersection Level of Service - Existing Weekday AM/PM Peak Hour

The AM and PM Peak Hour LOS within the project study area was determined using a Synchro/SimTraffic model and the Caltrans 2000 Highway Capacity Manual Operational Methodology, which uses the average delay per vehicle to determine the intersection LOS. The AM peak hour was defined as 8-9 am and the PM peak hour from 5 pm to 6 pm.

The LOS congestion rating for intersections varies on a scale from LOS A to LOS F where LOS A represents stable flow and very slight delay, and LOS E represents unstable flow, poor progression, and long cycle lengths. At LOS F, an intersection operates at forced-flow, jammed conditions, and it is considered over capacity. LOS E/F are conditions that experience 56 seconds or more of delay for signalized intersections and 36 seconds or more for unsignalized intersections with two-way stops. See Figure 2-12 for LOS criteria for intersections with traffic signals and Figure 2-13 for unsignalized intersections. Unsignalized intersections are those where at least one of the movements is controlled by a STOP or a YIELD sign.

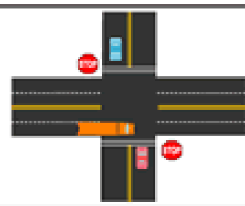
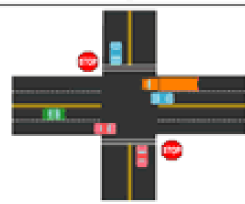
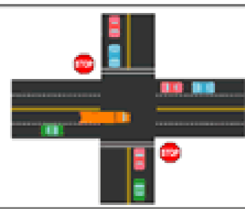
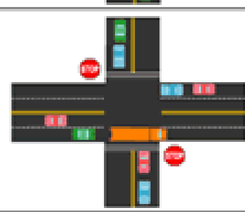
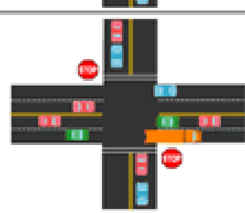
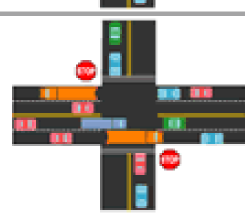


Source: 2020 Highway Capacity Manual, Exhibit 16-2, Level of Service Criteria for Signalized Intersections

Figure 2-12. LOS Criteria – Signalized Intersections

LEVELS OF SERVICE

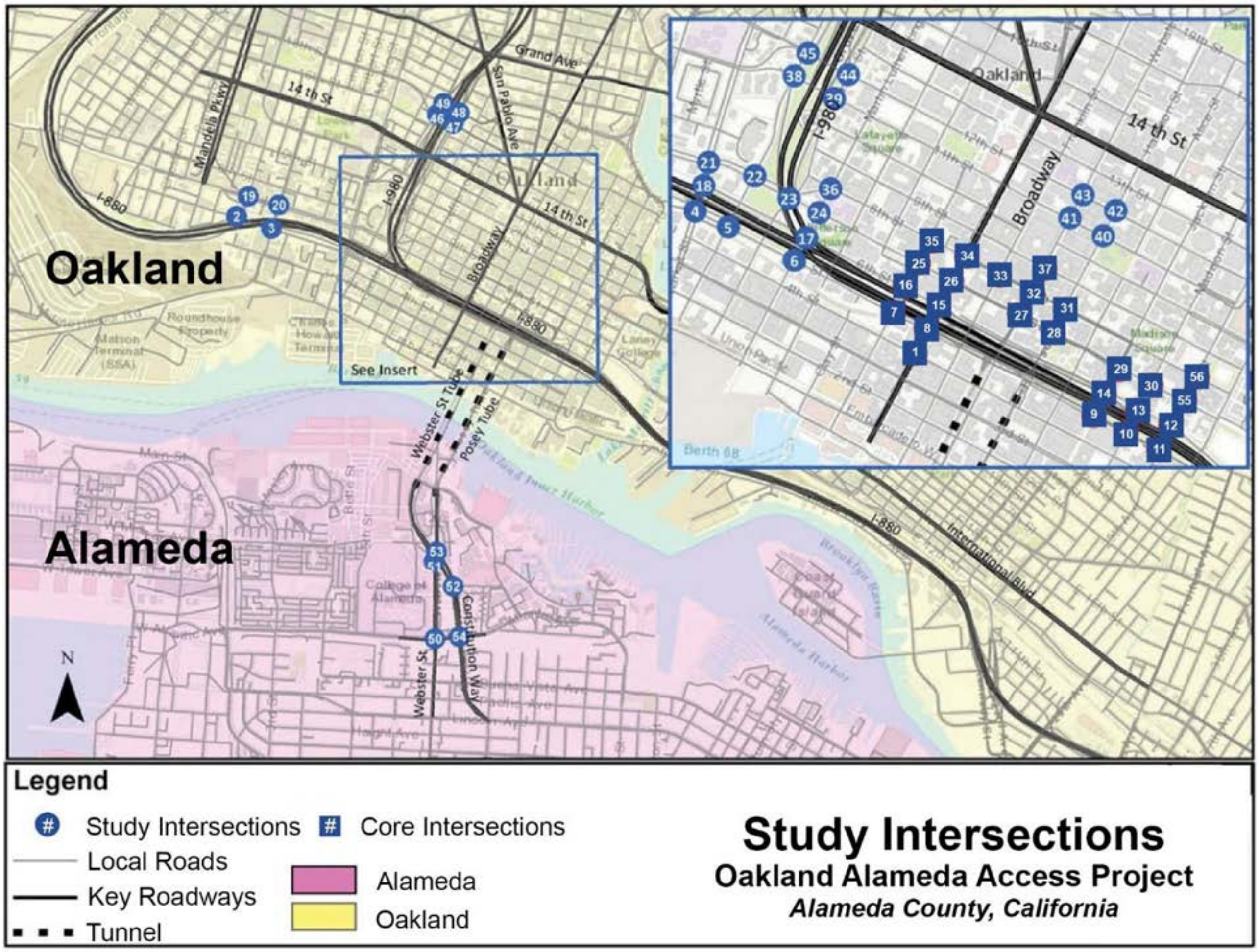
for Two-Way Stop Intersections

Level of Service	Flow Conditions	Delay per Vehicle (seconds)	Technical Descriptions
A		≤10	Very short delays
B		11-15	Short delays
C		16-25	Minimal delays
D		26-35	Minimal delays
E		36-50	Significant delays
F		>50	Considerable delays

Source: 2020 Highway Capacity Manual, Exhibit 17-2, Level of Service Criteria for Two-way Stop-Controlled Intersections

Figure 2-13. LOS Criteria – Unsignalized Two-Way Stop Intersections

The 2020 TOAR identified 56 intersections and joining roadways within the project study area, including SR-260 from I-880 to Atlantic Avenue in Alameda. Of these 56 intersections, 25 were identified as core (key) intersections that would be affected by the proposed project and were analyzed further (see Figure 2-14).



Source: TOAR (March 2020); Note: Map not to scale

Figure 2-14. Project Study Area Intersections

Existing intersection LOS is summarized in Table 2-13. All but one intersection in this table is controlled by signals. Intersection #1: 4th Street/Broadway is controlled by a two-way stop sign on the side streets. As shown, most intersections operate at LOS D or better during the AM/PM peak hours except for intersection numbers 1, 7, 8, 11, 16, 37, and 45 that appear in bold text in Table 2-13.

Table 2-13. Intersection LOS – Existing Weekday AM/PM Peak Hour

No.	Intersection	City	AM Peak Hour		PM Peak Hour	
			Delay (seconds)	LOS	Delay (seconds)	LOS
	CORE INTERSECTIONS					
1	4th Street/Broadway Two-way Stop (Westbound 4th)	Oakland	4.3 (9.2)	A (A)	**74.3** **(172.1)**	**F** **(F)**
7	5th Street/Washington Street	Oakland	4.9	A	**109.5**	**F**
8	5th Street/Broadway	Oakland	17.1	B	**62.7**	**E**
9	5th Street/Jackson Street	Oakland	35.8	D	39.8	D
10	5th Street/Madison Street	Oakland	7.5	A	7.5	A
11	5th Street/Oak Street	Oakland	12.4	B	**243.8**	**F**
12	6th Street/Oak Street	Oakland	14.9	B	15.3	B
13	6th Street/Madison Street	Oakland	9.5	A	9.9	A
14	6th Street/Jackson Street	Oakland	38.3	D	34.1	C
15	6th Street/Broadway	Oakland	18.5	B	41.6	D
16	6th Street/Washington Street	Oakland	8.0	A	**71.6**	**E**
25	7th Street/Washington Street	Oakland	8.0	A	46.7	D
26	7th Street/Broadway	Oakland	15.0	B	20.0	B
27	7th Street/Webster Street	Oakland	12.7	B	25.6	C
28	7th Street/Harrison Street	Oakland	8.9	A	8.8	A
29	7th Street/Jackson Street	Oakland	23.5	C	15.2	B
30	7th Street/Madison Street	Oakland	16.6	B	14.0	B
31	8th Street/Harrison Street	Oakland	12.7	B	14.7	B
32	8th Street/Webster Street	Oakland	37.0	D	40.8	D
33	8th Street/Franklin Street	Oakland	26.5	C	21.3	C

No.	Intersection	City	AM Peak Hour		PM Peak Hour	
			Delay (seconds)	LOS	Delay (seconds)	LOS
34	8th Street/Broadway	Oakland	10.9	B	17.7	B
35	8th Street/Washington Street	Oakland	10.9	B	30.7	C
37	9th Street/Webster Street	Oakland	23.8	C	**73.1**	**E**
55	7th Street/Oak Street	Oakland	12.1	B	13.5	B
56	7th Street/Oak Street	Oakland	10.7	B	10.4	B
	OTHER INTERSECTIONS					
2	5th Street/Union Street	Oakland	11.0	B	25.6	C
3	5th Street/Adeline Street	Oakland	15.2	B	23.4	C
4	5th Street/Market Street	Oakland	12.3	B	13.0	B
5	5th Street/Brush Street	Oakland	12.4	B	10.3	B
6	5th Street/MLK Jr. Way	Oakland	3.7	A	12.4	B
17	6th Street/MLK Jr. Way	Oakland	5.1	A	5.6	A
18	6th Street/Market Street	Oakland	3.7	A	7.8	A
19	7th Street/Union Street	Oakland	18.7	B	13.5	B
20	7th Street/Adeline Street	Oakland	9.9	A	11.0	B
21	7th Street/Market Street	Oakland	11.4	B	15.4	B
22	7th Street/Brush Street	Oakland	14.8	B	14.4	B
23	7th Street/Castro Street	Oakland	11.5	B	21.4	C
24	7th Street/MLK Jr. Way	Oakland	6.0	A	9.5	A
36	8th Street/MLK Jr. Way	Oakland	4.7	A	8.5	A
38	11th Street/Brush Street	Oakland	9.1	A	9.9	A
39	11th Street/Castro Street	Oakland	40.2	D	41.1	D
40	11th Street/Webster Street	Oakland	14.6	B	16.1	B
41	11th Street/Harrison Street	Oakland	10.8	B	11.9	B
42	12th Street/Harrison Street	Oakland	17.8	B	18.9	B
43	12th Street/Webster Street	Oakland	7.6	A	11.9	B
44	12th Street/Castro Street	Oakland	18.1	B	17.9	B

No.	Intersection	City	AM Peak Hour		PM Peak Hour	
			Delay (seconds)	LOS	Delay (seconds)	LOS
45	12th Street/Brush Street	Oakland	**101.6**	**F**	41.6	D
46	17th Street/Brush Street	Oakland	6.7	A	7.9	A
47	17th Street/Castro Street	Oakland	31.9	C	47.9	D
48	18th Street/Castro Street	Oakland	11.3	B	12.5	B
49	18th Street/Brush Street	Oakland	6.9	A	7.3	A
50	Atlantic Avenue/ Webster Street	Alameda	31.4	C	21.5	C
51	Willie Stargell Avenue/Webster Street	Alameda	14.4	B	14.7	B
52	Marina Village Parkway/ Constitution Way	Alameda	32.5	C	15.7	B
53	Mariner Square Loop/ Constitution Way	Alameda	4.1	A	3.6	A
54	Atlantic Avenue/ Constitution Way	Alameda	14.4	B	17.5	B

Source: TOAR (March 2020)

Note: Intersection #1 is unsignalized with stop control on 4th Street. The first reported value reflects average conditions for the intersection as a whole. Number in parentheses reflects conditions for the worst-case minor stop-controlled approach.

2.8.3. Environmental Consequences

NO-BUILD ALTERNATIVE

The No-Build Alterative would not change any of the existing infrastructure or the transportation network including access and circulation on local streets. Local streets in the project study area would remain congested during morning and evening peak commute hours. Under No-Build conditions, motorists traveling between I-880 and I-980 freeways and the Tubes would continue to take limited, indirect, and circuitous routes along Oakland city streets, and continue to cause local arterial congestion, bottlenecks (a localized disruption of vehicular traffic), and long travel delays. Several of the local intersections would continue to operate at deficient LOS because of the high traffic volumes. There would be no improvements to pedestrian or bicycle facilities, ADA access and bicycle connectivity and the streets in and around the Oakland Chinatown area would continue to have a high volume of pedestrian activity and continue to experience vehicle-pedestrian conflicts and the high accident locations would remain. In addition, the I-880 structure would continue to be a physical barrier limiting bicycle and pedestrian connectivity between downtown Oakland and the Jack London District.

The No-Build Alternative would not remove the NB I-880 Broadway off-ramp or construct transportation-related improvements associated with the proposed project. It would not improve access and mobility to and from SR-260/Tubes and I-880, and local roadways would continue to experience traffic and congestion. Substantial numbers of vehicles would need to take indirect and circuitous routes (estimated up to one mile) to travel to and from Alameda. Traffic and congestion would continue to worsen on the local street system as travel demand increases further compromising local access and circulation. It would not remove any on- or off-street parking spaces. There would be no cost associated with the No-Build Alternative.

BUILD ALTERNATIVE

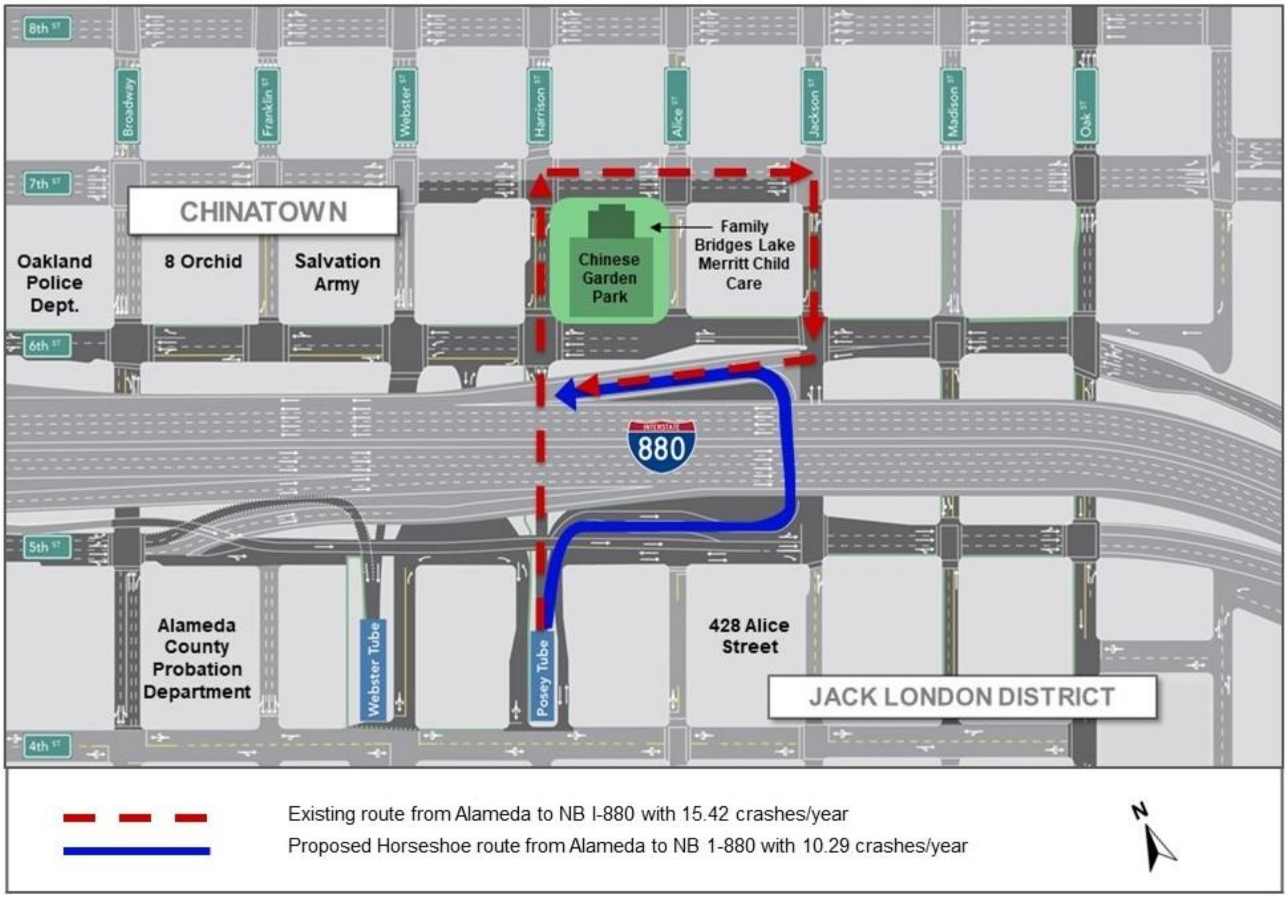
Safety

Permanent Impacts

The proposed project achieves the goals stated in the Purpose and Need to “Reduce freeway-bound regional traffic on local roadways and within area neighborhoods” and “Reduce conflicts between regional and local traffic.” These outcomes would directly improve multimodal safety for residents in the neighborhoods adjacent to the freeway and for motorists on local streets traveling through the area.

Local Streets

The roadway network modifications that are part of the proposed project would remove regional traffic on local roadways and decrease traffic volumes on key intersections and streets in downtown Oakland and Chinatown, notably along 7th, 8th, Broadway, Webster, Harrison, and Jackson streets. The new Jackson Street Horseshoe Connector would effectively divert traffic from Harrison, 7th, Jackson, and Madison streets resulting in substantial decreases as high as 1,500 vehicles per hour on Harrison Street under the Build Alternative for 2025 and 2045 AM peak hour conditions (Figure 2-15 and Figure 2-16). In addition, changes in traffic movement at the key intersections would result in significant decreases in traffic volume under the Build Alternative 2025 AM/PM and 2045 AM/PM peak hours as detailed in Table 2-14.



Note: Graphic not to scale

Figure 2-15. Existing/Proposed Route Alameda to I-880

Note: Graphic not to scale

Figure 2-16. Intersections with Key Decreases in Traffic Volumes

Table 2-14. Decrease in Volumes at Key Intersections by AM/PM Peak Period

Map No.	Key Intersection Movements	2025/AM	2025/PM	2045/AM	2045/PM
1	Broadway and 7th (NB Right Turn)	49%	70%	53%	77%
2	Webster and 8th (WB Left Turn)	58%	78%	64%	58%
3	Webster and 7th (SB Through)	43%	41%	50%	27%
3	Webster and 7th (EB Right Turn)	39%	54%	57%	55%
4	Harrison and 7th (NB Right Turn)	56%	46%	38%	43%

Bicycle and pedestrian facility improvements that address safety include:

- Curb extensions/bulb-outs at four intersections: (Broadway/5th, Jackson/5th, Harrison/7th, Jackson/7th)
- Separated bicycle facilities:
  - Class I Multi-use Path: 0.32 miles (Posey Tube to 6th Street, widened path to the Posey Tube on the Alameda side)
  - Class II Bike Lanes: 0.33 miles (5th Street, Mariner Square Loop)
  - Class IV Cycle Tracks: 0.87 miles (6th Street, Oak Street)
- New sidewalks: 0.32 miles (5th Street, 6th Street, Mariner Square Loop)
- 1.49 miles of new bicycle/pedestrian walkway in the Webster Tube

Operational improvements that address safety include the following:

- PHB at one location (7th/Alice)
- Exclusive pedestrian signal phase at three locations (Broadway/6th, Jackson/5th, Webster/Willie Stargell)
- LPI at one location (Broadway/5th)
- No-turn-on-red restrictions at nine locations (Jackson/5th eastbound left turn, Broadway/6th southbound right turn and westbound right turn, Webster/6th southbound right turn, Harrison/6th southbound right turn, Jackson/6th southbound right turn, Madison/6th southbound right turn, Oak/7th eastbound left turn, Oak/8th northbound left turn)

Curb extensions or sidewalk bulb-outs improve safety by shortening pedestrian crossing distances and by reducing pedestrian exposure to conflicts with vehicles. The construction of Class I multi-use paths, Class II bike lanes, and Class IV cycle tracks would provide improved separation between vehicles on the roadway and bicycle and pedestrian traffic in the area, reducing conflicts and increasing user confidence and safety. Signal phasing improvements would prioritize bicycle and pedestrian movements and improve safety by reducing or eliminating potential conflicts with vehicular traffic. The safety improvements for several key intersections are illustrated in Figure 2-17.

Figure 2-17. Proposed Pedestrian Improvements (Oakland)

Proposed connectivity improvements between the cities of Oakland and Alameda also include opening the Webster Tube maintenance walkway to bicyclists and pedestrians and improving connections to the existing Posey Tube walkway. With walkways in both the Tubes, bicyclists and pedestrians would still have access when one tube is closed for maintenance. Connecting bicycle and pedestrian facilities would also be improved to enhance connectivity to the cities of Oakland and Alameda.

In Oakland, the project provides new multi-use paths along Harrison Street from the Posey Tube to 6th Street and along 4th Street between the Webster and Posey tubes (see Figure 1-12). In Alameda, the widened walkway through the Webster Tube continues along Webster Street and connects to Mariner Square Loop. For pedestrians, the proposed project includes new crosswalks connecting the Posey Tube stairs to the bicycle and pedestrian path along Mariner Square Drive, across Webster Street at Willie Stargell Avenue, and from the Webster Tube to Mariner Square Loop in Alameda (see Figure 1-11).

Table 2-15 lists the bicycle and pedestrian crash reduction factors from the *Caltrans Local Roadway Safety Manual* for improvements included as part of the proposed project.

Table 2-15. Bicycle/Pedestrian Improvement Crash Reduction Factors Included in the Proposed Project

Improvements	Crash Reduction Factor
Bike Lane	35%
Pedestrian Crossing Enhancements (includes curb extensions)	30%
Leading Pedestrian Phasing	10 - 15%
PHB	55%

Source: Local Roadways Safety A Manual for California's Local Road Owners, Version 1.5 (April 2020)

Under the Build Alternative, Caltrans and Alameda CTC propose the following improvements that improve safety for automobiles, transit, and freight at the following facilities:

NB I-880 Mainline

The NB I-880 mainline would see several modifications between the 5th Avenue overhead railroad crossing to the EB I-980 connector ramp. The modifications to improve safety include:

- Additional of an auxiliary lane in advance of the Oak Street off-ramp.
- Additional shoulder rumble strips.
- Removal of the Broadway off-ramp (results in a minor increase in shoulder width).
- Removal of the raised concrete gore island at the Jackson Street on-ramp.

SR-260 Posey and Webster Tubes

The proposed modifications to the Tubes include:

- Reductions in lane and shoulder widths (to accommodate bicycle and pedestrian improvements).
- Reduced speeds from 35 mph to 25 mph.
- Electronic signs and flashing beacons.

Broadway to the Webster Tube Connector

The addition of a curb extension at the Broadway and 5th Street intersection would shorten crossing distances and improving pedestrian safety and connectivity.

Horseshoe On-ramp

Under the Build Alternative, the 7th/Harrison and 7th/Jackson intersections to the Jackson Street on-ramp would be improved by installing new, high-visibility signals; eliminating the free-right turn movements; and installing pedestrian sidewalk bulb-outs. The horseshoe on-ramp would also provide a separated roadway with reduced conflict points, which would improve safety.

7th and 8th Street

7th and 8th streets between Broadway and Oak Street would see decreases in traffic volume and congestion due to the creation of direct access between SR-260 and I-880, resulting in fewer conflicts and collisions.

NB I-880 Broadway and Oak Street Off-ramps

- In advance of the Oak Street exit, NB I-880 would be restriped from four to five lanes, including a standard 1,400-foot-long auxiliary lane to accommodate the additional traffic resulting from the Broadway off-ramp removal.
- Oak Street exit would be widened from one- to two-lanes.
- Oak Street intersection ramp would be widened to provide:
  - One left-turn-only (SB) pocket lane
  - One through (WB) lane
  - One through (WB) and right-turn (NB) lane
  - One right-turn-only (NB) lane

SB I-880 Broadway On-ramp

The removal of the Broadway-to-Jackson connection and restriping the lanes to standard widths would improve safety by removing a conflict point and improving operations. Minor improvements at the 5th Street and Broadway intersection are also expected to further improve safety.

NB I-880 Jackson Street On-ramp

The removal of the Broadway-to-Jackson connection would remove a conflict point and reduce crashes along the on-ramp. Also, the existing nonstandard shoulder would be widened to standard width, and the current on-ramp would be restriped to provide standard lane widths.

<u>Access, Circulation and Parking</u>

Permanent Impacts

The proposed project would modify existing access to I-880 by building a more direct connection between the I-880 and the SR-260 Posey and Webster Tubes. The new connection would improve local circulation by reducing traffic traveling from Alameda to I-880 on local streets. The proposed project would also improve bicycle access, and connectivity through the project study area, including connections to transit and expanding walkable areas, which may encourage drivers to switch modes. This would benefit the surrounding neighborhoods by decreasing traffic and congestion on local roadways.

The proposed project would remove approximately 284 parking spaces in Oakland, which would include approximately 156 on-street spaces on local streets and approximately 128 spaces in six

Caltrans parking lots located under I-880. Nearly 90% of the on-street parking losses are occurring in the project study area on 5th, 6th, and Harrison streets. Parking losses are associated with the improvements in safety, connectivity, accessibility, and numerous active transportation enhancements that the proposed project will provide as follows:

- 5th Street would accommodate space for truck turning, emergency vehicle access, and conversion from one-way to two-way.
- 6th Street would accommodate the two-way cycle track.
- Harrison Street would accommodate the bicycle/pedestrian path from the Posey Tube and conversion from one-way to two-way traffic.

As previously referenced (Section 2.4.3), the loss of publicly available on-street parking has the potential to impact area businesses. Alameda CTC and Caltrans will continue to coordinate with the City of Oakland to develop parking mitigation to address potential localized impacts to local businesses.

No parking spaces in the Laney College parking lot would be permanently removed in order to accommodate the widening of the Oak Street off-ramp. Also, the proposed project would improve bicycle connections, providing students who drive alternative access to the college and to other transit modes.

Construction Impacts

Construction activities may require temporary lane closures that could affect access to businesses depending on the location.

Areas under I-880 would be used for construction workers, staging, and equipment parking. Depending on the locations selected, areas used currently for parking would be removed during construction, which would require users to find alternative locations. The TCE within the Laney College parking lot may result in a temporary loss of parking.

<u>Traffic Operations</u>

Permanent Impacts

Freeways

The Build Alternative would provide a more direct connection from Alameda through the Posey Tube to both NB I-880/EB I-980 and to SB I-880. This would eliminate the need to travel on local streets, especially Harrison, 7th, and Jackson streets.

The Build Alternative would remove the NB I-880/Broadway off-ramp viaduct structure, including the bridge deck and supporting columns and extend 6th Street connecting Oak Street to Broadway to provide a more direct connection to Alameda through the Webster Tube from NB I-880 and from the east side of downtown Oakland. This would reduce the number of vehicles traveling to Alameda from portions of Broadway between 5th and 7th streets, 7th Street west of Webster Street, Harrison Street north of 6th Street, and 8th Street east of Webster Street. However, removal of the Broadway off-ramp would increase traffic on the NB I-880 Oak Street, Market Street, and I-980 off-ramps. It is anticipated that 80-95% of Broadway off-ramp traffic would use the Oak Street off-ramp resulting in an increase in volume by 800-900 vehicles. The remainder of Broadway off-ramp traffic traveling farther west is expected to shift to either the Market Street or I-980 off-ramp then to either the 11th Street or 17th Street off-ramp. As a result, volumes on these ramps are projected to be up to 60-70 vehicles per hour higher in the Build Alternative compared to the No-Build Alternative.

An anticipated by-product of this change is traffic demand on NB I-880 after the Oak Street off-ramp, specifically through the weave section between the Jackson Street on-ramp and I-980 off-ramp, would increase under the Build Alternative compared to the No-Build Alternative. For this weave section, peak hour volumes for the Build Alternative are 20-190 vehicles per hour higher than the No-Build Alternative depending on forecasted year (2025/2045) and period (AM/PM).

Modification of the WB I-980 off-ramp to Jackson Street, removal of the southbound Broadway on-ramp link to the Jackson Street off-ramp, and the extension of 6th Street from Jackson Street to Webster Street make this route more attractive for vehicles traveling from WB I-980 to downtown Oakland and to Alameda. This leads to a shift of WB I-980 traffic from the 12th Street off-ramp to the Jackson Street off-ramp. In the 2025 AM and PM peak periods, approximately 200 more vehicles would use the Jackson Street off-ramp in the Build Alternative compared to the No-Build Alternative and use of the WB I-980 off-ramp to 12th Street would decrease. By 2045, the increased demand on both routes would result in little difference between the two alternatives.

Under the Build Alternative, freeway operating conditions for NB I-880 are expected to degrade slightly for the 2025/2045 AM Peak Hour and the 2025/2045 PM Peak Hour. The LOS degradation for NB I-880 would be due to the traffic redistribution associated with closing the NB off-ramp to Broadway and to the improved connection to the Jackson Street on-ramp. These changes in access would result in higher demands between the Jackson Street on-ramp and the I-980 off-ramp. While this segment is expected to operate at capacity under both alternatives, the higher demands under the Build Alternative would lead to additional congestion and queues on the mainline. During the 2025 AM Peak Hour, LOS for the freeway segment just after the Oak Street off-ramp would change from D to F. During the 2045 AM Peak Hour, this segment would be LOS F for both alternatives (see Table 2-16).

During the 2025 PM peak period, the NB I-880 segment from the existing Broadway off-ramp to the Jackson Street on-ramp would operate at LOS E compared to the No-Build Alternative at LOS D. However, the addition of a new deceleration lane approaching the Oak Street off-ramp under the Build Alternative would result in that segment operating at LOS D compared to LOS E under the No-Build Alternative (see Table 2-17). There would be no difference in freeway performance for SB I-880.

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Table 2-16. I-880 Freeway Segment LOS – 2025 and 2045 AM Peak Hour

Intersection	2025 AM				2045 AM			
	No-Build		Build		No-Build		Build	
	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS
NB I-880								
Mainline start (PM 30.47) to 23rd Avenue off-ramp	**108.4**	**F**	**108.3**	**F**	**100.2**	**F**	**101.4**	**F**
23rd Avenue off-ramp to 23rd Avenue on-ramp (diagonal)	**125.5**	**F**	**125.5**	**F**	**124.2**	**F**	**124.4**	**F**
23rd Avenue eastbound on-ramp to 23rd Avenue WB on-ramp	**89.5**	**F**	**89.6**	**F**	**88.2**	**F**	**88.4**	**F**
23rd Avenue WB on-ramp to 5th Street off-ramp	**39.0**	**E**	**39.0**	**E**	**39.0**	**E**	**39.0**	**E**
5th Street off-ramp to lane add (Build)	**36.5**	**E**	**35.8**	**E**	**67.3**	**F**	**60.2**	**F**
Lane add (Build) to Oak Street off-ramp	**36.5**	**E**	28.5	D	**67.3**	**F**	**114.3**	**F**
Oak Street off-ramp to Broadway off-ramp	33.3	D	**60.4**	**F**	**98.8**	**F**	**123.2**	**F**
Existing Broadway off-ramp to Jackson Street on-ramp	**62.0**	**F**	**106.6**	**F**	**123.2**	**F**	**123.2**	**F**
Jackson Street on-ramp to I-980 off-ramp	27.7	D	28.1	D	27.9	D	27.9	D
I-980 off-ramp to Market Street off-ramp	20.2	C	20.4	C	21.5	C	21.5	C
Market Street off-ramp to merge	17.3	B	17.2	B	18.3	C	18.2	C
Merge to Union Street on-ramp	23.0	C	23.0	C	24.4	C	24.3	C
Union Street on-ramp to mainline end (PM 31.41)	19.4	C	19.3	C	20.5	C	20.4	C
SB I-880								
Mainline start (PM 30.47) to Union Street off-ramp	15.8	B	15.8	B	**57.2**	**F**	**57.2**	**F**

Intersection	2025 AM				2045 AM			
	No-Build		Build		No-Build		Build	
	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS
Union Street off-ramp to Union Street on-ramp	16.0	B	16.0	B	**108.5**	**F**	**108.5**	**F**
Union Street on-ramp to accel lane end	13.0	B	13.0	B	**174.6**	**F**	**174.6**	**F**
Accel lane end to I-980 on-ramp	17.3	B	17.3	B	**179.1**	**F**	**179.1**	**F**
I-980 on-ramp to Broadway on-ramp	21.9	C	21.9	C	**164.3**	**F**	**164.3**	**F**
Broadway on-ramp to lane drop	27.3	D	27.3	D	**134.2**	**F**	**134.2**	**F**
Lane drop to Oak Street on-ramp	28.5	D	28.5	D	**126.9**	**F**	**126.9**	**F**
Oak Street on-ramp to lane drop	**52.2**	**F**	**52.1**	**F**	**141.1**	**F**	**141.1**	**F**
Lane drop to Embarcadero on-ramp	**82.1**	**F**	**82.1**	**F**	**105.3**	**F**	**105.3**	**F**
Embarcadero on-ramp to Embarcadero off-ramp	**89.4**	**F**	**89.3**	**F**	**93.0**	**F**	**93.0**	**F**
Embarcadero off-ramp to 23rd Avenue off-ramp	**104.5**	**F**	**104.6**	**F**	**105.1**	**F**	**105.1**	**F**
23rd Avenue off-ramp to 23rd Avenue on-ramp	**122.0**	**F**	**122.1**	**F**	**122.0**	**F**	**122.0**	**F**
23rd Avenue on-ramp to mainline end (PM 31.41)	**104.8**	**F**	**104.8**	**F**	**104.8**	**F**	**104.8**	**F**

Source: TOAR (March 2020)

Table 2-17. I-880 Freeway Segment LOS – 2025 and 2045 PM Peak Hour

Intersection	2025 PM				2045 PM			
	No-Build		Build		No-Build		Build	
	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS
NB I-880								
Mainline start (PM 30.47) to 23rd Avenue off-ramp	**81.1**	**F**	**81.4**	**F**	**86.4**	**F**	**86.3**	**F**
23rd Avenue off-ramp to 23rd Avenue on-ramp (diagonal)	**102.5**	**F**	**102.7**	**F**	**114.4**	**F**	**114.2**	**F**
23rd Avenue eastbound on-ramp to 23rd Avenue WB on-ramp	**80.1**	**F**	**80.2**	**F**	**91.9**	**F**	**91.7**	**F**
23rd Avenue WB on-ramp to 5th Street off-ramp	**39.0**	**E**	**39.0**	**E**	**39.0**	**E**	**39.0**	**E**
5th Street off-ramp to lane add (Build Alternative)	**35.4**	**E**	**35.4**	**E**	34.9	D	35.0	E
Lane add (Build) to Oak Street off-ramp	**35.4**	**E**	26.9	D	34.9	D	26.8	D
Oak Street off-ramp to Broadway off-ramp	30.8	D	27.1	D	30.8	D	27.4	D
Existing Broadway off-ramp to Jackson Street on-ramp	27.0	D	**37.8**	**E**	27.2	D	**46.1**	**F**
Jackson Street on-ramp to I-980 off-ramp	27.7	D	28.1	D	27.9	D	28.4	D
I-980 off-ramp to Market Street off-ramp	17.3	B	17.7	B	17.8	B	17.8	B
Market Street off-ramp to merge	15.0	B	14.0	B	13.9	B	13.8	B
Merge to Union Street on-ramp	20.0	C	18.6	C	18.5	C	18.3	C
Union Street on-ramp to mainline end (PM 31.41)	16.5	B	15.3	B	15.5	B	15.2	B
SB I-880								
Mainline start (PM 30.47) to Union Street off-ramp	14.7	B	14.7	B	**185.6**	**F**	**185.6**	**F**
Union Street off-ramp to Union Street on-ramp	10.3	A	10.3	A	**233.1**	**F**	**233.1**	**F**

Intersection	2025 PM				2045 PM			
	No-Build		Build		No-Build		Build	
	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS	Density (vpmpl)	LOS
Union Street on-ramp to accel lane end	8.9	A	8.9	A	**236.3**	**F**	**236.3**	**F**
Accel lane end to I-980 on-ramp	**60.3**	**F**	**55.6**	**F**	**220.2**	**F**	**220.2**	**F**
I-980 on-ramp to Broadway on-ramp	**127.8**	**F**	**127.8**	**F**	**197.0**	**F**	**197.0**	**F**
Broadway on-ramp to lane drop	**135.2**	**F**	**135.2**	**F**	**175.0**	**F**	**175.0**	**F**
Lane drop to Oak Street on-ramp	**143.5**	**F**	**143.5**	**F**	**161.9**	**F**	**161.9**	**F**
Oak Street on-ramp to lane drop	**167.8**	**F**	**167.9**	**F**	**163.0**	**F**	**163.0**	**F**
Lane drop to Embarcadero on-ramp	**139.2**	**F**	**139.2**	**F**	**132.6**	**F**	**132.6**	**F**
Embarcadero on-ramp to Embarcadero off-ramp	**120.8**	**F**	**120.8**	**F**	**105.6**	**F**	**105.6**	**F**
Embarcadero off-ramp to 23rd Avenue off-ramp	**131.5**	**F**	**131.5**	**F**	**131.7**	**F**	**131.7**	**F**
23rd Avenue off-ramp to 23rd Avenue on-ramp	**146.0**	**F**	**146.0**	**F**	**146.0**	**F**	**146.0**	**F**
23rd Avenue on-ramp to mainline end (PM 31.41)	**123.9**	**F**	**123.9**	**F**	**123.9**	**F**	**123.9**	**F**

Source: TOAR (March 2020)

Intersections

The Broadway ramp closure would pull traffic away from Broadway between 5th Street and 7th Street. A high percentage of current traffic exiting from the existing NB I-880 off-ramp to Broadway is heading to the Webster Tube. This traffic currently uses either Broadway to 5th Street or Broadway and 7th Street to access the Tube. Under the Build Alternative, this traffic would use the Oak Street off-ramp to the new 6th Street to travel directly to the Webster Tube. As a result, PM peak hour traffic volumes on 7th Street between Broadway and Webster Street would decrease by almost 800 vehicles per hour.

A primary element of the proposed project is the new horseshoe connector under I-880 at Jackson Street that provides more direct access for vehicles traveling from Alameda via the Posey Tube to the existing NB I-880/Jackson Street and SB I-880/Oak Street on-ramps. The new Jackson Street horseshoe connector would divert traffic from Harrison, 7th, Jackson, and Madison streets. Vehicles heading to NB or SB I-880 would turn right at the Posey Tube and exit onto 5th Street. The new horseshoe connector would be accessed from the left side of 5th Street and loop below the I-880 viaduct to connect to the existing NB I-880/Jackson Street on-ramp. Traffic heading to SB I-880 would continue south on 5th Street to the SB I-880/Oak Street on-ramp. As a result of this new connection, traffic volumes along Harrison, 7th, and Jackson streets are expected to decrease substantially. For example, traffic volumes on 7th Street between Harrison and Jackson streets are projected to decrease by up to 1,400 vehicles per hour.

The 6th Street extension would pull traffic off westbound 8th Street and out of Chinatown, and it would improve local circulation and network connectivity for all modes. Currently, traffic exiting at Oak Street travels north on Oak Street then uses cross streets such as 8th Street or 12th Street to access downtown Oakland or the Webster Tube. Similarly, traffic from the east side of downtown Oakland heading to the Webster Tube would typically use 8th Street or 12th Street to Webster Street. The new 6th Street connecting Oak Street to Broadway would provide a more direct route to downtown Oakland and the Webster Tube, drawing traffic away from 8th, 12th, and Webster streets. Peak hour traffic volumes on 8th Street approaching Webster Street and on Webster Street south of 8th Street are expected to decrease by up to about 500 vehicles per hour.

By making Madison Street a two-way street it would divert traffic from Oak Street. Currently a one-way street, southbound Madison Street is the primary route from the Jack London District/ Brooklyn Basin area to downtown Oakland, and NB I-880 can be accessed via Oak Street. Traffic forecasts for the No-Build Alternative show high volumes on this route. By converting Madison Street to a two-way between 4th and 6th streets, an alternative route would be provided. As a result, demands for northbound Oak Street would decrease by up to 160 vehicles per hour in the AM peak hour. Overall, operating conditions on local streets under the Build Alternative would improve as a greater number of core intersections improve from LOS E or F to LOS D or better (see Table 2-18 and Table 2-19).

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Table 2-18. Core Intersection LOS: 2025/2045 Weekday AM Peak Hour (Oakland)

No.	Core Intersections	2025 AM				2045 AM			
		No-Build		Build		No-Build		Build	
		Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
1	4th Street/Broadway	5.6 (14.3)	A (B)	3.8 (9.1)	A (A)	7.1 (20.4)	A (C)	18.8 **(43.0)**	C **(E)**
7	5th Street/Washington Street	4.9	A	5.2	A	5.0	A	5.1	A
8	5th Street/Broadway	18.5	B	13.9	B	19.2	B	23.0	C
9	5th Street/Jackson Street	43.8	D	12.7	B	52.3	D	14.7	B
10	5th Street/Madison Street	**59.0**	**E**	21.7	C	**91.5**	**F**	20.9	C
11	5th Street/Oak Street	50.9	D	9.7	A	**66.9**	**E**	11.7	B
12	6th Street/Oak Street	20.3	C	17.9	B	21.1	C	22.3	C
13	6th Street/Madison Street	15.8	B	30.6	C	14.0	B	34.8	C
14	6th Street/Jackson Street	43.7	D	11.9	B	37.0	D	12.7	B
15	6th Street/Broadway	22.0	C	21.1	C	22.1	C	20.8	C
16	6th Street/Washington	8.6	A	12.7	B	8.9	A	10.9	B
25	7th Street/Washington Street	8.3	A	8.5	A	8.9	A	8.8	A
26	7th Street/Broadway	16.7	B	14.1	B	18.2	B	13.1	B
27	7th Street/Webster Street	12.1	B	10.3	B	18.3	B	13.0	B
28	7th Street/Harrison Street	9.0	A	7.7	A	8.8	A	7.7	A
29	7th Street/Jackson Street	32.4	C	11.3	B	19.4	B	13.5	B

		2025 AM				2045 AM			
		No-Build		Build		No-Build		Build	
No.	Core Intersections	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
30	7th Street/Madison Street	18.0	B	44.3	D	18.7	B	48.4	D
31	8th Street/Harrison Street	13.5	B	12.2	B	13.9	B	12.6	B
32	8th Street/Webster Street	38.6	D	35.3	D	39.4	D	37.7	D
33	8th Street/Franklin Street	26.1	C	25.8	C	27.5	C	26.9	C
34	8th Street/Broadway	11.5	B	11.5	B	13.3	B	11.8	B
35	8th Street/Washington Street	10.6	B	10.1	B	11.9	B	10.7	B
37	9th Street/Webster Street	32.7	C	23.5	C	26.8	C	25.8	C
55	7th Street/Oak Street	11.9	B	13.0	B	12.1	B	14.1	B
56	8th Street/Oak Street	12.2	B	14.2	B	15.2	B	19.2	B

Source: TOAR (March 2020)

Table 2-19. Core Intersection LOS: 2025/2045 Weekday PM Peak Hour (Oakland)

No.	Core Intersections	2025 AM				2045 AM			
		No-Build		Build		No-Build		Build	
		Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
1	4th Street/Broadway	**59.7 (143.7)**	**F (F)**	**12.7 (57.8)**	**B (F)**	**58.2 (194.4)**	**F (F)**	**48.0 (110.3)**	**E (F)**
7	5th Street/Washington Street	**118.5**	**F**	**112.6**	**F**	**119.1**	**F**	**128.9**	**F**
8	5th Street/Broadway	**62.3**	**E**	45.9	D	**61.3**	**E**	**56.4**	**E**
9	5th Street/Jackson Street	44.0	D	20.9	C	31.7	C	19.9	B
10	5th Street/Madison Street	7.3	A	44.5	D	8.1	A	30.6	C
11	5th Street/Oak Street	**274.9**	**F**	32.7	C	**360.0**	**F**	52.9	D
12	6th Street/Oak Street	15.3	B	21.3	C	16.3	B	19.4	B
13	6th Street/Madison Street	9.8	A	36.6	D	11.3	B	29.3	C
14	6th Street/Jackson Street	37.9	D	16.0	B	31.3	C	15.9	B
15	6th Street/Broadway	44.0	D	25.3	C	**96.5**	**F**	33.8	C
16	6th Street/Washington	**129.7**	**F**	40.3	D	**92.9**	**F**	26.7	C
25	7th Street/Washington Street	**61.5**	**E**	**69.5**	**E**	**140.4**	**F**	**91.4**	**F**
26	7th Street/Broadway	35.2	D	24.3	C	**60.1**	**E**	43.4	D
27	7th Street/Webster Street	52.6	D	**69.6**	**E**	**79.9**	**E**	**86.2**	**F**
28	7th Street/Harrison Street	10.5	B	6.3	A	24.7	C	10.5	B
29	7th Street/Jackson Street	19.0	B	31.1	C	19.4	B	14.5	B

No.	Core Intersections	2025 AM				2045 AM			
		No-Build		Build		No-Build		Build	
		Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
30	7th Street/Madison Street	14.4	B	46.3	D	20.3	C	24.0	C
31	8th Street/Harrison Street	16.4	B	14.3	B	**73.5**	**E**	**90.3**	**F**
32	8th Street/Webster Street	43.0	D	33.5	C	**65.0**	**E**	**70.3**	**E**
33	8th Street/Franklin Street	27.8	C	28.1	C	45.0	D	31.6	C
34	8th Street/Broadway	52.8	D	17.6	B	**64.7**	**E**	21.2	C
35	8th Street/Washington Street	27.5	C	21.8	C	15.6	B	13.7	B
37	9th Street/Webster Street	**66.8**	**E**	25.3	C	47.2	D	26.6	C
55	7th Street/Oak Street	14.4	B	15.9	B	14.7	B	16.4	B
56	8th Street/Oak Street	10.6	B	13.4	B	11.8	B	14.0	B

Source: TOAR (March 2020)

Construction Impacts

As a result of temporary lane closures, local streets in and adjacent to the project footprint could experience increased congestion as vehicles use other routes to avoid construction areas.

Bicycle and Pedestrian Networks

Permanent Impacts

Thirty-six meetings were held with the City of Oakland between 2015 and 2020 to obtain City feedback on proposed pedestrian and bicyclist infrastructure, and to ensure consistency with the Bicycle Master Plan (updated in 2019). At these meetings, stakeholder and public outreach were routinely discussed including comments from the public during scoping and from the City of Alameda. Meetings to solicit feedback on proposed bicycle facilities were also held with the Jack London Improvement District, Bike East Bay, Downtown Oakland Bikeways and Bike Walk Alameda. Detailed information about public meetings, concerns raised, and public comments can be found in Section 4.4. Public Participation.

The Build Alternative would fill in sidewalk gaps on 5th and 6th streets, expand bicycle and pedestrian networks, and enhance safety, access, and connectivity within the project study area. Improving signals and restricting right-turn movements would reduce potential vehicle conflicts with pedestrians and bicyclists. Throughout the formal and informal scoping for the proposed project, public participation and stakeholder input refined the project design including the bicycle and pedestrian facilities.

Constructing new Class IV bikeways on 6th and Oak streets would improve access and connections within the neighborhoods, and it would provide linkages to other transit modes in the area including AC Transit, BART, San Francisco Ferry, and Amtrak. Improved pedestrian and bicycle facilities in the Tubes would provide more connectivity between Oakland and Alameda. Pedestrian facilities on 6th Street between Oak Street and Broadway would be upgraded, and new facilities would be installed to fill in gaps and to meet ADA standards. Crosswalk markings and traffic signals would be upgraded to enhance safety and access for pedestrians and bicyclists.

The elevated I-880 freeway creates a barrier with discontinuous streets and limited access between downtown Oakland and the Jack London District. The conversion of Madison Street to two-way operation between 4th and 6th streets and the Class IV two-way cycle track on the west side of Oak Street between 3rd and 9th streets provide improved bicycle access under I-880 between downtown Oakland and the Jack London District (see Figure 1-12). Modifications to the Broadway/5th Street and Broadway/6th Street intersections and to the intersections on 7th Street from Harrison Street to Jackson Street, which is part of the current route from Alameda to I-880 (Figure 1-6), will shorten pedestrian crossing distances and improve walkability in and out of downtown Oakland from the south.

Removal of the Broadway off-ramp and the extension of 6th Street provides for additional local circulation and network connectivity for all modes. The Class IV two-way cycle track between Oak and Washington streets provides a connection across downtown Oakland for bicyclists. The removal of the Broadway off-ramp allows for new ADA-compliant sidewalks between Broadway and Alice Street and between Jackson and Oak streets on the south side of 6th Street. The proposed project also includes a new ADA-compliant sidewalk on 6th Street bordering the Chinese Garden Park. Access between Broadway and Harrison Street improves with the two-way operation on 6th Street. Collectively, these improvements will enhance the connectivity and accessibility of non-motorized travel within the project study area.

Construction Impacts

Construction would affect pedestrians and bicyclists within the project study area. One or more pedestrian crossings could be temporarily closed. Pedestrian detours would be provided to direct persons to areas outside construction areas. Bicyclists may be required to detour to other routes or would need to travel with vehicles in the existing roadways. The proposed project's TMP would include information on pedestrian and bicycle facilities affected and detour routes. As part of the TMP, a shuttle may be needed to transport bicyclists and pedestrians between Alameda and Oakland. The schedule and frequency for the shuttle would be determined prior to construction.

<u>Public Transportation</u>

Permanent Impacts

The Build Alternative would not impact public transportation. The ability to travel though the project study area with less congestion would benefit transit routes such as AC Transit and the Free Broadway Shuttle. No transit stops would be permanently relocated. The bicycle network improvements would improve connectivity by providing more direct access to public transportation facilities and by filling in gaps in the project study area.

Construction Impacts

Nighttime closures in the Tubes would affect public transportation; however, detours would be provided to maintain service. There are bus stops along 7th Street that may be temporarily relocated during construction. Local bus routes and routes that use I-880 could be affected by increased congestion and detours, if needed, during construction. Although project construction would last for 36 months, temporary bus stop relocations would be implemented only as needed for different phases and locations of construction. Bus stop relocations are not expected to be needed for all 36 months of construction; however, multiple bus stops may need to be relocated concurrently. None of these stops are enabled with smart technology and no electrical utility relocations would be required. Temporary bus stops would be ADA compliant, and the location would be determined in coordination with AC Transit. AC Transit would also coordinate with the City of Oakland, other relevant city agencies, affected transit agencies, and stakeholders. As part of the TMP, the public would be informed in advance of construction activities that would affect transit routes.

PROJECT FEATURES

The following project features would be implemented:

PF-TRF-1 Transportation Management Plan (TMP)	• Caltrans will communicate with emergency service providers through the public information program to avoid emergency service delays by ensuring all providers are aware of lane closures well in advance of implementation. Proactive public information systems, such as changeable message signs, will notify travelers of pending construction activities. Also, a TMP will be developed as part of the project to address traffic impacts from staged construction, lane closures, and specific traffic handling concerns, such as emergency access during construction. • During the design phase of the project, prepare a TMP that includes plans for traffic rerouting, a detour plan (if required), and public information procedures with participation from local agencies, transit services, local communities, business associations, and affected drivers. • Early and well-publicized announcements and other public information measures will be implemented prior to and during construction to minimize confusion, inconvenience, and traffic congestion. • Detours will be required, detour routes will be planned in coordination with Caltrans and the cities of Oakland and Alameda traffic departments and will be noticed to emergency service providers, transit operators, and I-880, SR-260 and I-980 users in advance. • Caltrans will coordinate with the cities of Oakland and Alameda to develop and implement a TMP. • The TMP will identify the strategies to be implemented to minimize impacts on those traveling to and through the construction area. • Strategies such as changeable message signs will notify travelers of pending construction activities.
PF-TRF-2 Construction Site Security	• The contractor will coordinate with Caltrans to access areas within their ROW. The contractor will be responsible for securing all work zones in and around the construction sites, including staging areas within Caltrans' ROW. • Security of the project work zones will be the responsibility of the contractor through construction.

2.8.4. Avoidance, Minimization and/or Mitigation Measures

Project features such as early coordination and the TMP mentioned above will include strategies to address construction related traffic impacts. The following measures would also be implemented to address emergency services and the temporary loss of parking.

AMM-TRF-1 **Parking Restrictions**	During construction of the project, some on-street parking restrictions may be required on a temporary basis. Measures will be evaluated to address the temporary loss of parking within the City of Oakland.
AMM-TRF-2 **Temporary Parking Removal Notification**	Prior to construction, information will be provided to neighborhoods and businesses in the project study area about other parking opportunities and available transportation in lieu of driving to address the temporary removal of on- and off-street parking.
AMM-TRF-3 **Laney College**	Coordinate with Laney College to maintain access to and circulation within the parking lot during construction.
AMM-TRF-4 **AC Transit**	Caltrans will coordinate with AC Transit to coordinate and provide advance public notifications of temporary bus stop relocations.

2.9. VISUAL/AESTHETICS

2.9.1. Regulatory Setting

NEPA establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically (emphasis added) and culturally pleasing surroundings (42 USC 4331[b][2]). To further emphasize this point, FHWA, in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

CEQA establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of aesthetic, natural, scenic and historic environmental qualities" (CA PRC Section 21001[b]).

California Streets and Highways Code Section 92.3 directs Caltrans to use drought resistant landscaping and recycled water when feasible and incorporate native wildflowers and native and climate-appropriate vegetation into the planting design when appropriate.

2.9.2. Affected Environment

The information in this section is discussed in detail in the *Visual Impact Assessment* (VIA April 2020), which was performed according to the methodology established by FHWA's *Visual Impact Assessment for Highway Projects* (March 1981). This methodology divides views into visual assessment units that have distinct, but not necessarily homogenous, visual character. Viewpoints are selected from each unit to represent the views to or from the proposed project, and simulations of these viewpoints are used to depict proposed changes to the existing visual environment. For this project there is one visual assessment unit with multiple viewpoints. The project is localized both by its dimensions and visual resources within a relatively small area in the cities of Oakland and Alameda.

VISUAL ENVIRONMENT

In Oakland, the project study area is characterized by flat terrain, man-made structures, pavement, and minimal vegetation. Land uses are primarily commercial, but there are also government facilities, residential properties, religious facilities, and neighborhood parks. Existing scenic resources within the project study area includes a city-designated scenic route (Oak Street). Views of the horizon and the Oakland Hills are available through several street corridors. Overhead highway structures block views of the sky from under I-880. Two neighborhood parks provide natural settings (Chinese Garden Park and Madison Square Park) in this urban environment. Most streets lack trees, and there are only a few streets with trees. Where trees are present, such as on Broadway, they are a visual resource that provides a connection to the natural environment.

The visual environment within Alameda is similar to that in Oakland. However, there is a higher prevalence of vegetation. Land uses consist of schools, commercial properties, business parks, and a neighborhood park (Neptune Park). Existing visual resources include landscaping at adjacent commercial areas, business parks, and along the Webster Street shared-use path. Long-range views of the horizon are available in all directions because adjacent low-rise buildings are setback from Webster Street and city sidewalks.

Within the project study area, neither I-880 nor SR-260 are designated officially as State Scenic Highways. Portions of I-880 (PM 30.81 to 31.08) and SR-260 (PM R0.84 to R1.20) are designated as Classified Landscaped Freeways, which regulates the placement of outdoor advertising displays. Vantage points along I-880 afford views of the East Bay Hills, San Francisco Bay, and San Bruno Mountain.

Within the project study area, the Posey Tube Portal building and associated balustrade walls are historic visual resources in Oakland and Alameda. The east balustrade wall on the Oakland side near 5th Street, the west balustrade wall near 6th Street, and the two pylon bases under I-880 at 6th Street would be impacted by the proposed project. The walls and the replacement features at the intersection of 6th and Harrison streets would be reconstructed with architectural details subject to review in accordance with Section 106 of the National Historic Preservation Act (NHPA) (Section 2.10) and Draft Individual Section 4(f) Evaluation (Appendix A).

VISUAL ASSESSMENT UNIT

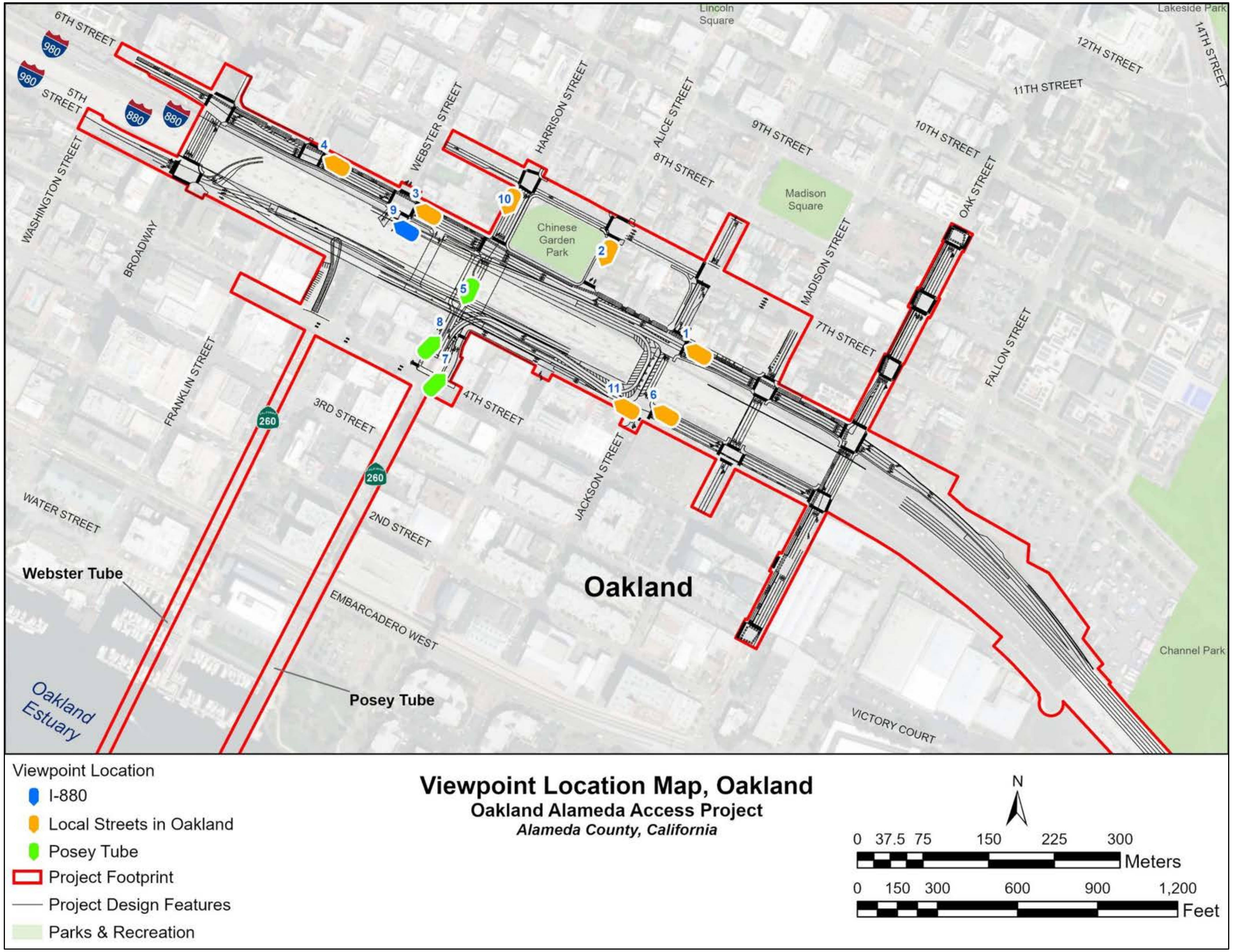
A visual assessment unit can be thought of as an outdoor room that exhibits a distinct visual character and quality. One unit was established for each of the following areas: 1) local streets in Oakland, 2) Posey Tube, 3) I-880, and 4) local streets in Alameda. One or more viewpoints were identified within the visual assessment unit as follows:

City of Oakland (Figure 2-18)

- Viewpoint 1: 6th Street facing west toward its intersection with Jackson Street
- Viewpoint 2: Alice Street facing south from its intersection with 7th Street
- Viewpoint 3: 6th Street facing west toward its intersection with Webster Street
- Viewpoint 4: 6th Street facing west toward its intersection with Franklin Street
- Viewpoint 5: Harrison Street facing south at its intersection with 5th Street
- Viewpoint 6: 5th Street facing west toward its intersection with Jackson Street
- Viewpoint 7: Harrison Street facing north toward 5th Street
- Viewpoint 8: Harrison Street facing east toward 5th Street
- Viewpoint 9: I-880 above Webster Street facing west
- Viewpoint 10: Harrison Street facing south toward 6th Street
- Viewpoint 11: 5th Street facing west toward its intersection with Alice Street

City of Alameda (Figure 2-19)

- Viewpoint 12: Webster Street facing north toward the Posey Tube
- Viewpoint 13: Webster Street facing north toward the Webster Tube



Source: HNTB (2020)

Figure 2-18. Viewpoint Location Map – Oakland

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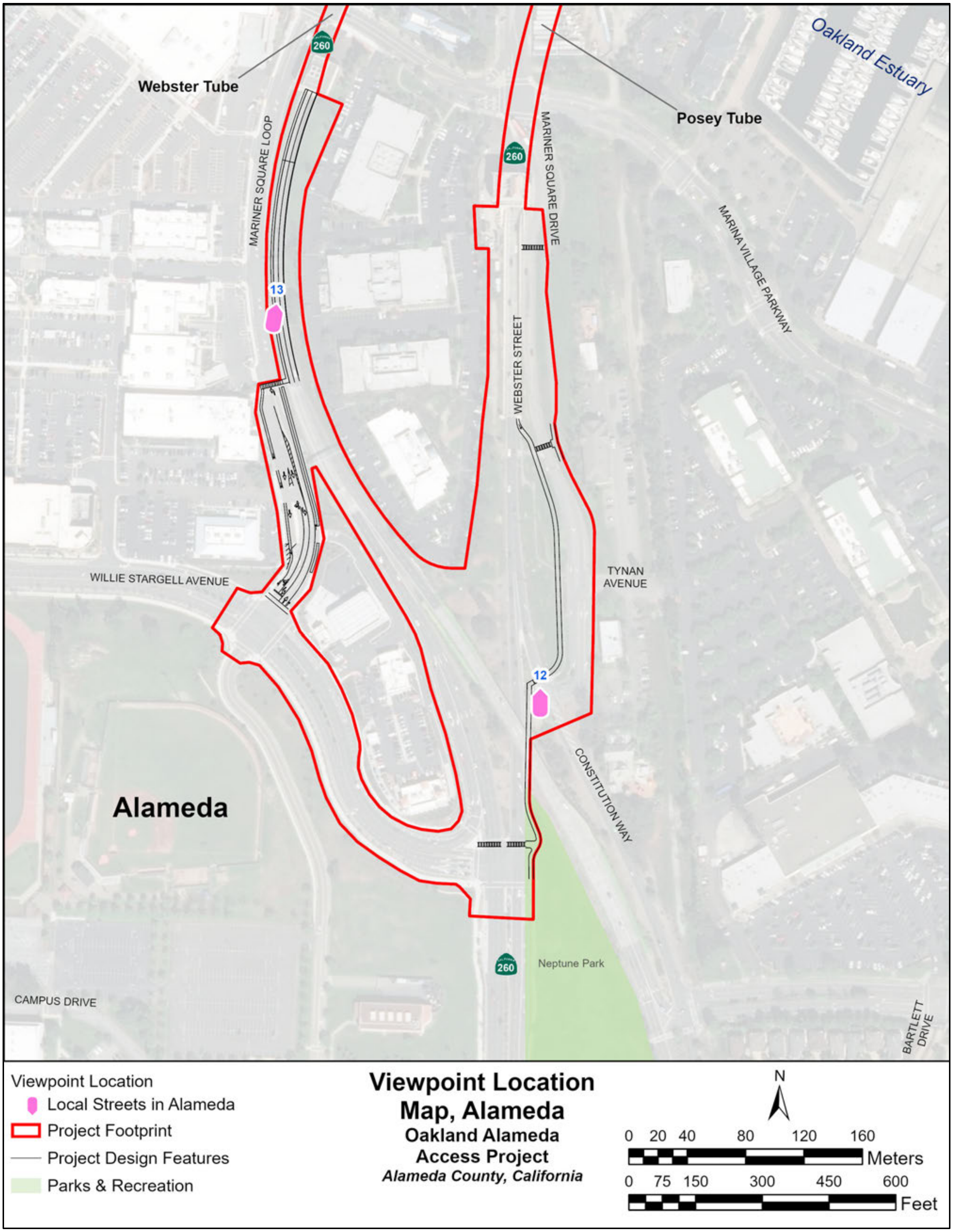

Source: HNTB (2020)

Figure 2-19. Viewpoint Location Map – Alameda

Each viewpoint was evaluated using the following descriptive terms identified in FHWA's *Visual Impact Assessment for Highway Projects*.

VISUAL QUALITY

- *Vividness:* extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements.
- *Intactness:* integrity of visual features in the landscape and the extent to which the landscape is free from non-typical visual intrusions.
- *Unity:* extent to which all visual elements combine to form a coherent, harmonious visual pattern.

VISUAL CHARACTER

- *Line:* edges or linear definition
- *Form:* visual mass or shape
- *Scale:* apparent size as it relates to the surroundings
- *Texture:* surface coarseness
- *Dominance:* position, size, or contrast
- *Glare:* reflective surfaces and brightness

VISUAL RESOURCE IMPACTS

Visual impacts are qualitatively determined by assessing the degree of change to existing visual resources and predicting viewer response to those changes (Table 2-20). Visual impacts can be either positive or negative. Avoidance, minimization, and/or mitigation measures are considered for negative visual impacts. At each viewpoint, the degree of change is determined by comparing the existing and proposed visual character and quality. The projected viewer response is estimated by analyzing viewer exposure and sensitivity. Generally, visual resource impacts range from low to high as noted in the following examples:

- **Low:** An overall rating of "low" results from a combination of low change to existing visual resources and a low viewer response (Table 2-20). A project with a low rating may or may not require avoidance or minimization measures for negative visual impacts.
- **Moderately Low:** An overall rating of "moderately low" results from a combination of low to moderate change to existing visual resources and a low to moderate viewer response (Table 2-19). Negative impacts associated with a moderately low rating can be prevented using avoidance/minimization measures or mitigated using conventional methods.
- **Moderate:** An overall rating of "moderate" can result from a moderate level of change to existing visual resources combined with a moderate level of viewer response. This rating can also result if there is a high level of change to existing visual resources combined with a low viewer response or the reverse (Table 2-20). Negative impacts associated with a moderate rating can typically be mitigated within five years using conventional methods.

- **Moderately High:** An overall rating of "moderately high" can result from a combination of moderate-low to a high level of change to existing visual resources and a moderate-low to high viewer response (Table 2-20). Negative impacts associated with a moderately high rating may require extraordinary mitigation methods. In addition, proposed landscaping would take longer than five years to provide acceptable mitigation while plantings establish.
- **High:** An overall rating of "high" can result from a combination of moderate-high to high level of change to existing visual resources and a moderate-high to high level of viewer response (Table 2-20). Negative impacts associated with a high rating likely cannot be mitigated through extraordinary architectural design and landscape treatments. An alternative project design may be required to avoid visual impacts classified as high.

Table 2-20. Visual Impact Ratings Using Viewer Response and Resource Change

		Viewer Response				
		Low (L)	**Moderate-Low (ML)**	**Moderate (M)**	**Moderate-High (MH)**	**High (H)**
Resource Change	**Low (L)**	L	ML	ML	M	M
	Moderate-Low (ML)	ML	ML	M	M	MH
	Moderate (M)	ML	M	M	MH	MH
	Moderate-High (MH)	M	M	MH	MH	H
	High (H)	M	MH	MH	H	H

VIEWERS

The population affected by the project is composed of viewers. Viewers are people whose views of the landscape may be altered by the proposed project-either because the landscape itself has changed or their perception of the landscape has changed. Viewer response is a measure of the viewer's reaction to changes in the visual environment and has two dimensions, viewer exposure and viewer sensitivity. Viewer response is based upon the viewer's exposure level (ability to see an object) and sensitivity (ability to recognize an object). For highway projects, there are two major types of viewer groups: highway neighbors and highway users. Each group has their own level of viewer exposure and sensitivity.

Highway Neighbors

Highway neighbors are people who have views *to* the road. They can be subdivided into different viewer groups by land use. For example, residential, commercial, industrial, retail, institutional, civic, educational, recreational, and agricultural land uses may generate highway neighbors or viewer groups with distinct reasons for being in the corridor. Therefore, neighbors in different groups would have distinct responses to changes in visual resources. For the proposed project, four categories of highway neighbors were considered: 1) community residents, 2) recreationists, 3) users of commercial areas, and 4) passersby on local streets. Single- and multi-family residences along local streets would have a long-duration of exposure and high level of sensitivity to the proposed project. Recreation area users would experience moderate durations of exposure to views of the proposed project features and would be anticipated to have moderate sensitivity. Commercial employees/patrons and government building workers would likely have moderate to low levels of exposure and sensitivity. Pedestrians and bicyclists on local streets would have moderate durations of exposure and sensitivity, depending on traffic speeds and day of the week.

Highway Users

These are individuals who have views from the road. For the proposed project, highway users were motorists on I-880 (193,000 person trips/weekday) and SR-260 (51,000 trips/weekday). Daily commuters have an increased exposure to views from the road due to the amount of time spent on the highway. Driver exposure and sensitivity to views from the highway vary from moderate to moderate-high, while passengers are anticipated to have a higher level of awareness and sensitivity to a wide range of views.

2.9.3. Environmental Consequences

PERMANENT IMPACTS

No-Build Alternative

Under the No-Build Alternative, no improvements would be made within the project study area. No visual impacts are associated with this alternative.

Build Alternative

Thirteen viewpoints were identified under the Build Alternative. Within this section, the existing visual character/quality, proposed changes, and anticipated viewer response are discussed for each viewpoint. All photographs used in the following simulations were taken on March 25, 2018 except for viewpoint 10 (November 7, 2019) and viewpoints 12 and 13 (Google Earth images).

Local Streets in Oakland, Viewpoint 1

Viewpoint 1 captures 6th Street east of its intersection with Jackson Street. Figure 2-20 depicts before and after views from this location. This view was selected because it illustrates the removal of the northbound Broadway off-ramp and the proposed improvements along 6th Street.

Existing Visual Character/Quality: The surrounding land use consists mainly of single- and multi-family residential structures. The northbound Broadway off-ramp is present in the foreground with the northbound Jackson Street on-ramp and I-880 viaduct visible in the background. These highway structures interfere with views of the natural environment. In addition, a harmonious balance is lacking between these structures and the residential neighborhoods. The vividness, intactness, and unity of this view were all low. Because of this, the existing condition's overall quality is low.

Proposed Project Features: Both the northbound Broadway off-ramp and the raised/paved median on 6th Street would be removed. Along 6th Street, added features would include two northbound travel lanes, a cycle track, a12-foot-wide sidewalk along the north side of the road, pavement striping (including pedestrian crosswalks), street lights, traffic signals, and street trees in concrete sidewalk cut-outs. Parking would be removed along the north side of the street. All proposed landscaping would be compliant with Caltrans policy and the requirements of the cities of Oakland and Alameda.

Changes to Visual Character/Quality: The proposed improvements would result in fewer highway structures. The lack of shadowing would result in increased light levels along 6th Street. The addition of trees would enhance the natural environment and the views. Positive effects associated with the proposed improvements would increase both vividness and intactness from low to moderate. The removal of the Broadway off-ramp would result in additional space between I-880 and the residential neighborhood; thereby, increasing the balance between highway structures and residential structures. As a result, unity would increase to moderate. The overall resource change with the project features would be moderate.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 1 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate viewer response.

Figure 2-20. Viewpoint 1 from 6th Street Looking West

Note: The project features, such as retaining walls, proposed planting, signposts, and utilities are subject to approval and may not represent the final constructed conditions or aesthetics.

Local Streets in Oakland, Viewpoint 2

Viewpoint 2 captures Alice Street looking south toward I-880 and the northbound Broadway off-ramp. Figure 2-21 depicts before and after views at this location. This view was selected as a viewpoint because it illustrates the removal of the northbound Broadway off-ramp, construction of the proposed retaining wall along the 6^{th} Street northbound on-ramp, and improvements along 6^{th} Street.

Existing Visual Character/Quality: The northbound Broadway off-ramp and its support columns are illustrated in the foreground. The 6^{th} Street northbound on-ramp and its landscaped slope along I-880 are visible in the background. A single-family residential neighborhood is present along the east side of Alice Street. The Chinese Garden Park is present on the west side of Alice Street. Medium-rise buildings are present beyond I-880.

The vividness of this view is moderate due to views of the horizon, well-maintained homes, and existing landscaping. However, the highway structures diminish the vividness of this view. The intactness is moderate-low since the view is diminished by highway structures and vehicles. There is moderate unity between the residential neighborhood, neighborhood park, and I-880. The overall level of quality of the existing condition is moderate.

Changes to Visual Character/Quality: The northbound Broadway off-ramp would be removed, and a retaining wall would be added along the north side of the 6^{th} Street on-ramp. 6^{th} Street would become a one-way street with two northbound through lanes. Other improvements on 6^{th} Street would include pavement striping (including pedestrian crosswalks), and the addition of a two-way cycle track, 12-foot-wide sidewalk on the north side of the road and turn pocket at the intersection with Alice Street. Partial removal of existing vegetation would occur due to the widening of 6^{th} Street. This would open the view of existing structures to the south of I-880. However, street trees added on the north side of 6^{th} Street would block this view once mature. All proposed landscaping would be compliant with Section 92.3 of the Street and Highways Code.

The vividness associated with this view would increase but remain moderate following the removal of the Broadway off-ramp and the installation of street trees. The level of intactness would increase to moderate with the removal of the off-ramp. However, the I-880 highway structures would remain in the view. The level of unity between man-made structures and natural features would increase but remain moderate. The overall change to the visual resource was determined to be rated as moderate.

Anticipated Viewer Response: All potential viewers were considered, and the overall level of viewer response to the proposed changes was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 2 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate viewer response.

Figure 2-21. Viewpoint 2 from Alice Street Looking South toward the Northbound Broadway Off-ramp

Note: The project features, such as the retaining wall, landscaping, signposts, and utilities, are subject to approval and may not represent the final constructed conditions or aesthetics.

Local Streets in Oakland, Viewpoint 3

Viewpoint 3 captures 6th Street looking west toward its intersection with Webster Street. Figure 2-22 depicts before and after views from this location. The view was selected because it illustrates the removal of the northbound Broadway off-ramp and the proposed improvements along 6th Street.

Existing Visual Character/Quality: The adjacent land use at this location consists of multi-family residential and commercial structures. The northbound Broadway off-ramp is visible in the foreground. Street trees are adjacent to the building on the northwest corner of the 6th Street/ Webster Street intersection. An unsheltered person's encampment is located under the northbound Broadway off-ramp.

The vividness of this view is low. The northbound Broadway off-ramp dominates the view, casts shadows on the environment, and limits views of the horizon. The level of intactness is low due to the intrusion of the highway structures on the natural environment. There is also low unity between the highway structures and the adjacent neighborhoods. Therefore, the overall visual resource quality is low.

Proposed Project Features: The northbound Broadway off-ramp and raised/paved 6th Street divider would be removed. Proposed improvements along 6th Street would include the addition of one northbound through lane, two left-turn only lanes and one eastbound, left turn only lane on the south side of the road. One additional northbound lane would be added to the west of the intersection. A two-way cycle track would be added along the north side of the road, along with a new 12-foot-wide sidewalk. Parking would be removed to accommodate these improvements. New pavement striping (including pedestrian crosswalks), street lights, and traffic signals are proposed. An 8-foot-wide sidewalk and 4-foot-wide landscaped strip would be added along the south side of 6th Street. Street trees in concrete sidewalk cut-outs are proposed along both sides of the road. All proposed landscaping would be compliant with Caltrans' policy and the requirements of the City of Oakland.

Changes to Visual Character/Quality: The proposed project improvements would result in fewer highway structures. Natural light at the street level would increase following removal of the northbound Broadway off-ramp, which would also result in additional space between the highway and the adjacent neighborhood. Street trees would enhance the natural environment. The existing I-880 viaduct would remain in view after completion of the proposed project. Based on the positive effects anticipated from the proposed improvements, vividness, intactness, and unity would all increase from low to moderate. Therefore, the overall change to the visual resource with the project features would be moderate.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 3 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate viewer response.

Figure 2-22. Viewpoint 3 from 6th Street Looking West toward Webster Street

Note: The project features, such as proposed plantings, signposts, and utilities, are subject to approval and may not represent the final constructed conditions.

Local Streets in Oakland, Viewpoint 4

Viewpoint 4 captures 6th Street at its intersection with Franklin Street. Figure 2-23 depicts before and after views from this location. The view was selected because it illustrates the proposed improvements along 6th Street, including the removal of the northbound Broadway off-ramp.

Existing Visual Character/Quality: Adjacent land use consists of commercial structures and their associated parking lots. The northbound Broadway off-ramp is visible in the foreground. This ramp connects with westbound 6th Street, which is in the background. 6th Street terminates near the ramp and does not connect to Broadway. The I-880 connector to EB I-980 is visible in the distant background.

There are minimal visual resources associated with this view resulting in a low vividness score. Views of the horizon are available. However, man-made structures dominate these views. This contributes to a low intactness score. There is also a low level of unity between the highway structures and the adjacent neighborhood buildings. Based on this, the overall level of quality in the existing condition is low.

Proposed Project Features: The proposed project would result in the removal of the northbound Broadway off-ramp and connect 6th Street to Broadway. Proposed improvements along 6th Street would include two northbound through lanes and one southbound through lane on 6th Street. A two-way cycle track and a 12-foot-wide sidewalk is proposed along the north side of 6th Street. Parking would be removed to accommodate this. Pavement would be restriped, including pedestrian crosswalks. New street lights and traffic signals would be installed. An 8-foot-wide sidewalk and 4-foot-wide landscaped strip would be constructed along the south side of 6th Street. Street trees in concrete sidewalk cut-outs would be installed along both sides of the road. All proposed landscaping would be compliant with Caltrans' policy and the requirements of the City of Oakland.

Changes to Visual Character/Quality: The vividness, intactness, and unity at this viewpoint would increase to moderate with the removal of the northbound Broadway off-ramp, extension of 6th Street, and installation of sidewalks and street trees. Specifically, unity would increase between man-made structures and natural features due to the additional space between the highway and the neighborhood and the addition of street trees. Based on the positive effects of the proposed improvements, the overall resource change with the project features would be moderate.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 4 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate viewer response.

Figure 2-23. Viewpoint 4 from 6th Street Looking West toward Franklin Street

Note: The project features, such as proposed plantings, signposts, and utilities, are subject to approval and may not represent the final constructed conditions.

Posey Tube, Viewpoint 5

Viewpoint 5 captures Harrison Street looking south toward the Posey Tube Portal building. Figure 2-24 depicts before and after views from this location. This view was selected because it illustrates the proposed work on Harrison Street, the Posey Tube balustrade wall, and the Jackson Street off-ramp.

Existing Visual Character/Quality: The view faces south towards the Posey Tube Portal building, its associated balustrade retaining walls and decorative lights, and the pedestrian walkways adjacent to the street. The Posey Tube is a 1928 Art Deco-style structure designated as a City of Oakland Landmark and a National Register of Historic Places (NRHP) eligible historic resource. The Oakland Portal building, an element of the Posey Tube, is also a key contributor to the NRHP-listed Oakland Waterfront Warehouse District. The Posey Tube Portal on the Alameda end is also listed as an Alameda Historical Monument. Its architecture is moderately grand in scale, precise and ornate in character, and is well preserved. The westbound Jackson Street off-ramp and SB I-880 on-ramp are overhead in the foreground. Harrison Street is a one-way northbound street. Two pedestrian walkways are present, but only the east side walkway is currently operational.

The vividness of the Posey Tube complex is high. It is memorable because of its architecture, ornate balustrade walls, and lights. The level of intactness is moderate. Highway structures disrupt the view of the historic balustrade walls. Unity is high because there is a balance between the design of the Portal building and the parallel balustrade walls, which appear to radiate from the building. The overall level of quality in the existing condition is moderate-high.

Proposed Project Features: The proposed project would alter the alignment of northbound Harrison Street to provide two alternative routes to 6th Street. From the Portal building, motorists could drive north on Harrison Street to 6th Street or turn right and connect with 5th Street. To accommodate the alternative route to 5th Street, the balustrade wall on the east side of Harrison Street would be removed and replaced with a curved wall. A new left-turn pocket would be constructed to accommodate the turn onto 6th Street requiring removal of a section of the historic Posey Tube's western approach wall. The architectural details of the replacement walls would be subject to review in accordance with Section 106 of the NHPA (Section 2.10) and Draft Individual Section 4(f) Evaluation (Appendix A).

The Jackson Street off-ramp would be straightened horizontally and sloped down to connect with 5th Street closer to Alice Street. The southbound Jackson Street on-ramp would be narrowed over Harrison Street.

Changes to Visual Character/Quality: The quality of views would depend on how well the new architectural features blend into the existing details. Vividness would be reduced from high to moderate. The existing level of high vividness is related to the symmetry and perspective of the balustrade walls that highlight the Posey Tube Portal building. That element would be missing under the Build Alternative. However, this view is limited to pedestrians on the east side walkway and vehicle passengers because of the northbound direction of traffic. Passengers must turn in their seats and drivers must look through rearview mirrors to view the Posey Tube Portal building.

Intactness would be reduced from moderate to moderate-low from the alteration of the symmetrical site design of the existing historic structure. Despite the minor reduction in shadowing, unity would also be reduced to moderate. The Portal building would remain the center of focus as viewed from Harrison Street, and it would retain a somewhat harmonious balance between the walls and the Posey Tube Portal building. Based on the negative effects of the proposed features, the overall change to the visual resource was rated as moderate.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response to the proposed changes was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 5 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate viewer response.

Figure 2-24. Viewpoint 5 on Harrison Street Looking South at the Posey Tube

Note: The project features, such as signposts and utilities, are subject to approval and may not represent the final constructed conditions. Consulting parties and ongoing Section 106 coordination will dictate the final appearance of this wall.

Local Streets in Oakland, Viewpoint 6

Viewpoint 6 captures 5th Street looking west toward its intersection with Jackson Street. Figure 2-25 depicts before and after views from this location. This view was selected because it illustrates the proposed reconfiguration of 5th Street and the Jackson Street off-ramp.

Existing Visual Character/Quality: Land use consists of medium-rise multi-family residential and low- to medium-rise commercial structures. SB I-880 is in the foreground along the south side of this viewpoint. The Jackson Street two-lane off-ramp is visible in the distance to the south of I-880. 5th Street has a single eastbound travel lane with parallel parking along both sides. Vegetation is only at the edge of I-880.

Within this viewpoint, vividness is low due to the dominance of concrete structures. Intactness is low with the highway structures encroaching on views from 5th Street. Unity is moderate. There is a view of the horizon and of the landscaping along the south edge of I-880 balancing the natural and man-made environment. However, the overall quality of view in the existing condition is low.

Proposed Project Features: The proposed project would reconfigure 5th Street. The Jackson Street off-ramp would be one-lane and would connect with 5th Street just west of Alice Street. The two lanes next to I-880 would be converted into the proposed Harrison Street to 5th Street connector for northbound vehicles emerging from the Posey Tube. The lane closest to I-880 would be controlled with a median barrier to direct traffic around the horseshoe connector under I-880. The second lane to the south would be a 5th Street eastbound through lane. The third lane to the south would accommodate traffic from the Jackson Street off-ramp. The fourth lane to the south would be a local one-way eastbound lane connecting Harrison Street to 5th Street. There would also be a short, two-lane travel route adjacent to the Alice Street condominium building to provide access to their garage and circulation between Alice and Jackson Streets.

A landscaped median with trees would be added between the Jackson Street off-ramp and the local 5th Street traffic lane. Landscaping would be added along the south edge of I-880 and between the I-880 abutment and Jackson Street curb between 5th and 6th streets. All proposed landscaping would be compliant with Caltrans policy and the requirements of the City of Oakland.

Changes to Visual Character/Quality: The proposed project features would enhance the visual quality at this viewpoint. The relocation of the Jackson Street off-ramp would reduce the length of the I-880 retaining wall visible from 5th Street. Landscaping would improve the view. As a result, vividness would be increased to moderate. However, intactness would remain low due to the high prevalence of pavement and man-made structures which intrude on views of the natural environment. Unity would increase to moderate. Landscaping would increase the balance between natural features and man-made structures. The positive effects of the proposed improvements would result in an overall moderate visual resource change.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 6 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate viewer response.

Figure 2-25. Viewpoint 6 on 5th Street Looking West toward Jackson Street

Note: The project features, such as retaining walls, landscaping, signposts, and utilities, are subject to approval and may not represent the final constructed conditions or aesthetics.

Posey Tube, Viewpoint 7

Viewpoint 7 captures Harrison Street facing north towards I-880. Figure 2-26 depicts before and after views from this location. This view was selected because it illustrates the proposed pedestrian/bicycle path next to the Posey Portal building and the new balustrade wall/railing.

Existing Visual Character/Quality: Adjacent land use consists of the historic Posey Tube Portal building and low- to medium-rise commercial buildings. Both the Jackson Street off-ramp and I-880 are visible in the background. The Posey Tube is memorable due to its architecture and symmetrical site design with the parallel balustrade walls. Therefore, this viewpoint, which includes architectural elements of the Tube, has a moderate level of vividness. Intactness was moderate but diminished by the highway structures which intrude on views of the horizon. The highway structures and adjacent commercial buildings are not in harmonious balance with the Posey Tube Portal building, resulting in a moderate-low level of unity. The overall quality of views in the existing condition is moderate.

Proposed Project Features: The proposed project would result in the removal of vehicle parking on the west side of Harrison Street and add a pedestrian/bicycle path next to the Posey Portal building. This path would continue to the north and enter a ramp with new balustrade walls and railings.

The proposed project would include a new connector between Harrison and 5th streets. A new decorative wall would be added along the south edge of this connector. This would be visible in the distance. The Jackson Street off-ramp would be moved to the south with its ramp structure sloping downward to the east.

Changes to Visual Character/Quality: Vividness at this viewpoint would increase to moderate-high. The removal of vehicle parking next to the Oakland Posey Tube Portal building and the addition of the pedestrian/bicycle path would create an expanded setting for this historic structure. The new walls to the east would also augment the historic characteristics of the setting. Intactness would increase to moderate-high. Even though there would be more man-made structures in the view, these would enhance the site rather than diminish the existing quality of the view. Unity would increase to moderate-high with the addition of the new wall along the connector between Harrison and 5th streets. The addition of a context sensitive wall would unify architectural styles and land uses integrating the historic Posey Tube design aesthetic into the surrounding environment. Contextual elements would help generate viewer acceptance of the proposed project elements and provide compatibility with existing visual resources. Consulting parties' input and ongoing Section 106 coordination will determine the final appearance of this wall. Based on the positive effects associated with the proposed improvements, the overall change to the visual resource with the project features would be moderate.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response with the project features would be moderate-low.

Resulting Visual Impact: Visual impacts at Viewpoint 7 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate-low viewer response.

Figure 2-26. Viewpoint 7 on Harrison Street Looking East at I-880

Note: The project features, such as signposts and utilities, are subject to approval and may not represent the final constructed conditions. Consulting parties and ongoing Section 106 coordination will dictate the final appearance of this wall.

Posey Tube, Viewpoint 8

Viewpoint 8 captures Harrison Street facing east towards the Posey Tube balustrade wall, 5th Street, and I-880. Figure 2-27 depicts before and after views from this location. This view was selected because it illustrates the proposed changes to SR-260 and the balustrade wall.

Existing Visual Character/Quality: Adjacent land use at this viewpoint consists of the historic Posey Tube Portal building and low- to medium-rise commercial buildings. The Jackson Street off-ramp and I-880 are visible in the background. As noted earlier, the Posey Tube is highly memorable and vivid. However, this view does not include the building and is not very memorable. Because of this, vividness is low. The level of intactness is also low due to the highway structures which intrude on views of the horizon. Unity is low because the diversity of structures is not in a harmonious balance. The overall quality of views in the existing condition is low.

Proposed Project Features: A northbound Harrison Street to eastbound 5th Street connector would be added along with a new wall along the south side of the connector. Existing lights from the balustrade wall would be relocated to the new wall. The Jackson Street off-ramp would be relocated to the south to connect with 5th Street near Alice Street. Harrison Street at the upper level would continue to be a one-lane eastbound local street connecting to 5th Street.

Changes to Visual Character/Quality: The proposed project features would enhance the appearance of the existing environment. The new structures would be integrated through and around the neighborhood rather than separated as in the existing condition. The historic style elements of the Posey Tube Portal building would be integrated with adjacent structures. As a result, vividness, intactness, and unity would increase to moderate-high. The overall change to the visual resource would be moderate based upon the positive effects associated with the proposed project.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response to the proposed improvements was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 8 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate viewer response.

Figure 2-27. Viewpoint 8 on Harrison Street Looking East at 5th Street and I-880

Note: The project features, such as signposts and utilities, are subject to approval and may not represent the final constructed conditions. Consulting party input and ongoing Section 106 coordination will determine the final appearance of this wall.

I-880, Viewpoint 9

Viewpoint 9 captures NB I-880 between Webster and Franklin streets. Figure 2-28 depicts before and after views from this location. This view was selected because it illustrates the removal of the NB I-880 Broadway off-ramp.

Existing Visual Character/Quality: I-880 consists of five travel lanes in the northbound and southbound directions. The Broadway off-ramp is visible north of the concrete barrier. Medium- and high-rise commercial and public buildings are visible to the north of the highway.

Vividness is moderate. This view is somewhat memorable due to the elevated vantage point from I-880 affording views of the Oakland cityscape in all directions and the East Bay hills to the north. Intactness is moderate since views of the horizon are wide and available in all directions. These views are intruded upon to a moderate degree by overhead highway signage. Unity is moderate because there is some balance between the man-made structures and the natural environment. The overall quality of views in the existing condition is moderate.

Proposed Project Features: The proposed project would remove the Broadway off-ramp. Street trees would be planted along 6th Street, north of I-880, forming a long row of vegetation next to the highway once the trees mature. All proposed landscaping would be compliant with Caltrans policy and the requirements of the City of Oakland.

Changes to Visual Character/Quality: It is likely that removal of the Broadway off-ramp would not enhance views to the north because the concrete barrier would limit views from standard-sized vehicles. Truck drivers would observe less concrete roadway from their elevated vantage point. At maturity, the trees along 6th Street would enhance the view. Because of the minor nature of these improvements, vividness, intactness, and unity would remain unchanged (moderate). Therefore, the proposed resource change with the project features would be moderate-low.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response to the proposed improvements was predicted to be moderate.

Resulting Visual Impact: Visual impacts at Viewpoint 9 would be moderate under the Build Alternative due to the moderate-low change to the existing visual resource and moderate viewer response.

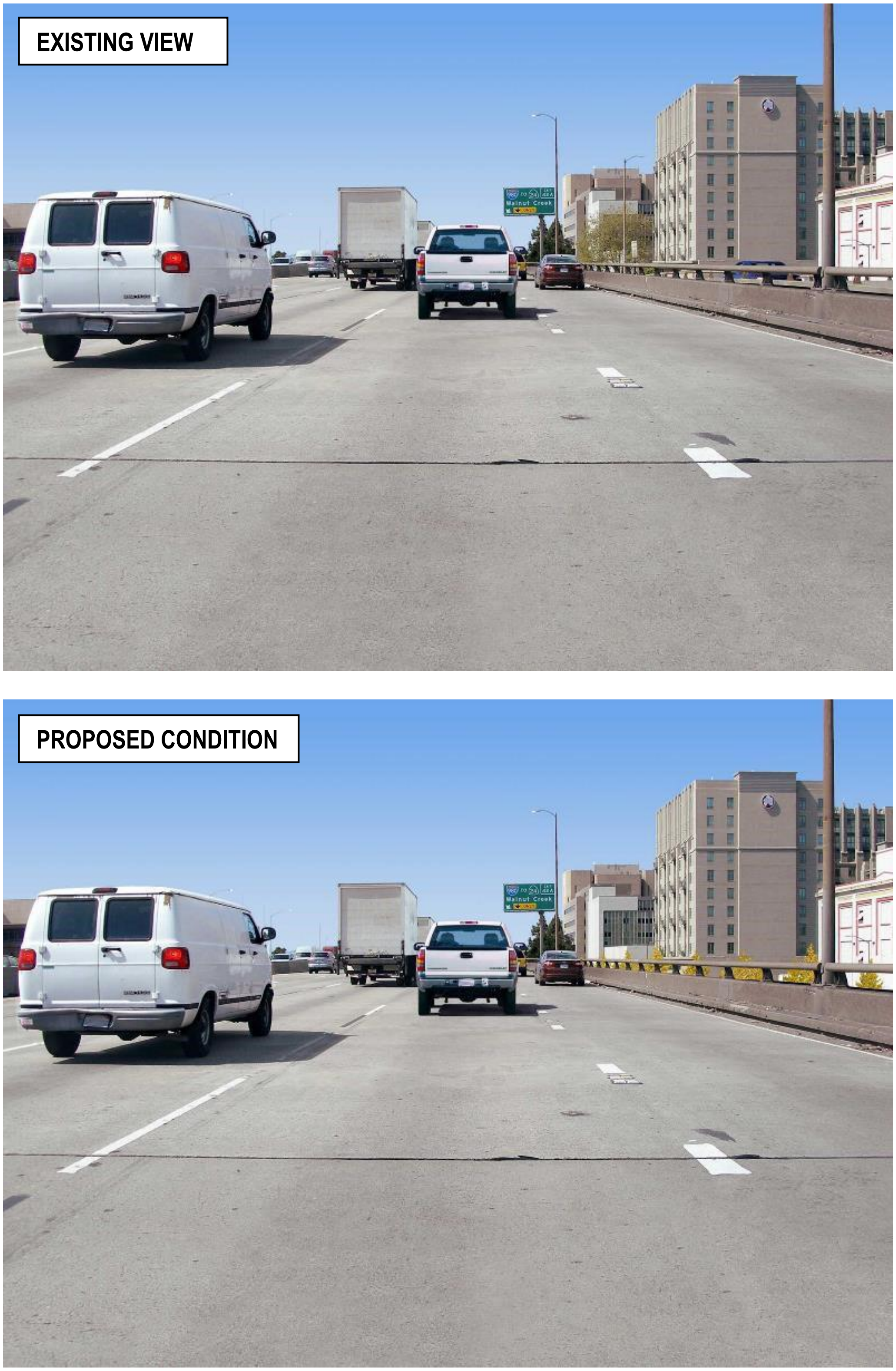

Figure 2-28. Viewpoint 9 on I-880 Looking West

Note: The project features, such as signposts and utilities, are subject to approval and may not represent the final constructed conditions.

Local Streets in Oakland, Viewpoint 10

Viewpoint 10 captures Harrison Street looking south toward the I-880 and the NB Broadway off-ramp. Figure 2-29 depicts before and after views from this location. This view was selected because it illustrates the removal of the NB I-880 off-ramp and the proposed 6th Street improvements.

Existing Visual Character/Quality: From this viewpoint, the NB I-880 Broadway off-ramp, I-880, and the Posey Tube Portal building are visible. Harrison Street is a one-way northbound street. Parking lots are located under the western portion of the highway. 6th Street is located to the west, and the Chinese Garden Park is located to the east. Residential and low-rise commercial buildings are located to the west.

Vividness at this location is low. The NB I-880 Broadway off-ramp partially blocks views of the horizon and the Posey Tube Portal building. Intactness is low due to highway structure intrusion on views of the surrounding visual resources. Unity is low because of the dominance of the highway structures and the poor balance between man-made structures and natural features. The overall level of quality of views in the existing condition is low.

Proposed Project Features: The proposed project would include the removal of the NB I-880 Broadway off-ramp, connect 6th Street to Oak Street, install a two-way cycle track, construct a 12-foot-wide sidewalk along the north side of 6th Street, and pavement would be restriped, including pedestrian crosswalks. Street lights and traffic signals would be installed, and street trees would be planted in sidewalk concrete cut-outs. A southbound right-turn-only lane would be added to Harrison Street. All proposed landscaping would be compliant with Caltrans policy and the requirements of the City of Oakland.

Changes to Visual Character/Quality: Construction of the proposed project features would improve the existing visual environment. Vividness would increase to moderate. The removal of the NB I-880 Broadway off-ramp would create more space and diminish shadowing at street level. Intactness would increase to moderate with the off-ramp removal and landscaping. Unity would increase to moderate because of the interaction between the Chinese Garden Park and the proposed landscaping. Street trees would also improve the balance between man-made structures and natural features. The positive effects associated with the proposed improvements would result in a rating of moderate.

Anticipated Viewer Response: All potential viewers were considered, and the overall viewer response was predicted to be moderate-low.

Resulting Visual Impact: Visual impacts at Viewpoint 10 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate-low viewer response.

Figure 2-29. Viewpoint 10 on Harrison Street Looking South at I-880

Note: The project features, such as wing walls, landscaping, signposts, and utilities, are subject to approval and may not represent the final constructed conditions or aesthetics.

Local Streets in Oakland, Viewpoint 11

Viewpoint 11 captures 5th Street looking west at I-880 near its intersection with Jackson Street. Figure 2-30 depicts before and after views from this location. This view was selected because it illustrates the relocation of the Jackson Street off-ramp to the south to accommodate the Posey Tube link to the Jackson Street horseshoe connector.

Existing Visual Character/Quality: Adjacent land use includes low- and medium-rise residential and commercial buildings. The WB Jackson Street off-ramp and I-880 are visible beyond 5th Street, which consists of one eastbound through-lane with parking along both sides. The off-ramp has two eastbound lanes. A retaining wall separates off-ramp lanes from 5th Street and transitions to a paved median as the off-ramp descends to meet 5th Street. Landscaping is present on the east side of 5th Street next to the highway.

Vividness is low due to a dominance of concrete structures that diminish the view's memorability. Intactness is also low. The WB Jackson Street off-ramp and the I-880 retaining wall encroach on views from 5th Street. Unity is moderate-low. Views of the horizon are restricted by man-made structures but are helped by landscaping along I-880. The overall quality of views in the existing condition is low.

Proposed Project Features: The WB Jackson Street off-ramp would be relocated further west on 5th Street. A new retaining wall and landscaping would be installed between the off-ramp and I-880. Retaining walls along the south side of I-880 would receive aesthetic treatments, including color, texture, and/or patterns to reduce visual impacts, glare, and possible incidence of graffiti. The utility pole in front of the Alice Street condominiums would be removed, and the utility lines would be installed underground. Parking would be removed along 5th Street. A landscaped median with street trees would be installed between the WB Jackson Street off-ramp lanes and the 5th Street traffic lanes. All proposed landscaping would be compliant with Caltrans policy and the requirements of the City of Oakland.

Changes to Visual Character/Quality: The proposed project features would enhance the appearance of the visual environment. The relocation of the WB Jackson Street off-ramp would diminish the length of the I-880 retaining wall expanding views from 5th Street. Street trees would add a natural element. Because of this, vividness would increase to moderate. However, intactness would remain low due to the visual extent of the structures intruding on natural feature views. Unity would increase to moderate. Landscaping would increase the balance between natural features and man-made structures. The overall change to the visual resource would be moderate due to the positive effects of the proposed improvements.

Anticipated Viewer Response: All potential viewers were considered, and the overall reviewer response to the proposed project changes was predicted to be moderate-low.

Resulting Visual Impact: Visual impacts at Viewpoint 11 would be moderate under the Build Alternative due to the moderate change to the existing visual resource and moderate-low viewer response.

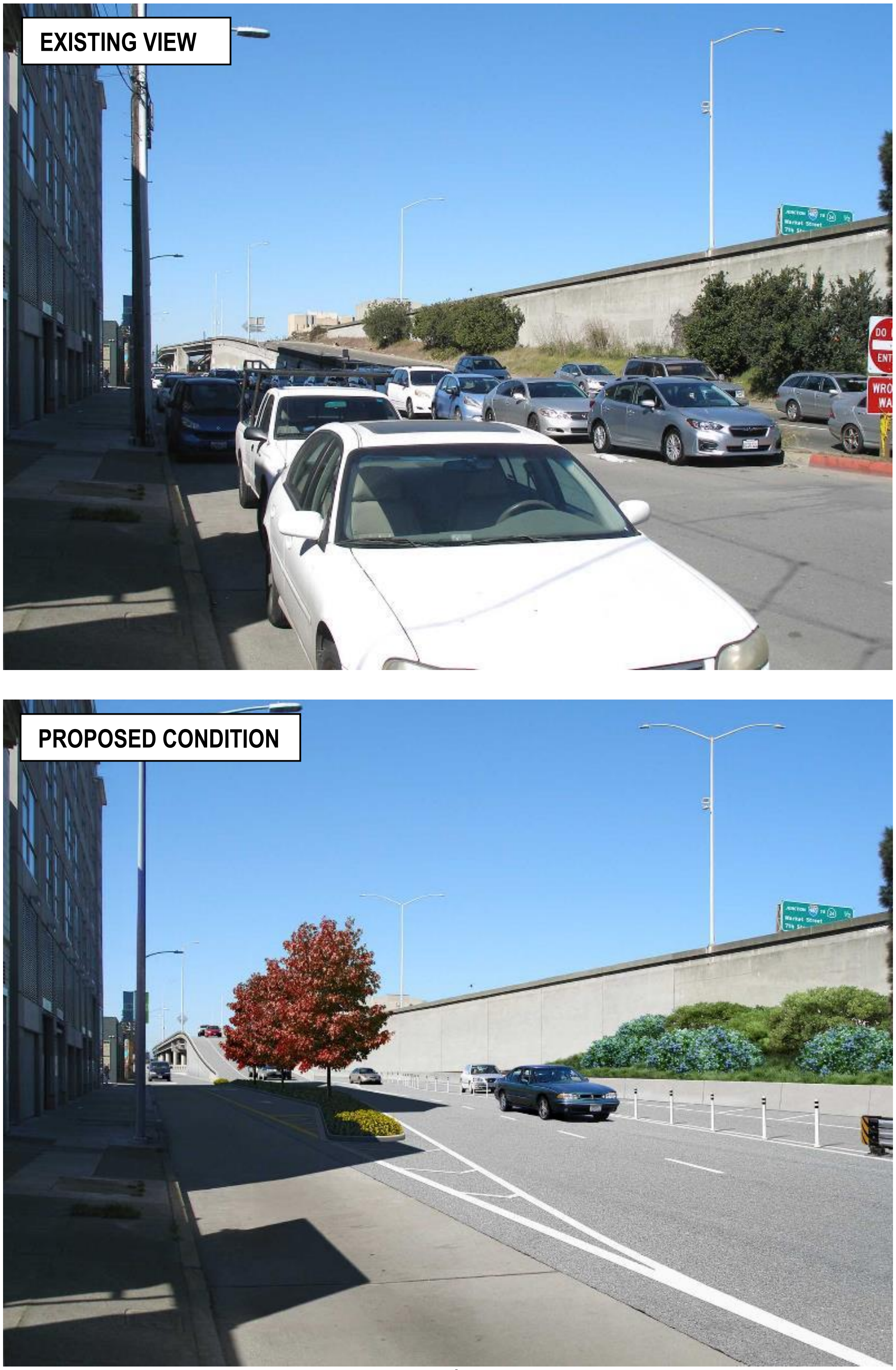

Figure 2-30. Viewpoint 11 on 5th Street Looking West at I-880

Note: The project features, such as retaining walls, landscaping, signposts and utilities, are subject to approval and may not represent the final constructed conditions or aesthetics.

Local Streets in Alameda, Viewpoint 12

Viewpoint 12 captures Webster Street in Alameda looking northeast towards the Posey Tube in the distance and Neptune Park in the foreground (Figure 2-31). No simulations were run to compare the existing and proposed conditions due to the limited scope of the proposed project features.

Existing Visual Character/Quality: Land uses adjacent to the project on northbound Webster Street include low- to medium-rise buildings arranged within business parks. These buildings are set back from Webster Street and are partially screened by mature trees. The Art Deco Style Posey Tube and pylons are a focal point and serve northbound travel through the Tube.

Vividness is high next to northbound Webster Street and the Posey Tube. These are memorable given the building set-backs and surrounding landscaping, which partially screens man-made structures. Intactness is moderate-high, and unity is high since there is a harmonious balance between man-made structures and natural features. The overall quality in the existing condition is moderate-high.

Proposed Project Features: Adjacent to northbound Webster Street, the proposed project would add minor street striping, relocate the existing bicycle/pedestrian paths to the west side of Mariner Square Drive and widen to 10 feet the existing 8-foot wide bicycle/pedestrian path in Neptune Park adjacent to Webster Street.

Changes to Visual Character/Quality: Due to the minor scope of the proposed work, no changes to vividness, intactness, or unity from the existing condition is proposed. Therefore, the overall resource change with the project features would be low.

Anticipated Viewer Response: All potential viewers were considered, and the overall reviewer response to the proposed project changes was predicted to be low.

Resulting Visual Impact: Visual impacts at Viewpoint 12 would be low under the Build Alternative due to the low change to the existing visual resource and low viewer response.

Source: Google (2017)

Figure 2-31. Viewpoint 12 on NB Webster Street, South of the Posey Tube

Local Streets in Alameda, Viewpoint 13

The Viewpoint 13 captures the egress area from the Webster Street Tube in Alameda looking north (Figure 2-32). No simulations were run to compare the existing and proposed conditions due to the limited scope of the proposed project features.

Existing Visual Character/Quality: Land uses adjacent to the project on southbound Webster Street Tube include low- to medium-rise buildings arranged within business parks to the east. These buildings are set back from the Webster Street Tube and are partially screened by mature trees. To the west is a large commercial shopping complex. Recent landscaping partially screens its buildings.

The Webster Tube Portal building serving southbound travel through the tube is a mid-20th century building, characterized by its simple architecture. The walls adjacent to the Webster Street Portal building are tall and plain with a smooth concrete finish. Vividness is low because views are not memorable. Intactness is low because man-made structures dominate views. Unity is low since there is no harmonious balance between the man-made structures and the natural environment. The overall quality of the existing condition is low.

Proposed Project Features: At the Webster Tube egress, the proposed project would add a bicycle/pedestrian path on the west side of the southbound lanes.

Changes to Visual Character/Quality: The bicycle/pedestrian path would not enhance or diminish the quality of existing views. Therefore, the levels of vividness, intactness, and unity would remain low. The overall resource change with the project features would be low.

Anticipated Viewer Response: All potential viewers were considered, and the overall reviewer response to the proposed project changes was predicted to be low.

Resulting Visual Impact: Visual impacts at the Viewpoint in Figure 2-32 would be low under the Build Alternative due to the low change to the existing visual resource and low viewer response.

Source: Google (2017)

Figure 2-32. Viewpoint 13 on *S*B Webster Street, South of the Webster Street Portal

Summary of Viewpoint Analysis

Table 2-21 summarizes and compares the proposed visual resource change, viewer response, and visual impacts at each viewpoint.

Table 2-21. Summary of Viewpoints within the Project Study Area

Visual Assessment Unit Locations	Viewpoint	Resource Change	Viewer Response	Visual Impact
Oakland Local Streets	Viewpoint 1: 6th Street facing west toward its intersection with Jackson Street	Moderate	Moderate	**Moderate**
	Viewpoint 2: Alice Street facing south from its intersection with 7th Street	Moderate	Moderate	**Moderate**
	Viewpoint 3: 6th Street facing west toward its intersection with Webster Street	Moderate	Moderate	**Moderate**
	Viewpoint 4: 6th Street facing west toward its intersection with Franklin Street	Moderate	Moderate	**Moderate**
	Viewpoint 6: 5th Street facing west toward its intersection with Jackson Street	Moderate	Moderate	**Moderate**
	Viewpoint 10: Harrison Street facing south toward 6th Street	Moderate	Moderate-Low	**Moderate**
	Viewpoint 11: 5th Street facing west toward its intersection with Alice Street	Moderate	Moderate-Low	**Moderate**
Posey Tube	Viewpoint 5: Harrison Street facing south at its intersection with 5th Street	Moderate	Moderate	**Moderate**
	Viewpoint 7: Harrison Street facing north toward 5th Street	Moderate	Moderate-Low	**Moderate**
	Viewpoint 8: Harrison Street facing east toward 5th Street	Moderate	Moderate	**Moderate**
I-880	Viewpoint 9: I-880 above Webster Street facing west	Moderate-Low	Moderate	**Moderate**
Alameda Local streets	Viewpoint 12: Webster Street facing north toward the Posey Tube	Low	Low	**Low**
	Viewpoint 13: Webster Street facing north toward the Webster Tube	Low	Low	**Low**

Build Alternative Visual Impacts

The proposed project would generally result in positive changes to visual quality. This includes expanded views of the horizon, increased horizontal clearances between highway structures and adjacent neighborhood buildings, proposed retaining walls with context sensitive treatments, proposed changes to the balustrade walls associated with the Posey Tube Portal building, and proposed landscaping.

The horizontal distance between adjacent buildings on the north side of 6th Street and highway structures would be increased by the proposed project with the removal of the existing NB I-880 Broadway off-ramp. Horizontal space and vertical clearance would be increased allowing increased views of the horizon. Approximately 1.4 acres of overhead concrete ramp structures would be removed allowing daylight to replace shadows from the removed highway structures.

Trees and shrubs would be planted along 6th Street increasing natural features within the project footprint. Additionally, 6th Street would become a continuous street between Oak Street and Broadway, complete with new pavement striping (including for pedestrian crossings), a two-way cycle track, a 12-foot-wide sidewalk, new street lights, and traffic signals. This would create a connected and harmonious corridor.

The WB Jackson Street off-ramp connection to 5th Street would be shifted west of Alice Street removing a long retaining wall along the ramp. New walls would be installed at Jackson Street at the west edge of the proposed horseshoe connector. A landscaped median with trees would be added on 5th Street separating local traffic from Posey Tube and Jackson Street off-ramp traffic. This would add natural features along 5th Street.

The eastern balustrade wall and staircase at the Oakland Posey Tube Portal building would be changed to accommodate a vehicle connector between the Posey Tube and 5th Street, and to provide an access ramp to the Posey Tube for bicyclists and pedestrians. The western balustrade wall at 6th Street would be changed to accommodate the widening of 6th Street and new architectural features would be added at the termini of the east and west balustrade walls at 6th Street. The proposed walls and architectural features would be designed to integrate with the remaining Posey Tube features, and it would be subject to review in accordance with Section 106 of the NHPA (Section 2.10) and Draft Individual Section 4(f) Evaluation (Appendix A).

Retaining walls would be added in several locations adjacent to I-880. These would be treated with context-sensitive architectural patterns and textures to enhance their appearance. The appearance of these walls would not alter substantially the existing character of the environment at the I-880 highway.

For motorists and passengers along I-880, the removal of the NB I-880 Broadway off-ramp would only be visible to a minor degree. The existing concrete barrier along the edge of the I-880 highway minimizes the existing view of this off-ramp. Street trees would be viewed along 6th Street once they are mature.

In Alameda, the existing character of the environment would be changed minimally by the proposed project. An existing pedestrian path would be realigned from Webster Street to Mariner Square Drive, an existing 8-foot-wide bicycle/pedestrian path would be widened to 10 feet adjacent to Neptune Park on Webster Street, and an improved bicycle/pedestrian path in the Webster Tube would be constructed and would connect the Tube to Mariner Square Loop.

In Oakland, minor street and intersection improvements would be consistent with the general character of the existing conditions. Viewer response to the proposed project features would vary from moderate to low depending on the duration of their exposure, their level of sensitivity to project features, and the type of change to their view. Neighboring residents would have moderate to high levels of exposure and sensitivity to the proposed project features. Recreational facilities users, local roadway travelers, and employees/patrons of commercial areas would have relatively short to moderate durations of exposure and moderate-low to moderate-high levels of sensitivity to the proposed project features.

The changes to 6th Street between Oak Street and Broadway and the changes to 5th Street between Alice and Jackson Streets would affect most neighboring residents. Along both streets, the quality of character would increase for the neighborhood and adjacent residents. The relocation of the Jackson Street off-ramp would remove a long retaining wall, and a landscaped median would be added between the local 5th Street travel lane and the highway off-ramps.

Impacts to Scenic Vistas and Scenic Routes

Visual impacts from the proposed project to views of scenic vistas would be low. Distant scenic resources include the East Bay hills, Oakland Estuary, and San Bruno Mountain and ridges. They are partially visible from I-880 vantage points. From local streets, views to the north of the East Bay Hills are partially visible through some street corridors. Intervening buildings block or restrict long-range views of these resources Therefore, the existing character of these views is moderate to low. The proposed project would not enhance or diminish the existing character or quality of scenic vistas.

The City of Oakland General Plan, Scenic Highways Element (1974) identifies the Oak Street corridor from the Embarcadero to Lake Merritt as a scenic route. Proposed project improvements at the intersection with 6th Street, and minor street improvements at the intersections with 7th through 9th streets, would enhance the character and quality of Oak Street.

Visual Character

The proposed project features are located within urban neighborhoods in the cities of Oakland and Alameda, and they are adjacent to highways I-880 (Oakland) and SR-260 (Alameda and Oakland). The Build Alternative would result in moderate to low levels of visual impacts to the overall character and to the quality of existing views at local streets, from neighborhoods adjacent to proposed project features, and from recreation facilities. Most of these impacts would enhance the overall visual environment, including expansion of views of the horizon, the addition of natural elements (such as landscaping), and the reduction of light shadowing.

Light and Glare

The proposed project would improve existing conditions of light and glare. It would remove the elevated NB I-880 Broadway off-ramp adjacent to 6th Street in Oakland, which casts shadows on the environment below. Removal of this structure would allow natural light to penetrate onto 6th Street. In addition, under the Build Alternative street lights would be added along both 5th and 6th streets. Visual impacts associated with these proposed improvements would be low.

CONSTRUCTION IMPACTS

No-Build Alternative

There would be no construction with the No-Build Alternative; therefore, no construction impacts would occur.

Build Alternative

Construction activities would last approximately 36 months. Construction equipment would be staged at areas underneath the I-880 structure, which is owned by Caltrans. Construction activities would primarily occur in the daytime; however, nighttime work may be needed to minimize impacts to traffic. Caltrans would continue to coordinate with the cities of Oakland and Alameda to develop and implement a TMP to minimize construction impacts on the human and natural environment.

Viewers would see materials, equipment, workers, construction operations, dust, construction signage and barriers, night lighting, contractor staging yards, and new structure construction. Construction impacts would be temporary. Motorists, bicyclists, and pedestrians would be exposed to construction activities while passing through the construction zone. Residents, businesses, places of worship, schools, and recreational facilities would be exposed to construction activities on a temporary basis. Short-term visual impacts would include the removal of some existing vegetation.

PROJECT FEATURES

Project features include design elements of the proposed project and standardized measures that are part of all or most Caltrans projects, including Best Management Practices (BMP), Caltrans Standards and Specifications, and standard special provisions. These features are considered an integral part of the proposed project and have been considered prior to any significance determinations for CEQA. The following project features are included in the Build Alternative.

PF-VA-1 **Preserve Existing Vegetation**	Trees, shrubs, and native vegetation will be preserved in place to the extent practicable. Prior to construction, trees will be surveyed and included in plan sets.
PF-VA-2 **Landscape Plantings**	Within Caltrans' ROW, use drought-tolerant plants, including California native species, as part of the planting palette where regionally appropriate. Planting must be maintainable, low maintenance, durable, Model Water Efficient Landscape Ordinance (MWELO) compliant, and site appropriate.
PF-VA-3 **Plant Establishment Period (PEP)**	Fund requirement planting through the parent roadway contract to be completed as a separate contract (within two years of roadway completion) with a three-year PEP, unless the estimated cost within Caltrans' ROW is below $300,000 (then only a one-year PEP is needed).

2.9.4. Avoidance, Minimization, and/or Mitigation Measures

To avoid and minimize negative impacts to visual resources, the proposed project will implement AMM-VA-1 through AMM-VA5. The proposed project will also implement AMM-AS-5 to minimize aesthetic impacts by protecting remaining trees and replacing trees removed by the proposed project (see Chapter 2, Section 4.4.4). The following avoidance and minimization measures will be designed and implemented in concurrence with the district landscape architect and the assigned Professionally Qualified Staff (PQS) for Cultural Resources.

AMM-VA-1 **Vegetation Removal Measures**	The proposed project will: • Minimize the removal of groundcover, shrubs, and mature trees to the maximum extent possible. Utilize open areas for contractor staging and storage areas. • Protect existing vegetation outside the clearing and grubbing limits from the contractor's operations, equipment, and materials storage through installation of high visibility temporary fencing around vegetation to be protected. • Provide truck watering of vegetation when automated irrigation is interrupted by construction.
AMM-VA-2 **Vegetation Replacement**	Within Caltrans' ROW, replace removed shrubs at a minimum 1:1 replacement ratio.
AMM-VA-3 **Revegetation Planting**	Disturbed areas will be treated with hydroseed erosion control grasses and locally native grasses if appropriate.
AMM-VA-4 **Aesthetic Treatments**	Context-sensitive retaining wall treatments of color, pattern, and/or texture will be implemented where feasible to reduce visual impacts, glare, and potential for graffiti.
AMM-VA-5 **Construction Impact Measures**	The resident engineer will be responsible for stating where materials and equipment storage and staging will be situated to minimize visibility from the highway corridor and local streets. If visibility is unavoidable, material and equipment will be visually screened to minimize visibility from the roadway and the receptors. • All construction lighting will be limited to the area of work and will utilize directional lighting and shielding. • Trenching for utilities will be avoided within the drip lines (outer extent of tree branches) of trees and screening shrubs. Directional drilling will be used within the tree drip lines where feasible. • Highway plantings within Caltrans' ROW will be provided where feasible. Caltrans' safety-setback requirements will apply for all plantings within state ROW. Street trees, shrubs, and groundcover on local streets will be provided where feasible.

- Any roadside vegetation and irrigation systems that are damaged or removed during project construction will be replaced according to Caltrans' policy and the requirements of the cities of Oakland and Alameda.

To mitigate negative impacts to visual resources, the proposed project will implement MM-VA-1 as follows:

MM-VA-1 **Posey Tube and Approaches Aesthetic Treatments**	New concrete retaining walls will receive architectural treatments that are context sensitive. In particular, the Oakland Posey Tube Portal building balustrade walls and related architectural features will be designed in accordance with Section106 of the NHPA and the Secretary of the Interior's Standards.

2.10. CULTURAL RESOURCES

2.10.1. Regulatory Setting

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including "historic properties," "historic sites," "historical resources," and "tribal cultural resources." Laws and regulations dealing with cultural resources include the following.

The NHPA, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the NRHP. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 CFR Part 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the FHWA, the ACHP, the SHPO, and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR Part 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 USC 327).

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. California PRC Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, AB 52 added the term "tribal cultural resources" to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect state-owned historical resources that meet NRHP criteria. It further requires Caltrans to inventory state-owned structures in its ROW. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing state-owned historical resources that are included in or eligible for listing in the NRHP or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU) between Caltrans and SHPO, effective January 1, 2015. For most Federal-aid projects on the State Highway System, compliance with the Section 106 PA will satisfy the requirements of PRC Section 5024.

2.10.2. Affected Environment

The following cultural resource studies were completed for the proposed project:

- Phase I Archaeological Survey Report (ASR) for the Oakland Alameda Access Project, Caltrans District 4 (March 2020)
- Historic Resources Evaluation Report (HRER) for the Oakland-Alameda Access Project, Oakland and Alameda, Alameda County, California (March 2020)
- Extended Phase I Archaeological Investigations (XPI) for the Oakland Alameda Access Project, Caltrans District 4 (April 2020)
- HPSR for the Oakland Alameda Access Project (May 2020)
- Finding of Adverse Effect (FOE) for the Oakland Alameda Access Project (in progress 2020)

AREA OF POTENTIAL EFFECTS

The Area of Potential Effects (APE) spans a portion of downtown Oakland, extends through the Tubes, and continues into the City of Alameda. It encompasses properties that have the potential to be directly and indirectly affected as a result of the proposed project (Figure 2-33). The APE was established in accordance with PA Stipulation VIII.A in consultation with Caltrans Professionally Qualified Staff, Alameda CTC consultant staff, and the project manager on March 11, 2020.

In Oakland, the APE runs along the I-880 corridor roughly between ALA-880 PM 30.47 to PM 31.61; adjacent local streets between 3rd and 9th streets and Washington Street southwest to approximately Fallon Street; SR-260 between ALA-260 PM R0.78 to PM R1.90, which includes the Tubes and Webster Street in Oakland and Alameda; and portions of Webster Street and Willie Stargell Avenue in Alameda. The APE encompasses all areas of direct project elements, TCEs, and staging areas. The Architectural APE extends beyond the Archaeological APE to encompass the total footprint of the historic districts, buildings, and structures that overlap it and could be indirectly impacted by the proposed project's design. The vertical APE ranges from 2 to 6 feet within the areas of proposed roadway and sidewalk improvements, 6 to 10 feet in areas of utility work, and 13 to 50 feet in the area proposed for the Posey Tube retaining wall replacement on 5th and 6th streets and the bents and a column for the I-880 off-ramp to Jackson Street. In Alameda, an overhead sign foundation will require a 20-foot-deep excavation.

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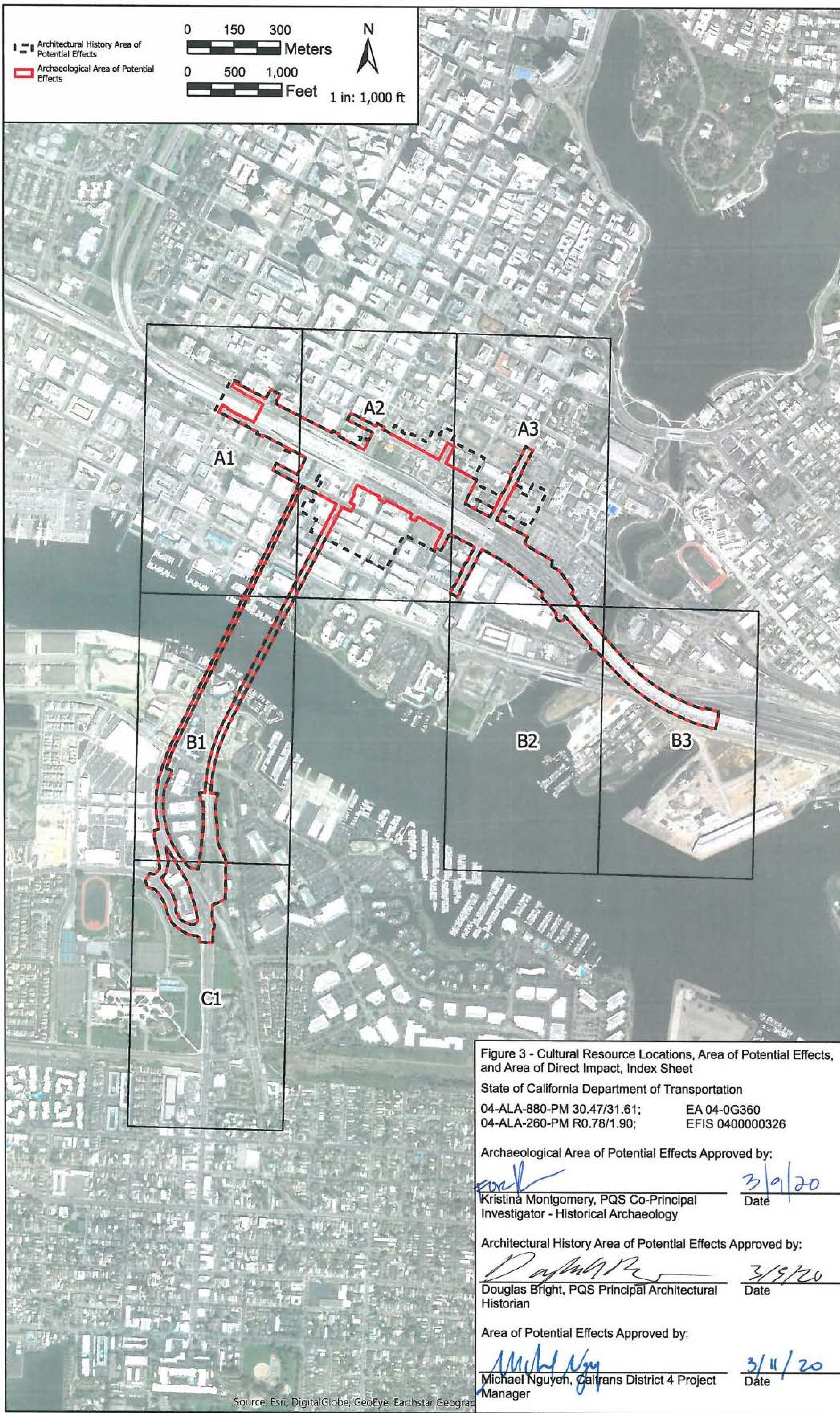

Source: HNTB (2020)

Figure 2-33. Area of Potential Effects Map

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RECORDS SEARCH

Record and information searches were conducted for the APE and a 0.10-mile radius by staff at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS). Record search requests were submitted in November 2015, January 2016, and December 2017 following updates to the project footprint limits. Responses were received in January 2016 and January 2018. In February 2020, Caltrans conducted a specific record search of their cultural resources database following further footprint changes to the APE. That search encompassed portions of the Archaeological APE and a surrounding 0.10-mile radius.

Three previously recorded archaeological resources were identified within the Archeological APE:

1. Prehistoric archaeological site CA-ALA-314/P-01-000091 (Nelson Shellmound 314);
2. Historic-period site P-01-010520 (Oakland Block 55) previously determined ineligible for the NRHP; and
3. Isolated prehistoric find P-01-010690 (AC-149).

According to the March 2020 HRER, two historic districts, the Oakland Waterfront Warehouse District and the 7th Street/Harrison Square Residential District and 145 previously identified, inventoried, and/or evaluated built-environment resources were identified within the Architectural APE.

- Twenty-four of the 145 built-environment resources are contributors to the NRHP-listed Oakland Waterfront Warehouse District.
- Ninety-seven are contributors to the NRHP-eligible 7th Street/Harrison Square Residential District.
- One was previously evaluated as NRHP eligible, but it was re-evaluated as not NRHP eligible.
- One property in the 7th Street/Harrison Square Residential District was improperly defined as a contributor to the District.
- One was previously found ineligible for listing in the NRHP, but it is eligible for local listing or designation.
- Eleven were previously found or determined ineligible for listing in the NRHP and CRHR.
- Seven properties were found ineligible for listing in the NRHP and/or CRHR.
- Twelve properties within the 7th Street/Harrison Square Residential District were not formally evaluated for the NRHP or CRHR listing but are considered ineligible for both the NRHP and CRHR for this proposed project because they post-date the District's period of significance.
- Also, four properties previously listed in or found eligible for the NRHP as contributors to the Oakland Waterfront Warehouse District or 7th Street/Harrison Square Residential District were demolished prior to the historic resources survey conducted for the proposed project.

In addition, one contributor to the Oakland Waterfront Warehouse District (the American Bag Company/Union Hide Company Building) is listed individually in the NRHP.

Seven bridges listed on Caltrans' Historic Highway Bridge Inventory as Category 5 — not eligible for listing on the NRHP or the CRHR — were also identified within the APE.

Eighty-one cultural resources, two prehistoric archaeological sites, and 76 built-environment resources were previously recorded within a 0.10-mile radius, but they are located outside the APE. Seventy cultural resource studies, including excavations, surveys, monitoring reports, and built-environment studies, have been completed within or directly adjacent to the APE. Forty-four prior studies included portions of the Archaeological APE and cumulatively overlapped just over half of it.

In addition to the record and information searches, archaeological sensitivity studies were conducted to examine the potential to encounter buried prehistoric and historic period cultural deposits within the Archaeological APE. Prehistoric sensitivity was determined primarily by the age, type, and physical extent of landforms that were available for human use and occupation. Historic period sensitivity in the Archaeological APE was determined by examining the natural conditions and gradual development of each affected city block through the examination of historic period maps. These areas were then referenced against potential Areas of Deep Impact to define zones of high to low historic period sensitivity within the Archaeological APE (ASR March 2020).

The Architectural APE includes four historic properties:

1. Oakland Waterfront Warehouse District
2. George A. Posey Tube
3. American Bag Company/Union Hide Company Building
4. 7th Street/Harrison Square Residential District

The NRHP- and CRHR-listed Oakland Waterfront Warehouse District includes 24 contributing properties. The 7th Street/Harrison Square Residential District that was found previously eligible for listing in the NRHP and consists of 97 contributing properties. The 7th Street/Harrison Square Residential District is considered eligible for listing in the NRHP and CRHR for the purposes of this undertaking only.

The Architectural APE includes three properties previously found or determined not eligible for listing in the NRHP and/or CRHR that are considered historical resources under CEQA, as well as eight properties previously found or determined not eligible for listing in the NRHP and/or CRHR that are not historical resources under CEQA. One property has been found ineligible for both the NRHP and CRHR as part of the proposed project but is eligible for local listing or designation. Six properties were found ineligible for listing in the NRHP and/or CRHR as part of the proposed project and are not historical resources under CEQA. Six properties were previously identified but not evaluated in other surveys, and for the purposes of this proposed project are considered ineligible for listing in the NRHP and CRHR and are not historical resources under CEQA.

HISTORICAL SOCIETIES/HISTORIC PRESERVATION GROUPS CONSULTATION

Letters were sent to the following historical societies and historic preservation groups on February 21, 2018:

- Oakland Cultural Heritage Survey
- City of Oakland Landmarks Preservation Advisory Board (LPAB)
- City of Oakland Planning and Building Department
- Oakland Heritage Alliance (OHA)
- Jack London Improvement District
- City of Alameda Community Development Department
- City of Alameda Historical Advisory Board
- Alameda Architectural Preservation Society
- Art Deco Society of California
- Alameda County Historical Society
- California Preservation Foundation

One response dated March 20, 2018, was received from Savlan Hauser, executive director of the Jack London Improvement District. Ms. Hauser stated that her organization had assisted in public outreach and held a community meeting about the proposed project, and that she and Gary Knecht, board member emeritus, were participants in the Alameda CTC stakeholder workshop group for the proposed project. She stated the organization's interest with regard to impacts from the proposed project on historic resources, and she provided a link to published information on the Posey Tube and the Oakland Waterfront Warehouse District. Follow-up communications with other organizations were sent out in April 2018; no responses were received.

In response to a scoping meeting held by Alameda CTC/Caltrans on September 28, 2017, the OHA sent a letter dated October 30, 2017 to Caltrans citing concerns regarding potential project impacts on the Posey Tube and the Oakland Waterfront Warehouse District. OHA requested that alternatives be studied that would not impact portions of the Posey Tube and requested that Caltrans hold a meeting with the City of Oakland's LPAB to obtain comments on potential project impacts. OHA also stated that it wished to review drawings of proposed changes to the Posey Tube and the *Finding of Effects* report for the proposed project. OHA followed up this letter with correspondence to the LPAB on February 5, 2018, copied to Caltrans, requesting that the Board review and comment on this proposed project, and that they provide an invitation to Caltrans for a future board meeting.

As part of its outreach efforts, Alameda CTC and Caltrans met with City of Oakland historic preservation staff on July 18, 2018, to discuss the proposed project, and they attended a LPAB meeting on January 14, 2019, to present the proposed project to the Board. The meeting in July 2018 included a discussion of efforts made to avoid impacts to historic properties/historical resources and ways Oakland's LPAB can be involved in the proposed project. Alameda CTC and the City agreed that the proposed project should be brought before the LPAB at a public meeting later in the year. At the LPAB meeting in January 2019, Alameda CTC and Caltrans introduced the proposed project to the Board with a presentation about it, including illustrations of possible designs for the new wall at the north end of the Posey Tube. A board member inquired about the process to assess project impacts on the Posey Tube and expressed interest in seeing a contemporary style version of the new wall, as well as documentation for the Posey Tube and other historic properties that may be affected by the proposed project. The requested documentation for the Posey Tube and other properties was provided in an email on January 15, 2019; however, a contemporary style version of the new wall was not provided. A representative of the OHA spoke during the public comment period expressing the organization's desire for alternatives that do not remove the Posey Tube wall.

NATIVE AMERICAN CONSULTATION

The Native American Heritage Commission (NAHC) was contacted in December 2015 to perform a search of the Sacred Lands File for the Archaeological APE, and to obtain a list of Native American tribal representatives who may have knowledge of or concerns about the project study area. Following design changes to the proposed project, updated requests were submitted to the NAHC in February 2016 and December 2017. Searches of the Sacred Lands File failed to indicate the presence of cultural resources in the immediate project study area. The NAHC provided a list of nine tribal groups or individuals to contact for further information. Letters were sent to each of these parties in February 2016. Updated contact letters were sent out and follow-up calls were made in July 2018. Only one response was received after the initial letter was sent.

Follow-up calls in July 2018 resulted in contact with four local tribal representatives:

- Tony Cerda, Chairperson of the Costanoan Rumsen Carmel Tribe
- Ann Marie Sayers, Chairperson of the Indian Canyon Mutsun Band of Costanoan
- Andrew Galvan, Ohlone Indian Tribe Representative
- Irene Zwierlein, Chairperson of the Amah Mutsun Tribal Band of Mission San Juan Bautista

All requested Native American monitoring during archaeological and construction excavation, and to be kept informed about the proposed project. Also, Chairperson Zwierlein and Ms. Sayers requested that a Native American monitor be present during sensitivity training for construction crews.

Additional follow-up emails detailing the results of the Extended Phase I Archaeological Investigations were sent to all nine contacts on April 24, 2020.

- On April 26, 2020, Ms. Ballard received an email notice that the email to Chairperson Zwierlein could not be delivered because the recipient's email inbox was full. Consequently, on April 27, 2020 a follow-up letter was sent to Chairperson Zwierlein via the U.S. Postal Service. Ms. Ballard called Chairperson Zwierlein on June 4, 2020. Ms. Zwierlein recommended doing a sensitivity training for the construction crew and bringing in a Native American monitor if there is an archaeological discovery. Ms. Ballard followed up with Chairperson Zwierlein in an email on June 9, 2020, describing the inclusion of AMM-CUL-1 (WEAT and Sensitivity Training) for archaeological resources.
- Ms. Ballard called Ms. Sayers on June 4, 2020 and discussed the results of testing to date. Ms. Sayers was fine with the use of an inadvertent discovery plan. Ms. Ballard followed up with Ms. Sayers on June 6, 2020, to explain the implementation of PFCUL-1

and 2 (Cultural Resource Discovery and Human Remains procedures) cover the project's inadvertent discovery protocols.

- Mr. Galvan responded via email on June 4, 2020. Mr. Galvan indicated that the Ohlone Indian Tribe would like to consult regarding AB 52. Caltrans sent an AB 52 follow up email to Mr. Galvan on June 22, 2020, with a brief project update including the project schedule and the status of cultural report findings. No response has been received to date.
- Ms. Ballard was unsuccessful with her phone calls to the remaining contacts. A follow-up email was sent to each contact on June 4, 2020. No responses have been received to date.

No tribal cultural resources have been identified as a result of the Native American consultation correspondence, background research, or field investigations.

FIELD SURVEY

Archaeological Survey

Archaeological pedestrian surveys of the Archaeological APE were conducted in May 2018. Following project design changes, a supplemental survey was undertaken in February 2020 (ASR March 2020). All accessible, unpaved areas within the Archaeological APE featuring visible soils were examined using transects spaced no more than 30 feet apart. These areas were photo documented, and notes were taken regarding soil types, ground surface visibility, presence or absence of cultural materials, and survey conditions. Efforts also were made to relocate previously recorded archaeological resources by looking for surface indications. No archaeological resources were observed during the survey effort.

Built-environment Survey

Architectural surveys of the APE were conducted in February 2018. Survey observations were documented in field notes and digital photographs and resulted in the recordation and evaluation of seven historic period built-environment resources (see Table 2-22). These resources were recorded on Department of Parks and Recreation (DPR) 523 forms. A reconnaissance-level survey was conducted of the historic districts within the Architectural APE to identify contributing resources that were demolished, and to assess other substantial changes to the overall character of the districts.

Over 70% of the historic period built-environment resources within the Architectural APE are located in the 7th Street/Harrison Square Residential District. Most were built in the 19th century while roughly 20% were built in the 20th century before 1915, which is the end of the District's period of significance. These properties are predominantly raised, wood-frame residences of two or three stories constructed in the Queen Anne, Edwardian, Folk Victorian, and Colonial Revival styles. Many of the buildings have been altered over time due to conversion from single- to multi-family housing; replacement of windows, doors, and/or siding; and other additions.

Table 2-22. Built-environment Resources Newly Identified in the APE (during 2018 field surveys)

APN	Location	Historic Name	Community	Year Built
1-181-14	6th Street between Jackson and Alice streets	N/A	Oakland	1959
1-181-12	Jackson Street between 6th and 7th streets	Schnebly, Hostrawser & Pedgrift	Oakland	1913
1-147-1	5th Street between Webster and Harrison streets	Alameda County Weights & Measures	Oakland	1949-57
1-147-2	5th Street between Webster and Harrison streets	N/A	Oakland	1964
1-153-6	Alice Street between 4th and 5th streets	N/A	Oakland	1954
1-155-3	5th Street between Alice and Jackson streets	N/A	Oakland	1966-88
1-155-4	Jackson Street between 4th and 5th streets	N/A	Oakland	1966

Less than 20% of the historic period built-environment resources within the Architectural APE are within the Oakland Waterfront Warehouse District along the west side of the I-880 corridor. This area transformed from a 19th century residential community to an industrial area in the early 20th century. Two-thirds of its contributing buildings were constructed between 1914 and 1930. The buildings within the District are generally large one- to three-story warehouses of brick and/or concrete with flat or low-pitched roofs. The buildings are utilitarian in design with some including classically derived architectural details. They include the American Bag Company/Union Hide Company Building, which is a contributor to the District and is listed individually in the NRHP.

A handful of buildings are over three stories, and they are more elaborate in their architectural decoration. One example is the Oakland Portal building for the Posey Tube, an Art Deco-style with Beaux Arts influences completed in the late 1920s. The building serves as the exit from the Posey Tube, and it is made of reinforced concrete construction. The Posey Tube Oakland Portal is one component of a larger transportation property, which includes a precast concrete tunnel that connects automobile traffic between the cities of Oakland and Alameda. Along with the Oakland Portal building, the Posey Tube includes a nearly identical Alameda Portal building and Art Deco approaches at both portals.

The remaining resources in the Architectural APE outside of the 7th Street/Harrison Square Residential District and Oakland Waterfront Warehouse District date to the mid-20th century, and they were built as commercial and industrial buildings. Typical of the period, these buildings are unadorned concrete-constructed buildings with flat or low-pitched roofs.

RESULTS

Archaeological Testing Results

Based on the inaccessibility of the known archaeological sites, depth of potential project impacts, and the ASR's buried site sensitivity assessment, subsurface testing was required to complete identification efforts. Archaeological sites P-01-000091/CA-ALA-314 and P-01-010520/Oakland Block 55 were documented in areas within the APE that are covered by hardscape; therefore, their presence or absence could not be confirmed during the Phase I surface survey (Ballard and Holson 2020).

Extended Phase I archaeological testing consisted of hand augering, truck-mounted direct push geoprobe coring, and mechanical trenching and were completed in areas identified as archaeologically sensitive (XPI April 2020). Coring involved both hand augering and continuous 2-inch diameter cores completed with a truck-mounted direct push geoprobe and subsequent geoarchaeological analysis. The upper 5 feet of the core was hand augered, while the continuous core sample was taken from 5 to 27 feet below the surface or until refusal. Although the subsurface dune deposits documented in the cores were available for human occupation during the early to late Holocene Epoch, there were no prehistoric archaeological materials evident in the cores, and no historic period archaeological deposits were noted apart from isolated fragments of refuse near the surface and in the artificial fill. No evidence of P-01-000091/CA-ALA-314 was found within the APE.

Mechanical trenching was conducted in January 2020 in and adjacent to two areas identified as sensitive for historic period deposits. Four trenches were excavated within the boundaries of P-01-010520/Oakland Block 55 to assess the depth of fill, the archaeological sensitivity of the Webster Tube connector area, and to determine if buried historic period features were present within the Archaeological APE. No intact features associated with P-01-010520/Oakland Block 55 were found in the mechanical trenches. A few trenches revealed sparse historic period demolition debris at a depth of 0 to 5 feet on top of sterile dune sand, and no intact historic period features or deposits were identified. The Extended Phase I coring and trenching investigation within the Archaeological APE did not reveal prehistoric or historic period archaeological deposits.

Archaeological Resource Results

No archaeological resources were identified during the Phase I pedestrian surface survey or extended Phase I archaeological testing. The prehistoric archaeological site CA-ALA-314/P-01-000091 could not be located and is assumed to not be present in the APE; no features from historic period site P-01-010520 (Oakland Block 55) were found. This resource was previously determined not eligible for inclusion in the NRHP with SHPO concurrence, and it is not considered significant for the purposes of CEQA and those determinations remain valid. The isolated prehistoric find P-01-010690 (AC-149), although not relocated, is considered exempt for evaluation under PA, Attachment 4 as an isolated find; therefore, it has no potential to be a historic property. This resource is not considered significant for the purposes of CEQA.

Built-environment Assessment Results

Out of the 145 historic-period built-environment resources within the Architectural APE, 15 were previously evaluated and found not eligible for the NRHP and the CRHR (Table 2-23). Twelve of these previously evaluated properties are not considered significant resources for the purposes of CEQA. Three resources, Harrison Square, Saroni Wholesale, and Eagle Sales are considered significant resources for the purposes of CEQA.

Table 2-23. Built-environment Resources Evaluated Previously as Not Eligible for the NRHP and CRHR

APN/Resource Name	Location	Historic Name	City	Year Built
1-183-1	Harrison Street between Harrison and Alice streets	Harrison Square	Oakland	1853
1-177-20	Jackson Street between 7th and 8th streets; 7th Street between Jackson and Madison streets	Jackson Street Garage; Sunny Way Sewing	Oakland	1921, 1924
1-153-12-1	Harrison Street between 3rd and 4th streets	Saroni Wholesale Sugar & Rice Warehouse	Oakland	1922
1-155-6	4th Street between Jackson and Madison streets	Eagle Sales, Inc.	Oakland	1947-48
1-157-1	3rd Street between Alice and Jackson streets	Prime Smoked Meats, Inc.	Oakland	1953, 1967
1-157-5	Alice Street between 2nd and 3rd streets	Prime Smoked Meats, Inc.	Oakland	1953, 1967
1-157-29	3rd Street between Alice and Jackson streets	WP Fuller Co. Annex	Oakland	1914
18-455-11; 18-465-9	N/A	Southern Pacific Railroad Yards & Tracks/Hanlon Lead Bridge	Oakland	ca. 1940s-50s
Bridge 33 0106L	N/A	Webster Tube (Oakland and Alameda Portal buildings)	Oakland	1963
Bridge 33 0198	I-880 Madison Street undercrossing	N/A	Oakland	1958, 1985
Bridge 33 0200	I-880 5th and 6th streets viaduct	N/A	Oakland	1953, 1984
Bridge 33 0483F	I-980/I-880 southbound connector	N/A	Oakland	1985, 1990
Bridge 33 0485K	I-980/SR-260 separation	N/A	Oakland	1985
Bridge 33 0513K	SR-260 Constitution Way overcrossing	N/A	Alameda	1985
Bridge 33 0754*	I-880 5th Avenue overhead	N/A	Oakland	2013

**Bridge 33 0754 replaced Bridge 33 0027*

Properties within the APE that qualified for exemption for evaluation under PA, Attachment 4 are as follows:

- Considered minor, ubiquitous, or fragmentary infrastructural elements (Property Type 1).
- Seven built resources that are less than 30 years old (Property Type 2).
- Twelve built resources that are 30 to 50 years old (Property Type 4).
- Two substantially altered buildings that appear to be more than 30 years old (Property Type 6).

The resources are not considered significant resources for the purposes of CEQA.

The following seven resources in Table 2-24 were evaluated for NHRP and CRHR eligibility as part of the proposed project; they were found not eligible. All but one of the sources are not considered significant resources for the purposes of CEQA. Schnebly, Hostrawser & Pedgrift (listed in Table 2-24) is a significant resource for the purposes of CEQA.

Table 2-24. Built-environment Resources Evaluated for the Proposed Project and Not Eligible for Inclusion on the NRHP and CRHR

APN/ Resource Name	Location	Historic Name	Community	Year Built
1-181-14	6th Street between Alice and Jackson streets	N/A	Oakland	1959
1-181-12	Jackson Street between 6th and 7th streets	Schnebly, Hostrawser & Pedgrift	Oakland	1913
1-147-1	5th Street between Webster and Harrison streets	Alameda County Weights & Measures	Oakland	1949-57
1-147-2	5th Street between Webster and Harrison streets	N/A	Oakland	1964
1-153-6	Alice Street between 4th and 5th streets	N/A	Oakland	1954
1-155-3	5th Street between Alice and Jackson streets	N/A	Oakland	ca. 1966-88
1-155-4	Jackson Street between 4th and 5th streets	N/A	Oakland	1966

One property within the APE, the 7th Street/Harrison Square Residential District, is considered eligible for inclusion on the NRHP and the CRHR for the purposes of this proposed project only. The District is considered a significant resource for the purposes of CEQA.

In 1985, the Oakland Cultural Heritage Survey concluded that the 7th Street/Harrison Square Residential District was eligible for listing in the NRHP. While no specific NRHP criteria, period of significance, or character-defining features were listed in its evaluation of the District, the Oakland Cultural Heritage Survey identified (in order of importance) architecture, social/ education, exploration/settlement, and economic/industrial as the main themes of the District's significance. The District is assumed significant under NRHP Criterion A for its important association within the residential growth of Oakland during the 19th and early 20th centuries, and under NRHP Criterion C as a distinct grouping of 19th and early 20th centuries residential architecture. The period of significance is from the 1860s when the earliest buildings were constructed to about 1915 when most of the lots had been developed. Character-defining features include the extant contributing buildings, historic transportation grid, size and scale of the contributors, and their 19th and early 20th centuries architecture. Three properties were previously evaluated as eligible for inclusion in the NRHP and the CRHR and these conclusions remain valid (Table 2-25). All three resources are considered significant resources for the purposes of CEQA. The Posey Tube is a state-owned property and is included in the Master List of Historical Resources. The Oakland Portal building, a key contributing element to the Posey Tube, is also listed in the NRHP as a contributor to the Oakland Waterfront Warehouse District and is listed as a City Landmark. The Alameda Portal building is a designated City of Alameda Historical Monument.

The Oakland Waterfront Warehouse District was listed on the NRHP on April 24, 2000, and it includes 24 contributors. The District is significant at the local level under NRHP Criterion A for its important association with Oakland's industry from World War I to just after World War II. Also, the District is significant architecturally at the local level under NRHP Criterion C. The District is a distinct example of cohesive early 20th century utilitarian industrial architecture with a period of significance from 1914 to 1954. Character-defining features of the historic district include the extant contributing buildings and structures, the historic transportation grid, and the early 20th century utilitarian industrial architecture. The District includes the Posey Tube Oakland Portal building, which is part of the larger Posey Tube property and is determined individually eligible for listing on the NRHP, and the American Bag Company/Union Hide Company Building on Harrison Street, which is listed in the NRHP as an individual property. The larger Posey Tube property is not a contributor to the District.

Caltrans determined the Posey Tube was individually eligible for the NRHP in 1993, and SHPO concurred with that determination in January 1998. As the first subaqueous automobile tube on the west coast, the Posey Tube is significant at the state level under NRHP Criterion A for its important association with automobile development as the primary method of transportation in California. Also, this historic property is significant at the national level under NRHP Criterion C for its innovative engineering. In particular, the Tube's construction method used precast, reinforced concrete tubes that were wholly completed off-site and installed into an excavated trench on the estuary floor. The Posey Tube's modified transverse ventilation system, which used only two portals for fresh and exhaust air, was also groundbreaking at the time. Both engineering innovations significantly reduced design and construction costs.

Furthermore, under NRHP Criterion C, the property is significant at the state level for the Art Deco design of the Oakland and Alameda Portal buildings. The period of significance for the Posey Tube extends from 1928, the year the structure was completed and opened to automobile traffic, to 1947 when the California Division of Highways (predecessor to Caltrans) acquired the facility. The Tube's contributing features generally include Oakland and Alameda Portal buildings (both interior and exterior features) and approaches and the subaqueous tube. Character-defining features include, but are not limited to, the integrity of and relation between the contributing elements (listed above), the size and massing of the Portal buildings and approaches, the exterior and interior features of the Portal buildings, and the Art Deco characteristics of the Portal buildings and approaches.

The American Bag Company/Union Hide Company Building was listed on the NRHP on August 13, 1999. It is significant under NRHP Criterion C as an exceptional example of an early 20th century brick industrial warehouse. The period of significance for this historic property is 1917, the year it was constructed. Character-defining features include, but are not limited to, its size and massing, location and orientation on a corner lot, brick construction, original fenestration, and decorative polychromatic brick pattern. This historic building is a designated City of Oakland Landmark.

Table 2-25. Built-environment Resources Previously Evaluated as Eligible for the NRHP and CRHR

APN/ Resource Name	Location	Historic Name	Community	Year Built
George A. Posey Tube (including Oakland and Alameda portals and approaches)	N/A	N/A	Oakland	1925-28, 1964
Oakland Waterfront Warehouse District	N/A	N/A	Oakland	1914-54
1-151-49	Harrison Street between 2nd and 3rd streets	American Bag Company/Union Hide Company	Oakland	1917

The four resources listed in Table 2-26 were previously identified through historic building surveys conducted by the City of Oakland. All these properties were previously found ineligible for the NRHP or CRHR; however, they are considered historical resources under CEQA because they were identified in a local historic resources survey, as per California PRC 5024.1(g).

Table 2-26. Significant CEQA Resources Previously Identified through Historic Building Surveys (not eligible for NRHP or CRHR)

APN/Resource Name	Location	Historic Name	City	Year Built
1-181-12	Jackson Street between 6th and 7th streets	Schnebly, Hostrawser & Pedgrift	Oakland	1913
1-183-1	Harrison Street between 6th and 7th streets	Harrison Square	Oakland	1853
1-153-12-1	Harrison Street between 3rd and 4th streets	Saroni Wholesale Sugar & Rice Warehouse	Oakland	1922
1-155-6	4th Street between Alice and Jackson streets	Eagle Sales, Inc.	Oakland	1947-48

2.10.3. Environmental Consequences

Permanent and Construction Impacts

<u>Archaeological Resources</u>

No-Build Alternative

The No-Build Alternative would have no impact on archaeological resources within the Archaeological APE.

Build Alternative

The Build Alternative would require excavations ranging in depth from 2 to 6 feet in areas of proposed roadway and sidewalk improvements, 6 to 10 feet in areas of utility work, and 13 to 50 feet in the area proposed for the Posey Tube, the 5th and 6th streets retaining wall replacements, and the bents and a column for the I-880 off-ramp to Jackson Street. No archaeological resources were discovered as part of surface surveys or archaeological subsurface testing in areas within the Oakland portions of the APE and identified as potentially sensitive in the ASR (March 2020).

Built-environment Resources

Within the APE, four historic properties were identified as significant historic period built-environment resources: the 7th Street/Harrison Square Residential District, the Oakland Waterfront Warehouse District, the Posey Tube (including Oakland and Alameda portals and approaches), and the American Bag/Union Hide Company Building.

No-Build Alternative

The No-Build Alternative would have no impact on historic period built-environment resources within the project APE.

Build Alternative

Oakland Waterfront Warehouse District/George A. Posey Tube

Under the Build Alternative, the proposed project — at or near the Posey Tube and within the boundaries of the Oakland Waterfront Warehouse District — would construct a new horseshoe connector below the I-880 viaduct, right-turn-only lane from the Posey Tube to 5th Street in Oakland, two-way bicycle/pedestrian walkway through the Posey Tube, and make street improvements to 4th, 5th, and Harrison streets.

The construction of a right-turn-only lane from the Posey Tube approach to 5th Street would modify the Tube in Oakland by demolishing more than 175 feet of the approach's eastern approach wall and staircase for a new turn lane onto 5th Street (see Figure 2-24, Figure 2-26, Figure 2-27, and Figure 2-29 in Chapter 2, Section 2.9.3). The approach's extant straight wall would be replaced by a new curved wall that would extend onto 5th Street. The construction of the left-turn-only lane from the Posey Tube exit to 6th Street would modify the Tube by demolishing more than 95 feet of the Oakland approach's western wall. The approach's existing straight walls would be replaced by new walls that would extend onto 5th Street and 6th Street respectively. The design of the proposed wall would use similar materials and incorporate some of the original wall's Art Deco-style architectural details, such as concrete balustrades with paneled, oval openings and light pedestals surrounded by solid panels. The demolition of the approach's eastern wall and stairs, the construction of the new wall with a different configuration, and the construction of the bicycle/pedestrian ramp around the Portal building would result in the partial removal of, physical destruction of, or damage to this historic property under 36 CFR 800.5(a)(2)(i) and (ii).

The two-way bicycle/pedestrian walkway through the Posey Tube beginning at the Alameda approach and ending just west of Harrison Street under I-880 would use the existing eastside walkway, which would remain unaltered. The walkway would consist of a ramp at the Tube's Oakland exit, which would have a hairpin turn at 5th Street. The ramp would replace the existing staircase attached to the Oakland approach's eastern wall, and it would transition to an at-grade path that wraps around the Oakland Portal building. The path would replace the existing concrete sidewalk and curb on the west (4th Street) side of the building. The construction of the bicycle/pedestrian walkway at or near the Portal building would result in the partial removal of, physical destruction of, or damage to this historic property under 36 CFR 800.5(a)(2)(i) and (ii).

The Build Alternative would result in the physical destruction of portions of the Posey Tube; therefore, it would have an Adverse Effect on these two historic properties (the Posey Tube and the Oakland Waterfront Warehouse District, see Table 2-27). The Posey Tube also qualifies as a Section 4(f) resource, and there would be direct use of the property as a part of the Build Alternative (see Appendix A).

There are no predicted construction vibration impacts from the proposed project at the location of these two historic resources, and the implementation of avoidance measures would result in no damage from vibration impacts to the Oakland Waterfront Warehouse District/Posey Tube.

The American Bag Company/Union Hide Company Building

The proposed project would not result in an adverse effect on the American Bag Company/ Union Hide Company Building in Oakland (see Table 2-27). All construction activities would be conducted outside the boundaries of this historic property, and they would not result in the partial removal of, physical destruction of, or damage to this historic property under 36 CFR 800.5(a)(2)(i) and (ii).

The proposed project would not cause an adverse effect on the historic building from the introduction of new visual components. The closest project element would be the construction of a proposed bicycle/pedestrian path that would wrap around the Oakland Portal building. The proposed path would be approximately the same width, and it would use similar materials as the extant sidewalk along 4th Street adjacent to the Portal building. The path would be located one block and more than 320 feet northeast of this historic property, and it would be mostly obscured from view by a modern six-story residential building directly across from it on 3rd Street. While the southwestern portion of the path would be visible from the northeastern corner of the American Bag Company/Union Hide Company Building, it would not adversely alter the viewshed or setting of this historic property because the view and setting of the historic property would be mostly unchanged. Therefore, the construction of the proposed path would not diminish the integrity of the American Bag Company/Union Hide Company Building's significant historic features, and it would result in No Adverse Effect.

Furthermore, there are no predicted construction vibration impacts at the location of this historic property, and the implementation of avoidance measures would result in a No Adverse Effect on the American Bag Company/Union Hide Company Building.

The American Bag Company/Union Hide Company Building also qualifies as a Section 4(f) resource, and there would be a No Use determination of the property as a part of the Build Alternative (see Appendix A).

7th Street/Harrison Square Residential District

Under the Build Alternative the following construction activities are planned in or near the 7th Street/ Harrison Square Residential District in Oakland: demolition of the NB I-880 Broadway off-ramp structure along 6th Street, a new horseshoe connector below the I-880 viaduct, new retaining wall along the NB I-880 Jackson Street on-ramp, and surface street improvements to 6th, 7th, 8th, Harrison, Alice, Jackson, Madison, and/or Oak streets.

The surface street improvements and demolition of the NB I-880 Broadway off-ramp structure along 6th Street would be located within the historic district boundary, but none of these project elements would cause an adverse effect on the historic property. Surface street improvements to 6th, 7th, 8th, Harrison, Alice, Jackson, Madison, and/or Oak streets in the historic district boundary would include the following:

- New traffic signals and pedestrian lights;
- Lane and crosswalk striping;
- Lane and parking reconfiguration;
- Reconstruction of a new sidewalk along portions of the north and south sides of 6th Street;
- Reconstruction of portions of sidewalk along the north side of 6th Street;
- Curb extension at the intersections of 7th, Jackson, and Harrison streets;
- Installation of a PHB along 7th Street; and
- Bicycle/pedestrian path along the north and south sides of 6th Street.

These minor street improvements would not adversely alter the District's historic transportation grid, which is a character-defining feature. The streets within and adjacent to it have already been altered by the construction of modern buildings, structures, and contemporary infrastructure, including the NB I-880 Broadway off-ramp, addition and/or replacement of light standards, mailboxes, signage, traffic signals and pedestrian lights, parking meters, and sidewalk improvements (including sidewalk extensions, curb replacement, etc.). Therefore, the proposed surface street improvements would cause No Adverse Effects.

The demolition of the NB I-880 off-ramp, which was constructed after the District's period of significance, would physically reestablish a portion of 6th Street, which was part of the District's historic transportation grid that had been altered by construction of the off-ramps in the late 1950s. The removal of this noncontributing element would not cause the partial removal of, physical destruction of, or damage to this historic property nor would it result in any adverse visual effects to the historic district under 36 CFR 800.5(a)(2)(i) and (ii).

The horseshoe connector would not be visible when looking from the historic district because it would be shielded by the new retaining wall. While the new wall would alter views of the historic district somewhat, it would not do so in an adverse manner as the view looking toward south, east, and west would be similar having already been altered by the construction of modern buildings and structures and contemporary infrastructure, including I-880. Therefore, these project elements would not cause any adverse visual effects to the historic district.

Furthermore, there are no predicted construction vibration impacts, and the implementation of avoidance measures would result in no damage on the 7th Street/Harrison Square Residential District for vibration impacts (Table 2-27).

Table 2-27. Cultural Resource Impact Findings

Resource	Finding
George A. Posey Tube (including Oakland and Alameda portals and approaches)	Adverse Effect
Oakland Waterfront Warehouse District	Adverse Effect
American Bag Company/Union Hide Company Building	No Adverse Effect
7th Street/Harrison Square Residential District	No Adverse Effect

Caltrans has determined that the proposed project as a whole will have an Adverse Effect on historic properties (Table 2-27). The SHPO issued a concurrence letter on the ineligibility of the seven previously unevaluated built-environment resources within the APE on June 8, 2020. The SHPO's concurrence on the proposed project's Adverse Effect finding will be requested following the identification of the preferred alternative. SHPO consultation and concurrence are detailed in Chapter 4, Section 2.2.

If cultural materials are discovered during construction, all earth-moving activities within and around the immediate discovery area will be diverted until the resident engineer or the designated representative contacts the Caltrans Professionally Qualified Archaeologist to assess the nature and significance of the find.

If Caltrans Professionally Qualified Staff determines that cultural materials include human remains, State Health and Safety Code Section 7050.5 states that "further disturbances and activities shall stop in any area or nearby area suspected to overlie remains," Caltrans' Cultural Resources Studies Office will contact the Alameda County Coroner. Pursuant to CA PRC Section 5097.98, if the remains are thought by the coroner to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent. The Caltrans District 4 Cultural Resources Studies Office will work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 be followed as applicable.

PROJECT FEATURES

The following project features would be implemented as part of the Build Alternative:

PF-CUL-1 Cultural Resource Discovery	If cultural materials are discovered during construction, all ground disturbing activity within a 60-foot radius of the discovery will be diverted until a Caltrans Professionally Qualified Archaeologist is contacted to assess the nature and significance of the find.
PF-CUL-2 Human Remains	If Caltrans Professionally Qualified Staff determines that cultural materials contain human remains, State Health and Safety Code Section 7050.5 states that further disturbances and activities should stop in any area or nearby area suspected to overlie remains. Caltrans' Cultural Resources Studies Office will contact the Alameda County Coroner. Pursuant to CA PRC Section 5097.98, if the coroner believes the remains are Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent. The Caltrans, District 4, Cultural Resources Studies Office will work with the Most Likely Descendent on the respectful treatment and

disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.10.4. Avoidance, Minimization, and/or Mitigation Measures

To avoid and minimize potential adverse effects to cultural resources, the proposed project will implement AMM-CUL-1 (WEAT and Sensitivity Training).

AMM-CUL-1 WEAT and Sensitivity Training

- Before commencing construction, a qualified Caltrans-approved archaeologist will conduct a WEAT program for all on-site construction personnel. No construction worker will be involved in field operations without having participated in the WEAT program, which will include at a minimum:
- Review of archaeology, history, prehistory, and Native American cultures associated with historical resources in the project vicinity.
- Review of applicable local, state, and federal ordinances, laws, and regulations pertaining to historic preservation and Native American resources.
- Discussion of procedures to be followed if unanticipated cultural resources or human remains are discovered during construction.
- Discussion of disciplinary and other actions that could be taken against persons violating applicable laws and Caltrans policies.
- All construction crew members and contractors who attend the WEAT program will sign a form indicating that they attended the training and understand the information. Follow-up training will be conducted, as needed, with at least one annual refresher. New workers and construction staff will participate in the WEAT program prior to beginning work on-site. A record of all trained personnel will be kept on-site with the resident engineer and will be available for review upon request.

The following measure will be implemented to minimize or mitigate potential adverse effects to cultural resources.

MM-CUL-1 Section 106 Consultation

Caltrans will continue consultation with stakeholders to develop mitigation measures, pursuant to Stipulation XI of the 2014 Section 106 PA and 36 CFR Part 800.6. The mitigation measures will be included in an MOA, which will be executed in consultation with the SHPO.

Section 3.0. Physical Environment

3.1. HYDROLOGY AND FLOODPLAIN

3.1.1. Regulatory Setting

EO 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the proposed project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a 1% chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

3.1.2. Affected Environment

HYDROLOGY

A *Location Hydraulic Study Report* (LHS June 2020), *Water Quality Assessment Report* (WQAR April 2020) and a *Sea-level Rise Memorandum* (SLR Memo May 2020) were prepared for the proposed project.

The Alameda County Flood Control and Water Conservation District identifies the project footprint as within the Oakland Estuary and North Alameda watersheds. The Oakland Estuary watershed drains the Oakland portion of the project study area. The North Alameda watershed drains the Alameda portion of the project study area.

Runoff within the City of Oakland project footprint primarily collects along the roadway shoulders, is conveyed into underground storm drainage systems, and flows towards the Oakland Estuary and Lake Merritt Channel. The Lake Merritt Channel connects Lake Merritt to the Oakland Estuary. The existing I-880 bridge over Lake Merritt Channel (the 5th Avenue Overhead Bridge) is identified as Bridge Number 33 0127 and is located at PM 30.37 to 30.86. A pump station and tide gate regulate the tidal exchanges between Lake Merritt Channel and the Oakland Estuary. During the summer, water levels within Lake Merritt Channel are kept high for recreational activities. In the winter, the water levels are kept low to accommodate the influx of water from storm flows. The tide gate and pump station that regulate these water levels are located upstream (north) of the project footprint at East 8th Street over Lake Merritt Channel.

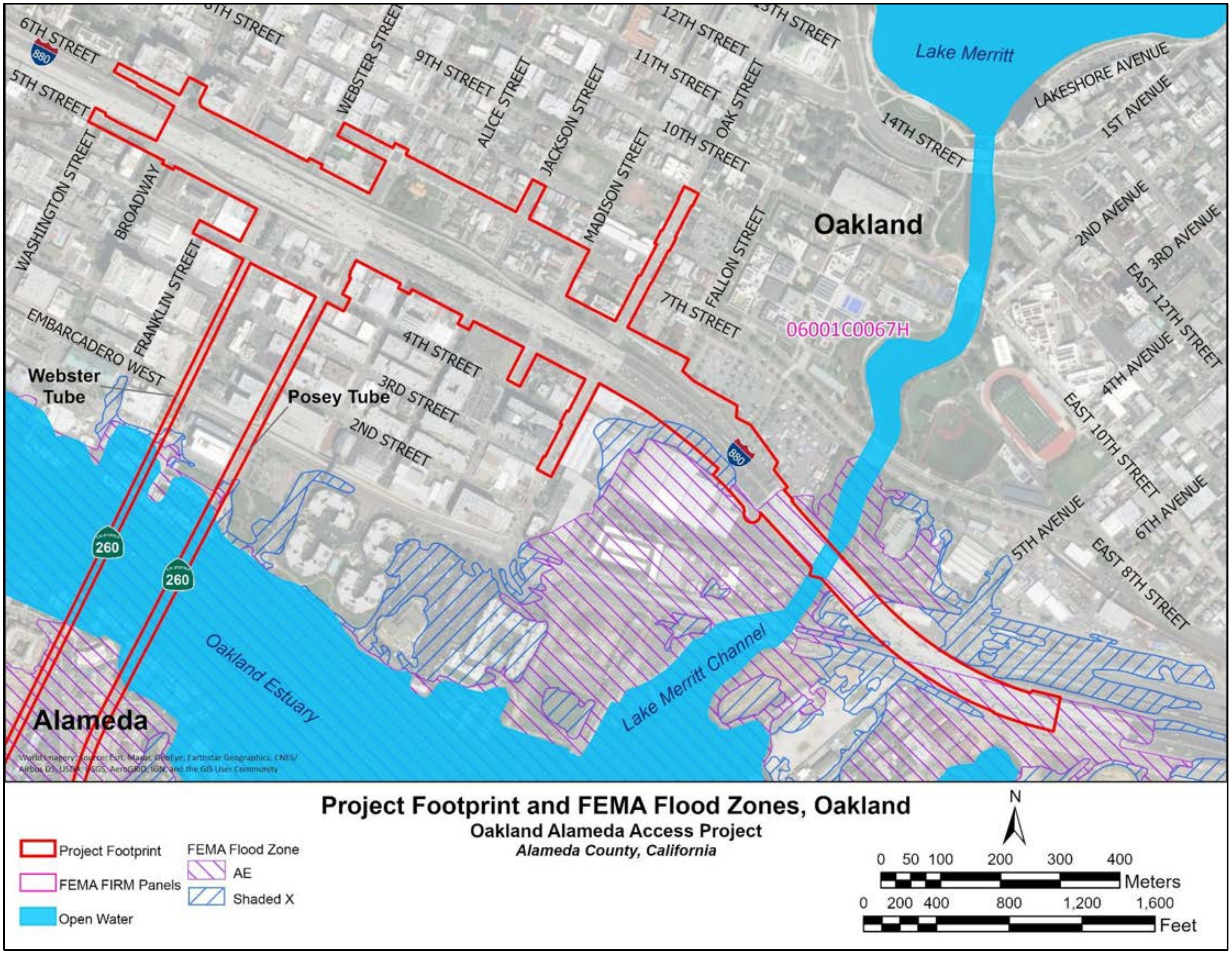
The Webster Tube (Bridge Number 33-106L) and Posey Tube (Bridge Number 33-106R) connect Oakland and Alameda underneath the Oakland Estuary. Runoff within the portion of the proposed project in the City of Alameda collects along the roadway shoulders, is conveyed into underground storm drainage systems, and flows towards the Oakland Estuary.

FLOODPLAINS

The Federal Emergency Management Agency (FEMA) is the nationwide administrator of the National Flood Insurance Program, which was established to protect lives, property, and reduce the financial burden of providing disaster assistance. In California, the National Flood Insurance Program is administered by the Department of Water Resources' Division of Flood Management. Local communities have an agreement with both the state and federal governments to regulate floodplain development according to criteria and standards outlined in the National Flood Insurance Program.

Natural and beneficial floodplain values for the project study area include, but are not limited to fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge. Coastal floodplains, in particular, provide wildlife habitat for fish, waterfowl, and shorebirds.

The project footprint is located within the Flood Insurance Rate Map (FIRM) Number 06001C0067H, as shown in Figure 2-34 and Figure 2-35. The Special Flood Hazard Areas extending through the portions of the project footprint in both the City of Oakland and the City of Alameda are classified as Zone AE and shaded Zone X. Zone AE floodplain is an area inundated by the 1% annual chance flood event (a 100-year flood or base flood event). The FIRM defines the shaded Zone X region as an area with 0.2% annual chance flood risk (a 500-year flood event), where the 1% annual chance flood has an average depth less than 1 foot, or with drainage areas of less than 1 square mile. The Zone AE and shaded Zone X flood hazard areas intersect with the project footprint near the Lake Merritt Channel in the City of Oakland. In the City of Alameda, the flood hazard areas intersect with roadway and bicycle/pedestrian facilities, including the entrance and exit of the Tubes. According to the FIRM, the stillwater elevation (the flood elevation without wave effects) of the Zone AE floodplain (the base flood elevation or BFE) for the project footprint both in the City of Oakland and the City of Alameda has an elevation of approximately 10 feet North American Vertical Datum of 1988 (NAVD 88).



Source: HNTB (2020)

Figure 2-34. Project Footprint and FEMA Flood Zones in Oakland

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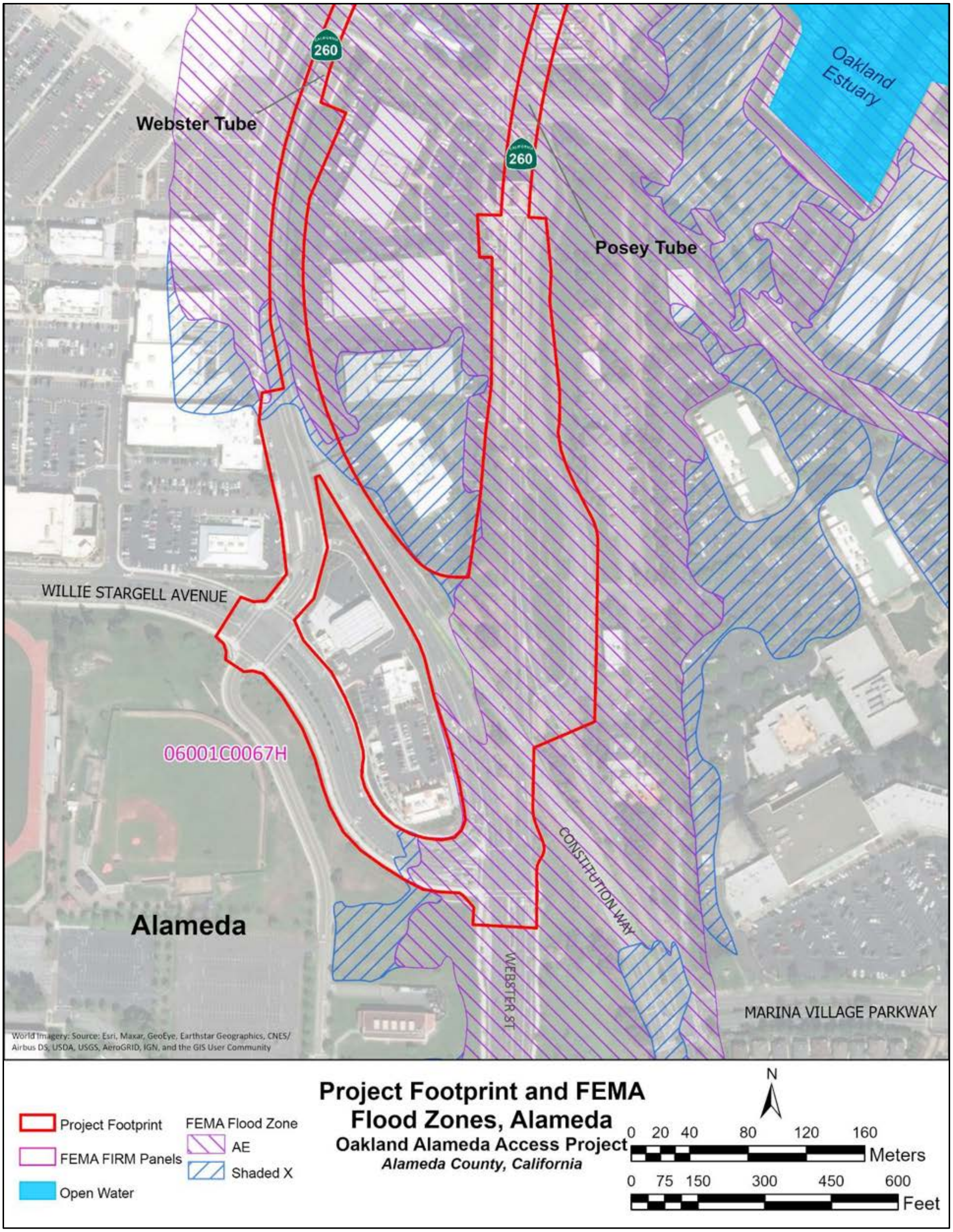


Source: HNTB (2020)

Figure 2-35. Project Footprint and FEMA Flood Zones in Alameda

3.1.3. Environmental Consequences

PERMANENT IMPACTS

No-Build Alternative

The No-Build Alternative would not result in any change in the project footprint's land use, its impervious surface area, or result in any floodplain encroachment.

Build Alternative

The Build Alternative would not result in changes to land use in or around the project footprint. The predominant land use within the project study area is commercial and residential with some institutional and governmental facilities. A partial acquisition of a sliver of parking lot from Laney College is necessary for the proposed project's completion; however, no businesses or residences would be displaced.

As described in the 2020 *Location Hydraulic Study*, proposed improvements in the City of Oakland's ROW would add approximately 0.03 acres of net new impervious surface to the watershed. The proposed improvements in the City of Alameda's ROW would add approximately 0.09 acre of net new impervious surface. In addition to the 0.84 acres of net new impervious surface added to Caltrans' ROW and 0.04 acres removed from Laney College, the total net new impervious surface within the project footprint would be approximately 0.92 acres. This would be approximately 0.0006% of the total watershed (245 square miles). Overall, the Build Alternative would have an insignificant effect on land use and impervious surface area within the watershed.

Work within the City of Oakland's project footprint, in the vicinity of the flood hazard areas, is limited to roadway striping on and east of the 5th Avenue overhead bridge, above the BFE. The minimum elevation of I-880 within the footprint and east of Oak Street is 15.4 feet NAVD 88 and is therefore, above the BFE. Most of the project footprint in the City of Oakland is outside of the 100-year floodplain. Within the City of Oakland, the Build Alternative would not place fill within the 100-year floodplain. The proposed project would not affect the 100-year floodplain or BFE in Oakland.

Work within the project footprint in the City of Alameda, in the flood hazard areas, includes the construction of bicycle and pedestrian facilities, roadway striping, and sign installation, as shown in Figure 2-35. These proposed project elements would be constructed at approximately the existing grade, and any required fill would be minimal. The ground elevation of these elements is lower than the BFE of 10 feet NAVD 88. The facilities within the 100-year floodplain would have a negligible effect on the floodplain storage volume because of the minimal amount of fill required to construct facilities near existing grade. A slight loss of the floodplain storage volume would not significantly impact the existing BFE in the vicinity of the proposed project because the fill volume is insignificant in relation to the total floodplain storage volume.

Risk is defined by FHWA as the consequences associated with the probability of flooding attributable to an encroachment. This includes the potential for property loss and hazard of life.

FHWA defines a significant encroachment as a highway encroachment, and any direct support of likely development within the 100-year floodplain, that would involve one or more of the following construction or flood-related impacts:

1. Significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route;
2. A significant risk (to life or property); or
3. A significant adverse impact on the natural and beneficial floodplain values.

Implementation of the Build Alternative would not result in a significant floodplain encroachment. The proposed project is not expected to cause any additional traffic interruptions during the base (100-year) flood. Proposed work in the City of Oakland within the FEMA 100-year floodplain is limited to traffic striping on structures above the flood elevation. The proposed project elements in the City of Alameda are currently not anticipated to modify the local roadway elevations within the FEMA 100-year floodplain. Therefore, the proposed project would not result in additional traffic interruptions during a 100-year flood. The Build Alternative would not significantly modify the extent and elevation of the 100-year floodplain in or near the proposed project. As this proposed project is not considered a significant encroachment, alternatives were not analyzed. The risk associated with the implementation of the proposed project is low.

As defined by FHWA, the support of incompatible base floodplain development is where a project encourages, allows, serves, or otherwise facilitates development that is incompatible with the floodplain, such as commercial development or urban growth. The Build Alternative would improve portions of existing transportation facilities. The proposed improvements are designed to improve the local traffic pattern and would not create new access routes to developed or undeveloped land in the 100-year floodplain. The proposed project would not encourage or facilitate development of new types of facilities within the floodplain.

As defined by FHWA, a longitudinal encroachment is an encroachment that is parallel to the direction of flow. For example, a highway that runs along the edge of a river is considered a longitudinal encroachment. The flow direction of the tidal floodplain within the project footprint is not parallel to the direction of the proposed improvements. Therefore, the proposed project would not be considered to be a longitudinal encroachment.

The proposed project does not propose any structures with the potential to block flows within the base floodplain. However, the proposed project is required to prevent flooding from runoff from the design flood, as defined by the *Highway Design Manual* (Caltrans 2020). To accomplish this, proposed drainage systems would be designed to capture and convey runoff from the design storm in the project footprint.

The water level of the San Francisco Bay has the potential to increase in elevation because of future SLR. By 2040, SLR has the potential to impact a significant portion of the project footprint. Project effects on SLR are evaluated in Chapter 3, Section 3.5. Adaptation.

Although the Build Alternative would construct proposed project elements in areas susceptible to SLR, it would not exacerbate existing conditions. The same areas of the project footprint would be subject to SLR in the Build and No-Build Alternatives. The Build Alternative would make improvements to existing, publicly accessible transportation facilities and would not result in any new risks to the public in terms of exposure to SLR. Adaptation measures for SLR are addressed in Chapter 3, Section 3.0. Climate Change.

No coordination with local, state, and federal water resources and floodplain management agencies is anticipated because the proposed project is expected to have a minimal impact on existing floodplains; the Build Alternative does not significantly or longitudinally encroach on a floodplain, does not require changes in FEMA FIRM maps, and there are no existing flood control channels within the project footprint.

CONSTRUCTION IMPACTS

No-Build Alternative

No construction is associated with the No-Build Alternative; therefore, no construction impacts would occur.

Build Alternative

During construction of the Build Alternative, the natural and beneficial uses of floodplains could be affected through changes in water quality from stormwater runoff. Impacts to hydrology and floodplains would be minimized with implementation of the project features described in Section 3.2. Water Quality and Stormwater Runoff (PF-WQ-5 through PF-WQ-9) and Section 4.2. Wetlands and Other Waters (PF-WW-1 and PF-WW-2).

PROJECT FEATURES

Project features described in Section 3.2. Water Quality and Stormwater Runoff (PF-WQ-1 through PF-WQ-9) and Section 4.2. Wetlands and Other Waters (PF-WW-1 and PF-WW-2) would reduce potential project impacts to floodplains.

3.1.4. Avoidance, Minimization, and/or Mitigation Measures

The avoidance and minimization and mitigation measures to restore and preserve the natural and beneficial floodplain values are included in Section 3.2. Water Quality and Stormwater Runoff (AMM-WQ-1) and Section 4.2. Wetlands and Other Waters (AMM-WW-1).

The proposed project would not result in significant or adverse effects to floodplains; therefore, no floodplain mitigation measures are proposed.

Incorporating SLR adaptation measures would be infeasible based on the evaluation of the benefits of the considered SLR adaptation measures against their potential impacts on the proposed project, and the associated additional estimated costs (see the May 2020 SLR Memo for cost breakdowns and other analysis details).

3.2. WATER QUALITY AND STORMWATER RUNOFF

3.2.1. Regulatory Setting

FEDERAL REQUIREMENTS: CLEAN WATER ACT

In 1972, Congress amended the Federal Water Pollution Control Act making the addition of pollutants to the waters of the U.S. from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request.
- Section 402 established the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administering this permitting program in California. Section 402(p) requires permits for stormwater discharges from industrial/construction and municipal separate storm sewer systems (MS4).
- Section 404 established a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the United States Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters."

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with the United States Environmental Protection Agency's (U.S. EPA) Section 404 (b)(1) Guidelines (40 CFR Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[2] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

STATE REQUIREMENTS: PORTER-COLOGNE WATER QUALITY CONTROL ACT

California’s Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the State include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of “waste” as defined, and this definition is broader than the CWA definition of “pollutant.” Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDR) and may be required even when the discharge is already permitted or exempt under the CWA.

The SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project study area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDL). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

[2] The U.S. EPA defines “effluent” as “wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.”

STATE WATER RESOURCES CONTROL BOARD AND REGIONAL WATER QUALITY CONTROL BOARDS

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PROGRAM

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater discharges, including MS4s. An MS4 is defined as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over stormwater, that is designed or used for collecting or conveying stormwater.” The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans’ MS4 permit covers all Caltrans ROW, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

Caltrans MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012 and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) and Order No. 2017-0026-EXEC (effective November 27, 2017) has four basic requirements:

1. Caltrans must comply with the requirements of the CGP (see the Construction General Permit section);
2. Caltrans must implement a year-round program in all parts of the state to effectively control stormwater and non-stormwater discharges; and
3. Caltrans stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.
4. Caltrans must comply with the trash reduction requirement per CT Statewide Stormwater NPDES permit – Attachment V – Specific Region Requirement: San Francisco Bay Area.

To comply with the permit, Caltrans developed the statewide Stormwater Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing stormwater management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in stormwater and non-stormwater discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

Construction General Permit

CGP, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates stormwater discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this CGP if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Stormwater Pollution Prevention Plans (SWPPP); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the CGP.

The CGP separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' SWMP and Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than one acre.

SECTION 401 PERMITTING

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permit triggering 401 Certification is a CWA Section 404 permit issued by the USACE. The 401 permit certificate is obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

REGIONAL AND LOCAL REQUIREMENTS

RWQCB Basin Plan

The proposed project is within jurisdiction of the San Francisco Bay RWQCB, Region 2. *The San Francisco Bay Basin Water Quality Control Plan* (Basin Plan 2015) states the goals and policies, beneficial uses, and water quality objectives that apply to water bodies throughout the San Francisco Bay region, which applies to the proposed project. The Basin Plan has been adopted by the SWRCB, U.S. EPA, and Office of Administrative Law.

<u>MS4</u>

The proposed project would include work along 4th, 5th, 6th, 7th, Oak, Madison, Jackson, Alice, Harrison, Broadway, and Webster streets in the City of Oakland, and they are covered under the 2015 San Francisco Bay Region Municipal Regional Permit (MRP) (NPDES Permit No. CAS612008, Order No. R2-2015-0049). Work along Mariner Square Loop and Mariner Square Drive are within the City of Alameda, which is also covered by this MRP. Work within Public Special District-Laney College is within Alameda County and is covered by the MRP. The Alameda County Clean Water Program developed the *C.3 Stormwater Technical Guidance* (2016) manual to summarize the requirements of the MRP, and to provide guidance for low-impact development design strategies and specific BMP selection criteria. This manual provides technical guidance for project designs that require implementation of permanent stormwater BMPs throughout Alameda County. Placement of stormwater BMPs would comply with the guidance document.

3.2.2. Affected Environment

A WQAR (April 2020) and the *Preliminary Geotechnical Report* (PGR March 2020) were prepared for the proposed project.

REGIONAL AND LOCAL HYDROLOGY

The project study area is entirely within an undefined hydrologic sub-area (#204.20) of the East Bay Cities Hydrologic Area and South Bay Hydrologic Unit.

The Caltrans Water Quality Planning Tool identified the project footprint as within the watersheds of the San Lorenzo Creek-Frontal San Francisco Bay Estuaries and the San Francisco Bay. The San Lorenzo Creek-Frontal San Francisco Bay Estuaries watershed drains the Oakland portion of the project study area. The San Francisco Bay watershed drains the Alameda portion of the project study area.

The Oakland Estuary separates the cities of Oakland and Alameda. The Tubes underneath the Oakland Estuary connect the Oakland and Alameda portions of the proposed project. Lake Merritt Channel crosses underneath I-880 at ALA 880 PM 30.77 at the east end of the Oakland portion of the proposed project. Lake Merritt Channel is a narrow, free-flowing waterway that connects Lake Merritt with the Oakland Estuary and the San Francisco Bay. Lake Merritt is located approximately 0.2 miles northwest of the proposed project. Runoff from the proposed project would flow into the local drainage system, which eventually discharges into the Lake Merritt Channel and the Oakland Estuary within the Oakland project footprint and Oakland Estuary within the Alameda project footprint.

MUNICIPAL SUPPLY

According to the 2020-2021 Caltrans District 4 Work Plan, none of the local water features — Lake Merritt Channel or Oakland Estuary — are considered to be drinking reservoirs or recharge facilities. None of the potential receiving waters (Oakland Estuary or Lake Merritt Channel) have been identified as having beneficial uses for municipal or domestic water supply.

GROUNDWATER HYDROLOGY

The proposed project lies within the East Bay Plain sub-basin of the Santa Clara Valley-East Bay Plain groundwater basin (Basin No. 2-9.04). The existing beneficial uses of this subbasin include municipal and domestic, industrial process and service, and agricultural water supplies. Available data indicate groundwater in Oakland would be encountered approximately 4 to 26 feet below ground surface (bgs). On the Alameda side of the proposed project, groundwater levels range from 3 to 7 feet bgs. The average groundwater elevation based on the PGR is 10 feet (NAVD 88).

EXISTING WATER QUALITY

Per the WQAR, the Oakland Estuary (part of the Central San Francisco Bay) is listed on the CWA 303(d) list as impaired for the following pollutants: chlordane, dichlorodiphenyltrichlorethane (DDT), dieldrin, dioxin compounds, furan compounds, invasive species, mercury, polychlorobiphenyls (PCBs), dioxin-like PCBs, selenium, and trash. Lake Merritt Channel is not classified as an impaired water body on the 303(d) list.

3.2.3. Environmental Consequences

PERMANENT IMPACTS

No-Build Alternative

There would be no construction under the No-Build Alternative; therefore, no permanent water quality impacts would occur.

Build Alternative

Within the project footprint, existing drainage facilities would be modified (or removed) and new drainage features would be installed to convey runoff from proposed project elements. Drainage facilities for the Build Alternative would connect to the existing outfalls to the Oakland Estuary and Lake Merritt Channel. The Build Alternative would not alter the greater existing drainage pattern of the watersheds in which it is located.

Permanent impacts to water quality have the potential to occur due to the added impervious area, which would prevent runoff from naturally dispersing and infiltrating into the ground, resulting in increased concentrated flow. However, the increase in runoff from elements of the Build Alternative would be minimal due to the small size of the added impervious areas compared to the extent of existing impervious surfaces within the project footprint (Table 2-28). Additionally, impacts from runoff would be minimized through the implementation of permanent stormwater measures.

Table 2-28. Build Alternative Disturbed Soil Areas and Impervious Areas/Surfaces

Proposed Project ROW	Disturbed Soil Area (acres)	Added Impervious Area (acres)	Removed Impervious Area (acres)	Replaced Impervious Surface (acres)	New Impervious Surface (acres)	Net New Impervious surface (acres)
Caltrans	2.96	0.86	0.02	2.09	2.93	0.84
City of Oakland	2.93	0.04	0.01	2.89	2.92	0.03
City of Alameda	0.21	0.09	0.00	0.13	0.22	0.09
Public Special District-Laney College	0.04	0.00	0.04	0.00	-0.04	-0.04
Total	**6.14**	**0.99**	**0.07**	**5.11**	**6.03**	**0.92**

Hydromodification is the alteration of the natural flow of water through a landscape. Alterations can result from changes in land use or cover. Although the Build Alternative would add impervious area compared to the existing condition, hydromodification impacts are anticipated to be minimal. This is due to the proposed project's location within an area that is tidally influenced. No work is proposed to occur within wetlands, Lake Merritt Channel, or Oakland Estuary, so a 401 water quality permit from the San Francisco Bay RWQCB is not required. The proposed project is grandfathered under the 1999 Caltrans NPDES Permit (Order No. 99-06-DWQ), so it is exempt from hydromodification management. Work within the cities' ROW is also exempt from hydromodification under the Alameda County Clean Water Program's 2017 *C.3 Stormwater Technical Guidance* because runoff would flow either into a tidally influenced water or enclosed pipes or culverts.

Heavy metals, oil and grease, and exhaust emissions are the primary pollutants associated with transportation corridors. Generally, stormwater runoff from roadways has the following pollutants: total suspended solids, nitrate nitrogen, total nitrogen, phosphorus, ortho-phosphate, copper, lead, and zinc. These pollutants are dispersed from combusting fossil fuels and the wearing of brake pads and tires. The proposed project would result in a minor decrease in VMT by shifting some traffic from local streets to highways. Therefore, project operation would not result in an increase in the production of pollutants associated with transportation corridors.

This proposed project is exempt from stormwater treatment requirements within Caltrans ROW under the 1999 Caltrans NPDES Permit because the total net new impervious is less than one acre (Table 2-28). Within City of Oakland and City of Alameda ROW, the proposed project would comply with the MRP. The proposed project is not required to implement permanent stormwater treatment measures within these cities under the MRP because the proposed project roadway widening does not include the addition of one or more travel lanes. However, as a best practice to minimize potential stormwater impacts, the proposed project would consider the potential for providing stormwater treatment to the maximum extent practicable (MEP). Treatment devices would be considered by Caltrans under the Build Alternative to address water pollution during project operation. Permanent stormwater treatment areas would be confirmed to meet the MEP as part of the proposed project's final design. The proposed project would be designed to minimize erosion and runoff that could contain pollutants during project operation. Design and treatment BMPs would be refined as design progresses and are a condition of the Caltrans MS4 Permit, MRP, CGP, and other regulatory agency requirements. Details for these BMPs would be developed and incorporated into the proposed project design and operations prior to project startup. With proper implementation of these design features, short-term construction-related water quality impacts and permanent water quality impacts would be avoided or minimized.

Permanent erosion control measures would be installed on all exposed areas once grading, or soil disturbance work is completed to achieve final stabilization. Other erosion control measures under consideration include hard-surface erosion control measures (rock slope protection, energy dissipation devices at culvert outlets, and vegetation-control lining), velocity dissipation devices, and flared-end sections or headwalls at culvert inlets and outlets. The Build Alternative would promote sheet flow and flow over vegetated surfaces, and minimize and prevent concentrated flows, channelizing, gullying, or scouring of slopes.

The proposed project is within an area along I-880 that generates a moderate density of trash. To comply with the trash TMDL listed for Central San Francisco Bay and the Caltrans NPDES permit, the proposed project would evaluate placement of trash capture inserts at inlets for trash removal or reduction (AMM-WQ-1). This AMM would minimize potential water quality impacts to receiving waters.

There are two existing altered Austin Vault Sand Filters (AVSF) and one existing biofiltration swale in the vicinity of the proposed project. The two AVSF sites are located along the I-880 at ALA PM 30.52 (east of 5th Street) and ALA PM 30.41 (east of Brooklyn Basin Way). The biofiltration swale is located on the southeast side of I-880 at ALA PM 30.092 (east of 9th Street). Work near the AVSFs and biofiltration swale would be limited to restriping. As specified in AMM-WW-1 (Section 4.2 Wetlands and Other Waters), a silt fence, an environmentally sensitive area (ESA) fence, and other construction site BMPs will be used to delineate all existing permanent treatment BMPs prior to and during all construction phases, and all fencing will be shown on the engineering plans. Therefore, impacts to all existing BMPs will be avoided.

There are no natural water supply sources identified within the project footprint, so no permanent impacts are anticipated. Any human made water supplies (e.g., potable or non-potable water lines) would be protected in place or relocated in accordance with the project plans and specifications developed during the design phase.

CONSTRUCTION IMPACTS

<u>No-Build Alternative</u>

There would be no construction with the No-Build Alternative; therefore, no construction impacts would occur.

<u>Build Alternative</u>

Temporary water quality impacts can result from sediment discharge from DSAs and construction near water resources or drainage facilities. Estimates for DSAs are listed in Table 2-28. These DSA values would be refined during the design phase once the limits of grading and proposed improvements, construction staging, construction access, and final roadway geometry have been developed.

Proposed grading and excavation activities would have the potential to increase erosion, resulting in elevated turbidity of stormwater runoff. The proposed project would disturb an estimated 6.2 acres of soil during construction. Sediment-laden runoff could enter storm drainage facilities that discharge into receiving waters. Additional sources of sediment include stockpiles, construction staging areas, and construction equipment that is not properly maintained or cleaned. This could potentially impact the beneficial uses of the Oakland Estuary and the Lake Merritt Channel.

This proposed project was rated as Risk Level 1 due to the low risk of sediment being produced and the receiving water bodies having a low risk of being impacted by sediment. In addition to the implementation of standard construction site BMPs, the contractor would be required to perform quarterly non-stormwater inspections, weekly visual inspections, and rain-event visual inspections for pre-storm, daily during a storm event, and post-storm.

Impacts from sediment-laden stormwater would be minimized through proper implementation of erosion control, soil stabilization, and sediment and tracking control BMPs. Temporary staging areas would be returned to preconstruction conditions.

If fueling or maintenance of construction vehicles occurs within the project footprint during construction, there is a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release of these materials may pose a threat to water quality if contaminants enter storm drains, open channels, or receiving water bodies. The magnitude of the impact from an accidental release depends on the amount and type of material spilled. A spill prevention and control plan would be implemented during construction to avoid and minimize any potential spill impacts.

This proposed project would need to undergo dewatering due to the foundation and pile depth of retaining walls and foundations. Dewatering procedures would follow the *Field Guide to Construction Site Dewatering (June 2014)*. If the proposed project's location contains potentially contaminated groundwater or groundwater that may release contaminated plumes when disturbed, a dewatering permit would be obtained prior to the start of construction. The potential for groundwater contamination is addressed under Section 3.5. Hazardous Waste/Materials.

Minimal impacts are anticipated to human use of the aquatic environment during construction. Access to the Lake Merritt Channel and the Oakland Estuary and their recreational uses would be maintained during construction, although temporary lane or road closures may alter routes and travel times. Temporary travel delays during construction would be minimized by a TMP, discussed in Traffic and Transportation (Section 2.8).

Information on agency consultation and coordination, including SWRCB and RWQCB, can be found in Chapter 4. Consultation and Coordination. A Section 401 Water Quality Certification, Section 404 permit, and Section 1602 permit are not required for this proposed project.

PROJECT FEATURES

The following project features would be implemented as part of the Build Alternative:

Permanent Design Pollution Prevention Project Features

Permanent design pollution prevention project features include drainage, erosion control, and maintenance measures to ensure that permanent water quality and stormwater impacts are minimized. These project features will be further considered and incorporated as appropriate during the design phase.

PF-WQ-1 Stormwater Design Features	The design features to address water quality impacts are a condition of the Caltrans MS4 Permit, MRP, CGP, and other regulatory agency requirements. Details for these stormwater design features or BMPs will be developed and incorporated into the project design and operations prior to project startup.
PF-WQ-2 Maintenance BMPs	Drain inlet stenciling for bicycle- and pedestrian-accessible inlets within Caltrans' ROW will be designed in accordance with Caltrans Standard Plans and Specifications.
PF-WQ-3 Permanent Erosion Control BMPs	Permanent erosion control BMPs will be implemented prior to, during, and after construction to prevent silt and sediment from entering drainage facilities and discharging to the Oakland Estuary or the Lake Merritt Channel. Permanent erosion control measures will be applied to all exposed areas once grading or soil disturbance work is completed as a permanent measure to achieve final slope stabilization. These measures may include hydraulically applying a combination of hydroseed, hydromulch, straw, tackifier, and compost to promote vegetation establishment, and installing fiber rolls to prevent sheet flow from concentrating and causing gullies.
PF-WQ-4 Treatment BMPs	Treatment BMPs will be considered for use on the project based on Caltrans' approved list of treatment BMPs, which have been verified to remove targeted design constituents and provide general pollutant removal. All treatment BMPs will be installed with impermeable liners as needed to reduce the impacts of potentially contaminated groundwater.

<u>Temporary Construction Pollution Prevention Project Features</u>

PF-WQ-5 SWPPP	The CGP, Caltrans, and local standards require the project's contractor to implement a SWPPP to comply with the conditions of the CGP. The SWPPP will be submitted by the contractor and approved by Caltrans prior to the start of construction. The SWPPP will detail the measures needed to prevent temporary water quality impacts resulting from construction activities. The SWPPP will also include development of a Construction Site Monitoring Program that details procedures and methods related to the visual monitoring, sampling, and analysis plans.
PF-WQ-6 Obtain CGP Coverage	Prior to any soil disturbance, a Notice of Intent will be filed with the SWRCB's Stormwater Multiple Application and Report Tracking System (SMART). In addition to filing a Notice of Intent, all dischargers must electronically file Permit Registration Documents, Notice of Termination, changes of information, sampling and monitoring information, annual reporting, and other required compliance documents through SMART.

PF-WQ-7 Construction BMPs	Temporary construction site BMPs will be implemented during construction to prevent any construction materials or debris from entering storm drains or drainage ditches within the project's vicinity. Temporary impacts to water quality during construction will be avoided or minimized by implementing temporary construction site BMPs. Typical construction site BMPs that will be considered for this project are listed in the Construction BMPs table. The selected BMPs are consistent with the practices required under the CGP. The actual minimum temporary construction site BMPs necessary for the project to comply with the CGP, Caltrans' *Construction Site Best Management Practices Manual*, and local standards will be determined during the design phase. Protective measures will be included in the contract documents, including, at a minimum: • No discharge of pollutants from vehicles and equipment cleaning will be allowed into the storm drain or water courses. • Vehicle and equipment fueling, and maintenance operations must be at least 50 feet away from water courses and storm drain inlets. • Dust control will be implemented, including the use of water trucks and tackifiers to control dust in excavation and fill areas, applying drain rock to temporary access road entrances and exits, and covering temporary stockpiles when weather conditions require. • Work areas where temporary disturbance has removed pre-existing vegetation will be restored and reseeded with a seed mix. Native seed mixes will be used where feasible. • Graded areas will be protected from erosion using a combination of silt fences, biodegradable fiber rolls along the toe of slopes or along edges of designated staging areas, and erosion-control biodegradable netting such as jute or coir, as appropriate. Biodegradable fiber rolls will be installed along or at the base of slopes during construction to capture sediment, and temporary biodegradable hydromulching will be applied to all unfinished disturbed and graded areas. Installation of BMPs with monofilament netting is strictly prohibited. A water quality inspector will inspect the site before and after a qualifying rain event to ensure that stormwater BMPs are adequate. A rain event is defined to be any storm that produces or is forecasted to produce at least 0.5 inch of precipitation at the time of discharge with a 72-hour dry period between events.

Construction BMPs

Temporary BMP	Purpose
Soil Stabilization	
Move-in/Move-out	Mobilization locations where permanent erosion control or revegetation to sustain slopes is required within the project.
Temporary cover	Plastic covers for stockpiles.
Sediment Control	
Temporary fiber rolls	Degradable fibers rolled tightly and placed on the toe and face of slopes to intercept runoff.
Temporary silt fence	Linear, permeable fabric barriers to intercept sediment-laden sheet flow that are placed downslope of exposed soil areas, along channels, and the project's perimeter.
Temporary drainage inlet protection	Runoff detainment devices used at storm drain inlets that are subject to runoff from construction activities.
Tracking Control	
Temporary construction entrances/exits	Points of entrance/exit to a construction site that are stabilized to reduce the tracking of mud and dirt onto public roads.
Street sweeping	Removal of tracked sediment to prevent them from entering a storm drain or water body.
Non-Stormwater Management	
Dewatering operations	Dewatering activities associated with stormwater and non-stormwater to prevent the discharge of pollutants from a construction site.
Waste Management and Materials Pollution Control	
Temporary concrete washout facilities	Specified vehicle washing areas that contain concrete waste materials.
Job Site Management	
General measures	Spill prevention and control Materials management Stockpile management Waste management Hazardous waste management Contaminated soil Concrete waste Sanitary, septic, and liquid waste

Temporary BMP	Purpose
Non-stormwater management	Water control and conservation Illegal connection and discharge detection and reporting Vehicle and equipment cleaning Vehicle and equipment fueling and maintenance Paving, sealing, saw cutting, and grinding operations Thermoplastic striping and pavement markers Concrete curing and concrete finishing
Miscellaneous	Train employees and subcontractors on site BMPs.

PF-WQ-8 **Dewatering**	Dewatering activities will comply with the Caltrans Standard Specifications and *Field Guide to Construction Site Dewatering.*
PF-WQ-9 **Spill Response**	A spill will trigger immediate response actions to report, contain, and mitigate the incident. The contractor will follow the California Office of Emergency Services Hazardous Materials Incident Contingency Plan, which provides response procedures for spills involving hazardous materials. The plan designates a chain of command for notification, evacuation, response, and cleanup of spills.

3.2.4. Avoidance, Minimization, and/or Mitigation Measures

In order to comply with Provision E.6 (Region Specific Requirements) of the current Caltrans NPDES Permit as well as local trash reduction requirements, the proposed project will implement the following AMMs.

AMM-WQ-1 **Trash Inserts**	Caltrans will consider trash capture inserts for drainage inlets within the project footprint in close coordination with the cities of Oakland and Alameda during the design phase.

With the incorporation of project features and AMM-WW-1 and AMM-WQ-1, there will be no adverse effects on water quality during project construction or operation.

3.3. GEOLOGY/SOILS/SEISMIC/TOPOGRAPHY

3.3.1. Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Department's Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the *Caltrans' Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.*

3.3.2. Affected Environment

This section references findings from the PGR (March 2020), *Preliminary Foundation Report* (April 2020), LHS (June 2020), WQAR (April 2020), and *Paleontological Identification/Evaluation Report and Paleontological Mitigation Plan* (PIR/PER and PMP March 2020).

TOPOGRAPHY

The project study area (extent shown in Figure 2-36) is relatively flat, sloping towards the Oakland Estuary from Alameda and Oakland. The very flat portions of the project study area near sea level were reclaimed from historic tidal marshlands. These areas include land adjacent to the Lake Merritt Channel, the northern portion of the Alameda project study area, and the western margin of the Oakland project study area. I-880 is elevated on a combination of fill and structure as it runs east-west through the southern part of downtown Oakland. The elevation of the Oakland project study area varies from sea level (0 feet) to about 35 feet (all elevations are in the North American Vertical Datum [NAVD] 88 datum). The elevation of the Alameda project study area varies from sea level to 13 feet.

GEOLOGY/SOILS

The proposed project is located within the eastern edge of the San Francisco Bay on a gently sloping southwesterly trending alluvial plain (formed from sediment carried by rivers and streams). The alignment is situated in the flats west of the East Bay Hills, which are part of the California Coast Range Geomorphic Province.

The project footprint is underlain by artificial fill, Merritt or dune sand, alluvial deposits, and Bay/estuarine mud (see Figure 2-36). Artificial fill consists of man-made deposits of various materials and ages. Artificial fill overlies alluvial deposits. Within the project study area, alluvial deposits are comprised of intermingled pockets of clayey gravel, sandy silty clay, and sand-clay-silt mixtures. Merritt sands are beach or near-shore deposits of slightly clayey, silty sand. San Francisco Bay mud is silty, clayey, and sandy with small pockets of sand and contains shells and organic material, which in some places is abundant enough to form thin layers of peat.

Results of previously completed boring tests near the project footprint were reviewed (PGR 2020). The borings were generally consistent with Figure 2-36 and indicated the area within the project footprint is underlain by loose- to medium-dense sand/silty sand to an approximate elevation of 8 feet. The layer is followed by a dense to very dense sand layer to an approximate elevation of -22 feet. This layer is underlain by hard clay/sand clays to the maximum depths explored (about an approximate elevation of -52 feet). A boring done near Lake Merritt Channel encountered thick younger Bay mud layer between the approximate elevations of 6 feet and 50 feet.

According to the Natural Resources Conservation Service, soil types are urban land and urban land-Baywood complex, both of which do not have an erosion hazard rating. Urban land soil type consists of areas covered by impervious surfaces and urban structures with soil material consisting of heterogenous fill. Baywood complex is a well-drained mixture of sand, silt, and clay on mounds and ridges at low elevations. Based on the available boring information, highly expansive soils such as fat clays and organic clays were not identified in the project footprint. No naturally occurring asbestos was identified within the project footprint.

There are no non-seismic geologic hazards (such as induced earth movement, volcanic hazards, expansive clays, or naturally occurring asbestos) identified within the project footprint. There are no mineral resources or geologic resources such as natural landmarks or landforms within the project study area.

Surface and Groundwater

The project footprint is entirely within an undefined hydrologic sub-area (#204.20400) of the East Bay Cities Hydrologic Area, South Bay Hydrologic Unit, and San Francisco Bay Hydrologic Region (Figure 2-37). The Alameda County Flood Control and Water Conservation District identifies the project footprint as within the Oakland Estuary and North Alameda watersheds. The Oakland Estuary watershed drains the Oakland portion of the project study area and the North Alameda watershed drains the Alameda portion.

The Oakland Estuary separates the cities of Oakland and Alameda and divides the proposed project. The Tubes connect the Oakland and Alameda portions of the proposed project underneath the Oakland Estuary. The Lake Merritt Channel crosses underneath I-880 at the east end of the Oakland portion of the proposed project. Lake Merritt Channel is a narrow, free-flowing waterway that connects Lake Merritt with the Oakland Estuary and the San Francisco Bay. Lake Merritt is located 0.2 miles northwest of the project footprint. Runoff from the project study area flows off paved surfaces and into adjacent culverts and storm drains, and into the local drainage system which eventually discharges into Lake Merritt Channel and Oakland Estuary within the Oakland project footprint and Oakland Estuary within the Alameda project footprint.

The proposed project lies within the East Bay Plain subbasin of the Santa Clara Valley-East Bay Plain groundwater basin (Basin No. 2-9.04). The existing beneficial uses of this subbasin include serving as a water supply for municipal and domestic purposes, industrial processes and services, and agricultural needs. Available data indicate groundwater in Oakland is encountered approximately 4 to 26 feet below ground elevations. The Alameda side of the proposed project has groundwater levels that range from 3 to 7 feet below ground level. Based on prior test borings and historic groundwater records, groundwater is encountered at approximately elevation 10 feet (PGR 2020).

SEISMIC CONDITIONS

The proposed project is in a seismically active area. Many faults located near the proposed project improvements can produce earthquakes that may cause strong ground shaking. Table 2-29 presents the maximum recorded earthquake magnitudes of faults near the I-880 corridor.

Table 2-29. Maximum Recorded Magnitude of Earthquake Faults Located in the Project Study Area

Fault	Closest Distance from I-880 (in miles)	Maximum Recorded Magnitude of Earthquake
Hayward Fault Zone (Northern Section)	3.8	7.3
Hayward Fault Zone (Southern Section)	3.4	7.3
San Andreas Fault Zone (Peninsula Section)	15.1	8.0

LIQUEFACTION SUSCEPTIBILITY

Due to the seismically active nature of the region, liquefaction potential was evaluated for the soils in the project study area (see Figure 2-36). Soil liquefaction occurs when saturated or partially saturated soil substantially loses strength and stiffness in response to applied stress, such as shaking during an earthquake causing the soil to behave like a liquid.

In the 2020 PGR, the project study area was evaluated for liquefaction potential by using available soil information (from previous test borings) and published geological hazards mapping. The results (Figure 2-36) show that the proposed project lies within the limits of a region mapped as having medium to high liquefaction potential. All of the project footprint in Alameda has a high potential for liquefaction. In Oakland, the Tubes near the Oakland Estuary as well as area east of Oak Street have a high potential for liquefaction. The test borings indicated the project footprint has loose- to medium-density soil pockets underneath it. These soils could liquefy under strong seismic shaking.

GROUND SURFACE RUPTURE

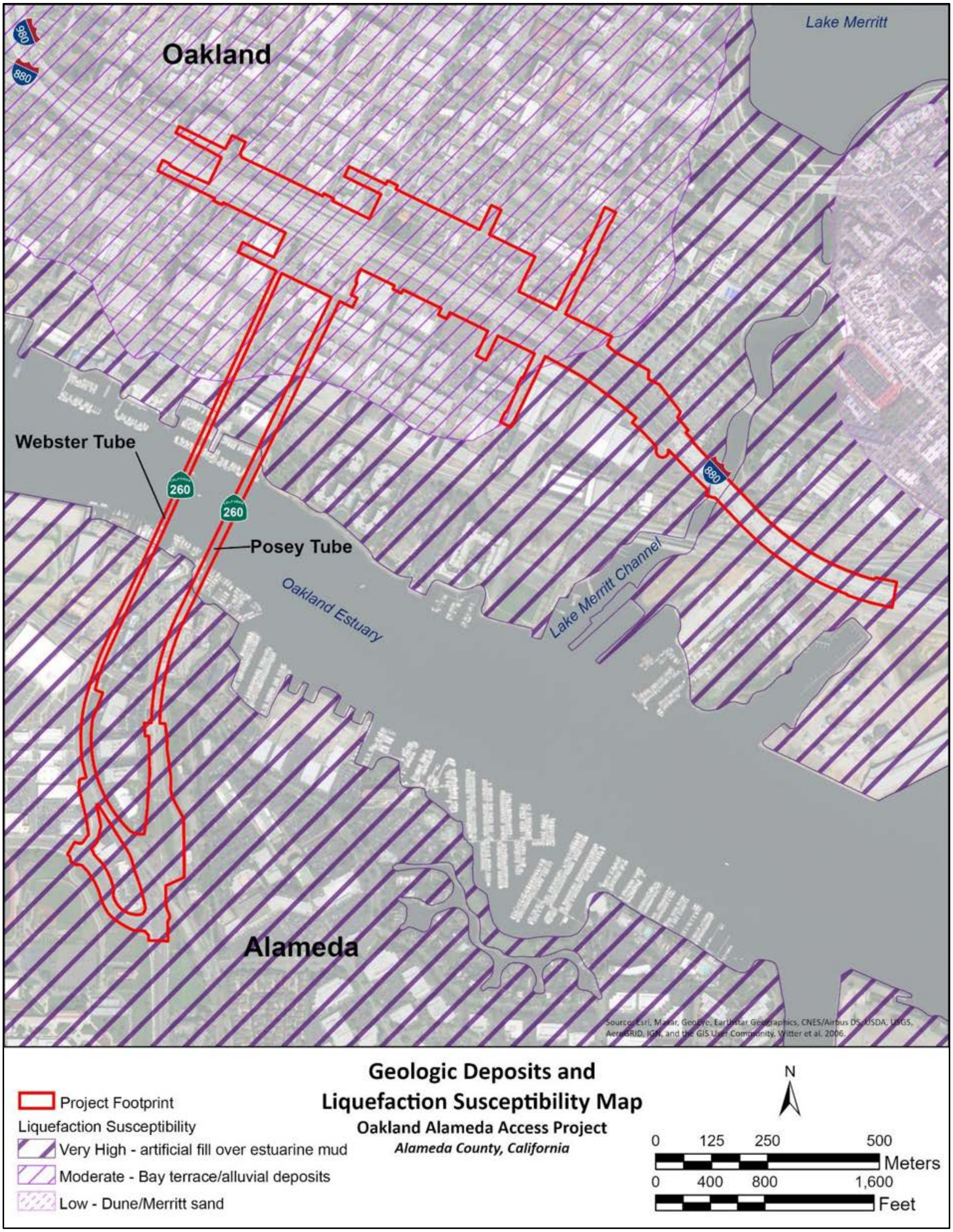
The project footprint is not within the Alquist-Priolo Special Study Zone and there are no known or mapped active faults that pass through the project footprint. The proposed project is situated approximately 3.8 miles southwest of the Hayward Fault Zone (Northern Section), which is a mapped Alquist-Priolo Earthquake Fault Zone (see Table 2-29). Surface rupture due to faulting within the project footprint is extremely unlikely, as an unknown fault would have to rupture to cause a new surface rupture.

SEISMIC GROUND SHAKING

Earthquake-induced ground shaking is a seismic hazard that can result in liquefaction, lurching and lateral spreading of soils, and soil and rock landslides, as well as the dynamic oscillation (movement back and forth) of man-made structures. Differential settlement can occur at the ground surface due to subsurface liquefaction and compaction caused by strong ground shaking. Based on available geological and seismic data, the project footprint has the potential to experience strong ground shaking during a seismic event. The project footprint has dry loose and medium density soils within the first 10 feet bgs. This layer is too thin to pose a risk to the project due to seismic settlement.

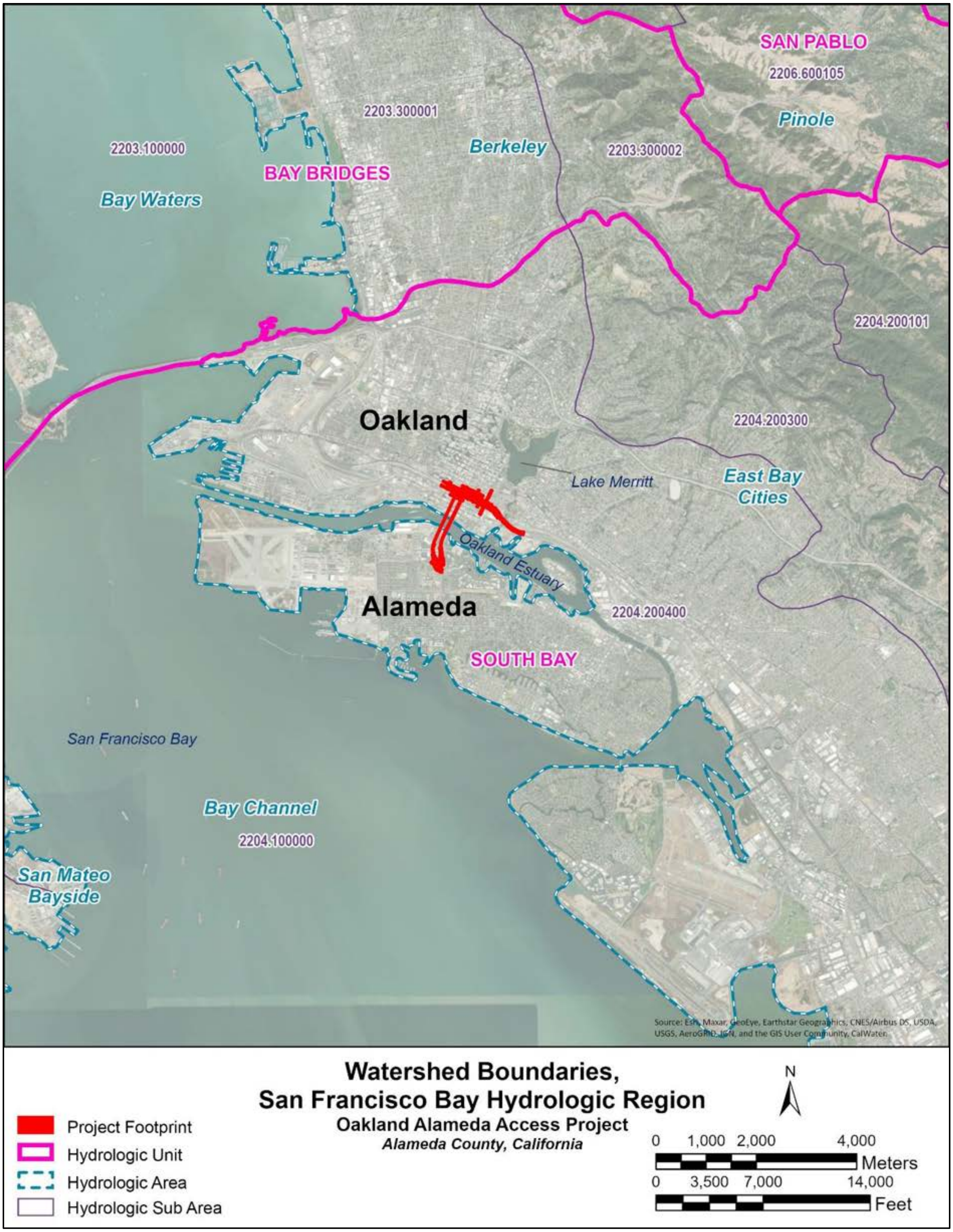
OTHER SEISMIC HAZARDS

There is no data on the local occurrence or impact of seiches, and none have been recorded in the Bay Area. Due to the shallowness of Lake Merritt, the Oakland General Plan concludes that there is not sufficient volume of water to produce sufficient waves to damage adjacent areas. The proposed project is not within the tsunami run-up zone. The project study area does not contain steep enough hill slopes to pose a risk of seismically induced landslides or rock falls.



Source: HNTB (2020)

Figure 2-36. Geologic Deposits and Liquefaction Susceptibility in the Project Study Area



Source: HNTB (2020)

Figure 2-37. Watershed Boundaries within the San Francisco Bay Hydrologic Region

3.3.3. Environmental Consequences

PERMANENT IMPACTS

<u>No-Build Alternative</u>

There would be no impacts related to geologic resources under the No-Build Alternative.

<u>Build Alternative</u>

There are no officially designated natural landmarks or other major geologic features within the project study area; therefore, grading for the Build Alternative would not have any impacts. The proposed project would not result in the loss of a known mineral resource of value to the region and the residents of the state, or in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

There could be an impact on the structural pavement design and/or shallow footing if expansive soil is encountered in the pavement subgrade or footing subgrade. However, no expansive soils types were identified in existing test borings. Additional testing during the design phase will confirm soil types and the absence of expansive soils.

Faulting and Seismicity

The site is generally level; therefore, natural slope seismic instability does not appear to be an issue within the project footprint. Surface rupture due to faulting within the project footprint is not anticipated unless an unknown fault were to rupture. Fault rupture potential is extremely unlikely, as is the risk of rock falls and landslides. The project is not within in area at risk of tsunamis or seiches. The primary seismic hazards in the project footprint are strong ground shaking and liquefication.

Seismic Ground Shaking

To address the region's seismic activity, the Build Alternative would be designed using *Caltrans Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations* (November 2012). This would ensure the structural integrity of structures and reduce hazards to the traveling public during a major earthquake in the region. The Build Alternative includes removal of the NB I-880/Broadway off-ramp structure, converting to area to a new at-grade section of 6th Street. At-grade roadways posed less risk to the public from seismic shaking than overhead structures. Seismic settlement, the compression of soil volume due to ground shaking, is not a risk for the proposed project. The proposed project would not increase the risk of exposing people or structures to potential adverse effects because of seismic activities, ground shaking, or seismic-related ground failure beyond the existing conditions.

Liquefaction

Based on the available soil information, the project footprint is underlain by potentially liquefiable soils. Based on the previous test borings, loose- to medium-dense soil pockets exist at approximately elevation 9 feet with thicknesses of approximately 2 feet. These soils may potentially liquefy under strong seismic shaking. These soils are relatively shallow and thin, and the impact of these soils liquefying is considered minor. Due to high seismicity, shallow groundwater and the presence of coarse-grained soils in the project study area, additional borings would be drilled during the following design phase to verify the liquefaction potential of the site. The Build Alternative would either place foundations below the potentially liquefiable soils or install ground improvements to provide lateral resistance for the foundation elements, if warranted by additional testing. Ground improvements could include mixing soils, vibro-compacting, and improving drainage.

CONSTRUCTION IMPACTS

No-Build Alternative

There would be no construction with the No-Build Alternative; therefore, no construction impacts would occur.

Build Alternative

No adverse effects on geology, soils, seismic, or topography are anticipated during construction. Construction of the proposed project would not expose workers or the public to any geologic hazards.

PROJECT FEATURES

Groundwater may be encountered 3-4 feet bgs but is estimated to average 10 feet in elevation. Any excavation below 10 feet in elevation is assumed to require dewatering to allow for construction. Groundwater is addressed in Section 3.1. Hydrology and Floodplain and Section 3.5. Hazardous Waste/Materials. As described in Section 3.2. Water Quality and Stormwater Runoff, erosion control PFs will be implemented during construction activities in accordance with the BMPs outlined in the SWPPP. Water quality PFs will reduce soil erosion and minimize impacts to water quality.

PF-GE-1 **Geotechnical Surveys**	Geotechnical surveys will be done during the design phase to confirm the existing geologic conditions. Project design will follow Caltrans Standard Specifications and standard engineering practices to address existing subsurface conditions.

3.3.4. Avoidance, Minimization, and/or Mitigation Measures

All project components will be designed in accordance with standard engineering practices and Caltrans standard specifications. No avoidance, minimization, and/or mitigation measures are required because no substantial adverse effects (NEPA) or significant impacts (CEQA) would occur related to geology, soils, topography, and seismicity. Site-specific subsurface soil conditions and groundwater conditions within the project footprint will be verified during the final design phase.

3.4. PALEONTOLOGY

3.4.1. Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils.

FEDERAL

A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

23 USC 1.9(a) requires that the use of Federal-aid funds must be in conformity with all federal and state laws.

23 USC 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 above and state law.

Under California law, paleontological resources are protected by CEQA.

3.4.2. Affected Environment

This section summarizes the PIR/PER and PMP (March 2020), and it discusses the geologic formations (distinctive types of rock) in the project footprint that have the potential to contain scientifically important paleontological resources.

Paleontological resources are the fossilized remains of plants and animals and associated deposits. Paleontological resources include fossils, fossil localities (areas that contain fossils), and stratigraphic units (layers of rock that contain the preserved remains or traces of fossil organisms). Paleontological resources are generally older than 5,000 years before present (BP). By convention, paleontological resources do not include human remains, artifacts (objects created by humans), or other evidence of past human activities; these are subjects of archaeology and are not considered in this section. Most fossils are the remains of now extinct organisms. However, some fossils may be of extant organisms documenting the state of that species at some point in the past. Both are considered nonrenewable resources. Therefore, fossils are valuable scientific and educational resources that are afforded protection under state and federal environmental laws.

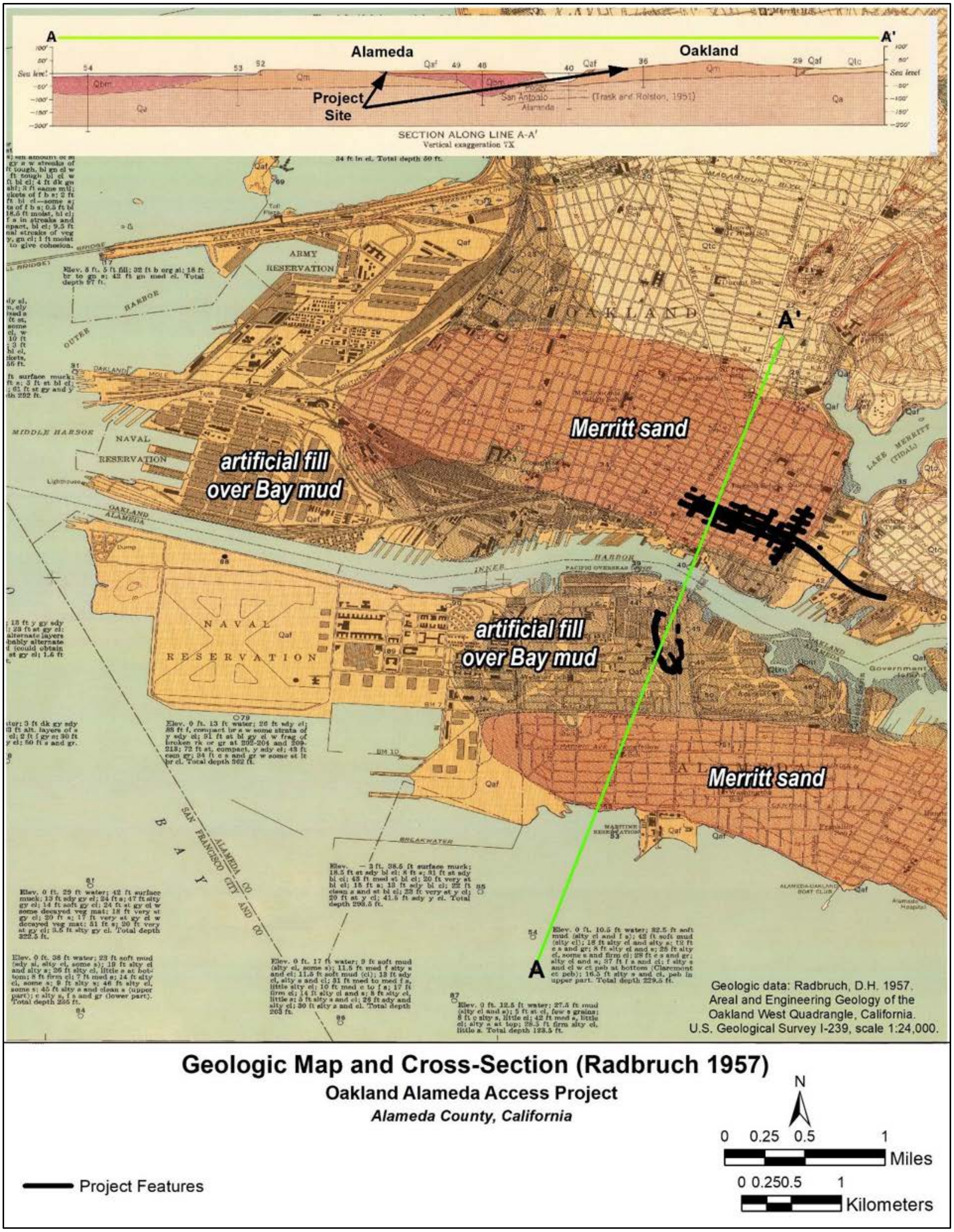
GEOLOGIC SETTING

The project footprint is underlain by the following geologic formations: Merritt sand (within the Alameda Formation), alluvial deposits, Bay mud, and artificial fill (see Figure 2-38). Only Merritt sand has the potential to contain fossils (fossiliferous).

Merritt sand (also known as the Alameda Formation, San Antonio Formation, Merritt Formation, and is similar to the Colma Formation) was produced by retreating sea levels during the Wisconsin glacial age (circa 75,000 to 10,000 years ago). Merritt sand in western Alameda County is fine-grained, well sorted, and well drained. A geologic cross-section was developed that extends from the San Francisco Bay south of Alameda island in a north-northeast direction and passes through the project footprint near the present-day location of the Webster Tube and intersects I-880 near Franklin Street. Based on this cross-section, Merritt sand has the potential to occur below existing roadway sections, foundations, and artificial fill. Therefore, the project footprint overlying Merritt sand has the potential to contain scientifically important paleontological resources (fossil remains). Caltrans boring logs from the Posey Tube Seismic Retrofit project, the original construction of the Posey Tube (Alameda County Estuary Subway project), and 5th and 6th Street Viaduct Widening project were reviewed to evaluate the depth of Merritt sand below artificial fill within the proposed project's limits. The boring logs provide soil textures encountered within the bore holes and the depths at which they were encountered, but the boring logs do not specify the geologic formations encountered. Therefore, existing boring logs do not provide enough information to estimate the depth to Merritt sand below artificial fill and Bay mud within the project footprint.

Artificial fill consists of human-made deposits of various materials and ages. Artificial fill was historically placed over Bay mud deposits along the Alameda and Oakland shorelines and over Merritt sand in the northern portion of the project footprint in Oakland. Much of this fill was placed on marshes and Bay mud located along the margin of the Bay to facilitate urban development. Artificial fill in Oakland is associated with the existing embankments along I-880, as well as land reclamation in the vicinity of the Lake Merritt Channel. Additionally, artificial fill was widely placed in Alameda for land reclamation. The thickness of artificial fill within the project footprint varies, it can be up to 50 feet thick in Alameda or relatively thin or non-existent within Oakland.

Bay muds are fine-grained estuarine (estuaries are partially enclosed water bodies with a mixture of freshwater from rivers or streams and saltwater from the ocean) and marine sediments deposited within stream valleys. Within the project study area in Oakland and Alameda, Bay mud lies under artificial fill and over Merritt sand. Young Bay mud, which marks the rise in the sea level and a return of marine and estuarine-type deposits between approximately 15,000 and 9,000 years ago. In the eastern portion of the San Francisco Bay area, such as within Oakland and Alameda, Merritt sand deposited in a marine environment grades into and intertwines with terrestrial alluvial fan deposits. Merritt sand outcrops in three large areas in Oakland and Alameda. Alluvial deposits are fan-shaped deposits of loosely arranged sediment deposited by freshwater flows from upland areas. Neither Bay mud nor alluvial deposits are known to contain fossils.



Source: Radbruch (1957)

Figure 2-38. Geologic Map and Cross-section of Paleontological Resources

PALEONTOLOGICAL RESOURCES

Paleontological and geological records searches were conducted on the University of California Museum of Paleontology online database, accessed December 28, 2015; updated in March 2018. In addition, an extensive library, literature, and map search was conducted at the University of California Berkeley Map and Earth Sciences Library on December 2, 2015, and the United States Geological Survey (USGS) on December 3, 2015; updated April 2, 2018. A paleontological survey was not conducted because the extensive urbanization of the project footprint precluded an effective survey of native soil conditions. The results of the paleontological records search for Merritt sand yielded Pleistocene-age (2.58 million to 11,700 years BP) fossils from Oak Knoll Hospital several miles southeast of the project footprint. Fossils of turtles, birds, voles, horses, frogs, newts, deer, and bony fish have been discovered at this site. Fossils in Merritt sand or similar formations have been found on the San Francisco Peninsula, in San Francisco's Potrero District, and as part of the Broadway Tunnel construction in San Francisco. Therefore, Merritt sand and similar age-equivalent sand deposits in the Bay Area have produced significant paleontological resources at numerous localities, including in the project study area.

Other geologic units within the project footprint are not likely to contain significant nonrenewable paleontological resources. Artificial fill contains no in-situ fossils, but fossils have been recorded in artificial fill in the Bay Area. The source of artificial fill often includes sediment from older fossil-bearing formations, including Merritt sand, so it is possible fossils exist in artificial fills. However, such fossils would have been transported from their original source and would be lacking information about their original source, reducing their scientific significance.

<u>Paleontological Potential/Sensitivity</u>

Caltrans uses a three-part scale to characterize paleontological sensitivity: no potential, low potential, and high potential (Caltrans 2012). The probability of finding significant fossils in the project footprint can be broadly predicted from previous records of fossils recovered from the geologic units present in and/or adjacent to the project study area. Paleontological sensitivities according to the Caltrans scale by geologic unit are summarized in Table 2-30.

Table 2-30. Paleontological Sensitivities by Geologic Unit

Caltrans Sensitivity Designation	Characteristics of Geologic Units in this Category
High/Sensitivity • Merritt sand and equivalents	• Consists of rock (deposits) units known to contain significant vertebrate, invertebrate, or plant fossils anywhere within their geographic extent. • This includes sedimentary rock units that are suitable for fossil preservation, as well as some volcanic and low-grade metamorphic rock units. • Includes rock units with the potential to contain abundant vertebrate fossils; a few significant vertebrate, invertebrate, or plant fossils that may provide new and significant taxonomic, phylogenetic (evolutionary history), ecological, and/or stratigraphic data; areas that may contain datable organic remains older than recent material; areas that may contain unique new vertebrate deposits, traces, and/or trackways; and fossiliferous deposits with very limited geographic extent or an uncommon origin (e.g., tar pits and cave deposits).
Low Potential/Low Sensitivity • None	• Includes sedimentary rock units that are potentially fossiliferous but have not yielded significant fossils in the past, have not yet yielded fossils but have the potential to contain fossil remains, or contain common and/or widespread invertebrate fossils of species whose taxonomy, phylogeny, and ecology are well understood.
No Potential/No Sensitivity • Artificial fill • Surface soils • Bay mud	• Includes rock units of intrusive igneous origin (solidified from lava or magma), most extrusive igneous rocks (formed when magma reaches the Earth's surface and cools quickly), and moderate-to high-grade metamorphic rocks (degree of difference between the original and the changed rock).

Merritt sand and similar formations have produced significant fossils at numerous locations in the Bay Area, including in geotechnical boreholes at a site several miles southeast of the proposed project. The presence of these fossil sites suggests these sediments have high potential to produce additional similar fossil remains during deep excavations within the project footprint. Therefore, they possess high sensitivity and additional identifiable fossil remains recovered from these sediments during project construction could be significant and scientifically important.

3.4.3. Environmental Consequences

PERMANENT AND CONSTRUCTION IMPACTS

<u>No-Build Alternative</u>

The No-Build Alternative would have no effect on paleontological resources because there would be no ground disturbing activities as a result of the proposed project during construction or operation.

<u>Build Alternative</u>

Merritt sand within the project footprint has a high potential/sensitivity to contain scientifically important paleontological resources. Table 2-31 lists all the Build Alternative's proposed excavations, including depth and impacted geologic unit.

Table 2-31. Summary of Project Excavations

Project Feature	Depth of Excavation (feet bgs)	Geologic Unit
OAKLAND		
Retaining wall 1	36	Artificial fill, Merritt sand
Retaining wall 2	13	Artificial fill, Merritt sand
Retaining wall 3	28	Artificial fill, Merritt sand
Retaining wall 4	2	Artificial fill
Retaining wall 4a	20	Artificial fill, Merritt sand
Retaining wall 4b	20	Artificial fill, Merritt sand
Retaining wall 5	44	Artificial fill, Merritt sand
Retaining wall 6	32	Artificial fill, Merritt sand
Retaining wall 7	6	Artificial fill, Merritt sand
Retaining wall 8R	32	Artificial fill, Merritt sand
Retaining wall 8L	6	Artificial fill, Merritt sand
Retaining wall 9	12	Artificial fill, Merritt sand
Retaining wall 10	4	Artificial fill, Merritt sand
Bicycle path	1	Artificial fill
Roadway work	2.5	Artificial fill
WB I-980 Jackson Street off-ramp new bents (columns) and an abutment	50	Artificial fill, Merritt sand
Utility trenching	6	Artificial fill, Merritt sand
ALAMEDA		
Bicycle path	1	Artificial fill
Roadway work	2.5	Artificial fill
Overhead sign foundation	20	Artificial fill

Within Alameda, it is anticipated excavations will encounter artificial fills and Bay mud only, with no potential for paleontological resources. In Oakland, the top of many excavations will be within previously disturbed artificial fill in existing embankments along I-880 and underlying existing paved surfaces. However, Merritt sand is located directly beneath these artificial fills, often quite close to the ground surface. It is likely the Merritt sand upper layers have been disturbed previously by historic urban development spanning more than 100 years, as well as previous excavations associated with the construction of I-880 and the Posey Tube. Nevertheless, there is potential for deeper excavations to encounter relatively undisturbed Merritt sand. Because there is potential to encounter undisturbed sediments with fossils in excavations for the Build Alternative retaining walls in Oakland, any fossil remains recovered from these excavations may be potentially significant and scientifically important.

Merritt sand has a high potential to contain significant paleontological resources in the subsurface within the project footprint, and it has the potential to be disturbed by project-related excavations. The Build Alternative has a greater potential for adverse effects to paleontological resources due to excavations during construction. Project operation under the Build Alternative has no potential to disturb any geologic formations with the potential to contain fossils.

3.4.4. Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will avoid or minimize effects on paleontological resources during construction of the Build Alternative. The following measures will reduce the potential for the proposed project to impact paleontological resources if present.

AMM-PAL-1 Paleontological Mitigation Plan (PMP)	Prior to construction, the PMP will be updated by a qualified project paleontologist (as defined in the Caltrans SER). It will emphasize construction worker training, on-call monitoring program, and protocols for salvage and recovery operations. All requirements identified in the updated PMP will be followed during construction.
AMM-PAL-2 WEAT	All construction crew members must receive a paleontologically focused WEAT prior to ground disturbance activities. This training will be developed and presented by a qualified project paleontologist and will contain fossil identification guidance, discovery protocol, and contact information for the qualified paleontological monitor. All personnel who receive the training will sign a form to document that they have taken the training. A record of all trained personnel will be kept on-site with the resident engineer and will be available for review upon request.
AMM-PAL-3 Paleontological Monitoring	A qualified paleontological monitor will be available on an on-call basis to inspect excavations deeper than 10 feet bgs. If fossils are discovered, the qualified paleontological monitor or crew will notify the resident engineer who will halt construction within 100 feet of the resource. The resident engineer will contact the on-call qualified paleontologist monitor who will evaluate the discovery and consult with Caltrans, museum repositories, and local experts, as applicable, to determine if salvage, recovery, and/or curation efforts are required per the PMP.

AMM-PAL-4 Salvage and Recovery Operations	Salvage and recovery methods described in the PMP will be followed during construction. Upon discovery, the qualified paleontological monitor will temporarily flag the discovery site as an ESA until salvage and recovery operations are complete. Construction work within the ESA and its 100-foot-wide buffer will be halted or diverted by the resident engineer to allow the prompt recovery of fossils.
AMM-PAL-5 Donation to Repository Institution	The PMP will outline the protocol for obtaining adequate storage of fossils in a recognized repository institution for salvaged or recovered specimens. This protocol will be followed during construction. A complete set of field notes, geologic maps, and stratigraphic sections will accompany the fossil collections.
AMM-PAL-6 Paleontological Mitigation Report	As required by the PMP, a Paleontological Mitigation Report will be completed at the end of project construction that outlines the results of the mitigation program.

No required permits are anticipated with regards to paleontological resources for the proposed project.

3.5. HAZARDOUS WASTE/MATERIALS

3.5.1. Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage, and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and the Resource Conservation and Recovery Act of 1976 (RCRA). The purpose of CERCLA, often referred to as "Superfund," is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the CA Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

3.5.2. Affected Environment

The following section is based on the *Initial Site Assessment* (ISA March 2020), the PGR (March 2020), and the WQAR (April 2020). The ISA included an environmental records review package which identified five sites within the project study area that may affect or be affected by the proposed project. The project study area encompasses a 300-foot radius around the project footprint (Figure 2-39, Figure 2-40, and Figure 2-41).

In Oakland, adjacent land uses to the project study area are primarily residential and commercial properties. I-880 bisects the project study area, and areas underneath the interstate are vacant Caltrans lots, parking lots, or commercial storage. In Alameda, adjacent land uses are primarily commercial and retail properties. Some adjacent recreational use is present along the south end of the project study area (Neptune Park in Alameda). There are four education facilities each in Alameda and in Oakland that are within 0.25 miles of the project study area.

A visual survey of the project study area was conducted from publicly accessible locations on September 14 and 15, 2019. The site visit consisted of a pedestrian survey to document potentially problematic land uses and contamination. Existing conditions were evaluated for potential concerns, including debris piles, leaks/stains, monitoring wells or evidence of ongoing environmental work, chemical storage, poor housekeeping, active underground storage tanks (UST), active aboveground storage tanks, or dry cleaners. No soil or groundwater sampling was conducted as part of this survey. The results of the visual survey were incorporated into the ISA.

The Oakland Estuary separates Oakland from Alameda. In the Oakland portion of the project study area historic USGS maps, historic aerial photos, and geologic GIS data indicate that there was artificial fill placed in the Lake Merritt Channel (channel connecting Lake Merritt to the Oakland Inner Harbor) between 1915 and 1948 (Figure 2-39). In the Alameda portion of the project study area, historic USGS maps show wetlands within the project footprint. These were later filled to support urban development. All of Figure 2-41 is considered artificial fill over estuarine mud. It is likely fill used in both Oakland and Alameda contains metals, petroleum, polyaromatic hydrocarbons (PAH), or other contaminants as industrial waste was historically used for Bay waterfront fill.

The elevation at the Oakland project study area varies from sea level (0 feet) to about 35 feet (in NAVD 88). The Alameda project study area varies from sea level to about 13 feet. Generally, surface water flows towards the Oakland Estuary, resulting in south/southwest flow in Oakland and north flow in Alameda. According to the ISA and WQAR, groundwater flows similarly towards the Oakland Estuary, with depths in the project footprint ranging from 4 to 26 feet bgs in Oakland and 3 to 8 feet bgs in Alameda, averaging an elevation of 10 feet. Groundwater has the potential to carry hazardous contaminants downgradient from their origin and to contaminate soil with groundwater fluctuation and vapor drift through the soil column.

HISTORIC CHEMICAL RELEASES

Five sites with potential hazardous waste or material concerns were identified in the project study area based on database searches and the site visit (Figure 2-39, Figure 2-40, and Figure 2-41). Table 2-32 describes the sites and their regulatory status.

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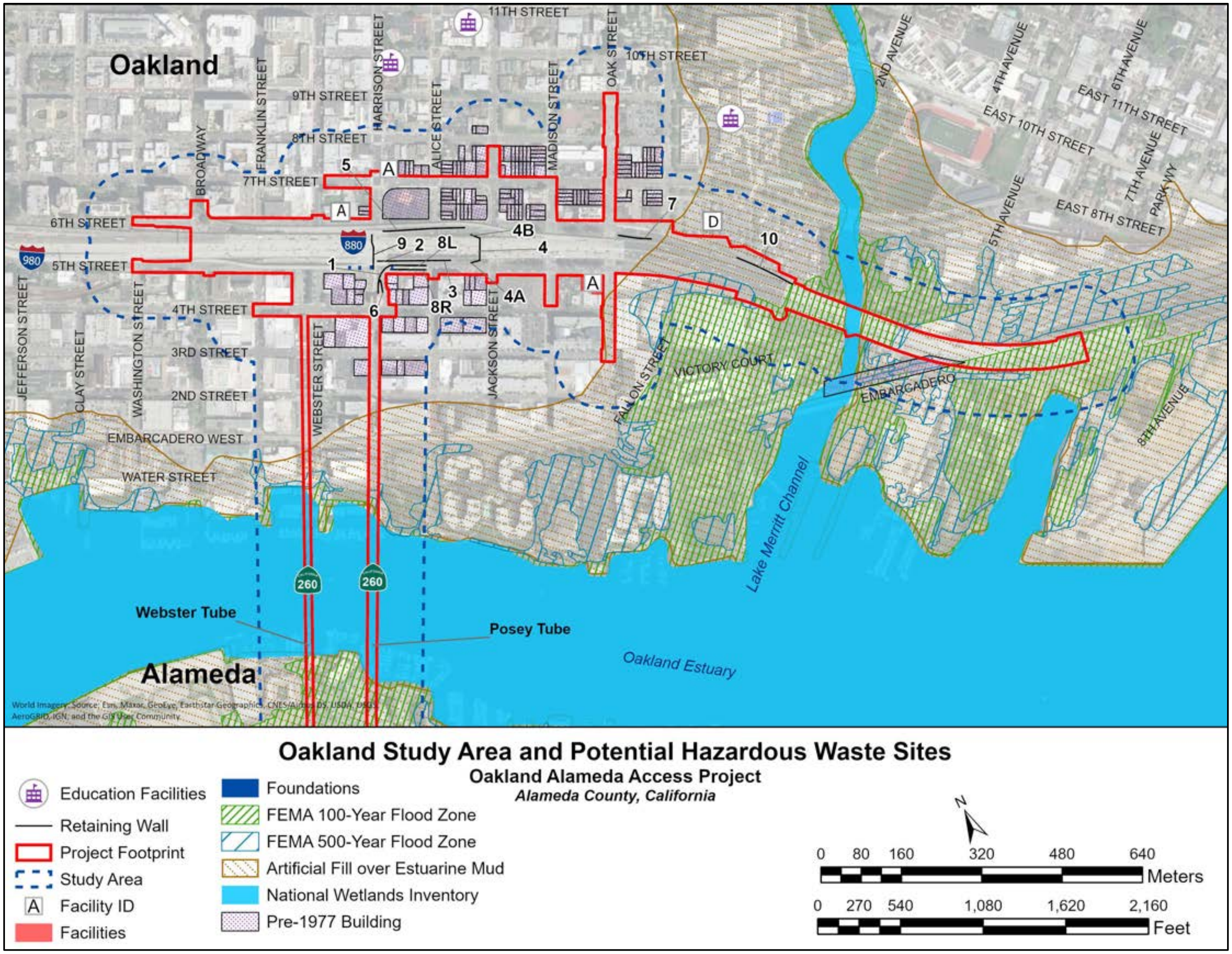
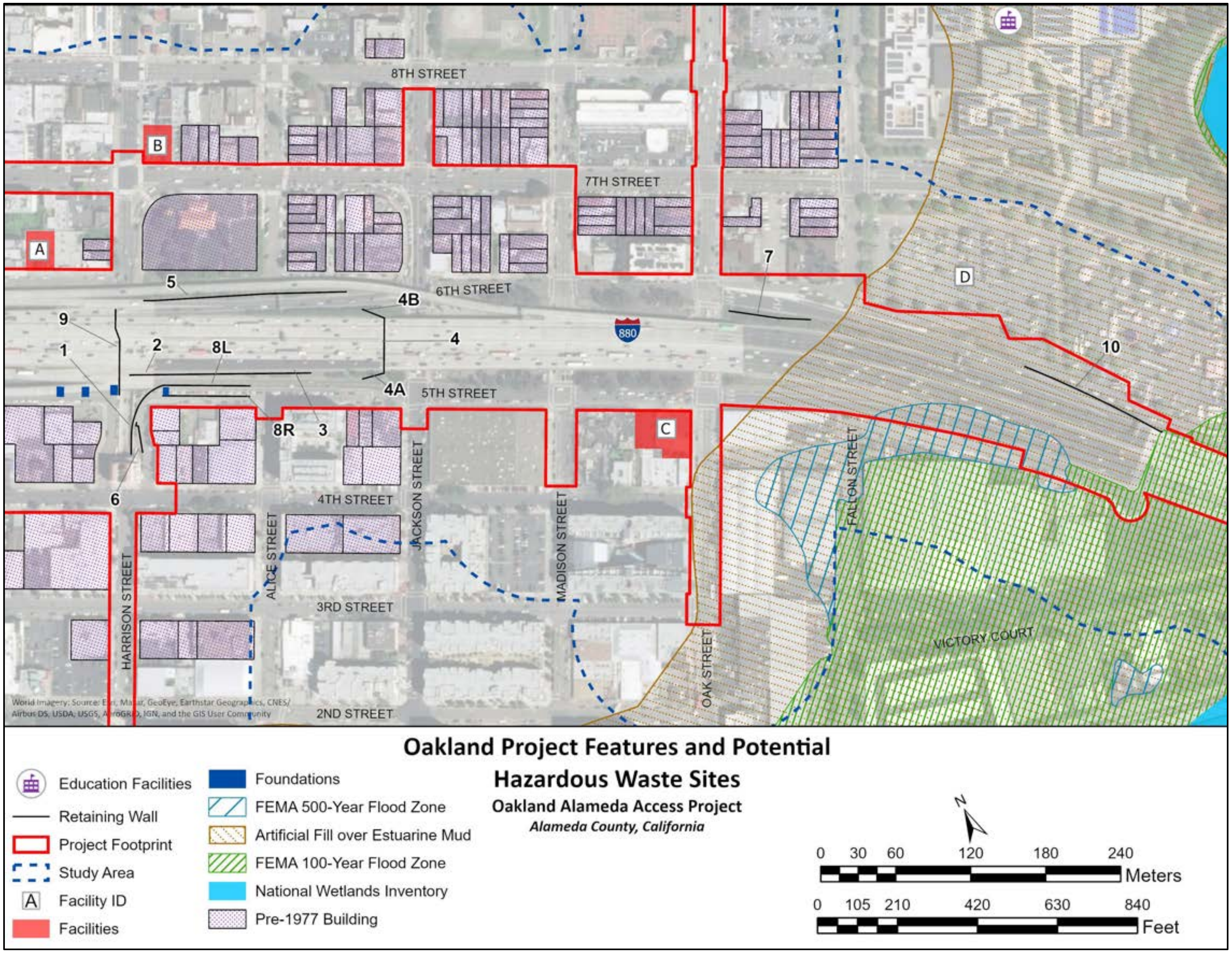


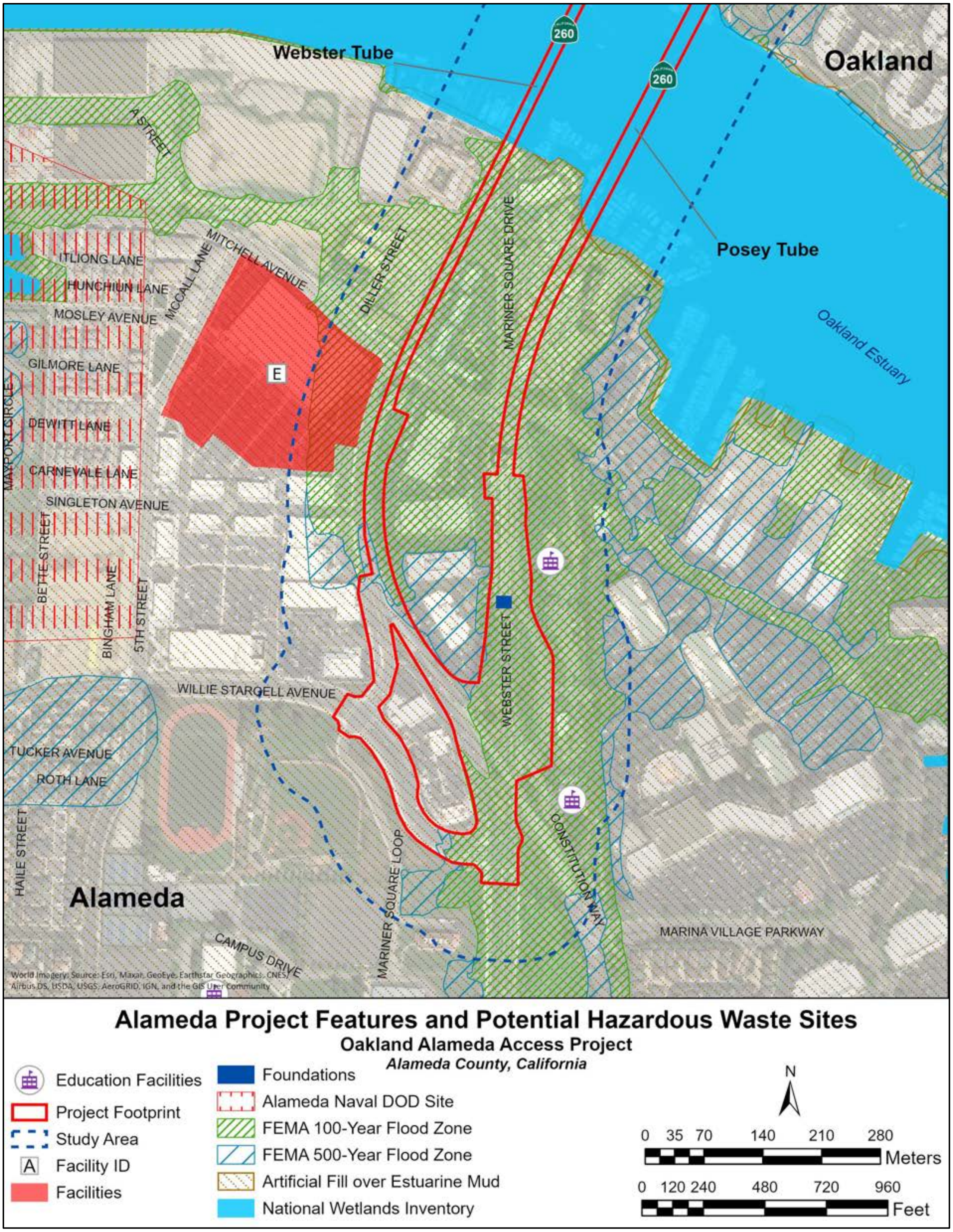
Source: HNTB (2020)

Figure 2-39. Oakland Project Study Area and Potential Hazardous Waste Sites



Source: HNTB (2020)

Figure 2-40. Oakland Project Features and Potential Hazardous Waste Sites



Source: HNTB (2020)

Figure 2-41. Alameda Project Features and Potential Hazardous Waste Sites

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Table 2-32. ISA Findings

Site	Findings	Status
A	**APN 1-189-14-1, 6th Street between Harrison and Webster Streets, Oakland** • Identified during the site survey between Harrison and Webster streets. • No visible signs of hazardous materials, waste, or contamination were observed. • Auto sites generate, use, store, and dispose of hazardous materials such as motor oil and are a potential source of hazardous waste. Downgradient portions of the project footprint are at risk of groundwater contamination if there have been any contaminants released from these sites. • Potential contaminants of concern (COC) are petroleum hydrocarbons.	**Unknown** Not listed on regulatory databases, no known contamination.
B	**APN 1-185-26, Harrison Street between 7th and 8th Streets, Oakland** • COC are benzene and gasoline. • In 1990, the site was listed on the Leaking Underground Storage Tank (LUST) Information System and Cortese databases for historical release of gasoline to soil and groundwater. • In February 1991, six USTs were removed; soil sampling detected elevated levels of hydrocarbon contamination. • Site characterization between 1993 and 1995 detected significantly elevated levels of total petroleum hydrocarbons (TPH) and benzene in soil and groundwater. • TPH in groundwater has co-mingled with contamination from two other sites (APN 1-185-14 and 1-185-13). • Remedial Action Plan was approved in July 2014 to remove residual contamination beneath three properties on Harrison Street. Remediation is ongoing. • Elevated levels of methyl tert-butyl ether (MTBE) in the groundwater at 48 feet below bgs may have migrated to the project footprint ROW along 7th and Harrison streets. • As of June 26, 2019, plume length (that exceeds water quality objectives) is between 250 and 1,000 feet, with benzene concentrations between 1,000 and 3,000 grams/liter, and MTBE concentrations over 1,000 grams/liter.	**Open** The site is currently undergoing remediation. It is located upgradient of the project footprint. Although the plume's southern boundary has not been determined, it could potentially have migrated inside the project footprint.

Site	Findings	Status
C	**APN 1-163-3, 5th Street between Oak and Madison Streets, Oakland** • COC is gasoline. • Previously listed on the LUST and Cortese databases. • Groundwater contamination occurred along Oak Street. Groundwater monitoring was conducted from July 1999 to July 2008 using seven groundwater monitoring wells. • Data indicated petroleum hydrocarbon concentrations have decreased since 1999, and water quality is expected to be restored to water quality objectives through natural attenuation processes. As defined in the Porter-Cologne Water Quality Control Act, water quality objectives are the allowable limits or levels of water quality constituents or characteristics that are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area. • In July 2008, the maximum concentration of TPHs (in the gasoline range) that were detected was 980 micrograms per liter (parts per billion [ppb]). • Between August 2009 and December 2011, soil vapor sampling was conducted at 10 locations throughout the site and along its boundary. Elevated concentrations of petroleum hydrocarbons were detected in three locations, but they were not detected at concentrations of concern. • The residual contamination does not appear to pose a risk to nearby residents or site workers.	**Closed** Closed on January 24, 2013 by the Alameda County Local Oversight Program. Site investigation and cleanup activities are complete.
D	**Between Oak Street and 5th Avenue, Oakland** • Review of historic aerial photos and USGS maps indicated fill was placed adjacent to the Lake Merritt Channel. • Previous investigations identified the presence of metals, petroleum hydrocarbons, and PAH in soil and groundwater.	**Unknown** Not listed on regulatory databases. Extent of contamination and potential effects on the project are unknown.
E	**APN 74-1366-2-1, 5th Street by Mariner Square Loop, Alameda** • Located within the Alameda Landing Redevelopment Area of the former Fleet and Industrial Supply Center (FISCA). FISCA closure (October 1, 2005) was issued by the San Francisco Bay RWQCB. • Previous environmental investigations identified the following COCs in the soil: PAHs, petroleum hydrocarbons, PCBs, metals, pesticides, and volatile organic compounds (VOC). • To prevent exposure to COCs, a barrier cap was installed in accordance with the 2008 Remedial Action Plan, as reported in the 2014 Remedial Action Completion Report. • Pollutant migration into the project footprint is unlikely due to direction of groundwater flow and capping.	**Open** (ongoing operation and maintenance) Property has land use restrictions and required ongoing operation and maintenance of the cover placed over impacted soils. *Operations and Maintenance Plan Annual Inspection Summary Report* (2019) indicated that the barrier cap continues to be effective.

Lead-based Paint and Asbestos-containing Material

Lead-based paint (LBP) was banned in residential and public buildings in 1977. Pre-1978 residences, buildings, and structures can still contain LBP. There are 146 buildings within the study area have been present since before the ban on LBP (shown in Figure 2-39, Figure 2-40, and Figure 2-41). Where older buildings (pre-1978) are upgradient, lead-contaminated runoff may have flowed into swales and ditches along the roadways. Surface soils adjacent to the roadways have the potential to contain elevated concentrations of lead ranging from background levels to several thousand part per million (ppm). The Tubes, as well as the I-880 on- and off-ramps west of the I-980 interchange were also built prior to 1978 so LBP may be present.

Also, structures built between 1950 and 1982 may include asbestos containing material (ACM) in their expansion joints, girders, abutment joints, metal beam guardrails, and shims. Due to their age, the components of the I-880 on- and off-ramps that are being modified or removed (these are a combination of aerial viaduct and fill supported by retaining walls), as well as the Tubes may contain ACM.

Aerially Deposited Lead

Aerially deposited lead (ADL) from the historical use of leaded gasoline, exists along roadways throughout California. There is the likely presence of soils with elevated concentrations of lead as a result of ADL on the state highway system ROW within the limits of the project alternatives. Soil determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control (DTSC). This ADL Agreement allows such soils to be safely reused within the project footprint as long as all requirements of the ADL Agreement are met.

Leaded gasoline was used in the United States from the 1920s to1980s. Although lead is no longer used in gasoline formulations (lead additives were banned in 1996 as part of the Clean Air Act), historic ADL emissions have accumulated in surface soils adjacent to roadways. Reviews of historic USGS maps and aerial photographs indicate the project footprint has supported vehicular activity since the 1930s. It is highly likely the surface soils along the project footprint are affected by ADL. Soil lead concentrations are likely to be higher near roads that are heavily traveled, and commercial services have been present since the 1920s, and in areas where vehicles stop, idle, and accelerate. Much of Oakland's road network was in place in the 1920s; therefore, it is expected to have higher soil lead concentrations than western Alameda, which had a more limited road network prior to the 1950s. Higher concentrations are also expected closer to I-880 as it has historically had the highest traffic volume in the project footprint. Therefore, it is recommended that surface soil samples are collected and analyzed for lead prior to construction.

Yellow Thermoplastic and Yellow Paint

As recently as 2004, lead chromate was the yellow pigment used in "safety yellow" traffic. According to Caltrans guidelines, "lead chromate containing yellow striping materials may contain ~20,000 ppm of lead and ~5,000 ppm of hexavalent chromium." Yellow thermoplastic and yellow paint may produce toxic fumes when heated. When this older yellow striping is ground from the pavement, its debris may meet the definition of hazardous waste unless it is substantially diluted with underlying paving material, as in the case where extensive pavement milling is being done. It has not been confirmed that the yellow paint and thermoplastic in the project roadways does not contain lead chromate. As such, restriping and roadway resurfacing has the potential to produce hazardous waste.

TREATED WOOD WASTE (TWW)

Treated wood is used as metal beam supports for guard railings, thrie beam barriers, piles, and roadside signs. These wood products are typically treated with preserving chemicals that protect against insect attack and fungal decay. These chemicals may be hazardous and include, but are not limited to, arsenic, chromium, copper, creosote, and pentachlorophenol. The project footprint contains treated wood that may need to be removed or modified during project construction.

COORDINATION/CONSULTATION WITH REGULATORY AGENCIES

The ISA details the agency coordination that has taken place for each identified site. Beyond database searches (SWRCB and DTSC), no other agency coordination has been documented.

3.5.3. Environmental Consequences

PERMANENT IMPACTS

<u>No-Build Alternative</u>

The No-Build Alternative would not result in any permanent impacts to hazardous waste or materials.

<u>Build Alternative</u>

Once constructed, the permanent condition of the Build Alternative would not result in disturbance of any known site that contains hazardous materials, nor would it expose the public or environment to any hazardous materials. The Build Alternative would use lead-free and chromium-free yellow substitute pigments and would not use LBP or asbestos in project elements. The proposed project does not include permanent elements that could result in disturbance of existing LBP, ACM, ADL, or potentially hazardous waste sites after construction is completed.

Therefore, after construction and as part of the permanent condition of the Build Alternative, the proposed project would not result in the release of or public or environmental exposure to hazardous lead chromate materials, LBP, ACM, or any sites that have been identified as potentially containing hazardous material.

CONSTRUCTION IMPACTS

<u>No-Build Alternative</u>

The No-Build Alternative would not have any interaction with the potentially hazardous materials because there would be no ground disturbance for construction.

Build Alternative

Historic Chemical Releases

Impacts from historical releases of chemicals to soil or groundwater could occur if contaminated media are encountered during construction. Activities that might result in disturbance of hazardous materials (if present) include excavating to install retaining walls, foundations for the Jackson Street off-ramp bents and the abutment, the light pole foundation in Alameda; and relocation of utilities and drainage systems.

Five sites were evaluated in the ISA as potential sources of hazardous waste. Contamination from these sites may have migrated through groundwater flow and also contaminated downgradient soils through ground water fluctuation and vaporization. For excavations that will be downgradient, work that will be conducted near ground water levels could encounter pollutant plumes. Although groundwater levels are estimated to average 10 feet in elevation, groundwater levels fluctuate and could be encountered at 3 feet bgs in Alameda, and 4 feet bgs in Oakland. Retaining walls with piles (#1, 3, 4, 5, and 6), the bents and abutment for the Jackson Street off-ramp, and the overhead sign foundation in Alameda all have the potential to encounter groundwater during construction. The foundations for the other retaining walls are above estimated groundwater levels.

The types of contaminants, known concentration(s), and level and extent of contamination in relationship to the Build Alternative is shown in Table 2-33. The likelihood of encountering contamination during construction, if present, was rated from “none” to “high,” which was based on construction activities that will take place within or hydraulically downgradient of the site. If work was below the water table and was downgradient of a site with confirmed contamination, it was rated as a “high” risk. If work was downgradient from a hazardous waste site (with or without confirmed contamination) and excavation was near the water table level, it was rated as a “moderate” risk. Shallow excavation (less than 3 feet) was rated as a “low” risk. No excavation, such as pavement striping operations, received a risk rating of “none.”

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Table 2-33. Potential Contamination within the Project Study Area

Site	Location	Known Contaminant	Matrix	Known Concentration	Potentially Affected Area	Proposed Work in Potentially Affected Area	Likelihood of Encountering Contamination
A	APN 1-189-14-1, 6th Street between Harrison and Webster streets, Oakland	Unknown	Unknown	Unknown	South of 6th Street by the Chinese Garden Park	• Removal of the NB I-880/ Broadway off-ramp; installation of Class IV cycle track, sidewalks, and curb and gutter; and pavement restriping. Excavation below the existing 6th Street grade will not be required. Work will be limited to the top 2.5 feet; do not anticipate encountering any potential contaminants. • New bents and abutment for Jackson Street off-ramp and retaining walls #1, 2, 6, and 9 are, downgradient. Retaining wall #1, bents and abutment will excavate below groundwater elevation.	**Moderate**, no known contamination. Existing land use and proposed excavation depth present a risk.
B	APN 1-185-26, Harrison Street between 7th and 8th streets, Oakland	Benzene, gasoline (petroleum hydrocarbons), MBTE	Soil and water	Unknown	South of Harrison Street by the Chinese Garden Park	• Restriping and installation of curb and gutter, sidewalks, and Class IV cycle track. Maximum excavation depth for this work is 2.5 feet. • Retaining walls #1, 2, 3, 8L, 8R, and 9 are downgradient. Retaining walls #1 and 3 will excavate below groundwater elevation.	**High** due to excavation required for retaining wall work.

Site	Location	Known Contaminant	Matrix	Known Concentration	Potentially Affected Area	Proposed Work in Potentially Affected Area	Likelihood of Encountering Contamination
C	APN 1-163-3, 5th Street between Oak and Madison streets, Oakland	Petroleum hydrocarbons	Soil and water	980 ppb (water)	Oak Street south of 5th Street	• Restriping and installation of curb and gutter, sidewalks, and Class IV cycle track. Maximum excavation depth is 2.5 feet.	**Low,** soil vapor samples did not have concentrations of concern. Work is limited to road surface.
D	Between Oak Street and 5th Avenue, Oakland	Metals, petroleum hydrocarbons, and PAHs	Soil and water	Unknown	I-880 between Oak Street and 5th Avenue and NB I-880 off-ramp to Oak Street	• Restriping and installation of curb and gutter, sidewalks. Maximum excavation depth for this work is 2.5 feet. • Retaining walls #7 and 10 have excavation depths of 6 and 4 feet bgs but are not expected to contact groundwater.	**Moderate** for retaining wall work in artificial fill.
E	APN 74-1366-2-1, 5th Street by Mariner Square Loop, Alameda	PAHs, petroleum hydrocarbons, PCBs, metals, pesticides, and VOCs	Soil and water	Unknown	City of Alameda project footprint	• Restriping and installation of curb and gutter, sidewalks, Class IV cycle track. • The overhead sign in Alameda will require excavation below groundwater elevations.	**Moderate** for sign foundation due to the presence of artificial fill and proximity to FISCA.

As noted in Table 2-33, each of the five sites have contributed hazardous materials to the environment that may be disturbed by the Build Alternative. Petroleum hydrocarbons are the most likely contaminant that would be encountered during construction.

Site A: APN 1-189-14-1, 6th Street between Harrison and Webster Streets, Oakland

Footings for the new Jackson Street off-ramp bents, abutment, and retaining walls #1, 2, 6, and 9 are south (downgradient and cross-gradient) of this site. The excavation depths required for these sites range from 13 to 50 feet bgs with minimum footing elevations of 10.3 to 17.78 feet. Excavation for the bent and abutment foundations as well as retaining walls #1 and 6 are expected to encounter groundwater.

It is unknown if there is contamination of soil or groundwater. To confirm that soil and groundwater does not contain hazardous substances, soil and groundwater testing will be done prior to construction (AMM-HW-4). If contamination is found, special handling and disposal methods will be followed during construction to prevent hazardous material exposure to workers, the public, or the environment (PF-HW-3, AMM-HW-6, and AMM-HW-7).

Site B: APN 1-185-26, Harrison Street between 7th and 8th Streets, Oakland

This site is currently undergoing remediation. There is a known plume of gasoline TPHs and MTBE that is moving southward along Harrison Street towards the project footprint; however, the plume's southern boundary has not been determined. The foundations for the Jackson Street off-ramp bents, abutment, and retaining walls #1, 2, 3, 5, 6, 8L, 8R, and 9 are south and downgradient of this site. The excavation depths required for these features will range from 6 to 50 feet bgs; however, only excavation for the bent and abutment foundations and retaining walls #1 and 6 are expected to encounter groundwater.

To confirm the groundwater does not contain any hazardous contamination, soil and groundwater will be tested for MTBE and TPHs prior to construction (AMM-HW-4). If contamination is found, special handling and disposal methods will be followed during construction to prevent hazardous material exposure to workers, the public, or the environment (PF-HW-3, AMM-HW-6, and AMM-HW-7).

Site C: APN 1-163-3, 5th Street between Oak and Madison Streets, Oakland

Although the gas station is a closed site, the closure report review indicated there are residual petroleum hydrocarbons along Oak Street, but not at concentrations of concern. Construction in this portion of the project footprint is limited to pavement striping and cycle track installation for 5th and Oak streets (adjacent to the site), and it will only disturb the top 2.5 feet of ground. Based on this, it is likely no hazardous contaminants in the soil or groundwater would be encountered during construction.

Site D: Between Oak Street and 5th Avenue, Oakland

Per the ISA, fill has been placed within the historic extent of the Lake Merritt Channel, the approximate extent of which is shown in Figure 2-39 and Figure 2-40. Historic investigations identified the presence of metals, petroleum hydrocarbons, and PAHs in the soil and groundwater of the fill area. Retaining wall #10 is located within this fill area. The extent of artificial fill is not precisely known, so retaining wall #7 may also be within artificial fill. The excavation depth required for these walls is 4 to 6 feet bgs. Although installation of these retaining walls is not expected to encounter groundwater, soil in these areas may be contaminated.

To confirm soil does not contain hazardous contamination, samples for the COCs will be taken (AMM-HW-4). A TCE is needed for retaining wall #10, so contaminant characterization would be done prior to easement acquisition and project construction. If contamination is found, special handling and disposal methods will be followed during construction to prevent hazardous material exposure to workers, the public, or the environment (PF-HW-3, AMM-HW-6, and AMM-HW-7).

Site E: APN 74-1366-2-1, 5th Street by Mariner Square Loop, Alameda

Although this site is adjacent to the project footprint, the soil conditions are similar to the project footprint's because the entire area was filled with same material. Environmental investigations identified the presence of PAHs, petroleum hydrocarbons, PCBs, metals, pesticides, and VOCs at concentrations above acceptable levels for direct human exposure. Most of the proposed project work is limited to the top 2.5 feet of ground to grade surface soils for the installation and widening of bike lanes. However, a sign footing will require excavation to a depth of 20 feet bgs. To confirm that surface disturbance and footing excavation will not encounter hazardous contamination, soil samples will be characterized prior to construction. Groundwater samples will only be required at the proposed sign foundation (AMM-HW-4). If contamination is found, special handling and disposal methods will be followed during construction to prevent hazardous material exposure to workers, the public, or the environment (PF-HW-3, AMM-HW-6, AMM-HW-7).

Table 2-34 summarizes potential contaminants, contaminated media, and contamination sources by project element.

Table 2-34. Contaminant Characterization of Project Elements

Project Element	Potential Contamination Source	Potential Contaminants for Testing	Potentially Contaminated Media
Retaining wall #1, 2, 6, 9 **Jackson Street off-ramp bents and abutment**	Auto sites	VOCs, TPHs, MTBE	Soil and groundwater
Retaining wall #3, 5, 8L, 8R	Auto site	VOCs, MTBE	Soil and groundwater
Retaining wall #7, 10	Lake Merritt Channel historic fill	Metals, petroleum hydrocarbons, and PAHs	Soil and groundwater
Overhead sign foundation	FISCA/Alameda historic fill	PAHs, petroleum hydrocarbons, PCBs, metals, pesticides, and VOCs	Soil and groundwater

Encountering hazardous materials during construction could impact the proposed project's scope, schedule, and cost. Proper disposal of contaminated soil and/or groundwater can add significant cost to the proposed project and may cause delays as the necessary agency coordination is conducted. Table 2-35 represents the estimated additional costs the proposed project would incur if contaminated soil or groundwater is encountered. This analysis assumes all excavated soil and all groundwater below 10 feet bgs is contaminated with hazardous material. The estimated additional cost for proper disposal would be $1.7 million with a potential delay of six months if widespread contamination is encountered. Construction delays could occur while the necessary agency coordination is conducted. When final design is complete, disposal costs will be updated and could differ significantly from the provided estimate.

Table 2-35. Estimated Costs Associated with Hazardous Waste Disposal

Proposed Work Below the Average Water Table Level	No-Build Alternative	Build Alternative*	Build Alternative**
Soil Disposal (Excavation, Transport, and Disposal)	$0	$508,000	$813,000
Dewatering (Transport and Treatment)	$0	$594,000	$2,495,000
TOTAL	$0	$1,102,000	$3,308,000

**Assumes no hazardous waste contamination is detected during construction.*

***Assumes all soil and groundwater below 10 feet bgs is contaminated with hazardous waste materials for retaining walls 1-3, 5-7, 8L, 8R, and Jackson Street off-ramp bents in Oakland and for the overhead sign foundation in Alameda. Excavated and dewatered materials would have to be disposed of at an appropriate off-site treatment facility.*

Project features and avoidance/minimization measures would be incorporated into the proposed project to limit the impacts to the proposed project's scope, schedule, and cost. During the design phase (prior to TCE acquisition and construction), Caltrans would conduct a site investigation to further evaluate and quantify potentially hazardous waste contamination (AMM-HW-4) This site investigation would evaluate if additional requirements are necessary to satisfy environmental, health and safety requirements (PF-HW-3, AMM-HW-6, and AMM-HW-7).

Other Potential Sources of Contamination

Aerially Deposited Lead

Impacts from lead contamination could occur where construction involves disturbing or exposing surface soils adjacent to the existing roadway. Direct contact with contaminated soil and subsequent hand-to-mouth activities (e.g., smoking, drinking, or eating) could result in the inadvertent ingestion of contaminated soil. Construction activities that produce dust could also result in lead exposure via inhalation. Avoidance and minimization measure AMM-HW-1 addresses characterization, disposal, and reuse of soils contaminated with lead during construction.

Lead-based Paint and Asbestos-containing Material

LBP and ACM surveys would be conducted prior to demolition or modification of the Jackson Street off-ramp, east wall of the Posey Tube, or the Broadway off-ramp (AMM-HW-2 and AMM-HW-3). LBP and ACM abatement would be performed by a certified contractor.

Yellow Thermoplastic and Yellow Paint

Yellow thermoplastic and yellow paint are present on streets within the project footprint. Since it has not been confirmed that this paint and plastic do not contain lead chromate, it has the potential to produce toxic fumes when heated during demolition or repaving activities. The debris produced when this older yellow striping is removed has the potential to meet the definition of hazardous waste. Project feature PF-HW-1 and PF-HW-3 are necessary to prevent the release of hazardous yellow paint and thermoplastic debris during construction.

Treated Wood Waste

The Build Alternative would remove wood components such as roadside signs that may be made of treated wood. In order to prevent release of the treatment chemicals in the wood, the proposed project would implement PF-HW-2, which would require proper handling and disposal of TWW.

PROJECT FEATURES

The following project feature would be implemented to prevent the release of lead chromate.

PF-HW-1 Yellow Paint and Thermoplastic	Caltrans specification SSP 14-11.12 (2018) will be included in the contract specifications and implemented during construction to contain any debris produced during yellow thermoplastic and yellow paint removal.

The following project feature would be implemented to prevent the release of chemicals from treated wood.

PF-HW-2 Treated Wood Waste	The project will follow the Caltrans Construction Manual with regards to TWW. Caltrans SSP 14-11.14_A10-19-18_2018 will be included in the contract specifications. The DTSC requires that TWW either be disposed of as hazardous waste or, if not tested, the generator may presume that TWW is a hazardous waste and manage the waste using DTSC's Alternative Management Standards, as described in 22 California Code of Regulations (CCR) 67386.1–67386.12.

The following project feature would be implemented to prevent release of hazardous waste or materials during handling and disposal:

PF-HW-3 Material Disposal	Material that is removed or modified will be handled and disposed of in accordance with all local, state, and federal requirements. The contractor will follow material and waste handling according to Caltrans SSP Sections 13 Water Pollution Control, 14-10 Solid Waste Disposal and Recycling, and 14-11 Hazardous Waste and Contamination.

PF-WQ-4 in Section 3.2. Water Quality and Stormwater Runoff requires dewatering to comply with the Caltrans Standard Specifications and *Field Guide to Construction Site Dewatering.* A dewatering permit would be acquired from the RWQCB — General WDR for Discharge or Reclamation of Extracted and Treated Groundwater Resulting from the Cleanup of Groundwater Polluted by VOCs, Fuel Leaks, Fuel Additives, and Other Related Wastes (VOC and Fuel General Permit), NPDES No. CAG912002, RWQCB Order No. R-2012-0012.

3.5.4. Avoidance, Minimization, and/or Mitigation Measures

The following minimization measures will address construction phase effects on lead-contaminated soils.

AMM-HW-1 **Lead in Soils**	The site investigation plan will collect and analyze soil samples in areas near roadways or painted structures that are potentially contaminated with ADL or LBP dust and where surface soil will be disturbed. Areas of focus will include swales, ditches, and other low areas where runoff may have carried lead-contaminated particles from ADL vehicle emissions or painted structure weathering. Due to multiple potential sources and transport mechanisms (i.e., air emissions and stormwater flows), the sampling investigation plan will develop a statistical approach for sample collection in areas planned for soil disturbance during construction.

The following minimization measures will address the potential to encounter ACM and LBP during construction.

AMM-HW-2 **ACM Investigation**	An ACM investigation will be performed by an inspector certified by Asbestos Hazardous Emergency Response Act under TSCA Title II and certified by California OSHA under the state of California's rules and regulations (CCR Section 1529).
AMM-HW-3 **LBP Abatement**	LBP surveys will be conducted prior to demolition of structures built before 1978. LBP abatement will be performed by a certified contractor.

The following minimization measure will address the potential to encounter hazardous waste or materials from historic releases.

AMM-HW-4 **Contaminant Characterization**	Groundwater and/or soil contaminants will be characterized prior to construction as part of the site investigation.

The following minimization measures will address the potential to encounter hazardous waste during construction.

AMM-HW-5 **Unexpected Contamination**	If soil, groundwater, or other environmental media with suspected contamination is encountered unexpectedly during construction (e.g., identified by odor or visual staining or if any USTs, abandoned drums, or other hazardous materials/wastes are encountered), work in the vicinity will be stopped, the area will be secured as needed, and all appropriate measures will be taken to protect human health and the environment. Appropriate measures will include notification of relevant regulatory agency(s), such as the RWQCB, DTSC, and Alameda County Department of Environmental Health. The project will comply with the various regulatory agencies' laws, regulations, and policies.

AMM-HW-6 Contaminated Soil Handling	Soil generated by construction activities will be stockpiled on-site in a secure and safe manner. All contaminated soils will be sampled and analyzed prior to acceptable reuse or disposal at an appropriate off-site facility. Specific sampling, handling, and transport procedures for reuse or disposal will be in accordance with applicable local, state, and federal agencies' laws, in particular RWQCB, DTSC, and Alameda County Department of Environmental Health. Additionally, soil samples will be analyzed as required by the accepting landfill.
AMM-HW-7 Dewatering Treatment and Disposal	Groundwater pumped from the subsurface will be contained on-site in a secure and safe manner and sampled and analyzed prior to treatment and disposal. The project will comply with applicable local, state, and federal laws, regulations, and policies to avoid health and environmental impacts.

By incorporating project features and avoidance and minimization measures, the proposed project will not expose workers, the public, or the environment to hazardous waste or materials during construction or operation.

3.6. AIR QUALITY

3.6.1. Regulatory Setting

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 CARB, 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 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 ($PM_{2.5}$), lead, and sulfur dioxide (SO_2). In addition, 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 (TAC); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel “Conformity” requirement under the FCAA also applies.

CONFORMITY

The conformity requirement is based on FCAA Section 176(c), which prohibits the 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. 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 CO, NO_2, O_3, particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO_2, and also has a nonattainment area for lead; however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of RTPs and Federal Transportation Improvement Programs (FTIP) 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 FCAA 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 FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, 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; the project has a design concept and scope that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and U.S. EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. 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.

3.6.2. Affected Environment

The following discussion was summarized from information presented in the *Air Quality Report* (AQR May 2020), TOAR (March 2020), and ISA (March 2020).

METEOROLOGY AND CLIMATE

The topography of a region can substantially impact air flow and resulting pollutant concentrations. California is divided into 15 air basins with similar topography and meteorology to better manage air quality throughout the state. Each air basin has a local air district that is responsible for identifying and implementing air quality strategies to comply with ambient air quality standards. The project footprint is in the San Francisco Bay Area Air Basin (Air Basin), which includes nine Bay Area counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, the western portion of Solano County and the southern portion of Sonoma County. Air quality regulations in the San Francisco Bay Area Air Basin are administered by the BAAQMD. However, MTC is the MPO in the San Francisco Bay Area including the counties of Solano and Sonoma.

Air quality in the region is affected by natural factors, such as proximity to the San Francisco Bay and the Pacific Ocean, topography (terrain), meteorology (weather), temperature, amount of sunlight, types of winds, and existing air pollution sources. The project study area is bordered by the San Francisco Bay to the west and by the Oakland-Berkeley Hills (averaging 1,500 feet high) to the east. Winds can transport ozone and ozone precursors (NO_x and CO) from one region to another, contributing to air quality problems downwind of source regions. The prevailing winds near the project study area are from the west off the San Francisco Bay. The San Francisco Bay Area is characterized by a Mediterranean-type climate with warm, dry summers (average 63 degrees Fahrenheit in July) and cool, wet winters (average 48 degrees Fahrenheit in January). Temperatures in this area have a narrow range due to the proximity of moderating marine air. Maximum temperatures during summer average in the mid-70s with minimums in the mid-50s. Winter highs are in the mid- to high-50s with lows in the low- to mid-40s. Annual average rainfall is 22.6 inches (at the Oakland Airport), which mainly occurs during the winter months.

ATTAINMENT STATUS AND AIR POLLUTION STANDARDS

Table 2-36 shows the NAAQS and the California Ambient Air Quality Standards (CAAQS), along with the associated principal health and atmospheric effects and typical sources of emissions. The table also shows the attainment status for Alameda County. The U.S. EPA designates areas as meeting (attainment) or not meeting (nonattainment) NAAQS. The FCAA requires states to develop a general plan to attain and maintain the NAAQS in all areas of the country and a specific plan to attain the NAAQS for each area designated as nonattainment. A maintenance area is an area that was designated nonattainment for a NAAQS but later met the standard and was re-designated to attainment-maintenance. Unclassified areas are those that the U.S. EPA is not able to determine an area's status, even after evaluating the available information. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS, and they do not apply at all for state standards regardless of the status of the area. To ensure that air quality continues to meet the NAAQS, states are required to develop maintenance SIPs. Table 2-37 indicates the status of the SIPs.

For federal standards, the Air Basin is designated as marginal nonattainment for the 8-hour O_3 standard, moderate nonattainment for the $PM_{2.5}$ 24-hour and annual standards, and attainment-maintenance for CO standards. The Air Basin has been designated as unclassifiable/attainment for PM_{10}, NO_2, and SO_2.

The state has a similar process for the CAAQS. The Air Basin has been designated by CARB as nonattainment for the O_3, PM_{10}, and $PM_{2.5}$ standards. The Air Basin has been designated as attainment or unclassified for all other CAAQS. No information is available for vinyl chloride.

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Table 2-36. State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	Principal Health and Atmospheric Effects	Typical Sources	State Project Attainment Status	Federal Project Area Attainment Status
O_3[c]	1 hour	0.09 ppm[d]	N/A	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 TACs. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROG)/VOCS 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.	Nonattainment	N/A
O_3	8 hours	0.070 ppm	0.070 ppm (4th highest in 36 months)	Same as 1 hour.	Same as 1 hour.	Nonattainment	Nonattainment – (Marginal)
CO[d]	1 hour	20 ppm	35 ppm	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.	Attainment	Attainment – Maintenance
CO	8 hours	9.0 ppm	9 ppm	Same as 1 hour.	Same as 1 hour.	Attainment	Attainment – Maintenance

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	Principal Health and Atmospheric Effects	Typical Sources	State Project Attainment Status	Federal Project Area Attainment Status
PM_{10}[e]	24 hours	50 micrograms per cubic meter ($\mu g/m^3$)	150 $\mu g/m^3$ (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some TACs. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Nonattainment	Unclassifiable/ Attainment
PM_{10}	Annual	20 $\mu g/m^3$	N/A	Same as 24 hour.	Same as 24 hour.	Nonattainment	N/A
$PM_{2.5}$[f]	24 hours	N/A	35 $\mu g/m^3$	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a TAC – 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.	N/A	Nonattainment – (Moderate)
$PM_{2.5}$	Annual	12 $\mu g/m^3$	12.0 $\mu g/m^3$	Same as 24 hour.	Same as 24 hour.	Nonattainment	Nonattainment – (Moderate)

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	Principal Health and Atmospheric Effects	Typical Sources	State Project Attainment Status	Federal Project Area Attainment Status
NO_2	1 hour	0.18 ppm	0.100 ppm[g]	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain and 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.	Attainment	Unclassifiable/ Attainment
NO_2	Annual	0.030 ppm	0.053 ppm	Same as 1 hour.	Same as 1 hour.	Attainment	Unclassifiable/ Attainment
SO_2[h]	1 hour	0.25 ppm	0.075 ppm (99th percentile over 36 months)	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.	Attainment	Unclassifiable/ Attainment
SO_2	3 hours	N/A	0.5 ppm[3 i]	Same as 1 hour.	Same as 1 hour.	N/A	Unclassifiable/ Attainment
SO_2	24 hours	0.04 ppm	0.14 ppm (for certain areas)	Same as 1 hour.	Same as 1 hour.	Attainment	Unclassifiable/ Attainment
SO_2	Annual	N/A	0.030 ppm (for certain areas)	Same as 1 hour.	Same as 1 hour.	N/A	Unclassifiable/ Attainment

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	Principal Health and Atmospheric Effects	Typical Sources	State Project Attainment Status	Federal Project Area Attainment Status
Lead[j]	Monthly	1.5 μg/m^3	N/A	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a TAC 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.	Attainment	N/A
Lead	Calendar Quarter	N/A	1.5 μg/m^3 (for certain areas)	Same as monthly.	Same as monthly.	N/A	Unclassifiable/ Attainment
Lead	Rolling 3-month average	N/A	0.15 μg/m^3 [k]	Same as monthly.	Same as monthly.	N/A	Unclassifiable/ Attainment
Sulfate	24 hours	25 μg/m^3	N/A	Premature mortality and respiratory effects. Contributes to acid rain. Some TACs 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.	Attainment	N/A
Hydrogen Sulfide	1 hour	0.03 ppm	N/A	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.	Unclassified	N/A

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]	Principal Health and Atmospheric Effects	Typical Sources	State Project Attainment Status	Federal Project Area Attainment Status
Visibility-Reducing Particles (VRP)[i]	8 hours	Visibility of 10 miles or more at relative humidity less than 70%	N/A	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other “Class I” areas. However, some issues and measurement methods are similar.	See PM above. May be related more to aerosols than to solid particles.	Unclassified	N/A
Vinyl Chloride[j]	24 hours	0.01 ppm	N/A	Neurological effects, liver damage, cancer. Also considered a TAC.	Industrial processes	No information available	N/A

Source: Caltrans, Air Pollution Standards Table, https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/aq-updates-air-pollution-stds-tbl.docx, accessed March 10, 2020, and CARB (2019).

Adapted from the California CARB Air Quality Standards chart (http://arb.ca.gov/research/aaqs/aaqs2.pdf)

Greenhouse Gases and Climate Change: GHGs do not have concentration standards for that purpose. Conformity requirements do not apply to GHGs.

[a] California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and PM (PM_{10}, $PM_{2.5}$, and VRPs) are values not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Tittle 17 of the CCR.

[b] Federal standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 36 months, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 36 months, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

[c] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. Transportation conformity applies in newly designated nonattainment areas for the 2015 national 8-hour ozone primary and secondary standards on and after August 4th, 2019 (see Transportation Conformity Guidance for 2015 Ozone NAAQS Nonattainment Areas).

[d] Transportation conformity requirements for CO no longer apply after June 1, 2018 for the following California Carbon Monoxide Maintenance Areas (see the U.S. EPA CO Maintenance Letter).

[e] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 36 months.

[f] The 65 µg/m^3 $PM_{2.5}$ (24-hour) NAAQS was not revoked when the 35 µg/m^3 NAAQS was promulgated in 2006. The 15 µg/m^3 annual $PM_{2.5}$ standard was not revoked when the 12 µg/m^3 standard was promulgated in 2012. Therefore, for areas designated nonattainment or nonattainment/maintenance for the 1997 and/or 2006 $PM_{2.5}$ NAAQS, conformity requirements still apply until the NAAQS are fully revoked.

[g] Final 1-hour NO_2 NAAQS published in the *Federal Register* on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot-spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

[h] 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.

[i] Secondary standard, the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

[j] CARB has identified vinyl chloride and the PM fraction of diesel exhaust as TACs. Diesel exhaust PM is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the CARB and the U.S. EPA have identified lead and various organic compounds that are precursors to O_3 and $PM_{2.5}$ as TACs. There are no exposure criteria for adverse health effect due to TACs, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

[k] Lead NAAQS are not considered in Transportation Conformity analysis.

[l] In 1989, the CARB 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.

Table 2-37. Status of SIPs Relevant to the Proposed Project

Name/Description	Status
O_3	Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard (2001)
$PM_{2.5}$	No SIP required. Bay Area Winter Emissions Inventory for Primary $PM_{2.5}$ & PM Precursors: Year 2010 (2012)
CO	No conformity requirements. 2004 Revision to the California SIP for Carbon Monoxide (2004)

Source: CARB, California SIPs see https://ww3.arb.ca.gov/planning/sip/planarea/bayareasip.htm, accessed Feb. 7, 2020

EXISTING AIR QUALITY

The U.S. EPA, CARB, and BAAQMD maintain a network of air quality monitoring stations to characterize the air quality environment by measuring and recording pollutant concentrations in the local ambient air. The closest monitoring station to the project footprint is the Oakland West Monitoring Station located at 1100 21st Street in Oakland. The monitoring station is approximately 1.1 miles northwest of the project footprint. This station monitors O_3, NO_x, SO_2, CO, $PM_{2.5}$, speciated $PM_{2.5}$, toxics (mobile source air toxics [MSATs] and TACs), and black carbon. Data from the monitoring station were used for the years 2014 through 2018.

Table 2-38 includes pollutant levels, state and federal standards, and the number of exceedances (as determined by CARB) recorded at the Oakland West Monitoring Station from 2014 to 2018 for criteria pollutants. PM_{10} concentrations were not monitored in Alameda County between 2014 and 2018. In the project study area, the federal maximum 24-hour $PM_{2.5}$ standard was exceeded once in 2014, three times in 2015, seven times in 2017, and 15 times in 2018. No other pollutants exceeded standards between 2014 and 2018. A maximum annual concentration over a daily or hourly standard does not mean that the hourly or daily standard has been exceeded. The hourly, daily, and annual metrics are not comparable.

Table 2-38. Air Quality Concentrations 2014-2018 Measured at Oakland West Station

Pollutant	Standard	2014	2015	2016	2017	2018
O_3						
Max 1-hour concentration (ppm)		0.072	0.091	0.065	0.087	0.063
Number days exceeded: CAAQS (ppm)	0.09	0	0	0	0	0
Max 8-hour concentration (ppm)		0.059	0.065	0.053	0.069	0.050
Number days exceeded: CAAQS (ppm)	0.070	0	0	0	0	0
NAAQS (ppm)	0.070	0	0	0	0	0
CO						
Max 1-hour concentration (ppm)		3.0	4.7	2.6	6.0	3.6
Number days exceeded: CAAQS (ppm)	20	0	0	0	0	0
NAAQS (ppm)	35	0	0	0	0	0

Pollutant	Standard	2014	2015	2016	2017	2018
Max 8-hour concentration (ppm)		2.6	2.6	2.2	2.1	3.1
Number days exceeded: CAAQS (ppm)	9	0	0	0	0	0
NAAQS (ppm)	9	0	0	0	0	0
PM_{10}						
Max 24-hour concentration		-	-	-	-	-
Number days exceeded: CAAQS (µg/m$^{3)}$	50	-	-	-	-	-
NAAQS (µg/m^3)	150	-	-	-	-	-
Max annual concentration		-	-	-	-	-
Number days exceeded: CAAQS (µg/m$^{3)}$	20	-	-	-	-	-
$PM_{2.5}$						
Max 24-hour concentration (µg/m^3)		38.8	38.7	23.9	56.0	169.2
Number days exceeded: NAAQS (µg/m$^{3)}$	35	1	3	0	7	15
Max annual concentration (µg/m^3)		9.5	10.2	8.7	12.8	14.4
Number days exceeded: CAAQS (µg/m$^{3)}$	12	N/A	N/A	N/A	N/A	N/A
NAAQS (µg/m^3)	12.0	N/A	N/A	N/A	N/A	N/A
NO_2						
Max 1-hour concentration (ppm)		0.056	0.057	0.049	0.052	0.076
Number days exceeded: CAAQS (ppm)	0.18	0	0	0	0	0
NAAQS (ppm)	0.10	0	0	0	0	0
Max annual concentration (ppm)		0.014	0.14	0.12	0.13	0.12
Number days exceeded: CAAQS (ppm)	0.030	N/A	N/A	N/A	N/A	N/A
NAAQS (ppm)	0.053	N/A	N/A	N/A	N/A	N/A

Source: CARB (2019) https://arb.ca.gov/adam/select8/sc8start.php; BAAQMD (2019) https://www.baaqmd.gov/about-air-quality/air-quality-summaries

"-" = Data not measured at the West Oakland Station

The proposed project footprint is located near sources that emit priority MSATs, including non-mobile sources. The AQR identified traffic, port and rail operations, and industrial sources of MSATs near the proposed project. The heavy-duty trucks and cars that travel through West Oakland and on the surrounding roadways and freeways are the largest source of MSATs affecting sensitive receptors in West Oakland. Truck traffic in West Oakland is generated by the Port of Oakland (Port), businesses, parking lots, warehouses, cargo staging and handling areas, fuels sales, maintenance facilities, weigh stations, and food services. The Port is located about 1.5 miles to the west of the project footprint and encompasses a large area that extends out to about 5 miles west-northwest of the proposed project. The Port and the Union Pacific Railroad

(UPRR) that serves it are large sources of diesel PM and other MSATs. In addition, there are ferry services at the Jack London Square district that emit diesel PM. UPRR rail lines that include UPRR freight and Amtrak commuter trains use tracks that are also within and near the project footprint and the locomotives emit diesel PM. Large industrial sources of MSATs include wastewater treatment plant and recycling facilities. Small industrial sources include gas stations, back-up diesel generators, auto-body shops, restaurants, and commercial cooking. There are no MSAT monitoring stations near the project footprint; the nearest station reporting recent data is in San Francisco.

SENSITIVE RECEPTORS

The proposed project is located within the cities of Oakland and Alameda, which are both urban areas. The areas surrounding the project footprint are densely populated and developed with commercial uses (restaurants, retail spaces, and offices), residential uses (multi-family housing, single-family housing), and industrial uses (ports, light-industrial businesses). The BAAQMD defines sensitive receptors to include residential dwellings (including apartments, single-family houses, and condominiums/townhomes), schools, daycare centers, hospitals, and senior-care facilities. The zone of greatest air quality concern near roadways is within 500 feet (150 meters). The AQR identified 245 residences, six schools and day cares, and two parks that are located within 500 feet of the project footprint.

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. GHGs are analyzed in Chapter 3, Section 3.0. Climate Change.

3.6.3. Environmental Consequences

Project-related emissions would have an adverse environmental impact if they result in pollutant emissions levels that either create or worsen a violation of an ambient air quality standard (identified in Table 2-36) or contribute to an existing air quality violation. The Build and No-Build Alternatives were evaluated by comparing emissions from the project's baseline year (existing emissions in 2015), opening year (2025, when some of the project's transportation improvements will be open to the public), RTP horizon (2040, when it is assumed that Plan Bay Area will be fully implemented), and the project's design year (2045).

The NAAQS were used to evaluate air quality impacts under NEPA and CAAQS were used to evaluate air quality impacts under CEQA. The air quality analysis to support NEPA findings addresses federal criteria pollutants (O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, and Pb), MSATs, and asbestos. For NEPA, future Build Alternative emissions should be compared with future No-Build Alternative emissions. For CEQA, the air quality analysis addresses pollutants for which California has established air quality standards (O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2, Pb, VRP, sulfates, hydrogen sulfide, and vinyl chloride), as well as GHGs, MSATs, and asbestos. Similar to NEPA, analysis and documentation requirements for CEQA vary by pollutant; ranging from a narrative describing that the pollutant is typically not a transportation issue, to an emissions analysis. For CEQA, future scenario emissions (Build and No-Build) should be compared with baseline (existing conditions) emissions. GHGs are analyzed in Chapter 3, Section 3.0. Climate Change.

PERMANENT IMPACTS

No-Build Alternative

Under the No-Build Alternative there would be no permanent project-related changes to pollutant emissions.

Build Alternative

Under the Build Alternative, two major changes would occur: the construction of a new horseshoe ramp that would connect to the existing NB I-880/Jackson Street on-ramp from the Posey Tube and the removal of the NB Broadway Street off-ramp and re-construction of a through portion of 6^{th} Street for multimodal access. The Build Alternative is designed to alleviate the traffic congestion and improve connectivity between Oakland and Alameda for vehicular and multimodal travel.

Regional Conformity

The proposed project is listed in the Plan Bay Area 2040 financially constrained RTP (ID 17-01-0030), which was found to conform by MTC on July 26, 2017, and FHWA and FTA made a regional conformity determination finding on August 23, 2017. The project is also included in MTC's financially constrained 2019 Regional Transportation Improvement Program (RTIP) (ID ALA070009), page S4-75. The MTC's 2019 RTIP was determined to conform by FHWA and FTA on December 17, 2018. The design concept and scope of the proposed project is consistent with the project description in the 2040 RTP, 2019 RTIP, and the "open to traffic" assumptions of the MTC's regional emissions analysis.

Project-level Conformity

The Air Basin was designated an attainment-maintenance area for CO NAAQS, and a nonattainment area for the O_3 and $PM_{2.5}$ NAAQS. Project-level hot-spot analyses for CO, PM_{10}, and $PM_{2.5}$ are typically required under 40 CFR 93.109 for maintenance and nonattainment areas. However, the CO SIP conformity requirements ended in June 2018 so no additional hot-spot analysis for CO is required to address conformity. The measured CO concentrations in the project study area are well below the NAAQS and CAAQS (see Table 2-38). Therefore, the Build Alternative would not cause or contribute to a violation of ambient air quality standards for CO.

Since O_3 impacts are regional in nature, the project that is included in an RTP and RTIP has already undergone regional conformity analysis and does not require further analysis for a project-level conformity determination. The Build Alternative is included in a conforming RTP and RTIP, and therefore emissions of O_3 precursors from Build Alternative-related traffic are not anticipated to cause or contribute to, or worsen, any O_3 violations. In addition to project conformity with the RTP and RTIP, the BAAQMD adopted the 2017 CAP to plan for and achieve compliance with the Federal and State O_3 standards. The Build Alternative would not interfere with the control measures described in the 2017 CAP.

40 CFR 93.123(c)(5) states that: "CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site." Since construction

of the project is expected to last less than five years, an evaluation of CO, PM_{10}, and $PM_{2.5}$ emissions during project construction is not required for project-level conformity determination.

Due to the aforementioned reasons, CO and O_3 hot-spot analyses are not required for the Build Alternative. PM conformity is addressed in the following section.

PM Hot-Spots

A PM hot-spot analysis is required under the U.S. EPA Transportation Conformity Rule for POAQC. According to the U.S. EPA Transportation Conformity Guidance (2013), five types of projects are considered POAQC:

1. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
2. Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
3. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
4. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
5. Projects 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.

The Build Alternative has undergone interagency consultation regarding POAQC determination. The Air Quality Conformity Task Force concurred that the proposed project is not a POAQC on December 12, 2019 (SLR Memo May 2020). The Build Alternative is not considered a POAQC because it does not meet the definition in the U.S. EPA's Transportation Conformity Guidance; therefore, a PM hot-spot analysis is not required. Consultation and coordination with the FHWA for a project-level conformity determination is required prior to finalizing the environmental document and is detailed in Chapter 4, Section 4.1.

Long-term (Operational Emissions) Criteria Pollutants and Ozone Precursors

The assessment of long-term or operational emissions of criteria pollutants and O_3 precursors was based on the VMT and the mixture of vehicles that comprise local traffic. VMT was modelled using vehicle speeds at AM peak, PM peak, midday, and evening periods. The mix of vehicle types used in the model was based on the average mix for the project study area using I-880 and I-980 conditions. Regional operational emissions associated with project implementation were calculated using CT-EMFAC 2017 and adjusted to account for the enactment of the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One.

The Build Alternative would change local traffic patterns and speeds, thereby affecting mobile source emissions. The Build Alternative would provide a more direct connection from Alameda through the Posey Tube to NB I-880 by eliminating the need to travel on local streets, especially Harrison, 7th, and Jackson streets. Table 2-39 shows emissions in 2015 (existing or baseline emissions), 2025 (opening year), 2040 (RTP horizon year), and 2045 (design year) for the No-Build and the Build Alternatives. Emissions decrease in 2025, 2040, and 2045 compared to the existing condition primarily due to fleet turnover and improvements in exhaust controls. When compared to the No-Build Alternative, the Build Alternative would result in slight reductions in 2025, 2040, and/or 2045 in CO and NO_X emissions due to roadway network improvements.

The Build Alternative would result in slight reductions in 2025, 2040, and 2045 in CO emissions due to roadway network improvements. The Build Alternative is not anticipated to increase the percentage of vehicles operating in cold start mode; increase traffic volume; or worsen traffic flow. Additionally, the Build Alternative is located in an area designated "attainment" for CO under both the NAAQS and CAAQS. Therefore, the Build Alternative would not result in any impacts to air quality through changes in CO concentrations.

NO_x and ROG are both precursor pollutants that can lead to the formation of O_3. The Build Alternative would have an increase in ROG in the project's opening year (2025) compared to the No-Build Alternative. However, the difference in emissions between the alternatives is only 1.88 pound (a 1.7% increase). This is a negligible increase that would be resolved by 2040. The Build Alternative will provide transportation benefits that reduce pollutant emissions, including O_3 precursors, by improving traffic operations and efficiency. Therefore, emissions of O_3 precursors from Build Alternative-related traffic are not anticipated to cause, contribute to, or worsen any O_3 violations nor would the Build Alternative result in permanent air quality impacts through changes in O_3 concentrations.

Overall, based on the data in Table 2-39, emissions would slightly decrease or remain the same with implementation of the Build Alternative. Furthermore, the proposed Build Alternative would construct and improve infrastructure for bicyclists and pedestrians for improved connectivity between the cities of Alameda and Oakland. The CT-EMFAC 2017 model does not capture these improvements, but they would have additional air quality benefits for the project study area.

Table 2-39. Summary of Comparative Emissions Analysis for the Proposed Project

Scenario/ Analysis Year	CO (lbs./day)	PM_{10} (lbs./day)	$PM_{2.5}$ (lbs./day)	ROG (lbs./day)	NO_x (surrogate for NO_2) (lbs./day)
Baseline (Existing Conditions) 2015	2,776	70	209	250	1,132
No-Build Alternative 2025	1,125	56	210	110	386
Build Alternative 2025	1,122	56	209	112	386
No-Build Alternative 2040	903	59	226	77	352
Build Alternative 2040	899	59	226	77	350
No-Build Alternative 2045	907	61	232	76	362
Build Alternative 2045	905	61	232	76	360

Source: Illingworth & Rodkin using CT-EMFAC 2017 Version 1.0.2 (2020) with SAFE off-model adjustment factors.

Mobile Source Air Toxics

According to the FHWA's Interim Guidance the Build Alternative is classified as a Category 2 project (projects with low potential MSAT effects). This Build Alternative is expected to meet this category for the following reasons. The Build Alternative would not change the traffic mix, nor would it move major roadways closer to sensitive receptors. The Build Alternative would also not add significant vehicle capacity to roadways.

MSAT emissions were modelled for the No-Build Alternative and Build Alternative to further show that the difference in MSAT emissions between the alternatives would not be significant. CT-EMFAC 2017 was used to model the emissions of 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel PM, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (POM) based on average daily VMT estimates. The VMT within the project study area would decrease by less than 1% between the Build and No-Build Alternatives (Table 2-40). As shown in Table 2-41, the MSAT emissions for the Build Alternative would be lower than the baseline, opening, horizon, and design year emissions. The emissions from the Build Alternative would be similar or slightly less than the emissions from the No-Build Alternative.

Table 2-40. Summary of Average Daily VMT used in MSAT Qualitative Emissions Analysis

Scenario	Baseline 2015	Opening Year 2025	RTP Horizon Year 2040	Design Year 2045
No-Build Alternative	677,973	758,440	822,125	843,353
Build Alternative	677,973	757,430	821,198	842,454
Difference (No-Build vs. Build)	---	-1,010 (-0.1%)	-927 (-0.1%)	-899 (-0.1%)

Source: Illingworth & Rodkin using CT-EMFAC 2017 Version 1.0.2 (2020)

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Table 2-41. Summary of Comparative MSAT Emissions Analysis in Project Study Area

Scenario/ Analysis Year	1,3-butadiene (lbs./day)	Acetaldehyde (lbs./day)	Acrolein (lbs./day)	Benzene (lbs./day)	Diesel PM (lbs./day)	Ethylbenzene (lbs./day)	Formaldehyde (lbs./day)	Naphthalene (lbs./day)	POM (lbs./day)
Baseline (Existing Conditions) 2015	0.82	4.60	0.17	5.31	21.99	3.33	10.37	0.28	0.24
No-Build Alternative 2025	0.27	0.56	0.06	1.94	1.99	1.69	1.55	0.14	0.05
Build Alternative 2025	0.27	0.56	0.06	1.94	2.00	1.69	1.55	0.14	0.05
No-Build Alternative 2040	0.22	0.53	0.05	1.45	1.76	1.17	1.39	0.10	0.03
Build Alternative 2040	0.22	0.53	0.05	1.44	1.77	1.16	1.38	0.10	0.03
No-Build Alternative 2045	0.22	0.55	0.05	1.44	1.78	1.14	1.43	0.10	0.03
Build Alternative 2045	0.22	0.55	0.05	1.44	1.79	1.13	1.43	0.10	0.03

Source: Illingworth & Rodkin using CT-EMFAC 2017 Version 1.0.2 (2020)

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Regardless of the alternative chosen, future emissions will likely be lower than present levels in the 2040 horizon year as a result of the U.S. EPA's national control programs. These are projected to reduce annual MSAT emissions by over 90% between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the U.S. EPA projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the project study area are likely to be lower in the future in nearly all cases.

Under the Build Alternative in 2045, it is expected there would be reduced MSAT emissions in the immediate area of the proposed project, relative to the No-Build Alternative, due to the reduced VMT associated with more direct routing, and due to the U.S. EPA's MSAT reduction programs. Additionally, it should be noted that current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts from MSATs of proposed transportation projects in a way that would be useful to decision-makers.

According to the Council on Environmental Quality's *Provisions Covering Incomplete or Unavailable Information* (40 CFR Section 1502.22), when an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.

(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:

1. A statement that such information is incomplete or unavailable;

2. A statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;

3. A summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and

4. The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts that have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

The amended regulation will be applicable to all environmental impact statements for which a Notice to Intent (40 CFR 1508.22) is published in the Federal Register on or after May 27, 1986.

For environmental impact statements in progress, agencies may choose to comply with the requirements of either the original or amended regulation.

Incomplete or Unavailable Information for Project Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such a C-2 assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The U.S. EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The U.S. EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (U.S. EPA, www.epa.gov/iris/). Each report contains assessments of non- cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-reviewliterature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of C-3 occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxicscritical-review-literature-exposure-and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (https://www.epa.gov/iris)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.[3]

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

The Build Alternative would have overall lower operational emissions when compared to the baseline due to a slight decrease in VMT. When compared to the No-Build Alternative conditions, the differences in emissions would be similar or slightly lower. The Build Alternative also includes TSM and TDM strategies. Therefore, no avoidance or minimization measures are required or recommended to reduce air quality emissions from operation of the project.

CONSTRUCTION IMPACTS

No-Build Alternative

Under the No-Build Alternative there would be no construction and no additional emissions produced by construction activity.

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[3] https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf)

Build Alternative

Construction of the Build Alternative is planned to commence in 2023 and is anticipated to be completed in 2025. The duration of construction for the Build Alternative is approximately 36 months. Construction staging would be done within the project footprint, primarily within the Caltrans' ROW underneath I-880, as well as next to the Oak Street off-ramp and at the Alameda entrance to the Posey Tube.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other construction-related activities. Emissions from construction equipment are expected and would include CO, NO_x, ROGs, SO_2, PM_{10} and $PM_{2.5}$, and TACs such as diesel exhaust PM. O_3 is not directly emitted from construction activities; it is a regional pollutant that is derived from NO_x and ROGs in the presence of sunlight and heat. Construction-related effects on air quality from most highway projects would be greatest during the site preparation and roadway construction phases (including clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces) because most engine emissions and airborne dust are associated with the excavation, handling, and transport of soils to and from the site.

Sources of airborne or fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site could deposit mud on local streets, which could be an added source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions also depends 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 activities for large development projects are estimated by the U.S. EPA to add 1.2 tons of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50%. The Department's Standard Specifications (Section 14) on dust minimization require use of water or dust palliative compounds to reduce potential fugitive dust emissions during construction (PF-AQ-1).

In addition to dust-related PM_{10} emissions, heavy-duty trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROGs and some soot particulate (PM_{10} and $PM_{2.5}$) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site. Diesel exhaust particulate matter is a California-identified TAC, and localized issues may exist if diesel-powered construction equipment is operated near sensitive receptors.

Construction emissions were estimated for the Build Alternative using the latest Sacramento Metropolitan Air Quality Management District's Road Construction Model (RCEM) version 9.0, which uses EMFAC 2017 emission factors. Construction would occur over two stages with Stage 1 focusing on activities south of I-880, the construction of the Jackson Horseshoe on-ramp, and Stage 2 focusing on activities north of I-880, the removal of the Broadway off-ramp and construction of a through 6th Street. Within each stage, there are several sub-stages (e.g., 1A, 1B, and 1C). The stages overlap so the durations add up to greater than the actual length of construction. Table 2-42 shows the construction schedule and equipment used in each phase of the Build Alternative. Calculation methods and assumptions are provided in the AQS.

Table 2-42. Duration and Equipment for Construction Activities

Construction Activity	Duration (months)	Equipment Used
Stage 1		
1A: Clearing, grubbing, mobilization, 5th Street entrance, Webster Tube construction (walkway and striping)	8	Cement and mortar mixer, concrete/industrial saws, crushing and processing equipment, dump truck, excavators, jack hammer, generator sets, grader, off-highway tractor, pavers/paving equipment, plate compactor, rollers, scraper, pressure washers, rough terrain forklift, skid steer loaders, sweeper/scrubbers, signal boards, surfacing equipment, trencher, welders.
1B: Retaining walls 1-4, 6, 8L, 8R, horseshoe, connect Posey Tube to horseshoe, reconstruct Jackson off-ramp	12	Aerial lifts, cement and mortar mixers, cranes, crushing and processing equipment, concrete and industrial saws, dump trucks, excavators, forklifts, generator sets, graders, hoe ram, jack hammer, off-highway tractors, pavers and paving equipment, vibratory pile driver, plate compactors, rollers, rough terrain forklift, scrapers, skid steer loader, signal boards, surfacing equipment, sweepers and scrubbers, trenchers, welders.
1C: Construct 5th Street curb/gutter, sidewalk and pavement	1	Cement and mortar mixers, concrete and industrial saws, crushing and processing equipment, dump trucks, graders, off-highway tractors, pavers and paving equipment, plate compactors, pressure washers, scrapers, signal boards, skid steer loaders, surfacing equipment, sweepers/scrubbers.
1D: Retaining wall 9, overhead signs, restripe Posey Tube and Harrison Street	4	Aerial lifts, cement and mortar mixers, concrete and industrial saws, cranes, crushing and processing equipment, dump trucks, excavators, generator sets, graders, jack hammers, hoe ram, off-highway tractors, pavers and paving equipment, vibratory pile driver, plate compactors, rollers, rough terrain forklifts, scrapers, signal boards, skid steer loaders, surfacing equipment, sweepers/scrubbers, trenchers, welders.
Stage 2		
2A: Widen Oak Street off-ramp and prepare 6th Street, retaining walls 5, 7, 10	10	Aerial lifts, cement and mortar mixers, concrete and industrial saws, crushing and processing equipment, dump trucks, excavators, forklifts, generator sets, graders, off-highway tractors, pavers and paving equipment, vibratory pile drivers, plate compactors, rollers, scrapers, signal boards, skid steer loaders, sweepers/scrubbers, surfacing equipment, welders.
2B: Remove Broadway off-ramp structure and approach	3	Concrete and industrial saws, crushing and processing equipment, dump trucks, excavators, generator sets, hoe ram, jack hammer, off-highway tractors, skid steer loaders, signal boards, sweepers/scrubbers.
2C: Construct 6th Street	8	Cement and mortar mixers, concrete and industrial saws, dump trucks, excavators, forklifts, generator sets, graders, off-highway tractors, pavers and paving equipment, plate compactors, rollers, scrapers, signal boards, skid steer loaders, surfacing equipment, sweepers and scrubbers, trenchers.

Construction Activity	Duration (months)	Equipment Used
2D: Construct bicycle path and cycle tracks on local streets, traffic signals	4	Cement and mortar mixers, concrete and industrial saws, crushing and processing equipment, dump trucks, excavators, forklifts, generator sets, off-highway tractors, pavers and paving equipment, plate compactors, rollers, scrapers, signal boards, skid steer loaders, surfacing equipment, sweepers and scrubbers.
2E: Landscaping	3	Dump trucks, forklifts, signal boards.

Source: HNTB (2020)

Table 2-43 and Table 2-44 show the daily emissions associated with the Build Alternative. Construction emissions are short-term and intermittent in duration. In addition, project features and avoidance and minimization measures are provided that would reduce and/or control emissions resulting from construction activities.

Table 2-43. Stage 1 Construction Emissions

Sub-Stage	Phase	Activities	ROG (lbs./ day)	CO (lbs./ day)	NO_x (lbs./ day)	Exhaust PM_{10} (lbs./ day)	Exhaust $PM_{2.5}$ (lbs./ day)	CO2e (Metric Tons [MT]/ phase)
1A	**1Aa**	Mobilization, clear and grub	2.32	26.19	19.04	0.91	0.84	93.46
1A	**1Ab**	Construct 5th Street entrance to Webster Tube	5.76	49.01	54.23	2.36	2.13	218.92
1A	**1Ad**	Construct Webster Tube bicycle/pedestrian walkway	4.20	43.16	36.32	1.64	1.51	476.78
1A	**1Ae**	Restripe Webster Tube	0.35	2.82	2.38	0.14	0.10	6.72
1B	**1Ba**	Construction of RW 4	2.80	27.92	23.82	1.12	1.03	155.04
1B	**1Bb**	Close Broadway to Jackson off-ramp connection. Construction of RWs 2 and 3	2.94	30.10	25.02	1.24	1.08	251.05
1B	**1Bc**	Construct Horseshoe and re-construct Jackson Street off-ramp. Remove Jackson Street off-ramp. Partial construction of RWs 1, 8r, 8L, and Jackson Street off-ramp abutment	6.45	63.97	61.92	2.81	2.51	1,666.99
1B	**1Bd**	Re-construct Jackson off-ramp. Complete Posey Tube connection to the horseshoe. Complete RWs 1 and 6	3.47	34.33	32.98	1.39	1.27	269.92
1C	**1C**	Construct 5th Street curb/gutter, sidewalk and pavement	3.07	30.85	27.74	1.20	1.09	62.50
1D	**1Da**	Restripe Posey Tube	0.61	5.94	5.02	0.26	0.23	10.70
1D	**1Db**	Overhead guide signs	5.41	46.32	52.98	2.23	1.96	113.73
1D	**1Dc**	Construct RW 9, pavement, and stripe Harrison Street	3.55	38.87	33.85	1.57	1.37	165.82
---	**---**	**Stage 1 Average Daily Emissions (lbs./day) *Based on 380 Workdays**	**8.89**	**88.53**	**82.44**	**3.75**	**3.32**	**2,205.23 MT/Year**
---	**---**	**Stage 1 Total Construction Tons**	**1.69 tons**	**16.82 tons**	**15.66 tons**	**0.71 tons**	**0.63 tons**	**3,491.62 MT**

Table 2-44. Stage 2 Construction Emissions

Sub-Stage	Phase	Activities	ROG (lbs./ day)	CO (lbs./ day)	NO_x (lbs./ day)	Exhaust PM_{10} (lbs./ day)	Exhaust $PM_{2.5}$ (lbs./ day)	CO2e (Metric Tons/ phase)
2A	**2Aa**	Construct RWs 7 and 10 at Oak Street off-ramp	5.50	50.61	51.95	2.13	1.91	616.59
2A	**2Ab**	Construct auxiliary lane	2.95	28.84	30.61	1.34	1.15	141.48
2A	**2Ac**	Close Jackson Street on-ramp to Broadway off-ramp connection. Construct RW 5 at Jackson Street on-ramp. Remove raised gore and curb at on-ramp entrance. Restripe entrance ramp.	3.93	39.44	35.00	1.50	1.34	436.48
2B	**2B**	Remove Broadway off-ramp structure and approach	6.15	65.04	46.80	1.94	1.79	418.61
2C	**2Ca**	Construct 6th Street curb/gutter, sidewalk, fences	2.86	29.45	25.11	1.11	1.01	350.72
2C	**2Cb**	Construct 6th Street from Oak Street to Jackson Street	3.08	31.52	26.10	1.20	1.08	124.74
2C	**2Cc**	Construct 6th Street between Jackson and Harrison streets	3.43	38.33	35.49	1.51	1.27	202.12
2C	**2Cd/ 2Ce**	Construct 6th Street between Jackson and Harrison streets/Mill and overlay 6th Street between Broadway and Washington Street	3.84	41.78	32.74	1.47	1.36	219.33
2D	**2Da**	Construct bicycle paths and cycle tracks, local street paving	2.64	26.72	26.83	1.15	0.97	147.99
2D	**2Db**	Reconstruct Harrison/7th and 7th/Jackson intersections	2.03	20.49	17.32	0.79	0.67	97.87
2D	**2Dc**	Traffic signal installation and modification	2.47	25.95	21.50	0.99	0.87	111.75
2E	**2E**	Landscaping	0.95	7.76	7.42	0.33	0.27	25.19
---	**---**	**Stage 2 Average Daily Emissions (lbs./day) *Based on 500 Workdays**	**5.14**	**51.95**	**45.89**	**1.97**	**1.76**	**1,388.49 MT/Year**
---	**---**	**Stage 2 Total Construction Tons**	**1.28 tons**	**12.99 tons**	**11.47 tons**	**0.49 tons**	**0.44 tons**	**2,892.68 MT**
---	**---**	**Build Alternative Average Daily Emissions (lbs./day) *Based on 800 Workdays**	**7.43**	**74.52**	**67.84**	**3.02**	**2.68**	**1,915.29 MT/Year**
---	**---**	**Build Alternative Total (tons)**	**2.97**	**29.81**	**27.13**	**1.21**	**1.07**	**6,384.30 MT**

Source: Illingworth & Rodkin using RCEM version 9.0.0 (2020)

SO_2 is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Under California law and CARB regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel (not more than 15 ppm sulfur), so SO_2-related issues due to diesel exhaust from construction equipment will be minimal.

Some phases of construction, particularly asphalt paving, may result in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases.

Asbestos

Naturally Occurring Asbestos

Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. The State Department of Conservation, in conjunction with the USGS, has prepared a map and spreadsheet inventory of asbestos areas and areas known to contain serpentinite and ultramafic rocks. The locations of the identified deposits were examined, and it was determined that the project is not in an area containing naturally occurring asbestos. Standard dust control measures (included in PF-AQ-1, PF-WQ-1, PF-WQ-3, PF-WQ-6, PF-WQ-7, PF-WQ-8, and PF-WQ-9), such as watering, would effectively control any exposure to unanticipated naturally occurring asbestos.

Structural Asbestos

Impacts from asbestos-containing building materials could occur if asbestos was incorporated into older structures such as the Posey Tube and the I-880 viaduct. BAAQMD requires an asbestos survey and notification prior to regulated demolition or renovation. Demolition activities would be subject to BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing), which is intended to limit asbestos emissions and the associated disturbance of asbestos-containing waste material generated or handled during these activities. As described in the BAAQMD May 2017 CEQA Guidelines:

> *The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires the Lead Agency and its contractors to notify BAAQMD of any regulated renovation or demolition activity. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present. All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, including specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Therefore, projects that comply with Regulation 11, Rule 2 would ensure that asbestos-containing materials would be disposed of appropriately and safely.*

By complying with BAAQMD Regulation 11, Rule 2, the Build Alternative would minimize the release of airborne asbestos emissions, and demolition activity would not result in a significant impact to air quality.

Lead

ADL may be present in soils adjacent to roadways and railways that were heavily used prior to the lead additive ban. Some buildings in the project study area have been present since the early 20th century. Where older buildings (pre-1980s) contain LBP are upgradient and near the roadway, lead-contaminated runoff may have flowed off of the buildings and into swales and ditches present along the roadways. For the location of buildings built prior to the lead paint ban, see Section 3.5. Hazardous Waste/Materials. LBP surveys will be conducted prior to demolition of structure built before 1978 (AMM-HW-3). Lead contamination associated with historical air emissions and stormwater runoff from LBP could be present in the soil within the project footprint. Soils would be tested for the presence of lead (AMM-HW-1). If lead is present, the project would be handle contaminated soil in compliance with local, state, and federal regulations (AMM-HW-6).

Construction Conformity

Construction activities will not last for more than five years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123[c][5]).

PROJECT FEATURES

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in long-term adverse changes to air quality. Implementation of the following standardized measures, will reduce any air quality impacts resulting from construction activities:

PF-AQ-1 Dust Control	The construction contractor will comply with Caltrans Standard Specifications in Sections 10-5 and 14. Section 10-5 requires application of dust palliatives, application of temporary soil stabilization, and management of material stockpiles. Section 14 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. Section 14 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are described in Section 18.

The Build Alternative will also implement PF-WQ-1, PF-WQ-3, PF-WQ-6, PF-WQ-7, PF-WQ-8, and PF-WQ-9 (Section 3.2.3). These water quality project features address wind erosion, erosion control, trackout control, soil stabilization and watering, and will avoid and minimize construction impacts to air quality with respect to airborne dust.

3.6.4. Avoidance, Minimization, and/or Mitigation Measures

Three hazardous waste AMMs will reduce the potential for impact to air quality (Section 3.5.4). AMM-HW-1 will be implemented to confirm lead concentrations in soils. AMM-HW-2 will be implemented to address the potential for ACM to be encountered during structural modifications.

AMM-HW-6 would ensure proper handling and disposal of any contaminated soils.

The following AMMs will also be implemented to reduce the potential for project impacts to air quality. Measures will be further evaluated during the design phase of the project.

AMM-AQ-1 Dust Control	The project will minimize fugitive dust. The following measures will be implemented to control fugitive dust: • All vehicle speeds on unpaved roads will be limited to 15 mph. • Stabilization of disturbed areas will be done as soon as possible (including paving and vegetation establishment). • When average wind speeds exceed 20 mph, excavation, grading, and/or demolition activities will be avoided where feasible to minimize airborne dust. • 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. • Construction activities (such as excavation, grading, and ground-disturbing) will be phased to reduce the number of disturbed surfaces at any one time to the extent feasible. • A publicly visible sign will be posted with the resident engineer’s telephone number to contact regarding dust complaints. This person will respond to any complaints and take corrective action within 48 hours. The BAAQMD phone number will also be visible to ensure compliance with applicable regulations.
AMM-AQ-2 Exhaust Emissions	Measures to reduce exhaust emissions and PM_{10}, $PM_{2.5}$, and diesel PM from construction will be incorporated to the extent feasible to ensure that short-term health impacts to nearby sensitive receptors are avoided. Such measures may include: • Idling time of diesel-powered construction equipment and trucks shall be limited to no more than two minutes. Clear signage of this idling restriction shall be provided for construction workers at all access points. • All construction equipment will be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation. • All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114. • All off-road equipment over 25 horsepower that will be operated for more than 20 hours over the entire duration of construction will have engines that meet or exceed the U.S. EPA or CARB’s Tier 2 off-road emission standards. This equipment also will be retrofitted with a CARB Level 3 Verified Diesel Emissions Control Strategy (VDECS), if one is available for the equipment being used. Equipment with engines that meet Tier 4 Interim or Tier 4 Final emission standards automatically meet this requirement; therefore, a VDECS will not be required.

- 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 streets during peak travel times.
- Portable diesel generators will not be used. Grid power electricity will be used to provide power at construction sites; or propane and natural gas generators may be used when grid power electricity is not feasible.

With implementation of the project features and AMMs identified above, there would be no adverse effects to air quality. AMM-AQ-2 would minimize NO_x emissions during construction.

Climate Change

Neither U.S. EPA nor FHWA has issued explicit guidance or methods to conduct project-level GHG analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and executive orders on climate change, the issue is addressed in the CEQA chapter of this document. The CEQA analysis may be used to inform the NEPA determination for the proposed project.

3.7. NOISE AND VIBRATION

3.7.1. Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation; however, they differ between NEPA and CEQA.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The rest of this section will focus on the NEPA/Title 23 CFR 772 noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

NATIONAL ENVIRONMENTAL POLICY ACT AND 23 CFR 772

For highway transportation projects with FHWA involvement (and the Department, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include NAC that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2-45 lists the NAC for use in the NEPA 23 CFR 772 analysis.

Figure 2-42 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

According to Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects* (May 2011), a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

Table 2-45. Noise Abatement Criteria

Activity Category	Activity $L_{eq[h]}$[1]	Evaluation Location	Description of Activity Category
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	Exterior	Residential.
C[2]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted (without building permits).

[1] NAC, Hourly A-Weighted Noise Level (Leq[h])

[2] Includes undeveloped lands permitted for this activity category.

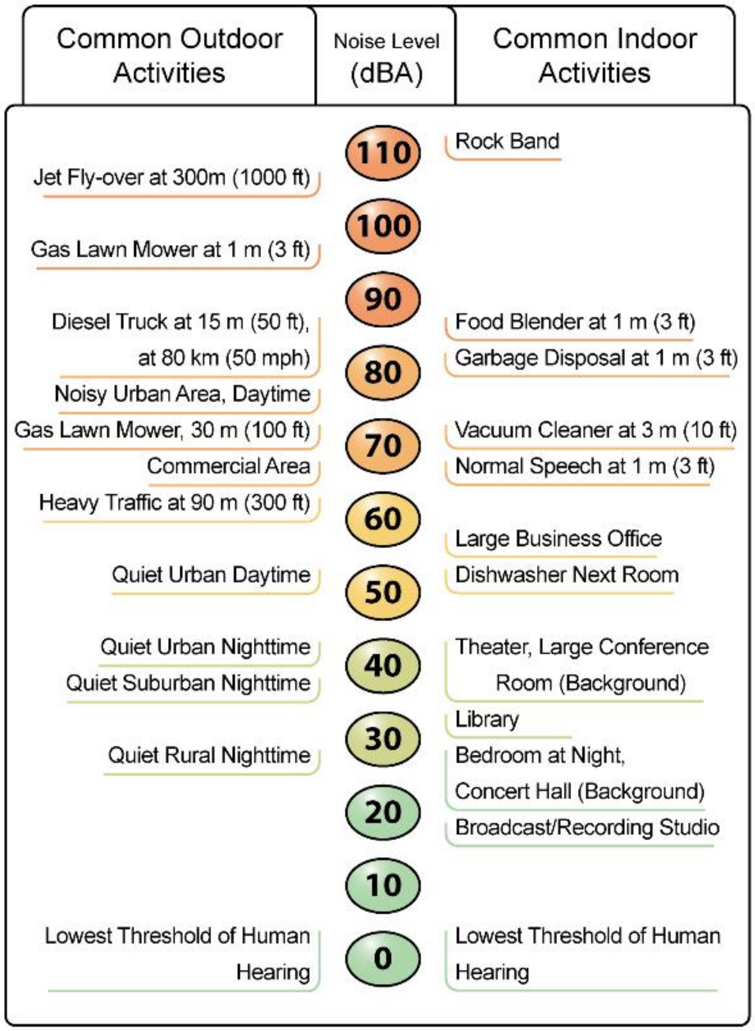


Figure 2-42. Noise Levels of Common Indoor and Outdoor Activities

If it is determined that the proposed project would have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design would be incorporated into the proposed project's plans and specifications. This section discusses noise abatement measures that would likely be incorporated into the proposed project.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. Noise abatement must be predicted to reduce noise by at least 5 dBA at an impacted receptor to be considered feasible from an acoustical perspective. It must also be possible to design and construct the noise abatement measure for it to be considered feasible. Factors that affect the design and constructability of noise abatement include, but are not limited to, safety, barrier height, topography, drainage, access requirements for driveways, presence of local cross streets, underground utilities, other noise sources in the area, and maintenance of the abatement measure. The overall reasonableness of noise abatement is determined by the following three factors: 1) the noise reduction design goal of 7 dB at one or more impacted receptors; 2) the cost of noise abatement; and 3) the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

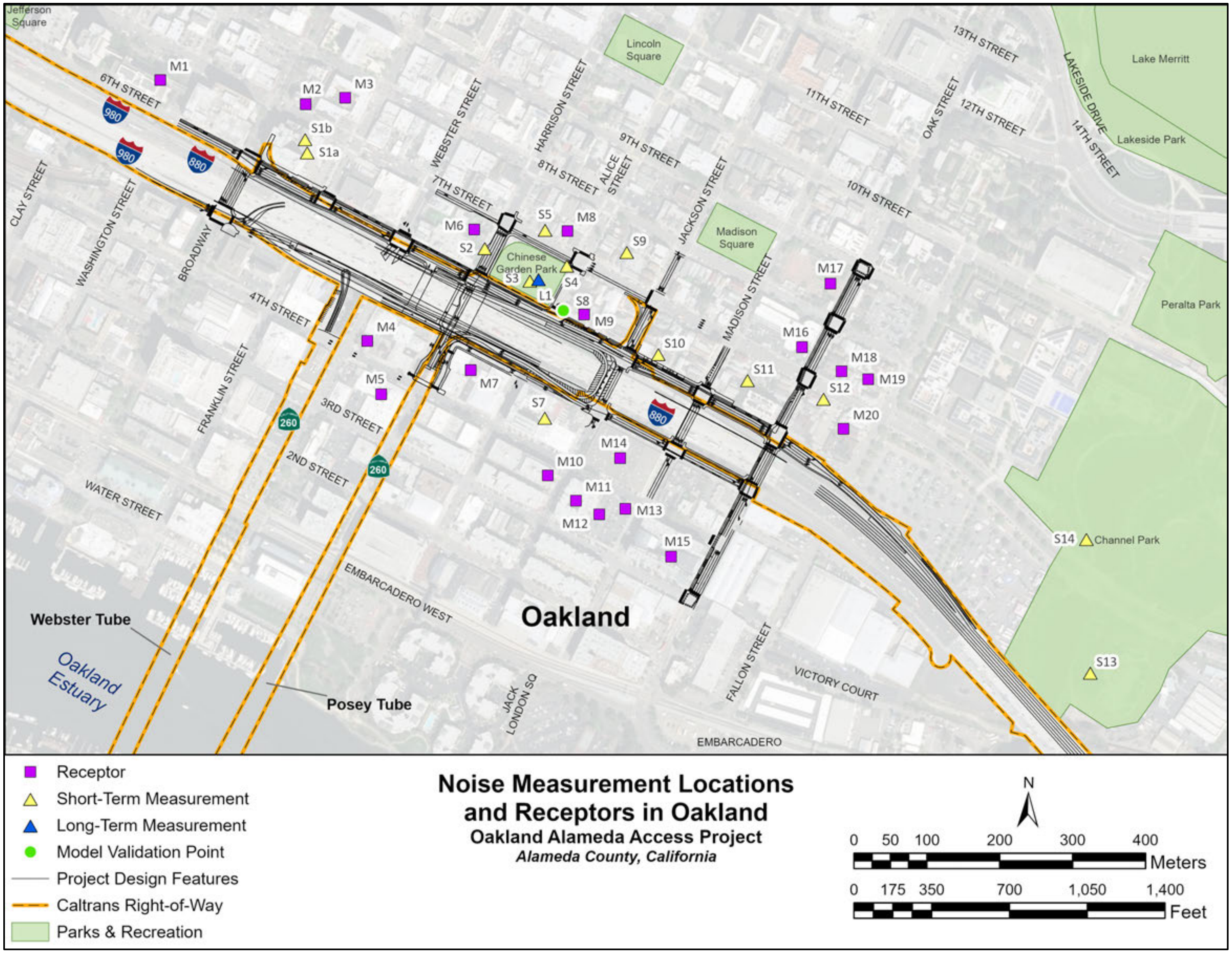
3.7.2. Affected Environment

The following summarizes the *Noise Study Report* (May 2020) and the *Noise Abatement Decision Report* (May 2020) and discusses the anticipated noise effects associated with the Build Alternative.

Field investigations within the project study area were conducted from July 16 to 18, 2018 to identify land uses that may be subject to traffic and construction noise impacts and to make noise measurements for use in validating the traffic noise model. Existing land uses within the project study area were categorized per Table 2-45. Activity categories B, C, D, E, and F were documented and potential noise receptors (Figure 2-43 and Figure 2-44) were identified within the project study area.

The proposed project's noise impact analysis focused on areas with frequent human use that would benefit from a lowered noise level. Within the project study area, these were outdoor areas (e.g., residential backyards and common use areas). Both long- and short-term noise measurements were collected. Long-term noise measurements were collected over a 48-hour period in order to calculate the daily trend in noise levels, and to establish the worst traffic noise hour. Short-term noise measurements were taken to validate the traffic noise model. These locations were representative of each major developed, or potentially developed, area within the proposed project. These measurements were taken over a minimum of two consecutive 10-minute windows.

FHWA's traffic noise model (Traffic Noise Model Version 2.5) was used to calculate future traffic noise levels under the No-Build and Build alternatives. Established traffic noise modeling methodology using traffic counts, speed observations, vehicle mix, and site-specific geographical information were used in the traffic noise model to determine existing and future noise levels within the project study area. The model was validated based on measured noise and traffic conditions during the field surveys. The existing noise environment varied by location and depended upon the traffic volumes, vehicle make-up, vehicle speeds, proximity of receptors to the roadways, the relative elevations of roadways to each receptor, and the presence of any intervening structures/barriers.



Source: HNTB (2020)

Figure 2-43. Noise Measurement Locations and Receptors in Oakland

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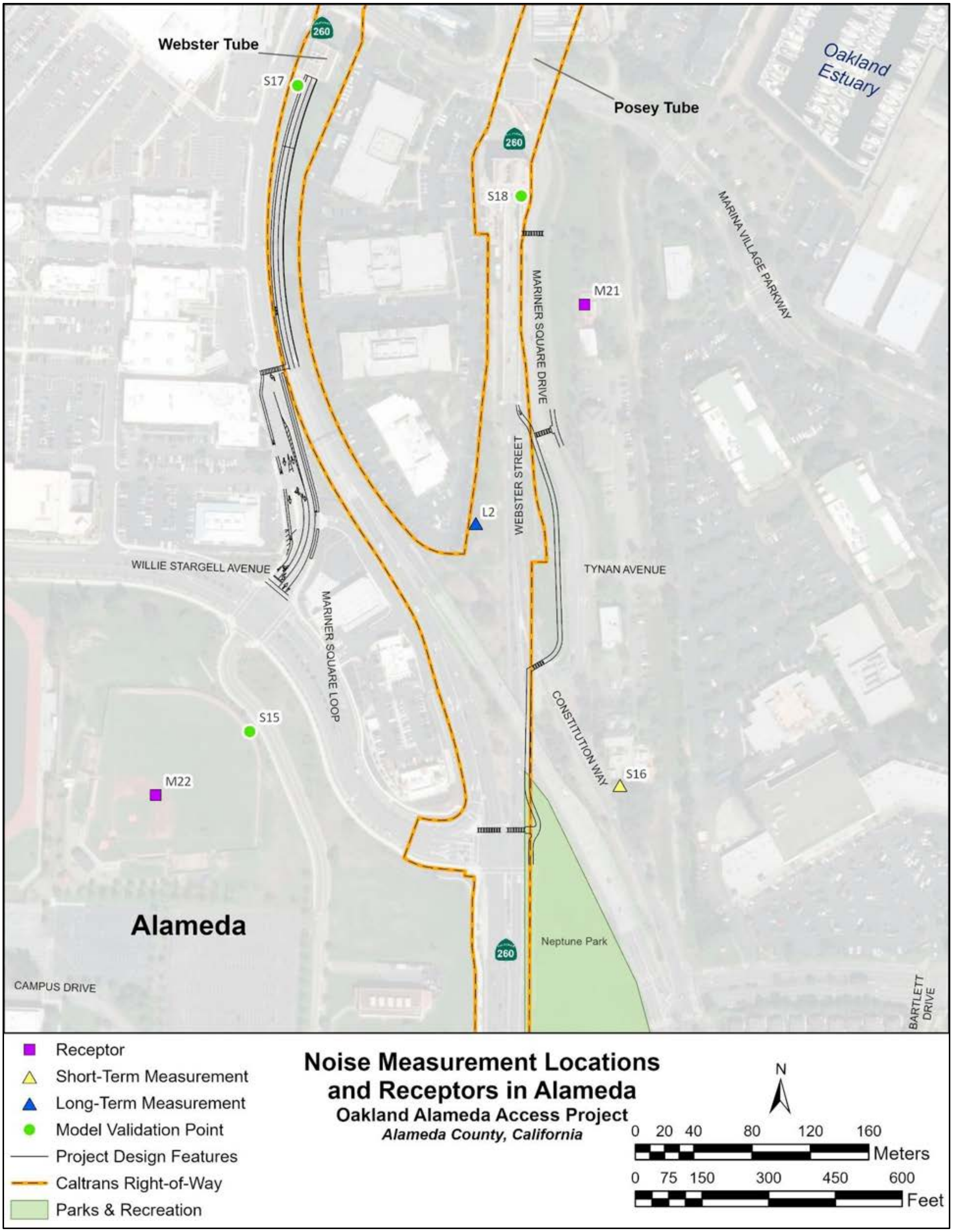


Source: HNTB (2020)

Figure 2-44. Noise Measurement Locations and Receptors in Alameda

3.7.3. Environmental Consequences

PERMANENT IMPACTS

Under Title 23 CFR 772, the proposed project would be classified as a Type 1 project since it would involve the physical alteration of an existing highway with a substantial horizontal or vertical change to the roadway alignment and the relocation of interchange lanes and ramps. Noise abatement must be considered for any impacted receptors of Type 1 projects. The traffic noise model was used to forecast future (2045) noise levels at receptors within the project study area. Table 2-46 provides the results of this modeling under both alternatives.

Category B and C Land Uses: A substantial noise impact to Category B and C land uses is defined as a predicted increase in noise levels of 12 dBA or greater. dBA approximates the frequency response of a young average person's ear when listening to most ordinary sounds. Category B or C land uses also could be impacted if the predicted noise level approaches or exceeds the NAC-specified level, which is defined as coming within 1 dBA of the NAC.

In Oakland, no substantial increase in noise levels was predicted. The worst-hour noise levels ($L_{eq[h]}$) at Category B land uses ranged from 36 to 73 dBA $L_{eq[h]}$ under both the existing conditions and the 2045 No-Build conditions. A similar range of 35 to 73 dBA $L_{eq[h]}$ was predicted under the 2045 Build conditions (Table 2-46). The worst-hour noise levels at Category C land uses ranged from 62 to 71 dBA $L_{eq[h]}$ under existing conditions to 63 to 70 dBA $L_{eq[h]}$ under the 2045 No-Build conditions. As before, a similar range of 62 to 70 dBA $L_{eq[h]}$ was predicted under the 2045 Build conditions. Although there are no existing noise barriers within the project study area, some receptors are shielded behind existing structures or within building courtyard areas. Many of the receptors along I-880 are located at upper-story balconies or rooftops. Traffic noise levels under the 2045 Build Alternative are predicted to approach or exceed the NAC at first (front) row Category B and C receptors north and south of I-880 (S1a, S2, S3, S13, M4, M7, M9, M13) and north and south of 7th Street (S4, S5, S12). Noise abatement was considered for these impacted receptors.

In Alameda, no substantial increase in noise levels was predicted, and there are no Category B land uses within the project study area. The worst-hour noise levels for Category C land uses ranged from 51 to 69 dBA $L_{eq[h]}$ under existing conditions. Conditions under both the 2045 No-Build and Build alternatives ranged from 52 to 69 dBA $L_{eq[h]}$ (Table 2-46). The noise levels under the 2045 Build Alternative are predicted to approach or exceed the NAC at one receptor (S16). Noise abatement was considered for this receptor.

Category D Land Use: A Category D land use is impacted if the proposed project's noise levels approach or exceed 52 dBA within the interior of a structure. Based on FHWA guidance, a Category D structure should provide 10 dBA of noise reduction from exterior noise sources with the windows open and noise reduction of 20 to 30 dBA with the windows closed. Therefore, Category D structures that lack forced air mechanical ventilation (i.e., windows open) could have interior noise levels approaching or exceeding 52 dBA with exterior exposures of 62 dBA or more. For structures with forced air mechanical ventilation (i.e., windows closed), exterior noise levels of 72 to 82 dBA would approach this threshold.

Category D land uses were documented in both Oakland and Alameda. Exterior noise levels were predicted to range from 58 to 71 dBA $L_{eq[h]}$ under 2045 Build conditions. Based on this, interior noise levels at four receptors (S3, S12, S13, and S16) could potentially approach or exceed 52 dBA with open windows. Noise levels would not approach or exceed this threshold with windows closed. The need to install forced-air ventilation was evaluated as noise abatement for Category D receptors. Each receptor confirmed the presence of a ventilation system, which would allow occupants to keep windows closed to help control noise. Because of this, no further noise abatement was considered for these interior uses.

Category E Land Use: Each Category E receptor (S10, M1, M5, and M17) was evaluated for potential noise impacts. None of the projected noise levels under either alternative approached or exceeded the 72 dBA threshold. Therefore, noise impacts are not anticipated to Category E receptors.

Category F Land Use: There is no established noise threshold for Category F land uses (storage and industrial). Potential receptors were evaluated during the visual surveys of the project study area. None of these receptors were determined to be noise sensitive.

Table 2-46. Existing (2018) and Future (2045) Noise Levels

Receptor ID[1]	Worst Hour Noise Levels (dBA $L_{eq[h]}$)			Activity Category (NAC dBA)	Impact[2]
	Existing	2045 No-Build	2045 Build		
L1	71	N/A	N/A	N/A	N/A
L2	71	N/A	N/A	N/A	N/A
S1a	66	66	66	B(67)	A/E
S1b	61	62	61	B(67)	None
S2	73	73	73	B(67)	A/E
S3	72	71	71	C(67)	A/E
S4	71	70	70	C(67)	A/E
S5	69	68	69	B(67)	A/E
S7	59	59	59	B(67)	None
S9	48	48	48	B(67)	None
S10	60	61	60	E(72)	None
S11	64	64	64	C(67)	None
S12	66	67	66	C(67)	A/E
S13	66	67	66	C(67)	A/E
S14	62	63	62	C(67)	None
S16	69	69	69	C(67)	A/E
M1	60	61	60	E(72)	None
M2	61	62	61	B(67)	None
M3	48	49	48	B(67)	None
M4	73	73	73	B(67)	A/E
M5	52	53	52	E(72)	None
M6	63	63	63	B(67)	None
M7	68	69	68	B(67)	A/E

Receptor ID[1]	Worst Hour Noise Levels (dBA $L_{eq[h]}$)			Activity Category (NAC dBA)	Impact[2]
	Existing	2045 No-Build	2045 Build		
M8	54	54	54	B(67)	None
M9	68	68	68	B(67)	A/E
M10	57	58	57	B(67)	None
M11	43	43	43	B(67)	None
M12	36	36	35	B(67)	None
M13	67	67	67	C(67)	A/E
M14	48	49	48	B(67)	None
M15	37	38	37	B(67)	None
M16	64	65	64	B(67)	None
M17	57	59	57	E(72)	None
M18	43	44	43	B(67)	None
M19	42	42	42	B(67)	None
M20	55	56	55	B(67)	None
M21	57	58	58	C(67)	None
M22	51	52	52	C(67)	None

[1] S = short-term receptor; M = modeled receptor; L = long-term receptor

[2] Impact Type: A/E = Approach or Exceed NAC, None = Increase is less than 12 dBA and noise levels do not approach or exceed the NAC

CONSTRUCTION IMPACTS

Noise

Construction noise varies depending on the construction process, type, and condition of equipment used, and on the layout of the construction site. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately predict levels of construction noise. Construction noise estimates provided in this section are approximate due to the lack of specific information available at this stage of the proposed project.

Construction noise may intermittently dominate the noise environment in the immediate area of work. Construction noise would primarily result from the operation of heavy equipment and the arrival/departure of heavy duty trucks. Vibratory pile drivers would be used to install temporary sheet piles during the construction of several retaining walls. Also, cast-in-drilled-hole (CIDH) concrete piles would be used for retaining wall construction. Table 2-47 outlines anticipated construction noise levels ($L_{eq[h]}$ and maximum sound level [L_{max}]) for each major phase of construction at a distance of 50 feet. Noise produced by construction equipment would be reduced at a rate of approximately 6 dBA per doubling of distance away from the noise.

Most construction phases are expected to generate average noise levels that would exceed ambient daytime noise levels at adjacent land uses by 15 to 25 dBA. Maximum instantaneous noise levels generated by typical construction activities would generally be at or below existing maximum noise levels generated by highway traffic, but they would be considerably higher than levels generated by local traffic. Noise levels generated during periods of vibratory pile driving would be higher. Due to the dense urban nature of the project study area, temporary construction noise impacts would be unavoidable at areas located immediately adjacent to the proposed project alignment.

Noise associated with construction is controlled by Caltrans Standard Specifications Section 14-8.02 "Noise Control," which would require the proposed project to control and monitor noise resulting from construction activities. This specification requires that noise levels do not exceed 86 dBA 50 feet from construction site activities from 9 pm to 6 am. With the exception of short periods associated with heavy demolition and site preparation, construction noise levels would not be expected to exceed the quantitative noise limits established by Caltrans. Construction during nighttime hours may be required to avoid temporary roadway closures. If so, the Caltrans specification would ensure acceptable noise levels are maintained.

Table 2-47. Noise Levels by Construction Phase at 50 Feet

Construction Stage	Subphase	Maximum Noise Level (L_{max}, dBA)	Hourly Average Noise Level ($L_{eq[h]}$, dBA)
Stage 1 South of I-880	(1A) Construct Webster Tube Bicycle/Pedestrian Walkway (180 Days)	85 to 90	88 to 91
	(1B) Construct Jackson Street Horseshoe Connector (295 Days)	90	87 to 92
	(1C) Construct 5th Street Curb/Gutter, Sidewalk, and Pavement (20 Days)	90	90
	(1D) Construct Posey Tube/Harrison Street (80 Days)	90	88 to 92
Stage 2 North of I-880	(2A) Widen Oak Street Off-ramp and Partial Construction of 6th Street (280 Days)	85 to 90	88 to 90
	(2B) Remove Broadway Off-ramp Structure and Approach (140 Days)	90	91
	(2C) Construct 6th Street (120 Days)	85 to 90	84 to 90
	(2D) Construct Bicycle Paths and Tracks on Local Streets (80 Days)	90	89 to 90
	(2E) Landscaping (60 Days)	85	83

Source: FHWA Roadway Construction Noise Model (February 2006)

Typically, work taking place within Caltrans' ROW is not subject to local noise ordinances. Caltrans will work with the contractor to meet the local requirements in Oakland and Alameda, where feasible.

Vibration

Pile driving, demolition, blasting, and crack-and-seat operations are the primary sources of vibration addressed by Caltrans. Impact pile driving is not proposed as a method of construction. Traffic, including heavy trucks traveling on a highway, rarely generate vibration amplitudes high enough to cause structural or cosmetic damage.

Due to the short-term nature of construction, the primary concern associated with vibration is structural damage. Demolition and construction activities can generate vibration that could affect nearby sensitive land uses. Building damage is classified as follows:

- Cosmetic damage (hairline cracking in plaster, opening of old cracks, loosening of paint, dislodging of loose objects, etc.);
- Minor damage (hairline cracking in masonry, loosening of plaster, etc.); and
- Major structural damage (wide cracking, shifts in foundations or bearing walls, etc.).

The impact of construction-generated vibration to sensitive receptors depends upon the proximity of the existing structures, soil properties, soundness of the structures, and construction method.

The proposed project is located in a dense urban area with a variety of structures and land uses, including multiple historic properties. Caltrans sets vibration limits depending upon the type of potentially affected structure. Exceeding a vibration limit of 0.5 inch/second peak particle velocity (PPV) would potentially damage new residential and modern commercial/industrial structures. A limit of 0.3 inch/second PPV is specified to prevent damage to older residential structures, while a conservative limit of 0.25 inch/second PPV is specified for historic/older buildings. Table 2-48 shows the distance to exceedance of vibration limits for various structure types.

Table 2-48. Distance to Exceedance of Vibration Limit by Structure Type

Structure Type (Threshold)	Distance to Exceedance of Threshold (in feet[1])	
	Vibratory Pile Driving	Other Heavy Construction
Historic Buildings (0.25 inch/second PPV)	75	25
Older Residences (0.3 inch/second PPV)	60	20
New Residential and Commercial/ Industrial Buildings (0.5 inch/second PPV)	40	12

[1] *These levels were calculated assuming normal propagation conditions, using a standard equation of PPVeqmt-*PPVref* (25/D)$^{1.1}$ *from Caltrans (September 2013)*

Due to the proximity of heavy construction and vibratory pile driving to structures as well as the density of historic structures in Oakland, vibration limits are anticipated to be exceeded at adjacent historic structures. Construction vibration limits are not anticipated to be exceeded in Alameda.

A desktop review conducted for the project footprint and adjacent areas did not identify any vibration sensitive business operations that would be impacted by construction. Additionally, no comments regarding vibration concerns were received in response to the public outreach notice and scoping meeting.

PROJECT FEATURES

The following project features would be included with the Build Alternative to address noise:

PF-NOI-1 **Noise Control**	All construction activities will conform to Section 14-8.02. Noise Control of the latest Caltrans Standard Specifications.
PF-NOI-2 **Noise Complaints**	The resident engineer will be responsible for collecting and responding to any complaints related to construction noise.

3.7.4. Avoidance, Minimization, and/or Mitigation Measures

Noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. Noise abatement must be predicted to provide a minimum of a 5 dB reduction at an impacted receptor to be considered feasible by Caltrans (i.e., the barrier would provide a noticeable noise reduction). Additionally, the Caltrans acoustical design goal states the barrier must achieve a 7 dB noise reduction at one or more benefited receptors.

Noise barriers were considered for exterior land uses in the project study area. Eight barriers in Oakland and Alameda were studied as potential noise abatement. Receptor and barrier locations are shown in Figure 2-45 and Figure 2-46.

Noise Barriers 1, 2, and 3 (Figure 2-45) would be located in Oakland north of I-880. Barriers 1 and 2 would not feasibly abate traffic noise or meet the 7 dB noise reduction goal. Therefore, reasonable allowances were not calculated for these barriers. Noise Barrier 3 would be a 1,490-foot long noise barrier mounted on the existing 5th Avenue overhead structure along the right shoulder of NB I-880. This barrier would feasibly abate traffic noise, meet the 7 dB noise reduction goal, and break the line-of-sight between truck stacks and receptors at a minimum height of 14 feet. The reasonable allowance calculated for the barrier's heights (14 to 16 feet) was $107,000. The estimated total construction cost of a 14-foot-high noise barrier would be $7,464,900 which far exceeded the reasonable allowance (Table 2-49 and Table 2-50). Additionally, Noise Barrier 3 would negatively impact the visual environment by blocking views along I-880 and increasing the shadowing associated with the I-880 viaduct. Therefore, construction of this noise barrier would not be reasonable, and it would not be recommended for construction.

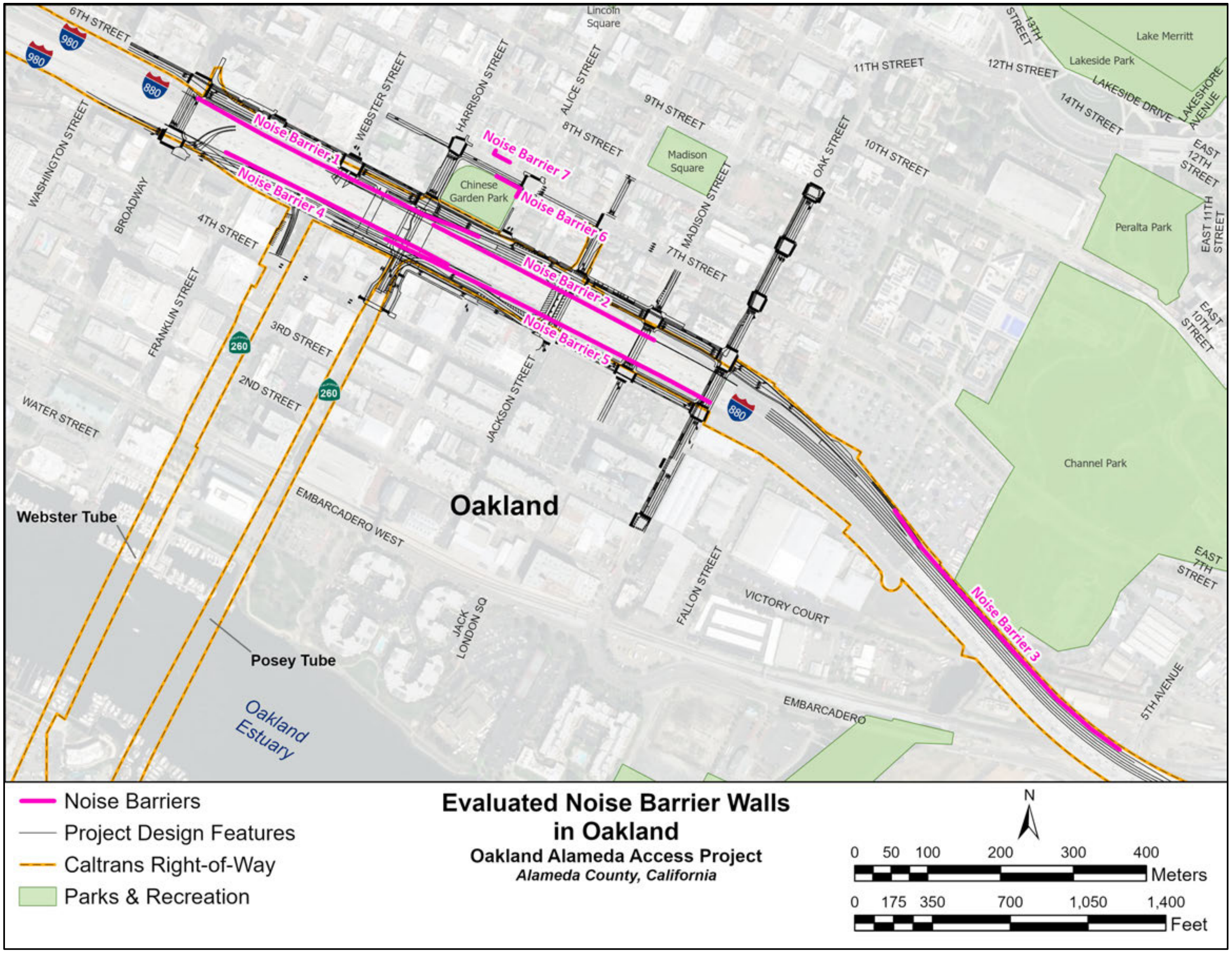
Noise Barriers 4 and 5 (Figure 2-45) would be located in Oakland south of I-880. These barriers would not feasibly abate traffic noise or meet the 7 dB noise reduction goal. Therefore, reasonable allowances were not calculated for Noise Barriers 4 and 5.

Noise Barriers 6 and 7 (Figure 2-45) are located along 7th Street in Oakland. Barrier 6 would not feasibly abate traffic noise or meet the 7 dB noise reduction goal. Therefore, a reasonable allowance was not calculated for this barrier. However, Noise Barrier 7 would feasibly abate traffic noise, meet the 7 dB noise reduction goal, and break the line-of-sight between truck stacks and receptors at a minimum height of 6 feet. This barrier would be approximately 67 feet long and located in front of residential properties along the north side of 7th Street. The reasonable allowance calculated for the barrier's heights (6 to 16 feet) was $214,000. The estimated total construction cost of the recommended 6-foot-high noise barrier would be $237,810, which exceeded the reasonable allowance (Table 2-49 and Table 2-50). Additionally, Noise Barrier 7 would be located directly in front of two contributing properties to the 7th Street/ Harrison Square Historic District and would likely result in an adverse impact to the district. Also, this noise barrier would negatively affect the visual environment by blocking views of the horizon and increasing shadowing. Construction could potentially interfere with utilities and encounter hazardous waste, as well. Therefore, construction of Noise Barrier 7 would not be reasonable, and it would not be recommended for construction.

One noise barrier was considered in Alameda (Figure 2-46). Noise Barrier 8 would be approximately 305 feet long along the east side of Constitution Avenue. This barrier would feasibly abate traffic noise, meet the 7 dB noise reduction goal, and break the line-of-sight between truck stacks and receptors at a minimum height of 8 feet. The reasonable allowance calculated for the barrier's heights (8 to 16 feet) was $107,000. The estimated total construction cost of the recommended 8-foot-high noise barrier would be $675,270, which far exceeded this reasonable allowance (Table 2-49 and Table 2-50). Additionally, Noise Barrier 8 would negatively impact the visual environment by blocking views of the horizon and the cutting of trees. Construction could potentially interfere with utilities and encounter hazardous waste, as well. Therefore, construction of Noise Barrier 8 would not be reasonable, and it would not be recommended for construction.

In addition to noise barriers, three additional noise abatement measures were evaluated:

- Solid concrete safety barriers would be incorporated along I-880 to the extent possible, which may provide some noise reduction.
- The direction of bridge deck tining (grooving) is a Caltrans standard measure. Tining in a longitudinal direction can reduce noise as compared to tining in the opposite direction. Tining would be evaluated during the design phase and incorporated, if feasible.
- The type of bridge joints incorporated into the project's bridge design (plate bridge joints instead of accordion joints) could potentially reduce noise levels. There are additional maintenance needs associated with plate bridge joints. Joint type would also be evaluated during the design phase.



Source: HNTB (2020)

Figure 2-45. Noise Barriers Evaluated in Oakland

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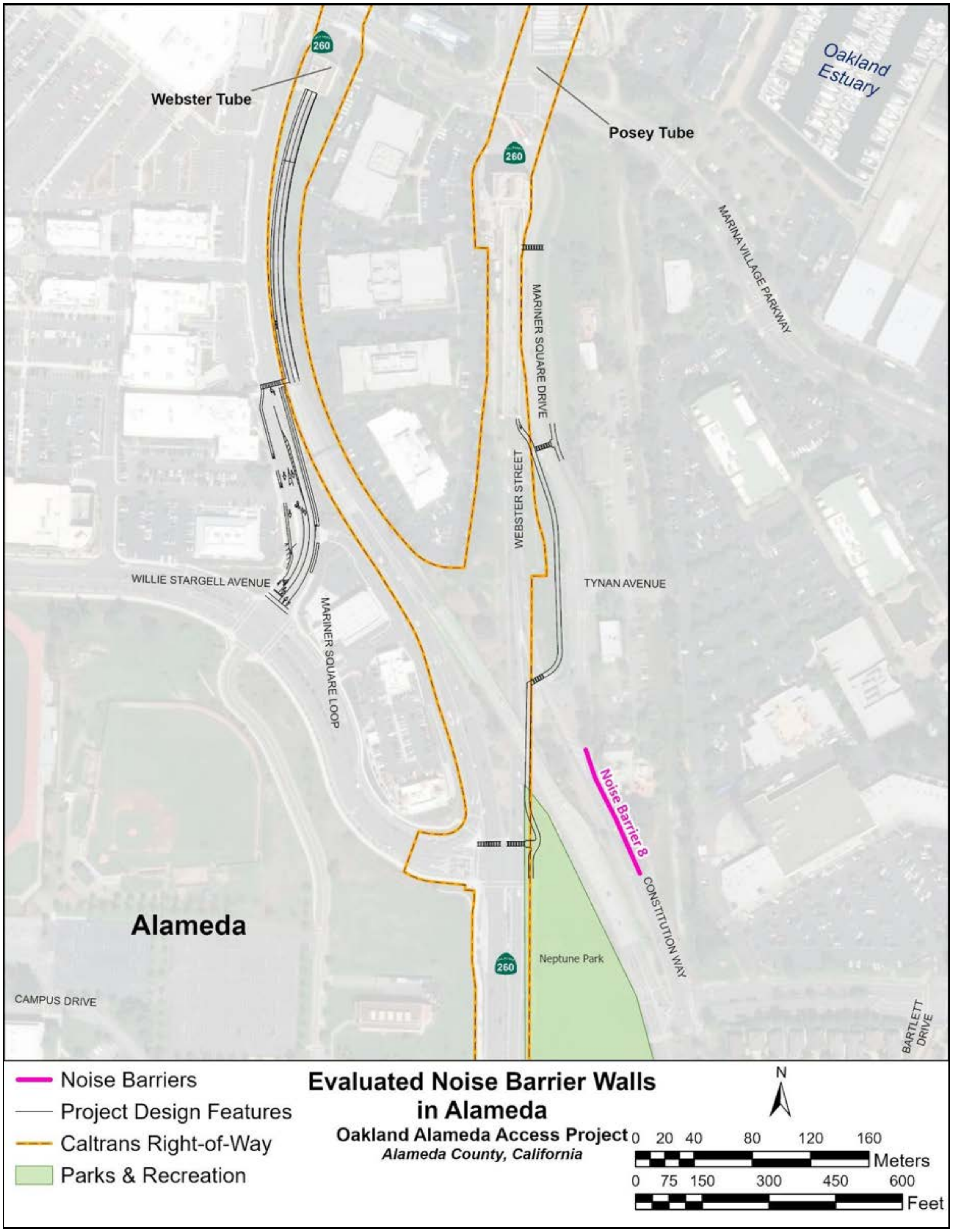

Source: HNTB (2020)

Figure 2-46. Noise Barrier Evaluated in Alameda

Table 2-49. Summary of Acoustically Feasible and Reasonable Noise Barriers

Barrier Number	Approximate Stationing/Location	Noise Level w/o Barrier at Benefited Receptors ($L_{eq[h]}$)	Barrier Height (feet)	Insertion Loss (dBA)	Number of Benefited Receptors	Total Reasonable Monetary Allowance
3	NB I-880 edge of shoulder (1,490 feet)	66	14	7	1	$107,000
			16	7	1	$107,000
7	North side of 7th Street between Harrison and Alice streets (67 feet)	69	6	7	2	$214,000
			8	9	2	$214,000
			10	11	2	$214,000
			12	12	2	$214,000
			14	12	2	$214,000
			16	12	2	$214,000
8	East side of Mariner Square Drive (305 feet)	69	8	8	1	$107,000
			10	9	1	$107,000
			12	11	1	$107,000
			14	12	1	$107,000
			16	13	1	$107,000

Note: Barrier lengths are based on linear approximations used for purposes of noise modeling in Traffic Noise Model 2.5. Actual lengths may differ slightly due to barrier curvature, etc.

Table 2-50. Summary of Key Noise Barrier Information

Noise Barrier	Length (feet)	Height (feet)	Acoustically Feasible (5 dB)?	Number of Benefited Receptors	Design Goal Achieved (7 dB)?	Total Reasonable Allowance	Estimated Construction Cost	Cost Less than Allowance?
3	1,490	14	Yes	1	Yes	$107,000	$7,464,900	No
		16	Yes	1	Yes	$107,000	$8,537,700	No
7	67	6	Yes	2	Yes	$214,000	$237,810	No
		8	Yes	2	Yes	$214,000	$254,560	No
		10	Yes	2	Yes	$214,000	$271,310	No
		12	Yes	2	Yes	$214,000	$285,380	No
		14	Yes	2	Yes	$214,000	$299,450	No
		16	Yes	2	Yes	$214,000	$316,200	No
8	305	8	Yes	1	Yes	$107,000	$675,270	No
		10	Yes	1	Yes	$107,000	$789,645	No
		12	Yes	1	Yes	$107,000	$884,348	No
		14	Yes	1	Yes	$107,000	$979,050	No
		16	Yes	1	Yes	$107,000	$1,093,425	No

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The following measures will avoid and minimize noise impacts during construction:

AMM-NOI-1 Equipment Idling	Unnecessary idling of internal combustion engines within 100 feet of residences will be strictly prohibited.
AMM-NOI-2 Stationary Equipment	Stationary noise generating equipment will be located as far as possible from sensitive receptors adjacent to the project footprint. The contractor will use "quiet" air compressors and other "quiet" equipment where such technology exists.
AMM-NOI-3 Noise Monitoring Program	Construction activities generating excessive noise will be limited to the hours specified in the appropriate local ordinance, where feasible. If work is necessary outside of these hours, Caltrans will require the contractor to implement a construction noise monitoring program, and to provide additional abatement where practical and feasible.
AMM-NOI-4 Vibratory Pile Driving	Vibratory pile driving activities will be limited to daytime hours on weekdays (8 am to 4 pm). Impact pile driving will not be used.
AMM-NOI-5 Equipment Muffling	All internal-combustion-engine-driven equipment will be equipped with manufacturer recommended intake and exhaust mufflers that are in good condition and appropriate for the equipment.
AMM-NOI-6 Construction Staging	Avoid staging of construction equipment within 200 feet of residences and locate all stationary, noise-generating construction equipment, such as air compressors, portable power generators, or self-powered lighting systems, as far as practicable from noise sensitive receptors.
AMM-NOI-7 Notification Requirements	Notify property owners and occupants located within 300 feet of the construction activities at least 14 calendar days prior to commencing extreme noise generating activities.

The following measures will avoid and minimize vibration impacts during construction:

AMM-VIB-1
Hydraulic Breakers

Where hydraulic breakers are proposed within 25 feet of historic buildings, consider alternative construction methods, such as hydraulic crushers or hydraulic splitters to break up material and saws or rotary rock-cutting heads to cut bridge decks or concrete slabs into small sections that can be loaded onto trucks for disposal. The following table details all potentially applicable historic buildings within the project footprint.

APN/ Resource Name	Location	Historic Name	Community
George A. Posey Tube (includes portals and approaches)	N/A	N/A	Oakland and Alameda
1-151-49	228 Harrison Street	American Bag Company/Union Hide Company	Oakland

APN/ Resource Name	Location	Historic Name	Community
1-147-4	423-425 Harrison Street	Western California Fish Company Building	Oakland
1-147-5	417 Harrison Street	Industrial Bearing Company Building	Oakland
1-147-6	302 4th Street	Impurgia Warehouse/ Hirsch Wright	Oakland
1-147-7	308 4th Street	Oakland Poultry Company	Oakland
1-147-12	300-310 Webster Street	Tyre Bros. Glass Company	Oakland
1-147-46	309 4th Street	Oakland Plumbing Supply	Oakland
1-149-6	229 Harrison Street	Poultry Producers of Central CA	Oakland
1-151-2	281 3rd Street	American Bag Company Annex	Oakland
1-151-45	255 3rd Street	N/A	Oakland
1-153-1	444 Harrison Street	Stephanos Building	Oakland
1-153-10	292 4th Street	Wright's West Warehouse/Paper Works International, Inc.	Oakland
1-153-14	261-267 4th Street	N/A	Oakland
1-153-15	255 4th Street	N/A	Oakland
1-153-2	432-438 Harrison Street	Quong Tai Shrimp Company	Oakland
1-153-7	401 Alice Street	Autocar Sales & Service	Oakland
1-153-8	270 4th Street	Nelson lee Paper/Food Cash	Oakland
1-153-9	278 4th Street	Makins Produce Company Warehouse/French Fries, Inc.	Oakland
1-153-115	283 4th Street	Oakland Wholesale Grocery Company	Oakland
1-155-5	401 Jackson Street	New California Poultry	Oakland
1-155-50	247 4th Street	Western States Grocery Company Headquarters;	Oakland

APN/ Resource Name	Location	Historic Name	Community
		Montgomery Ward & Company	
1-155-104	201 4th Street	Safeway Stores Corporate Headquarters	Oakland
1-157-29	225 3rd Street	WP Fuller Company & Annex	Oakland
1-181-12	601-609 Jackson Street	Schnebly, Hostrawser & Pedgrift	Oakland
1-183-1	640 Harrison Street	Harrison Square	Oakland
1-153-12-1	318-322 Harrison Street	Saroni Wholesale Sugar & Rice Warehouse	Oakland
1-155-6	220 4th Street	Eagle Sales, Inc.	Oakland
1-167-2	77-79 7th Street	Rosling House	Oakland
1-167-4	65 7th Street	Ferguson House	Oakland
1-167-5	633 Fallon Street	Colburn Complex	Oakland
1-167-6	625 Fallon Street	McGivney House	Oakland
1-167-7	619-621 Fallon Street	Hogin House	Oakland
1-167-8	615-617 Fallon Street	Hogan House	Oakland
1-167-11	624-626 Oak Street	Leitsh House	Oakland
1-169-5	61 8th Street	Josephs House	Oakland
1-169-6	59 8th Street	Sullivan House	Oakland
1-169-7	55 8th Street	N/A	Oakland
1-169-8	51 8th Street	Lougee/ Baungartner House	Oakland
1-169-9	715 Fallon Street	Gansberg House	Oakland
1-169-10	709 Fallon Street	Miller House	Oakland
1-169-11	705 Fallon Street	Bachman House	Oakland
1-169-12	701-703 Fallon Street	N/A	Oakland
1-169-13	64-68 7th Street	N/A	Oakland
1-169-14	68 7th Street	Grasso House	Oakland
1-169-15	70-72 7th Street	N/A	Oakland
1-169-16	74-76 7th Street	Beckert House	Oakland
1-169-17	92 7th Street	Open Door Mission	Oakland
1-169-18	708-710 Oak Street	N/A	Oakland

APN/ Resource Name	Location	Historic Name	Community
1-169-19	714 Oak Street	N/A	Oakland
1-169-20	720-722 Oak Street	Hugo Hohman Residence & Flat	Oakland
1-169-21	726 Oak Street	Wickliffe Matthews Residence	Oakland
1-173-1	632 Madison Street	Casey House	Oakland
1-173-2	129 7th Street	Sturm House	Oakland
1-173-3	123-125 7th Street	N/A	Oakland
1-173-4	121 7th Street	N/A	Oakland
1-173-5	119 7th Street	N/A	Oakland
1-173-6	631 Oak Street	Barbeau House	Oakland
1-173-7	625-627 Oak Street	Smart House & Smook House	Oakland
1-173-8	619-621 Oak Street	N/A	Oakland
1-173-13	620 Madison Street	Fieberling House #1	Oakland
1-173-14	624 Madison Street	Fieberling House #2	Oakland
1-173-15	626-628 Madison Street	Brangs House	Oakland
1-175-1	628 Jackson Street	N/A	Oakland
1-175-2	624 Jackson Street	N/A	Oakland
1-175-3	185 7th Street	Kellaher House	Oakland
1-175-4	616 Jackson Street	Kuhne House	Oakland
1-175-5	181 7th Street	Gilligan House	Oakland
1-175-6	177 7th Street	N/A	Oakland
1-175-11	615-617 Madison Street	N/A	Oakland
1-175-12	607 Madison Street	N/A	Oakland
1-175-13	603 Madison Street	Hamelin House	Oakland
1-175-14	170 6th Street	Lesser House	Oakland
1-175-16	178 6th Street	Cary House & Cottage	Oakland
1-175-17	182 6th Street	N/A	Oakland
1-175-18	186 6th Street	Casjen House	Oakland
1-175-19	190 6th Street	Sanderson House	Oakland
1-175-21	612 Jackson Street	Kravenhagen Foy House	Oakland
1-177-3	173-175 8th Street	N/A	Oakland
1-177-4	171 8th Street	Jacobvich House	Oakland

APN/ Resource Name	Location	Historic Name	Community
1-177-5	167-169 8th Street	Kelly House #2	Oakland
1-177-6	165 8th Street	Kelly House #1	Oakland
1-177-7	161-163 8th Street	N/A	Oakland
1-177-8	157-159 8th Street	Cheney House	Oakland
1-177-9	731-733 Madison Street	N/A	Oakland
1-177-10	727-729 Madison Street	N/A	Oakland
1-177-11	721-725 Madison Street	N/A	Oakland
1-177-12	717-719 Madison Street	N/A	Oakland
1-177-14-2	162 7th Street	N/A	Oakland
1-177-15	166 7th Street	Williamson House	Oakland
1-177-16	170 7th Street	N/A	Oakland
1-177-17	176 7th Street	Stulz House	Oakland
1-177-18	178 7th Street	Dolan House	Oakland
1-177-19	180-182 7th Street	Kellaher House	Oakland
1-177-21	192-196 7th Street	Purcell Grocery & Residence	Oakland
1-179-6	200-206 8th Street	N/A	Oakland
1-179-7	208-214 8th Street	McMullen House	Oakland
1-179-14	225-227 8th Street	N/A	Oakland
1-179-16	213-215 8th Street	Butler House	Oakland
1-179-18	701-715 Jackson Street	N/A	Oakland
1-179-20	228 7th Street	N/A	Oakland
1-179-21	230 7th Street	N/A	Oakland
1-179-22	234 7th Street	N/A	Oakland
1-179-23	702 Alice Street	N/A	Oakland
1-179-24	704 Alice Street	N/A	Oakland
1-179-25	708 Alice Street	Kessler House	Oakland
1-179-26	712 Alice Street	N/A	Oakland
1-181-1	634-636 Alice Street	Chloupek (Vincent & James) House	Oakland
1-181-2	628-632 Alice Street	Martin (Christian S.) House	Oakland

APN/ Resource Name	Location	Historic Name	Community
1-181-4	235 7th Street	Lundin (August) House	Oakland
1-181-8	213-215 7th Street	Unfug (John F.W. & Fedo H.) House	Oakland
1-181-10	617-621 Jackson Street	Potter (John & Mary) House	Oakland
1-181-11	613-615 Jackson Street	Ayers (Alonzo T.) House	Oakland
1-181-15	226-228 6th Street	Murphy House	Oakland
1-181-18	600-602 Alice Street	Hennings (Frederick) Residence & Flats	Oakland
1-181-19	606 Alice Street	Le Fevre House	Oakland
1-181-21	616-618 Alice Street	Gray Residence & Flat	Oakland
1-181-22	612-614 Alice Street	Stulz (William R. & Anna M.) House	Oakland
1-185-20	701 Alice Street	N/A	Oakland
1-185-21	254-256 7th Street	N/A	Oakland
1-185-22	262-264 7Th Street	N/A	Oakland
1-185-23	268-270 7th Street	Maynard Residence & Flat	Oakland
1-185-24	272 7th Street	Chauche House	Oakland
1-189-10	611 Harrison Street	Marston (Samuel I.) House	Oakland
1-189-11	607 Harrison Street	Fielding (John C. & Lydia W.) House	Oakland

AMM-VIB-2
Vibration Monitoring

Structural conditions at all buildings, including the historic buildings listed in AMM-VIB-1, located within 25 feet of heavy construction and within 75 feet of vibratory pile driving prior to, during, and after vibration-generating construction activities will be documented, including the following tasks:

Identification of sensitivity to groundborne vibration of structures and operations located within 25 feet of heavy construction and within 75 feet of vibratory pile driving.

Performance of a pre- and post-condition assessment through observation and measurements, plans, photographs, and any other data the qualified preparer may deem appropriate for all structures located within the exceedance distances (in the following table) based on the determination made as to the sensitivity of the structure to damage due to construction vibration.

Distance to Exceedance of Vibration Limit by Structure Type

Structure Type (Threshold)	Distance to Exceedance of Threshold, feet[1]	
	Vibratory Pile Driving	**Other Heavy Construction**
Historic Buildings (0.25 in/sec PPV)	75 feet	25 feet
Older Residences (0.3 in/sec PPV)	60 feet	20 feet
New Residential and Commercial/Industrial Buildings (0.5 in/sec PPV)	40 feet	12 feet

[1]These levels calculated assuming normal propagation conditions, using a standard equation of *PPVeqmt-PPVref * (25/D)* $^{1.1}$, from Caltrans, September 2013.

Source: Noise Study Report (May 2020)

Conduct a post-survey on structures where complaints of damage occurred. Make appropriate repairs in accordance with the Secretary of the Interior's Standards where damage has occurred as a result of construction activities.

Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person will be clearly posted at the construction site.

3.8. ENERGY

3.8.1. Regulatory Setting

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

CEQA Guidelines section 15126.2(b) and Appendix F. Energy Conservation require an analysis of a project's energy use to determine if the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources.

3.8.2. Affected Environment

The following sections summarize the *Energy Technical Memo* (August 2020) and discuss the anticipated energy effects associated with the Build Alternative.

STATEWIDE ENERGY CONSUMPTION

According to the U.S. Energy Administration (2018), the transportation sector in California consumed more energy than any other sector (residential, commercial, and industrial), representing nearly 40% of the total statewide energy consumed (Table 2-51). Automobiles, airports, and public transportation were key consumers of energy within this sector, with automobiles listed as the leading contributor. This is due, in part, to the total number of automobiles in the state. Per FHWA, California leads the nation in number of motor vehicles. In addition, several of the state's major metropolitan areas (including the San Francisco Bay Area) experience long commutes and/or delays associated with traffic congestion, resulting in increased energy consumption. The U.S. Energy Administration (2018) listed gasoline as the dominant energy source used by the transportation sector, representing approximately 55% of the energy consumed by the sector. Gasoline also represented approximately 22% of the total energy consumed statewide across all sectors. Based on the large influence of automobiles on energy consumption, existing and proposed traffic conditions within the project footprint are a key consideration when evaluating energy consumption.

Table 2-51. California Energy Consumption by End-Use Sector

End-Use Sector	Energy Consumption (Trillion BTU*)	Percent of Total Energy Consumption
Residential	1,439.2	18.07
Commercial	1,509.2	18.94
Industrial	1,848.2	23.20
Transportation	3,170.0	39.79
TOTAL	7,966.6	100.00

Source: U.S. Energy Administration (2018)
**BTU (British thermal unit)*

TRAFFIC CONDITIONS

Existing traffic conditions along I-880 were evaluated. Trucks represent approximately 12% of the vehicle mix. Traffic bottlenecks occur along NB I-880 within the project footprint during the AM peak hour between the 23rd Avenue on-ramp and the 5th Street off-ramp. During the PM peak hour, there is a bottleneck that forms along SB I-880 south of the project footprint that ultimately extends into the project footprint. The bottlenecks result from constrained roadway geometry, high traffic demand, and nonstandard roadway features. Bottlenecks result in an LOS F during peak hours for both NB and SB I-880.

VMT was estimated in the TOAR (Caltrans 2020) for both directions of I-880 in 2025. Under both the No-Build and Build Alternatives, there was a negligible difference in VMT. VMT was also estimated for both directions of I-880 in the design year (2045). In the SB direction, there would be no difference in freeway performance between the Build and No-Build alternatives. During 2045 PM peak operations, conditions slightly degrade in the NB direction under the Build Alternative. This is the result of higher demands within the weave segment between the Jackson Street on-ramp and I-980 off-ramp.

As noted in Section 2.8. Traffic and Transportation/Pedestrian and Bicycle Facilities, local streets in the project footprint are also congested during morning and evening peak commute hours. Currently, motorists traveling between I-880, I-980, and the Tubes must take circuitous routes through Oakland's city streets. This results in local congestion and travel delays. Several local intersections also operate at a deficient LOS due to high traffic volumes. Congested traffic conditions contribute to increased energy consumption as vehicles use extra fuel while in stop-and-go traffic or while moving at slow speeds.

TSM ELEMENTS

Within the project footprint, there are limited TSM elements. These elements, such as ramp-metering, transit, ridesharing programs, and bicycle/pedestrian infrastructure, help decrease energy consumption. None of the existing I-880 on-ramps within the project footprint are currently metered. Ramp metering is considered to be an energy efficient feature because it can reduce travel times and associated fuel consumption (FHWA 2020).

Within the project footprint, gaps or deficiencies exist in bicycle and pedestrian facilities (Figure 2-10 in Section 2.8. Traffic and Transportation/Pedestrian and Bicycle Facilities). Bicycle and pedestrian access between Oakland and Alameda is only available via a two-directional walkway within the Posey Tube. The Webster Tube allows no access for either walking or bicycling. In Oakland, several sidewalks, particularly along 5th and 6th streets, have substandard dimensions. Additionally, there are limited bicycle facilities south of 8th Street and under I-880, which impedes bicycle connectivity between neighborhoods to the north and south of the interstate. In Alameda, bike lanes and sidewalks are available along most roadways. Overall, these existing deficiencies within the project footprint could discourage walking and biking, two modes of transportation which consume no fossil-fuel related energy.

PAVEMENT CONDITION

Poor driving surfaces can contribute to increased fuel consumption. Caltrans researchers estimate that poor pavement-vehicle interaction could account for 1% of the overall fuel consumption on California highways (Caltrans and the MIT Concrete Sustainability Hub 2016). Using this estimate, in 2018 poor driving surfaces would have equated to 17.7 trillion British thermal units (BTU) of lost energy. Based on a desktop review, most of the roadways in the project footprint, including I-880 and its associated ramps, appear to be in good condition with limited deterioration (prevalent cracking, patching, and/or potholing). During the desktop evaluation, 8 of the 28 city blocks (28.6%) within Oakland appeared to be in poor condition. Deteriorated pavement was noted on portions of 6th Street, Harrison Street, and Oak Street. Fuel consumption within those segments would likely be elevated due to poor pavement-vehicle interaction.

LIGHTING AND TRAFFIC SIGNALS

Lighting is present throughout the project footprint. Based on a desktop evaluation, highway lighting is provided along the mainline of I-880 and its associated ramps. It is assumed that highway lighting uses high-pressure sodium bulbs. Pedestrian-scale street lighting is present along all Alameda local roadways within the project footprint, including the ingress/egress roadways associated with the Tubes. However, based on desktop evaluation, pedestrian-scale street lighting was absent from 5 of the 28 city blocks (17.9%) within the Oakland portion of the project footprint. Pedestrian-scale street lights were missing along portions of 5th, Madison, and Oak streets. Existing pedestrian-scale street lighting is assumed to be either low- or high-pressure sodium lamps.

Within the project footprint, traffic signals are present at 16 intersections within the City of Oakland and two intersections within the City of Alameda. It is assumed that these traffic signals use incandescent bulbs.

3.8.3. Environmental Consequences

PLANNING STRATEGIES

The proposed project is funded under the STIP. It is also included in MTC's RTP, 2019 TIP, and *Plan Bay Area 2040.* Therefore, the proposed project would not obstruct or conflict with statewide or regional planning strategies, including their requirements regarding energy usage and efficiency.

CEQA guidelines require that an EIR include an analysis of a project's potential for significant environmental effects resulting from wasteful, inefficient, or unnecessary use of energy. A quantitative analysis is required for projects that increase capacity or provide congestion relief, both of which could affect the ability of a transportation facility to accommodate existing and future traffic demand. The proposed project was not classified as a capacity increasing project and is not expected to change the existing vehicle mix. Examples of capacity increasing projects include new highways, added travel or auxiliary lanes, and new or reconfigured interchanges. However, the proposed project would relieve congestion on local roadways. An assessment of the proposed project's potential direct and indirect energy consumption was performed. Direct energy includes operational energy use and the one-time energy expenditure from project construction. Indirect energy includes maintenance activities required to operate or maintain the project.

DIRECT ENERGY USAGE

Operations

Roadway Improvements

Mobile sources of direct energy consumption were calculated using the CT-EMFAC 2017 model. This emissions model calculates project-level emissions and fuel consumption using data from CARB. Energy consumption was compared under both alternatives for the end construction year (2025) and design year (2045) (see Table 2-52). Fuel consumption was converted to energy consumption using the United States Energy Information Administration's (EIA) conversion rates.

Table 2-52. Annual Fuel Consumption within the Project Footprint

Year	Alternative	Gasoline (Gallons /year)	Gasoline Energy* (100,000 BTU/ year)	Diesel (Gallons /year)	Diesel Energy** (100,000 BTU/ year)	Total Energy (100,000 BTU/ year)	Net from No-Build (100,000 BTU/year)	Net from No-Build (%)
2015	**Baseline**	**4,794**	5,766.5	**1,463**	2,009.9	**7,776.4**	**N/A**	**N/A**
2025	No-Build	3,975	4,781.4	1,315	1,806.6	6,587.9	N/A	N/A
2025	Build	3,972	4,777.8	1,313	1,803.8	6,581.6	-6.4	-0.10
2045	No-Build	3,361	4,042.8	1,179	1,619.7	5,662.5	N/A	N/A
2045	Build	3,357	4,038.0	1,177	1,617.0	5,655.0	-7.6	-0.13

Source: CT-EMFAC 2017

**EIA (2020) conversion rate 1 gallon gasoline = 120,286 BTUs*

***EIA (2020) conversion rate 1 gallon diesel= 137,381 BTUs*

The Build Alternative in both 2025 and 2045 represent decreased fuel consumption as compared to 2015. In addition, under the Build Alternative, fuel usage and energy consumption would slightly decrease as compared to the No-Build Alternative in both 2025 and 2045. Based on this, the proposed project would not result in increased energy consumption but rather result in decreased energy expenditures.

In general, vehicles traveling at an optimum speed are more fuel efficient. Therefore, projects that improve traffic flow during peak travel demand periods or reduce stop-and-go conditions improve vehicle fuel economies. Improved fuel economies result in decreased energy consumption. Under the Build Alternative, traffic operations would generally improve thus reducing overall energy consumption. The proposed project would substantially reduce out-of-direction travel by providing more direct connections between Alameda and I-880 via the Tubes. This would reduce travel distance, traffic congestion, stop-and-go at traffic signals, and the number of vehicles traveling to/from Alameda on local streets in downtown Oakland.

Specifically, travel times will improve between the Tubes and I-880. In the AM peak hour, travel times through the Posey Tube to I-880 would decrease by up to three minutes (Figure 2-47). Travel times to the Webster Tube from various points could decrease by up to eight minutes during the PM peak hour with the proposed project (Figure 2-48). Reduced travel times would equate to reduced energy consumption on local roadways.

With respect to mobility in downtown Oakland, operating conditions on local streets improve as a greater number of core intersections improve from LOS E or F to LOS D or better (Figure 2-49). By improving the flow of traffic within the project footprint, the Build Alternative would decrease energy consumption associated with the existing congested traffic conditions.

VMT in 2025 was estimated for both directions of I-880 (TOAR March 2020). When the No-Build Alternative and Build Alternative were compared, there was a negligible difference in VMT. The Build Alternative would result in no change in performance along SB I-880.

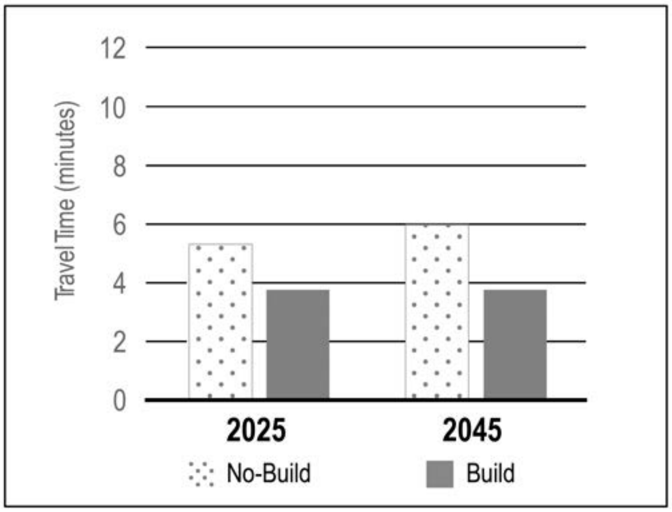


Figure 2-47. Travel Time: Posey Tube to NB I-880 (AM)

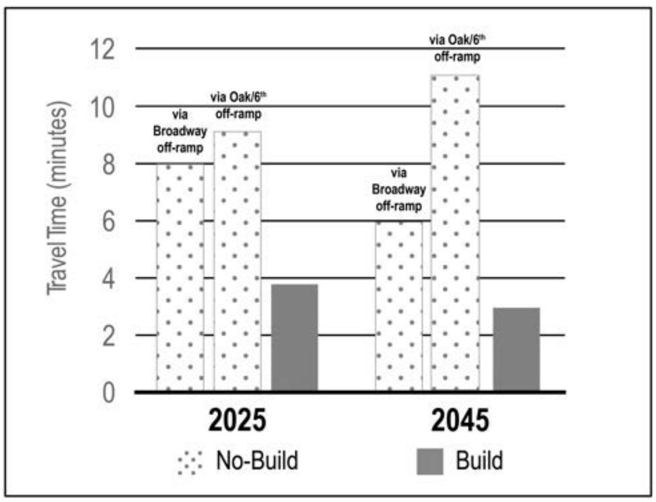


Figure 2-48. Travel Time: NB I-880 to Webster Tube (PM)

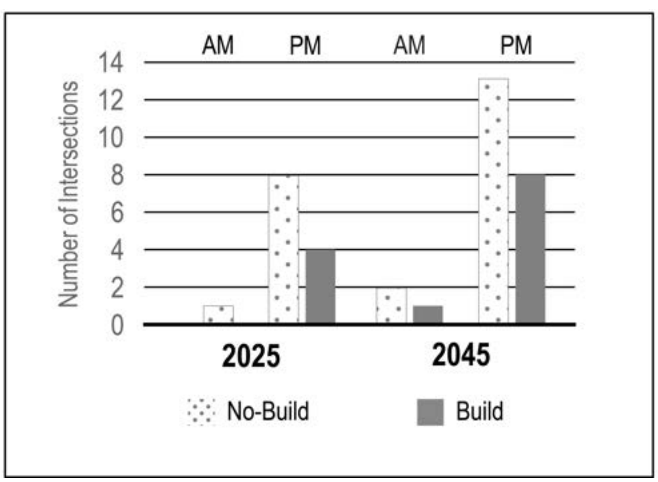


Figure 2-49. Number of Local Street Intersections Operating at LOS E or Worse

Per the TOAR (March 2020), conditions along NB I-880 would degrade slightly for the AM and PM peak hours as a result of closing the northbound off-ramp to Broadway and the improved connection to the Jackson Street on-ramp. This would slightly add to congestion and queuing along mainline I-880. Average vehicle speed would slightly decrease, and average vehicle hours traveled would slightly increase. The average speed on NB I-880 through the project footprint would decrease by less than 2 mph during the AM peak hour period (worst case). In terms of travel times through the entire study section, the net change would be approximately 15 seconds of additional travel time for northbound freeway drivers during the AM peak hour. However, LOS would remain unchanged. Therefore, this change was considered to be negligible in comparison to the traffic congestion alleviated along local roadways within the project footprint, and it is not anticipated to negate the decreased energy consumption associated with the local roadway improvements.

Pavement condition is generally classified as good within the project footprint. However, there are some roadway segments in deteriorated condition that would likely be rehabilitated as a result of the proposed project. Freshly paved roadways would improve pavement-vehicle interactions, thereby reducing vehicle fuel consumption. During the design phase, the existing pavement condition for every roadway in the project footprint would be evaluated to determine any rehabilitation or replacement needs.

Over time, drivers with newer and more fuel-efficient vehicles would use roadways within the project footprint. In addition to the roadway improvements associated with the Build Alternative, this would contribute to reduced energy consumption. Note that this decrease in energy consumption would also be achieved under the No-Build Alternative.

Additional Improvements

The Build Alternative includes several TMS elements. Existing bicycle and pedestrian networks would be expanded within the project footprint. New bicycle paths and cycle tracks would be constructed on 6th Street and Oak Street to improve connections within neighborhoods. Improved bicycle and pedestrian facilities in the Tubes would promote connectivity between the cities of Oakland and Alameda. Pedestrian facilities on 6th Street between Oak Street and Broadway would be upgraded, and new sidewalks would be installed to close existing gaps and meet ADA compliance standards. Improvements to bicycle and pedestrian networks would help reduce VMT by encouraging walking and bicycling within the project footprint and between the two cities. These alternative modes of transportation consume no energy and would, therefore, reduce the proposed project's overall energy consumption.

Improved bicycle and pedestrian networks would also provide linkages to public transportation within (or near) the project footprint including AC Transit, BART, San Francisco Bay Area Water Emergency Transportation Authority (WETA), and Amtrak. Increased use of public transportation would help reduce local/regional automobile traffic, support mode shift, and further reduce energy consumption.

Additional TSM measures have been incorporated into the Build Alternative to ensure efficient traffic movement. An auxiliary lane would be added on NB I-880 in advance of the Oak Street off-ramp widening. Ramp meters would be installed on the Jackson Street NB I-880 and Broadway SB I-880 on-ramps. Lastly, traffic signals would be coordinated on 6th Street from Oak Street to Broadway. These improvements would promote the efficient flow of traffic resulting in less fuel consumption and an overall energy savings.

Per Table 1-3 in Chapter 1, five traffic signals would be installed under the Build Alternative: four signals along 6th Street at its intersections with Jackson, Webster, Franklin, and Oak streets and one at the 7th/Alice streets intersection. Within the project footprint, this represents a net increase of three traffic signals. In addition, 11 existing signals within the project footprint would be modified. Energy efficient light-emitting diode (LED) lighting would be used for any new or replaced traffic signals. This technology consumes up to 85% less energy per year as compared to incandescent bulbs (C40 Cities 2020). Despite the net increase in number of traffic signals, implementing this technology would result in energy savings. During the design phase, a formal survey within the project footprint would document the condition and type of all traffic signals.

Pedestrian-scale street lighting would be replaced at four intersections. Additional pedestrian-scale street lighting may require replacement wherever light poles require relocation, such as along 5th Street and 6th Street. Lighting would be considered along the extension of 6th Street between Alice Street and Harrison Street. LED lighting would be used wherever pedestrian-scale street lights would be installed or replaced. As noted earlier, this lighting technology consumes less energy than the existing technology, thereby reducing the proposed project's overall energy consumption. Existing light poles will be reused, where feasible, with only the heads replaced helping to recycle materials and reduce wastefulness.

Construction

The No-Build Alternative does not include the construction of any of the improvements associated with the Build Alternative. Therefore, it would not have the one-time consumption of direct energy that would occur under the Build Alternative.

Direct energy consumption during construction was calculated by converting CO_2 emissions generated by diesel equipment into consumed energy. CO_2 emissions were quantified using the RCEM Version 9.0.0, which itemized emissions per phase of construction. Metric tons of CO_2 were then converted to fuel using GHG equivalencies (U.S. EPA 2020). Note that Table 2-53 includes the conversion of $C0_2$ into gallons of diesel fuel, which is anticipated to be the dominate fuel source during construction. Gallons of diesel fuel were then converted to BTUs using the EIA (2020) conversion rate.

Table 2-53. Direct Energy Consumption Per Construction Phase

Phase	Summary of Work	CO_2 (U.S. tons)	Diesel (gallons)*	Energy Consumption (Billion BTU)**
1A	• Clearing/grubbing and mobilizing • Construct the Webster Tube walkway	869	77,440	10.64
1B	• Construct the horseshoe connector at Jackson Street and retaining walls • Reconstruct the Jackson Street off-ramp	2,545	226,796	31.16
1C	• Construct the 5th Street pavement, sidewalk, and curb/gutter	68	6,060	0.83
1D	• Construct retaining walls • Restripe Harrison Street and the Posey Tube	315	28,071	3.86

Phase	Summary of Work	CO_2 (U.S. tons)	Diesel (gallons)*	Energy Consumption (Billion BTU)**
2A	• Widen the Oak Street off-ramp and prepare 6th Street • Construct the retaining walls	1,297	115,581	15.88
2B	• Remove Broadway off-ramp structure and approach	457	40,725	5.59
2C	• Construct 6th Street	976	86,976	11.95
2D	• Construct bicycle paths and cycle tracks on local streets • Install traffic signal	388	34,576	4.75
2E	• Landscaping	27	2,406	0.33
TOTAL		**6,942**	**618,631**	**84.99**

Source: RCEM Model Version 9.0.0

Note: The construction window for the proposed project extends over a 36-month period.

**U.S. EPA (2020) conversion rates: 10.180 × 10-3 metric tons CO2/gallon of diesel*

***EIA (2020) conversion rate 1 gallon diesel = 137,381 BTUs*

Energy consumed during construction of the proposed project would be temporary and would not result in a permanent increase in statewide annual energy consumption. When compared to California's annual energy consumption in the transportation sector, the energy expended to construct the proposed project would represent approximately 0.001% of the annual statewide energy consumption. Additionally, the construction window for the proposed project extends over a 36-month window. This would result in even smaller annual energy expenditures, representing a smaller proportion of the statewide annual energy consumption per year. It is anticipated that the energy expenditure required to construct the Build Alternative would be partially offset by the long-term operational reductions in energy consumption realized through more efficient traffic operations, as well as proposed project elements such as improved pavement conditions, new TSM elements (including bicycle/pedestrian infrastructure), and lighting/traffic signal improvements.

Direct energy consumption during construction would result from material processing, operation of on-site construction equipment, and traffic delays or detours. Energy consumption would vary by construction phase but could be reduced through implementation of an effective TMP. Limiting traffic congestion and the length of detours would limit energy consumption. BMPs would also be implemented to reduce energy consumption including limiting equipment idling, maintaining proper tire pressures on equipment, using local sources for materials, and using local sources for disposal.

INDIRECT ENERGY USAGE

Maintenance

Long-term maintenance of the various roadways with the project footprint would occur under either the Build Alternative or No-Build Alternative. Under the No-Build Alternative, traffic congestion and deficiencies in bicycle/pedestrian infrastructure would persist. The flow of traffic onto I-880 would continue to be un-metered. Pavement conditions would continue to deteriorate, and less efficient technology would continue to be used for traffic signals and pedestrian-scale street lights for a longer period of time.

The Build Alternative would address these deficiencies by alleviating local traffic congestion, controlling the flow of traffic onto I-880, and promoting alternative (and zero energy) modes of transportation such as walking and biking. More efficient LED lighting technology would be employed in new or replaced elements. This technology has a longer lifetime than is currently used in existing traffic signals and pedestrian-scale lighting, further reducing future maintenance needs. Operationally, the Build Alternative would have an energy savings over the No-Build Alternative.

CONCLUSION

The proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy because the following energy saving, and conservation features consistent with federal and state guidelines would be incorporated:

- The proposed project would not add roadway capacity. It would reduce local traffic congestion and shorten travel distances between I-880 and Alameda. The addition of ramp metering would continue to improve the flow of traffic entering I-880.
- By addressing existing deficiencies in bicycle and pedestrian facilities, the proposed project would encourage walking and biking within the project footprint and between the cities of Oakland and Alameda.
- New traffic signals and new pedestrian-scale lighting would utilize high-efficiency LED technology.
- Any replaced or modified traffic signals or pedestrian-scale lighting would also utilize high-efficiency LED technology.
- Existing light poles would be reused, where feasible, with only the heads replaced.
- Materials would be locally sourced, and waste will be locally disposed of where feasible.
- The proposed project's construction-related energy consumption would be temporary and would likely be offset by the proposed long-term energy savings associated with the proposed project elements.

3.8.4. Avoidance, Minimization, and/or Mitigation Measures

PF-TRF-1 requires the implementation of a TMP to minimize traffic disruptions and coordinate detours with local agencies, transit services, and local communities. The TMP would help limit traffic congestion and detour length as much as possible, thereby limiting energy consumption.

The following AMMs will also be implemented to reduce energy consumption:

- AMM-TRF-4 (Section 2.8.4) requires coordination with AC Transit to ensure limited service disruption to bus service, which represents a mode of transportation with reduced energy consumption as compared to motor vehicle use.
- AMM-AQ-2 (Section 3.6.4) requires the contractor to limit equipment idling times. It also requires equipment be tuned and running in proper condition. Both will limit equipment energy usage during construction.
- Four GHG AMMs will also result in reductions in energy consumption: AMM-GHG-1, AMM-GHG-2, AMM-GHG-3, and AMM-GHG-5 (Chapter 3, Section 3.0).

Based on these earlier referenced measures, no additional avoidance, minimization, or mitigation measures would be necessary to further reduce energy consumption.

Section 4.0. Biological Environment

4.1. NATURAL COMMUNITIES

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value. Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed in Section 4.5. Threatened and Endangered Species, and they are also discussed in Section 4.2. Wetlands and Other Waters.

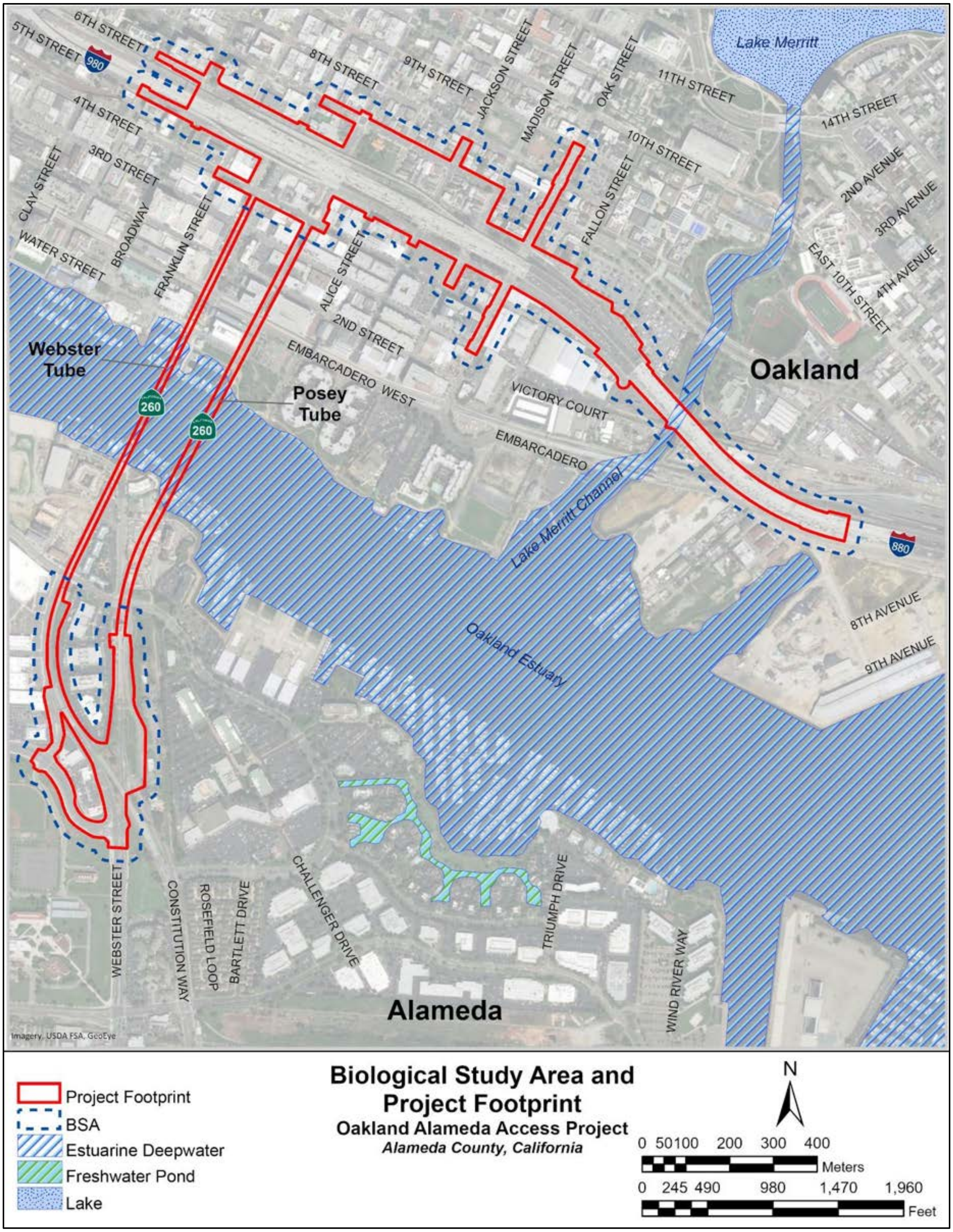
4.1.1. Affected Environment

This section summarizes the natural communities from the *Natural Environment Study-Minimal Impacts* (NES-MI March 2020) and the *Aquatic Resources Delineation Report* (ARDR March 2020). Biological field surveys were performed on August 14, 2015; November 4, 2015; December 18, 2015; July 11, 2017; and December 20, 2017 to document biological resources that occur or could potentially occur in the biological study area (BSA). The database search results are presented in Appendix G.

BIOLOGICAL STUDY AREA

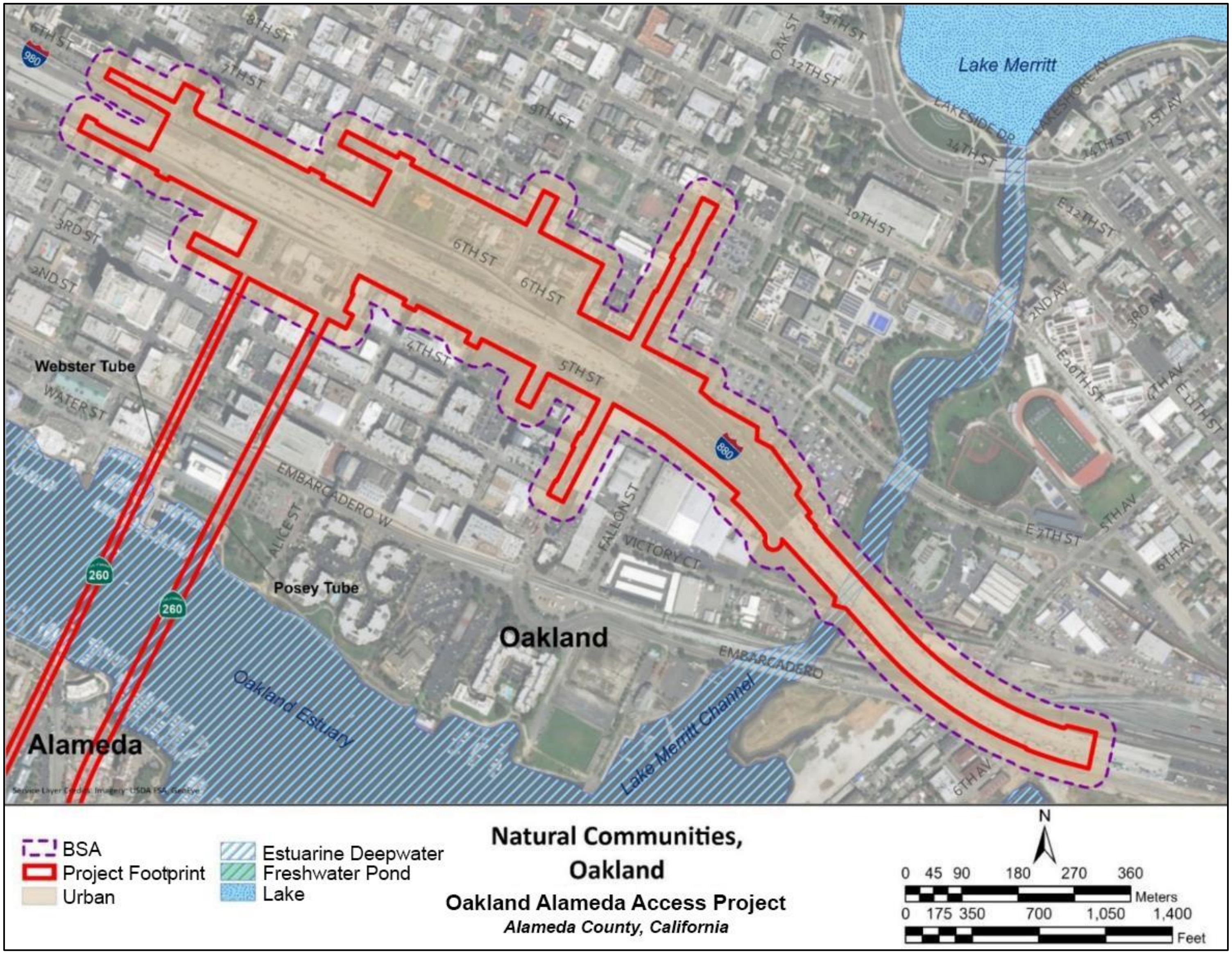
The BSA includes the project footprint (the physical extent of all project elements, including utility relocations, staging areas, access, and any TCEs needed for the proposed project), and adjacent aquatic and terrestrial areas that support biological resources that could be affected indirectly by the proposed project, either temporarily or permanently (Figure 2-50). The BSA does not include underground portions of the Tubes, as these man-made structures are located under the waters of the Oakland Estuary and have no potential to contain biological resources. The BSA consists of a segment in the City of Oakland (Figure 2-51) and a segment in the City of Alameda (Figure 2-52) that are separated by the Tubes. For the proposed project, the BSA consists mainly of urban and developed areas.

Natural communities are recurring associations of plants and animals found in particular locations with specific physical conditions. Habitat is defined by the United States Fish and Wildlife Service (USFWS) as a combination of environmental factors that provide food, water, cover, and space that a living thing needs to survive and reproduce. Most of the BSA is classified as urban habitat primarily composed of hardscape and impervious surfaces interspersed with landscape, ornamental, non-native, and ruderal vegetation (species that are the first plants to grow in an area and that do well with high levels of disturbance). Landscaped environments are unlikely to provide suitable habitat for special-status species due to disturbed soil conditions, use of pesticides, impervious surfaces, and predominance of non-native species that outcompete native vegetation for resources. Special-status species are addressed under Sections 4.3. Plant Species, 4.4. Animal Species, and 4.5. Threatened and Endangered Species. Natural communities found within the BSA are annual grasslands and aquatic estuarine habitats. The annual grassland habitat is described in the following section.



Source: HNTB (2020)

Figure 2-50. BSA and Project Footprint Map



Source: HNTB (2020)

Figure 2-51. Natural Communities in the Oakland BSA

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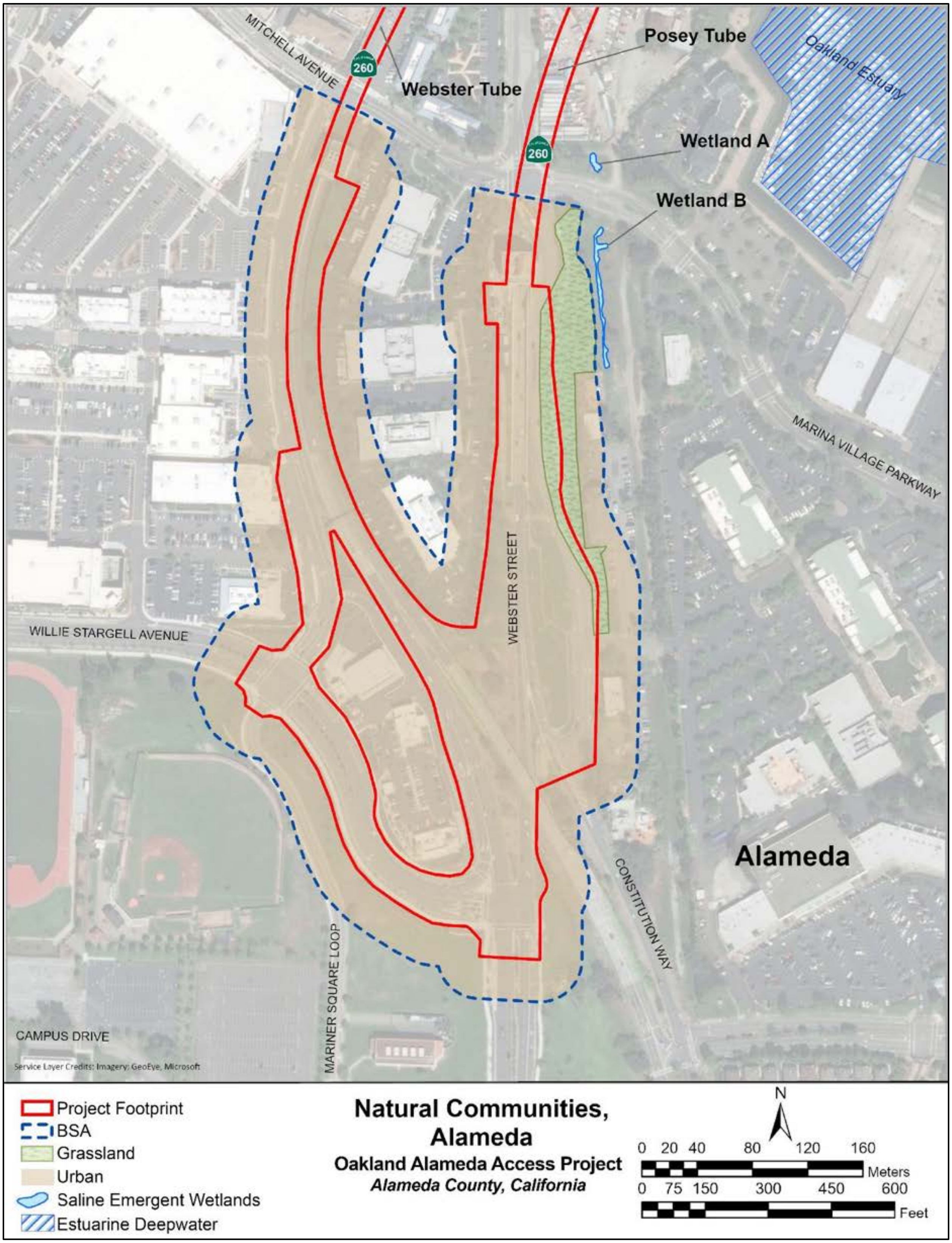

Source: HNTB (2020)

Figure 2-52. Natural Communities in the Alameda BSA

Annual Grassland

Non-native or naturalized annual grasses and forbs have largely replaced pre-colonial grasslands on rolling hills and flat plains in California. Annual grasslands consist of non-native or naturalized annual grasses, such as wild oats (*Avena* sp.), barley (*Hordeum* sp.), brome species (*Bromus* sp.), and soft chess (*Bromus hordeaceus*). The Alameda portion of the BSA has approximately 1.7 acres of grassland habitat (Figure 2-52), which is located on the southeast side of the BSA in a historically disturbed but undeveloped area (Figure 2-52). Vegetative habitat in this area is dominated by non-native grasses (Italian ryegrass [*Festuca perennis*], Pacific bentgrass [*Agrostis avenacea*], and wild oats [*Avena fatua*]), herbaceous (non-woody) plants (narrow leaved plantain [*Plantago lanceolata*], mallow [*Malva* sp.], cutleaf geranimum [*Geranium dissectum*]), and shrubs and trees including coyote brush (*Baccharis pilularis*).

Annual grassland provides foraging, breeding, and resting areas for a wide variety of birds, mammals, and reptiles. No special-status plant or wildlife species were observed in the annual grassland habitat during field surveys. In addition, special-status species are unlikely to occur in this area due to the lack of connectivity between this isolated patch of habitat and other source areas of natural land.

Trees

Tree surveys within the BSA identified 37 trees within the project footprint. The majority of these trees are eucalyptus (*Eucalyptus* spp.) with one coast live oak (*Quercus agrifolia*), one arroyo willow (*Salix lasiolepis*), one acacia (*Acacia* sp.), one pepper tree (*Schinus molle*), and one pine (*Pinus* sp.). The coast live oak, pine, and arroyo willow trees are native species.

DESIGNATED SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are assemblages of plants, animals, and natural resources that may have high species diversity, high productivity, limited distribution, decreasing range, or unusual characteristics. The California Department of Fish and Wildlife (CDFW) Natural Community Conservation Planning (NCCP) program originated from Fish and Game Code (FGC) Section 2800. The purpose of the NCCP program was to combine CDFW's efforts with private and public partners to take a broad-based ecosystem approach to planning for the protection and the perpetuation of California's biological diversity. The goal of the NCCP program is to identify and provide regional protection to plants and wildlife and their habitats. Sensitive natural communities that have been mapped to date as a result of the Vegetation Classification and Mapping Program (VegCAMP) effort are included in the California Natural Diversity Database (CNDDB).

Sensitive natural communities, as designated by CDFW, may include wetlands and waters of the U.S., other waters of the state, protected trees, riparian habitats, and essential fish habitat (EFH). Habitats that support special-status species, even if it is not designated as critical habitat, are considered sensitive. Natural communities that are not listed as sensitive in the CNDDB may be considered rare and unique to the region under CEQA Guidelines Section 15125 (c). A CNDDB online database search documented three sensitive natural communities within a 5-mile radius of the project footprint (Table 2-54). However, they were not observed during field surveys, and they do not have the potential to occur within the BSA.

Table 2-54. CNDDB-listed Sensitive Natural Communities within a 5-mile Radius

Sensitive Natural Community	Present in BSA	Proximity to BSA
Northern coastal salt marsh	No	• Nearest occurrences are: • Arrowhead Marsh (3.7 miles south) • Marsh (1.7 miles north) along the shoreline near Emeryville and the west span of the San Francisco-Oakland Bay Bridge
Northern maritime chaparral	No	• Nearest occurrence is Huckleberry Ridge on East Bay Regional Park Land (5 miles northeast)
Serpentine bunchgrass	No	• Nearest occurrence is Redwood Regional Park (approximately 5.3 miles east)

ESSENTIAL FISH HABITAT

The entire San Francisco Bay is classified as an EFH for species managed under the Pacific Coast Salmon Fishery Management Plan (FMP) (Coho and Chinook salmon), the Coastal Pelagic Species FMP, and the Pacific Coast Groundfish FMP. Pelagic species include Pacific sardine (*Sardinops sagax),* northern anchovy (*Engraulis mordax*), Pacific herring (*Clupea pallasii pallasii),* and jacksmelt (*Atherinopsis californiensis).* Species managed under the Pacific Coast Groundfish FMP include English sole (*Parophrys vetulus*). Furthermore, estuaries and seagrass communities within the San Francisco Bay are further defined as a Habitat Area of Particular Concern under the Pacific Coast Groundfish FMP. The BSA in the Lake Merritt Channel in Oakland is 700 feet upstream of the Oakland Estuary. Although there is a tidally influenced hydrologic connection to an EFH, the Lake Merritt Channel itself is not an EFH, nor does it provide high quality habitat for salmon, coastal pelagic species, or groundfish.

HABITAT CONNECTIVITY AND WILDLIFE MOVEMENT

The BSA does not provide space for wildlife movement or function as a wildlife corridor due to the presence of dense urbanization. Wildlife that dwell in urban environments, such as raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), and opossums (*Didelphis virginiana*) typically establish small territories they seldom venture from. These species may occur in the BSA. Deer (*Odocileous hemionus*), foxes (*Urocyon cinereoargeneus*), and coyotes (*Canis latrans*) and other native mammalian species are present in the hilly terrain east of Oakland. However, the vast networks of freeways and roadways and urban development in the project study area generally pose a barrier to wildlife movement and provide limited to no habitat value to these wildlife species. The Lake Merritt Channel may function as a wildlife corridor for some species of fish that swim between Lake Merritt and the Oakland Estuary. The BSA in Alameda provides limited space for urban wildlife such as raccoons and opossums, which also may traverse into the Oakland BSA.

4.1.2. Environmental Consequences

The following section identifies potential impacts on sensitive natural communities within the BSA.

PERMANENT IMPACTS

No-Build Alternative

The No-Build Alternative does not propose any construction or disturbance in the BSA; therefore, this alternative would not result in permanent impacts to natural communities.

Build Alternative

There are no sensitive natural communities within the project footprint or BSA. EFH in the Oakland Estuary would not be impacted. The Oakland Estuary is outside of the BSA because project activity is limited to within the Tubes and no work would occur in the Estuary. Natural communities, such as annual grassland, are found within the BSA and support special-status species regionally (outside of the BSA). Work near the annual grassland area in Alameda is limited to bicycle/pedestrian path and crosswalk improvements adjacent to Mariner Square Drive. There would be no permanent loss of annual grassland habitat associated with the Build Alternative.

Approximately 35 trees would be removed by the Build Alternative. In Oakland, one coast live oak, one pine, 31 eucalyptus, and one acacia would be removed from within Caltrans ROW. The coast live oak is located in-between the existing NB I-880 Broadway off-ramp and NB I-880, south of Chinese Garden Park. With the Build Alternative, the coast live oak would be removed with the Broadway off-ramp to construct the new 6th Street connection between Harrison and Alice streets. The pine tree is located on the southwest corner of I-880 and Jackson Street where the proposed project would construct the horseshoe connection between the Posey Tube and I-880. One pepper tree would be removed from Caltrans ROW in Alameda for the new bicycle/pedestrian path connecting to the Posey Tube. No trees would be removed outside Caltrans ROW. Trees provide habitat to nesting birds and bats. To avoid and minimize impacts to trees that may provide potential habitat, the proposed project will implement AMM-AS-5.

Implementation of the Build Alternative would not conflict with the provisions of any habitat conservation plan or local biological resource protection ordinances. Given the high level of existing development within the BSA and the minimal opportunity for regional wildlife movement, no permanent impacts to wildlife movement are anticipated. Therefore, the Build Alternative would not have any permanent impacts on natural communities.

CONSTRUCTION IMPACTS

No-Build Alternative

No construction or disturbance in the BSA would occur under the Build Alternative; therefore, this alternative would not result in temporary impacts to sensitive natural communities.

Build Alternative

Work near the annual grassland area in Alameda is limited to bicycle/pedestrian path and crosswalk improvements adjacent to Mariner Square Drive. To construct these improvements, temporary access and the use of adjacent grasslands areas may be necessary. Any potential temporary impacts to natural communities would be avoided with the incorporation of high visibility fencing (PF-NC-1) and BMPs (PF-NC-2).

Tree species that are preserved in place during construction, could be affected by nearby aboveground or belowground construction activities, such as excavation or utility relocation. To avoid and minimize impacts to existing trees that may provide potential habitat, the proposed project will implement AMM-AS-5.

PROJECT FEATURES

PF-NC-1 **High Visibility Fencing**	Adjacent to the annual grassland area, the project footprint will be delineated with high visibility fencing to avoid ground disturbance adjacent to work and access areas.
PF-NC-2 **BMPs**	Implement project site BMPs as follows: • Access routes and the number and size of staging, access, and work areas will be limited to existing paved, gravel, or other previously compacted surfaces as identified in the project plans. Movement of heavy equipment to and from the site will be restricted to established roadways. • Routes and boundaries will be clearly marked prior to initiating ground disturbance.

4.1.3. Avoidance, Minimization, and/or Mitigation Measures

To avoid and minimize impacts to trees that may provide potential habitat, the proposed project will implement AMM-AS-5. No other avoidance, minimization, or mitigation measures are proposed for sensitive natural communities.

4.2. WETLANDS AND OTHER WATERS

4.2.1. Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the CWA (33 USC 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high water mark (OHWM), in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the USACE with oversight by the U.S. EPA.

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 CFR Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a LEDPA to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

At the state level, wetlands and waters are regulated primarily by the SWRCB, RWQCBs, and CDFW. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California FGC require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by WDRs and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see the Water Quality section (3.2) for more details.

4.2.2. Affected Environment

Potentially jurisdictional waters are summarized in the NES-MI (March 2020) and the ARDR (March 2020). The BSA, surveys, and database searches are described in Section 4.1. Natural Communities. A wetland delineation was conducted in March 2018. An additional survey was conducted in September 2019 to search for potential jurisdictional wetlands and other waters of the U.S. within the Oakland BSA. The ARDR was prepared according to the 1987 Corps of Engineers Wetlands Delineation Manual and the Arid West Regional Supplement to identify wetlands and waters under USACE jurisdiction for the purposes of compliance with Section 404 of the CWA and/or Sections 9 and 10 of the Rivers and Harbors Act. The *Wetland Delineation Report/Aquatic Resources Delineation* was not submitted to the USACE for verification because the delineated wetlands are outside of the BSA, and there are no direct or indirect impacts.

WATERS

The proposed project lies on either side of the Oakland Estuary, which is connected to the San Francisco Bay. The National Wetlands Inventory (NWI) shows the waterbodies near the project footprint (Figure 2-50), which includes the Lake Merritt Channel, Oakland Estuary, and unnamed freshwater ponds. The Lake Merritt Channel is a jurisdictional water of the U.S. due to its direct hydrologic connection to the San Francisco Bay; it connects Lake Merritt to the Oakland Estuary. A pump station and tide gate regulate the tidal exchanges between the Lake Merritt Channel and the Oakland Estuary. During the summer, water levels within the Lake Merritt Channel are kept high for recreational activities. In the winter, the water levels are kept low to accommodate storm flows. The tide gate and pump station that regulate these water levels are located upstream (north) of the BSA at the East 8th Street Bridge. The Lake Merritt Channel at I-880 is open to the Oakland Estuary and subject to the ebb and flow of the tides. The Lake Merritt Channel is the only estuarine open water habitat in the BSA. No other waters of the U.S. were identified in the BSA. The Oakland Estuary flows over the Tubes and is not within the BSA. There are no proposed project activities that could affect the Estuary because all proposed project work is contained within the Tubes.

WETLANDS

Saline emergent wetlands consist of salt or brackish (a mixture of salt and freshwater) marsh growing on intertidal flats from mean sea level to extreme high tide. Cordgrass (*Spartina alterniflora*) grows in the areas of highest salinity, transitioning to pickleweed (*Salicornia pacifica*) and then to saltgrass (*Distichlis spicata*) in the least frequently inundated parts of the habitat. Saline emergent wetlands have been subject to submergence from SLR for several thousands of years. The San Francisco Bay Area supports most of this habitat in California.

A narrow fringe of saline emergent vegetation intersects with the boundary of the BSA just above the mean high tide line in the Lake Merritt Channel. Vegetation consists of pickleweed, saltgrass, marsh jaumea (*Jaumea carnosa*), and gumplant (*Grindelia stricta*). Due to the vertical separation between the proposed project on the elevated I-880 structure and the emergent vegetation underneath the structure, mapping of the wetland vegetation was not required. Saline emergent vegetation is mapped with estuarine deepwater habitat in Figure 2-51.

Just outside of the Alameda BSA, there is an approximately 500-foot-long tidally influenced swale parallel to and east of Mariner Square Drive that supports sparse saline emergent vegetation, including salt grass, pickleweed, and an occasional gumplant. The swale is hydrologically connected to the Oakland Estuary. Two wetlands in this swale are delineated as saline emergent wetlands (Wetlands A and B shown in Figure 2-52). Wetland A is connected to Wetland B by a culvert underneath Marina Village Parkway.

4.2.3. Environmental Consequences

The following section identifies potential impacts on wetlands and other waters of the U.S. within the BSA.

PERMANENT IMPACTS

<u>No-Build Alternative</u>

The No-Build Alternative does not propose any disturbance to the BSA; therefore, this alternative would not result in permanent impacts to jurisdictional waters.

<u>Build Alternative</u>

There are estuarine, open waters, and saline emergent vegetation in the Lake Merritt Channel. Proposed project elements over the Lake Merritt Channel are limited to roadway striping within the I-880 viaduct structure. There are no proposed project elements underneath the I-880 viaduct. The revised striping and traffic patterns on I-880 would not result in any direct or indirect permanent impacts to estuarine open waters or saline emergent wetlands in the Lake Merritt Channel.

In Alameda, a new crosswalk is the closest proposed project element to saline emergent wetlands. There would be no indirect permanent impacts to wetlands from the bicycle/pedestrian path. The Build Alternative would not result in permanent fill or loss of waters or wetlands either directly or indirectly.

CONSTRUCTION IMPACTS

No-Build Alternative

There would be no construction associated with the No-Build Alternative; therefore, no construction impacts would occur.

Build Alternative

No construction activities would take place within Lake Merritt Channel or Wetlands A or B. Wetland A is 298 feet from the project footprint where surface work would be conducted as part of the Build Alternative. Wetland B is 115 feet from the project footprint where a new crosswalk would be constructed. Work within the footprint for the Posey Tube is limited to within the tube itself and would not affect Wetlands A or B. Construction activity over the Lake Merritt Channel, which is limited to restriping, would be restricted to the deck surface of the I-880 viaduct. Therefore, the Build Alternative would not have direct impacts on open waters or wetlands.

Construction has the potential to affect any downgradient or downstream waters or wetlands if stormwater runoff carries pollutants, including sediment, from the construction site to the waters or wetlands. The proposed project would develop a project SWPPP (PF-WQ-5), obtain CGP coverage (PF-WQ-6), implement BMPs during construction (PF-WQ-7), require BMP inspections (PF-WW-1), and protect environmentally sensitive areas (ESAs; PF-WW-2) to protect wetlands and waters from potential changes in water quality during construction.

PROJECT FEATURES

The following project features would be implemented to protect wetlands and waters from impacts during construction:

PF-WW-1 BMP Inspection	A water quality inspector will inspect the site after a rain event to ensure the stormwater BMPs are adequate. Corrective action will be taken per Caltrans Standard Specifications for any identified deficiencies.
PF-WW-2 Protect Environmentally Sensitive Areas	Before the start of construction, ESAs (defined as areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed) will be clearly delineated in all construction work areas using temporary high-visibility fencing (ESA fencing). Construction work areas will include the active construction site and all areas providing support for the project, including areas used for vehicle parking, equipment and material storage and staging, and access roads. No construction activities will take place within ESAs and no personnel, materials, or equipment will be placed within ESAs. The ESA fencing will be inspected regularly and fully maintained throughout construction. The final project plans will show all locations where the fencing will be installed and will provide installation specifications. The bid solicitation package special provisions will clearly describe acceptable fencing material and prohibited construction-related activities, including vehicle operation, material and equipment storage, access roads, and other surface-disturbing activities within ESAs.

4.2.4. Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will prevent any indirect impacts to waters or wetlands.

AMM-WW-1
Silt and ESA Fence

If construction is planned to occur within 100 feet of saline emergent Wetlands A and B, a silt fence, an ESA fence, and other construction site BMPs will be placed at the project footprint near the wetlands prior to beginning any work in the vicinity. All silt and ESA fencing and other construction site BMPs will be shown on project plans. Silt and ESA fencing will be used to delineate all existing permanent treatment BMPs.

No compensatory mitigation is planned because there will be no direct or indirect impacts to wetlands or waters with the incorporation of the project features and AMMs identified above. No agency coordination has been completed to date because there will be no permanent or temporary impacts to wetlands or waters during construction or project operation with the incorporation of project features and AMMs.

4.3. PLANT SPECIES

4.3.1. Regulatory Setting

USFWS and CDFW have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special-status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under FESA and/or the California Endangered Species Act (CESA). Please see Threatened and Endangered Species, Section 4.5 in this document for detailed information about these species.

This section of the document discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California FGC, Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found at California FGC, Sections 1900-1913, and CEQA, found at California PRC, Sections 21000-21177.

4.3.2. Affected Environment

This section summarizes special-status species as described in the NES-MI (March 2020) and the ARDR (March 2020).

Special-status species include plant and wildlife species that are endangered or threatened, that could be eligible for listing as rare, threatened, or endangered by federal or state resource agencies, as well as species that are identified as candidate, sensitive, or special-status in regional or local plans, regulations or polices, or by the USFWS or CDFW. Special-status species are those animal and plant species that, in the judgment of the resource agencies, trustee agencies, and certain non-governmental organizations, warrant special consideration in the CEQA process. Species considered rare, threatened, or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as plant species identified in the CNPS Inventory of Rare and Endangered Vascular Plants of California, which may include species not found on either state or federal endangered species list. A species may also be designated as special concern at the local level.

PLANT SPECIES IN THE BSA

Dominant plant species are described in the following sections based on their associated habitat types.

Urban Species

Some public parks in the northern portion of the Oakland BSA have mature native trees, including coast live oaks and Monterey pine (*Pinus radiata*). Landscape shrubs included oleander (*Nerium oleander*), pampas grass (*Cortaderia jubata*), and rosemary (*Rosmarinus officinalis*). Herbaceous species included dandelion (*Taraxacum* sp.), English ivy (*Hedera helix*), and blue bunchgrass (*Festuca idahoensis*). These species are found in small, isolated patches located north of I-880 between Harrison and Alice streets. In Oakland, the trees observed included eucalyptus, southern magnolia (*Magnolia grandiflora*), acacia, and myoporum (*Myoporum laetum*). In Alameda, the trees observed included eucalyptus, acacia, sycamore (*Platanus* sp.), and Monterey pine. Shrubs included pampas grass and Himalayan blackberry (*Rubus armeniacus*).

Ruderal plant communities consist of varied, often temporary, collections of mostly non-native plants along roadsides or other disturbed areas. Aggressive, invasive weeds, such as brome grasses and thistles, typically thrive in ruderal habitats. Ruderal areas along the I-880 corridor and along roadways in the Alameda portion of the BSA contained sweet fennel (*Foeniculum vulgare*), bristly ox-tongue (*Helminthotheca echioides*), and pearly everlasting (*Anaphalis margaritacea*).

Urban areas, including landscaped and ruderal vegetation communities, rarely support special-status plant species. No special-status plant species were observed during field surveys.

<u>Annual Grassland Species</u>

Annual grasslands consist of non-native or naturalized annual grasses, such as wild oats, barley, brome species, and soft chess. The species composition in annual grasslands varies widely depending on weather but the habitat typically experiences a water deficit for four to eight months of the year. Annual grasslands in the BSA are dominated by non-native grasses, shrubs and trees including coyote brush, cutleaf geranimum, Italian ryegrass, narrow leaved plantain, mallow, Pacific bentgrass, and wild oats.

No special-status plant species were observed within this habitat type in the BSA.

<u>Special-status Species</u>

Table 2-55 lists special-status plant species that have been documented within 5 miles of the proposed project. None of these species have the potential to occur in the BSA, and none were documented during the field surveys.

Table 2-55. Occurrence Potential for Special-status Plants within the BSA

Scientific Name Common Name	Federal Status	State Status	CNPS Status	Flowering Period	Habitat Preferences	Potential to Occur within the BSA
Amsinckia lunaris Bent-flowered fiddleneck	--	--	1B.2	Mar-Jun	Coastal bluff scrub, cismontane woodland, valley and foothill grasslands; elevation (elev.) 3-500 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Arctostaphylos pallida Pallid manzanita	FT	SE	1B.1	Dec-Mar	Broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub in siliceous shale, sandy or gravelly soil; elev. 185-465 m.	**None**. No forest, woodland, chaparral, or scrub habitat present in the BSA.
Astragalus tener var. *tener* Alkali milk-vetch	--	--	1B.2	Mar-Jun	Playas, valley, and foothill grasslands in adobe clay; vernal pools with alkaline soils; elev. 1-60 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Balsamorhiza macrolepis Big-scale balsamroot	--	--	1B.2	Mar-Jun	Chaparral, cismontane woodland, valley and foothill grasslands sometimes in serpentinite soils; elev. 90-1,555 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Calochortus umbellatus Oakland star-tulip	--	--	4.2	Mar-May	Broad-leaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grasslands often in serpentine soil; elev. 100-700 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Carex comosa Bristly sedge	--	--	2B.1	May-Sep	Coastal prairie, freshwater marshes, and swamps along lake margins, valley, and foothill grasslands; elev. 0-625 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys. No freshwater wetlands in BSA.
Castilleja ambigua var. *ambigua* Johnny-nip	--	--	4.2	Mar-Aug	Coast bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grasslands, vernal pools; elev. 0-435 m.	**None**. BSAs are in historically disturbed urban areas. This species was not observed during botanical surveys.

Scientific Name Common Name	Federal Status	State Status	CNPS Status	Flowering Period	Habitat Preferences	Potential to Occur within the BSA
Centromadia parryi ssp. congdonii Congdon's tarplant	--	--	1B.1	May-Oct	Valley and foothill grassland in alkaline soils; elev. 0-230 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Chloropyron maritimum var. *palustre* Point Reyes bird's-beak	--	--	1B.2	Jun-Oct	Coastal salt marshes and swamps; elev. 0-10 m.	**None.** BSAs are in historically disturbed urban areas. This species was not observed during botanical surveys.
Chorizanthe cuspidata var. *cuspidata* San Francisco Bay spineflower	--	--	1B.2	Apr-Aug	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub in sandy soil; elev. 3-215 m.	**None**. No scrub, dunes, or prairie field in the BSA.
Chorizanthe robusta var. *robusta* Robust spineflower	FE	--	1B.1	Apr-Sep	Cismontane woodland, coastal dunes, coastal scrub, sandy terraces and bluffs, or in loose sand; elev. 3-120 m.	**None**. No woodlands, dunes, or scrub habitats in the BSA.
Clarkia concinna ssp. *automixa* Santa Clara red ribbons	--	--	4.3	Apr-Jul	Chaparral, cismontane woodland; elev. 90-1,500 m.	**None**. No chaparral or woodlands present in the BSA.
Clarkia franciscana Presidio clarkia	FE	SE	1B.1	May-Jul	Coastal scrub, valley and foothill grassland in serpentinite soil; elev. 0-20 m.	**None**. No scrub habitat or serpentine soils present in the BSA.
Dirca occidentalis Western leatherwood	--	--	1B.2	Jan-Apr	Broad-leaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, mesic riparian woodland; elev. 25-425 m.	**None**. No forests, chaparral, or woodland habitats in the BSA.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	--	--	1B.2	May-Sep	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland in sandy to gravelly serpentinite soil; elev. 0-700 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.

Scientific Name Common Name	Federal Status	State Status	CNPS Status	Flowering Period	Habitat Preferences	Potential to Occur within the BSA
Eryngium jepsonii Jepson's coyote thistle	--	--	1B.2	Apr-Aug	Valley and foothill grassland, vernal pools in clay soil; elev. 3-300 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Extriplex joaquinana San Joaquin spearscale	--	--	1B.2	Apr-Oct	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland in alkaline soils; elev. 1-835 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Fissidens pauperculus Minute pocket moss	--	--	1B.2	N/A	North coast coniferous forest, moss growing on damp soil along the coast, in dry streambeds and in stream banks; elev. 10-100 m.	**None**. No forest habitat present in the BSA.
Fritillaria liliacea Fragrant fritillary	--	--	1B.2	Feb-Apr	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland often in serpentinite soil; elev. 3-410 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Gilia capitata ssp. *chamissonis* Blue coast gilia	--	--	1B.1	Apr-Jul	Coastal dunes, coastal scrub; elev. 2-200 m.	**None**. No dunes or scrub habitat present in the BSA.
Gilia millefoliata Dark-eyed gilia	--	--	1B.2	Apr-Jul	Coastal dunes; elev. 2-30 m.	**None**. No dune habitat present in the BSA.
Helianthella castanea Diablo helianthella	--	--	1B.2	Mar-Jun	Broad-leaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grasslands; elev. 60-1,300 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Hemizonia congesta ssp. *congesta* Congested headed hayfield tarweed	--	--	1B.2	Apr-Nov	Northern coastal scrub, valley and foothill grasslands, sometimes serpentinite; elev. 20-560 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.

Scientific Name Common Name	Federal Status	State Status	CNPS Status	Flowering Period	Habitat Preferences	Potential to Occur within the BSA
Heteranthera dubia Water star-grass	--	--	2B.2	Jul-Oct	Alkaline, still or slow-moving marshes and swamps; requires a pH of 7 or higher, usually in slightly eutrophic waters; elev. 30-1,495 m.	**None.** BSA is in historically disturbed urban areas and lack suitable alkaline marshes. This species was not observed during field surveys.
Hoita strobilina Loma Prieta hoita	--	--	1B.1	May-Oct	Chaparral, cismontane woodland, mesic riparian woodland usually in serpentinite soil; elev. 30-860 m.	**None.** No chaparral or woodland habitat present in the BSA.
Holocarpha macradenia Santa Cruz tarplant	FT	SE	1B.1	Jun-Oct	Coastal prairie, coastal scrub, valley and foothill grassland; elev. 10-220 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Horkelia cuneata var. *sericea* Kellogg's horkelia	--	--	1B.1	Apr-Sep	Closed-cone coniferous forest, maritime chaparral, coastal dunes, coastal scrub in sandy or gravelly openings; elev. 10-200 m.	**None**. No forest, chaparral, or dune habitat present in the BSA.
Lasthenia conjugens Contra Costa goldfields	FE	--	1B.1	Mar-Jun	Cismontane woodland, playas in alkaline soils, valley and foothill grasslands, vernal pools in mesic soils; elev. 0-470 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Layia carnosa Beach layia	FE	SE	1B.1	Mar-Jul	Coastal dunes, coastal scrub in sandy soil; elev. 0-60 m.	**None**. No dune or scrub habitat present in the BSA.
Leptosiphon acicularis Bristly leptosiphon	--	--	4.2	Apr-Jul	Chaparral, cismontane woodland, coastal prairie, valley and foothill grasslands; elev. 55-1,500 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Leptosiphon rosaceus Rose leptosiphon	--	--	1B.1	Apr-Jul	Coastal bluff scrub; elev. 0-100 m.	**None**. No scrub habitat present in the BSA.
Meconella oregana Oregon meconella	--	--	1B.1	Mar-Apr	Coastal prairie, coastal scrub; elev. 250-620 m.	**None**. No prairie or scrub habitat present in the BSA.
Micropus amphibolus Mount Diablo cottonseed	--	--	3.2	Mar-May	Valley and foothill grasslands, cismontane woodland, broad-leaved upland forest. Bare, grassy, or rocky slopes; elev. 50-800 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.

Scientific Name Common Name	Federal Status	State Status	CNPS Status	Flowering Period	Habitat Preferences	Potential to Occur within the BSA
Monolopia gracilens Woodland woolythreads	--	--	1B.2	Mar-Jul	Broad-leaved upland forest in openings, chaparral in openings, cismontane woodland, north coast coniferous forest in openings, valley and foothill grasslands in serpentine soils; elev. 100-1,200 m.	**None**. No forest, chaparral, or woodland habitat present; no serpentine soil present in the BSA.
Plagiobothrys chorisianus var. *chorisianus* Choris' popcorn-flower	--	--	1B.2	Mar-Jun	Chaparral, coastal prairie, mesic coastal scrub; elev. 15-160 m.	**None**. No prairie or scrub habitat present in the BSA.
Plagiobothrys diffusus San Francisco popcorn-flower	--	SE	1B.1	Mar-Jun	Coastal prairie, valley and foothill grasslands; elev. 60-360 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Polygonum marinense Marin knotweed	--	--	3.1	Apr-Oct	Coastal salt or brackish marshes and swamps; elev. 0-10 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Sanicula maritima Adobe sanicle	--	Rare	1B.1	Feb-May	Chaparral, coastal prairie, meadows and seeps, valley and foothill grasslands in clay and serpentinite soils; elev. 30-240 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Spergularia macrotheca var. *longistyla* Long-styled sand-spurrey	--	--	1B.2	Feb-May	Meadows and seeps, marshes and swamps in alkaline soil; elev. 0-255 m.	**None.** BSA is in historically disturbed urban areas and lack suitable alkaline marshes. This species was not observed during field surveys.
Streptanthus albidus ssp. *peramoenus* Most beautiful jewel-flower	--	--	1B.2	Mar-Oct	Chaparral, valley and foothill grasslands, cismontane woodland; serpentinite outcrops on ridges and slopes; elev. 120-730 m.	**None**. No serpentine soil present in the BSA.

Scientific Name Common Name	Federal Status	State Status	CNPS Status	Flowering Period	Habitat Preferences	Potential to Occur within the BSA
Stuckenia filiformis ssp. *alpine* Slender-leaved pondweed	--	--	2B.2	May-Jul	Assorted shallow freshwater marshes and swamps; elev. 300-2,150 m.	**None**. No freshwater marshes or swamps present in the BSA.
Suaeda californica California seablite	FE	--	1B.1	Jul-Oct	Coastal salt marshes and swamps; elev. 0-15 m.	**None**. BSAs are in historically disturbed urban areas. This species was not observed during botanical surveys.
Trifolium hydrophilum Saline clover	--	--	1B.2	Apr-Jun	Marshes and swamps, valley and foothill grasslands, vernal pools; mesic, alkaline sites; elev. 0-300 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Triphysaria floribunda San Francisco owl's-clover	--	--	1B.2	Apr-Jun	Coastal prairie, coastal scrub, valley and foothill grasslands usually in serpentinite soils; elev. 10-160 m.	**None**. BSA is in historically disturbed urban areas. This species was not observed during field surveys.
Viburnum ellipticum Oval-leaved viburnum	--	--	2B.3	May-Jun	Chaparral, cismontane woodland, lower montane coniferous forest; elev. 215-1,400 m.	**None**. No suitable habitat present in the BSA.

Notes

General habitat descriptions are based on definitions used by the CNPS online Inventory of Rare and Endangered Plants (2019).

Status Legend

FE = Listed as endangered under FESA

FT = Listed as threatened under FESA

SE = Listed as endangered under CESA

ST = Listed as threatened under CESA

Rare = State listed as rare by the CNPS Rare Plant Scientific Advisory

CT = Candidate threatened

FP = Fully protected

CNPS Rare Plant Ranks:

1B = Plants Rare, Threatened, or Endangered in California and Elsewhere

2B = Plants Rare, Threatened, or Endangered in California but More Common Elsewhere

3 = Plants about Which More Information is Needed – A Review List

4 = Watch List: Plants of Limited Distribution

CNPS Threat Ranks:

0.1 – Seriously threatened in California

0.2 – Moderately threatened in California

Rationale Definitions

Evaluation of potential presence was based on the habitat types that each listed species occupies and on observations made during the 2015-2019 field surveys.

None = No possibility for occurrence.

Not likely = Habitat may be present, but this wildlife species has not been documented in the BSA other than historical museum specimen records; however, potential for its presence cannot be ruled out entirely.

Low = Suitable habitat present; not likely to occur due to environmental constraints but cannot be ruled as absent.

Moderate = Potential to occur based on habitat suitability and documented records in the BSA region.

High = Species has been documented within the BSA.

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4.3.3. Environmental Consequences

PERMANENT IMPACTS

No-Build Alternative

The No-Build Alternative does not propose any disturbance to the BSA; therefore, this alternative would not result in permanent impacts to special-status plant species.

Build Alternative

The Build Alternative would not have a permanent effect on special-status plant species or their habitat. There are no special-status plant species with the potential to occur within the BSA.

CONSTRUCTION IMPACTS

No-Build Alternative

The No-Build Alternative does not have any construction in the BSA; therefore, this alternative would not result in temporary impacts to special-status plant species.

Build Alternative

The Build Alternative would not have a temporary impact on special-status plant species because there are no special-status plant species with the potential to occur within the BSA.

4.3.4. Avoidance, Minimization, and/or Mitigation Measures

The proposed project will not have significant impacts on plant species; therefore, no additional measures are required.

4.4. ANIMAL SPECIES

4.4.1. Regulatory Setting

Many state and federal laws regulate impacts to wildlife. USFWS, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), and CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species section. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

4.4.2. Affected Environment

This section summarizes the analysis of animal species from the NES-MI (March 2020). The BSA, surveys, and database searches are as described in Section 4.1. Natural Communities. The results of database searches are presented in Appendix G. EFH is addressed in Section 4.1. Natural Communities, and critical habitat is addressed in Section 4.5. Threatened and Endangered Species.

ANIMAL SPECIES IN THE BSA

Animal species vary between habitat types within the BSA. Animal species observed during field surveys are described by habitat.

<u>Urban Habitat</u>

Urban habitat is the primary habitat type within the BSA. This habitat is characterized by manicured lawns, ornamental trees and shrubs, highly disturbed ruderal areas, impervious surfaces and hardscape, and buildings/structures. Wildlife species observed during field surveys include Anna's hummingbird (*Calypte anna*), yellow-rumped warbler (*Setophaga coronata*), mourning dove (*Zenaida macroura*), rock pigeon (*Columba livia*), black phoebe (*Sayornis nigricans*), American crow (*Corvus brachyrhynchos*), house finch (*Haemorhous mexicanus*), California towhee (*Melozone crissalis*), western gull (*Larus occidentalis*), and feral cat (*Felis catus*). Although urban areas are not considered high-quality habitat for special-status species, some special-status birds and bats use urban areas for nesting and foraging/hunting.

Annual Grassland Habitat

Annual grasslands in the BSA are found in Alameda, east of the Posey Tube Portal (Figure 2-52). Wildlife observed during field reviews in the grasslands included mourning doves (*Zenaida macroura*) and bushtits (*Psaltriparus minimus*).

Saline Emergent Wetlands

Saline emergent vegetation was found within the Lake Merritt Channel (mapped as part of estuarine waters in (Figure 2-51). Wildlife species observed during field reviews in this habitat type included white-crowned sparrow (*Zonotrichia leucophrys*), American crow (*Corvus brachyrhynchos*), raccoon, and mosquitofish (*Gambusia affinis*). Saline emergent wetlands regionally support special-status animals; however, none were observed during the field surveys. For additional information about this habitat, see Section 4.2. Wetlands and Other Waters.

Estuarine Waters

Estuarine habitats are a mixture of salt and freshwater, and they are highly productive ecosystems supporting large numbers of invertebrates, fish, and birds. Estuarine waters are found in the Lake Merritt Channel (Figure 2-51). Species observed in the estuarine waters included striped bass (*Morone saxatili*s) and bat rays (*Myliobatis californica*). Regionally, estuarine waters support special-status animals; however, none were observed during the field surveys. For a description of this habitat, see Section 4.2. Wetlands and Other Waters.

Special-status Species

No special-status wildlife species were observed during the biological surveys. Table 2-56 lists the special-status wildlife generated from the database searches, and it provides descriptions for the potential presence or absence of wildlife, listed status, required habitats, and occurrence likelihood in the BSA. Six special-status species have a low potential to occur based on habitat types within the BSA.

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Table 2-56. Occurrence Potential for Special-status Wildlife and Associated Habitat within the BSA

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Invertebrates				
Bombus occidentalis Western bumble bee	–	CE	Within California, its current range is in the far northeastern corner of the state. Found in a range of habitats, including mixed woodlands, farmlands, urban areas, montane meadows, and into the western edge of prairie grasslands.	**None**. Outside current range of this species.
Callophrys mossii bayensis San Bruno elfin butterfly	FE	--	Coast, mountainous areas, grassy ground cover near San Bruno Mountain in San Mateo County.	**None**. Outside of the range of this species.
Euphydryas editha bayensis Bay checkerspot butterfly	FT	--	Restricted to native grasslands on outcrops of serpentinite soil in the vicinity of the San Francisco Bay.	**None**. No serpentine soil or outcrops present in the BSA.
Fish				
Acipenser medirostris Green sturgeon – southern DPS	FT	SSC	These are the most marine species of sturgeon. Abundance increases northward of Point Conception. Migrates from saltwater to freshwater rivers to spawn. It spawns in the Sacramento, Klamath, and Trinity rivers at temperatures between 46˚ and 57˚ F. Preferred spawning substrate is large cobble; but can range from clean sand to bedrock.	**None.** This species could occur in the Oakland Estuary, which is beyond the BSA. Not known to use the Lake Merritt Channel.
Critical Habitat for Green sturgeon –southern DPS	FT	SSC	Estuarine, salt marsh, and freshwater streams.	**None.** Not present within the BSA.
Oncorhynchus mykiss irideus Steelhead – central California coast DPS	FT	--	Occurs from Russian River south to Soquel Creek and to, but not including, the Pajaro River. Also found in the San Francisco Bay and San Pablo Bay basins.	**None.** This species could occur in the Oakland Estuary, which is beyond the BSA. Not known to use the Lake Merritt Channel.

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Critical Habitat for Steelhead – central California coast DPS	FT	--	Creeks with dense riparian cover.	**None.** Not present within the BSA.
Oncorhynchus mykiss irideus Steelhead – Central Valley DPS	FT	--	Populations in the Sacramento and San Joaquin rivers and their tributaries.	**None.** This species could occur in the Oakland Estuary, which is beyond the BSA. Not known to use the Lake Merritt Channel.
Oncorhynchus tshawytscha Chinook salmon – Central Valley spring run ESU	FT	ST	Populations occur in the Sacramento and San Joaquin rivers and their tributaries. Spring-run Chinook migrate far upstream in the spring and shelter in deep, cool pools waiting to spawn until fall when temperatures decrease. After hatching, juveniles spend at least one summer in freshwater rearing areas, so the stream must have either perennial flow or cool intermittent pools with subsurface flow during the dry season.	**None.** This species could occur in the Oakland Estuary, which is beyond the BSA. Not known to use the Lake Merritt Channel.
Oncorhynchus tshawytscha Chinook salmon – Sacramento River winter run ESU	FE	SE	Occur in the San Francisco Bay Estuary. Winter-run chinook migrate through the Sacramento River to spawning grounds from December to July. Spawning is limited to the river between the Red Bluff Diversion and Keswick Dam in Redding.	**None.** This species could occur in the Oakland Estuary, which is beyond the BSA. Not known to use the Lake Merritt Channel.
Critical Habitat for Chinook salmon – Sacramento River winter run ESU	FE	SE	Large freshwater rivers.	**None.** Not present within the BSA.
Hypomesus transpacificus Delta smelt	FT	SE	Inhabits the Sacramento-San Joaquin Delta; found seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay. Seldom found at salinities greater than 10 parts per trillion (ppt), most often at salinities less than 2 ppt.	**None.** This species could occur in the Oakland Estuary, which is beyond the BSA. Not known to use the Lake Merritt Channel.

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Spirinchus thaleichthys Longfin smelt	FC	ST, SSC	Capable of adapting/tolerating a wide range of salinities. Found in open waters of estuaries. Prefer salinities of 15-30 ppt but can be found in completely freshwater to almost pure saltwater.	**None.** This species could occur in the Oakland Estuary, which is beyond the BSA. Not known to use the Lake Merritt Channel.
Eucyclogobius newberryi Tidewater goby	FE	SSC	Brackish water habitats. Found in shallow lagoons and lower stream reaches. Need fairly still but not stagnant water and high oxygen levels. Rarely moves into marine or freshwater habitats.	**Low.** This species could occur in the Oakland Estuary. There is a CNDDB occurrence in Lake Merritt. Due to hydrologic connection between Lake Merritt and the Oakland Estuary, tidewater gobies could be found in the Lake Merritt Channel.
Amphibians				
Ambystoma californiense California tiger salamander	FT	ST	Needs underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	**None**. No suitable breeding pools or uplands habitats are present. This species is not known to occur within a 5-mile radius of the BSA. There is a CNDDB record for a museum specimen collected in Alameda in 1886 but there are no records since that time. Species has been extirpated from Alameda and downtown Oakland.
Rana boylii Foothill yellow-legged frog	–	CT, SSC	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats.	**None**. No suitable habitat present; outside of the range of this species.
Rana draytonii California red-legged frog	FT	SSC	Occurs in a variety of ponds, sloughs, low-gradient streams, and low-salinity lagoons. Adults may forage in and migrate through terrestrial grasslands, riparian woodlands, and forests, but require weedy, slow-moving or standing water that persists through most of the dry season for successful reproduction.	**None**. No stream habitat suitable for breeding is present in the BSA; there are no CNDDB records within a 5-mile radius.

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Reptiles				
Emys marmorata Western pond turtle	–	SSC	Aquatic turtle; prefers ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation below 6,000 feet elev. Needs basking sites and suitable upland habitat (sandy banks or grassy open fields) up to 0.3 miles from water for egg-laying.	**None**. No suitable freshwater aquatic habitat present in the BSA. The only CNDDB record within a 5-mile radius is for an undated museum specimen collected in Lake Temescal.
Chelonia mydas Green sea turtle	FT	--	Require beaches for nesting, open ocean convergence zones, and coastal areas for benthic feeding.	**None**. No coastal marine habitat present. Not known to use the Lake Merritt Channel.
Masticophis lateralis euyxanthus Alameda whipsnake	FT	ST	Typically found in chaparral and scrub habitats, but would also use adjacent grassland, oak savanna, and woodland habitats.	**None**. The BSA is outside of the range of this species.
Birds				
Aquila chrysaetos Golden eagle	–	FP	Found in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of a range; also, large trees in open areas.	**None**. No suitable nesting habitat within the BSA. It is highly unlikely that this species would nest in a highly urbanized area.
Circus hudsonius Northern harrier	–	SSC	Coastal salt and freshwater marshes. Nest and forage in grasslands from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at a marsh edge. Nest built of a large mound of sticks in wet areas.	**None**. No suitably sized grasslands or marshes available for undisturbed nesting within the BSA. Annual grassland in Alameda is surrounded by urbanized areas that are not suitable for harriers.

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Elanus leucurus White-tailed kite	–	FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodlands. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**None**. Large trees in the BSA could provide nesting habitat but the highly urbanized BSA is an unlikely nesting location due to the low quality. The only CNDDB record within a 5-mile radius is for a pair that nested at the Berkeley Yacht Club in 1994 at a location approximately 4.6 miles north of the BSA.
Falco peregrinus anatum American peregrine falcon	DL	DL, FP	Found near wetlands, lakes, rivers, or other water on cliffs, banks, dunes, or mounds and man-made structures. Nests consist of a scrape, depression, or ledge in an open site.	**Low.** The nearest CNDDB record is for a nest observed at a location 2.2 miles southeast of the south end of the Oakland BSA. Tall buildings could provide suitable nesting habitat. Species is known to nest and hunt in urban areas.
Coturnicops noveboracensis Yellow rail	–	SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	**None.** The BSA is not within the breeding range of this species. Occasionally they may be observed wintering in freshwater marshes along the San Francisco Bay. Suitable freshwater marsh habitat is absent from the BSA.
Laterallus jamaicensis coturniculus California black rail	–	ST, FP	Inhabits freshwater marshes, wet meadows, and shallow margins of saltwater marshes that border larger bays. Needs water depths of about 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat.	**None**. No suitable nesting habitat within the BSA.
Rallus obsoletus California Ridgway's rail	FE	SE, FP	Saltwater and brackish marshes traversed by tidal sloughs in the vicinity of the San Francisco Bay. Associated with abundant growths of pickleweed but feeds away from cover on invertebrates from mud-bottomed sloughs.	**None**. No suitable nesting habitat within BSAs.

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Charadrius alexandrinus nivosus Western snowy plover	FT	SSC	Sandy beaches, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	**None**. No suitable nesting habitat within the BSA.
Rynchops niger Black skimmer	–	SSC	Nests on gravel bars, low islets, and sandy beaches in unvegetated sites. Nesting colonies usually have fewer than 200 pairs.	**None.** No gravel bars, islets, or sandy beaches within the BSA.
Sternula antillarum browni California least tern	FE	SE, FP	Nests along the coast from the San Francisco Bay south to northern Baja, California. Colonial breeder on bare or sparsely vegetated, flat substrates, sand beaches, alkali flats, landfills, or paved areas.	**None**. The BSA is an urbanized area and does not provide suitable space for colony nesting.
Athene cunicularia Burrowing owl	–	SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by long-growing vegetation. Nest in burrows; dependent on burrowing mammals, mainly the California ground squirrel.	**None**. The BSA is entirely within urban areas. There are no open grasslands or scrublands present.
Geothlypis trichas sinuosa Saltmarsh common yellowthroat	–	SSC	Resident of the San Francisco Bay region in fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**None**. No fresh or saltwater marshes present within the BSA.
Melospiza melodia pusillula Alameda song sparrow	–	SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia spp. marshes; nests low in Grindelia spp. bushes (high enough to escape high tides) and in Salicornia.	**None**. No fresh or saltwater marshes present within the BSA.
Mammals				
Scapanus latimanus parvus Alameda Island mole	–	SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.	**None**. There are no CNDDB or other records for this species since 1958. Due to urbanization of Alameda since 1958, it is presumed to no longer be present.

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Sorex vagrans halicoetes Salt-marsh wandering shrew	–	SSC	Salt marshes of the south arm of the San Francisco Bay. Medium high marsh 6-8 feet above sea level where abundant driftwood is scattered among *Salicornia* spp.	**None**. Saline wetlands near the BSA lack pickleweed and driftwood preferred by this species. Additionally, there are no CNDDB occurrences for this species on Alameda Island. Nearest CNDDB occurrence is over 4 miles away.
Antrozous pallidus Pallid bat	–	SSC	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to roosting site disturbance.	**Low**. This species could roost in structures or trees in the BSA. The nearest CNDDB record is from 1932 is for a female bat collected in Redwood Canyon approximately 7 miles southeast of the BSA.
Corynorhinus townsendii Townsend's big-eared bat	–	SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	**Low**. Could be present in buildings or structures.
Lasionycteris noctivagans Silver-haired bat	–	FGC	Primarily occupies coastal and montane forests. Forages over streams, ponds, and open brushy areas. Roosts in hollow trees beneath exfoliating bark or in abandoned woodpecker cavities.	**Low.** This species could roost in trees within the BSA.
Lasiurus cinereus Hoary bat	–	FGC	Prefers open habitats or habitat mosaics with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	**Low.** This species could roost in trees within the BSA. Potential water sources are wetlands and waters shown in Figure 2-50 and Figure 2-51.
Nyctinomops macrotis Big free-tailed bat	–	SSC	Needs high cliffs or rocky outcrops for roosting. Feeds principally on large moths.	**None.** The BSA is outside of the range of this species.

Scientific Name Common Name	Federal Status	State Status	Habitat Requirements	Potential to Occur within the BSA
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	–	SSC	Occurs in forest habitats of moderate canopy and moderate-to-dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material.	**None.** There are no areas within the BSA that provide dense understory. This species was not observed during field surveys.
Reithrodontomys raviventris Salt-marsh harvest mouse	FE	SE, FP	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat. Does not burrow, builds loosely organized nests. Requires higher areas for flood escape.	**None**. Saline wetlands near the BSA do not contain the appropriate vegetation structure and composition for this species.
Taxidea taxus American badger	–	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**None**. No suitable habitat present in the BSA. Grassland habitat is not large enough to provide sufficient food sources, and it is too close to urban area.
Pinnipeds Seals and sea lions	MMPA	--	Marine and estuarine waters.	**None**. There is no suitable marine and estuarine habitat or known haul-out sites within the BSA. Not known to use the Lake Merritt Channel.

Acronyms
DPS = Distinct Population Segment
ESU = Evolutionary Significant Unit
FE = Listed as endangered under FESA
FSC = Federal Species of Concern cited by NOAA Fisheries
FT = Listed as threatened under FESA
SE = Listed as endangered under CESA
ST = Listed as threatened under CESA
SSC = Designated as a species of special concern by CDFW
FP = Fully protected under the California FGC
C = Candidate under consideration for threatened (T) or endangered (E) status
Proposed = Proposed for threatened (T) or endangered (E) status
FGC = Protected under nongame mammal provisions in the California FGC
DL = Delisted
MMPA = Protected under Marine Mammal Protection Act

Potential to Occur/Rationale

None = No possibility for occurrence based on the known range of the species, no suitable habitat is present, or low-quality habitat is present, but the species is unlikely to occur due to environmental constraints.

Low = Marginal to suitable habitat present within or adjacent to the BSA, but the species has not been documented or recently documented within a 5-mile radius of the BSA.

Moderate = Suitable habitat is present within or adjacent to the BSA, and the species has been recently documented within a 5-mile radius of the BSA.

High = Suitable habitat is present within or adjacent to the BSA, and the species has been recently documented within or in close proximity to the BSA.

Six special-status wildlife species have a low potential to occurrence in the BSA: peregrine falcon, pallid bat, Townsend's big-eared bat, hoary bat, silver-haired bat, and tidewater goby. Additionally, native birds and their nests are protected under the Migratory Bird Treaty Act (MBTA) and the California FGC.

Peregrine Falcon

In California, the American peregrine falcon is fully protected by the state. Habitats with cliffs are used by breeding falcons, and they usually nest near water. They also can use towers, bridges, and buildings as nesting habitats. Foraging occurs in open-space habitats with non-breeding falcons occupying these habitats as well. No peregrine falcons or nests were observed during wildlife surveys; however, the species is known to use urban areas for nesting and hunting. CNDDB lists a recent record in East Oakland for a nest in an urban structure. The tall buildings east of the downtown Oakland BSA can provide potentially suitable nesting habitat. This species is less likely to be present in the vicinity of the Alameda BSA because there are few high-rise structures.

Native Birds

Under the MBTA and California FGC (CFGC), migratory birds, their nests, and eggs are protected from disturbance or destruction. All native birds are protected under the MBTA and the CFGC except for non-native species such as the European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), and rock pigeon (*Columbia livia*), as well as game species (subject to limited protection). Bird nesting habits vary and may include trees, shrubs, man-made structures, and on the ground.

Birds protected by the MBTA and the CFGC were observed during field surveys within the BSA. There is a known rookery of snowy egret (*Egretta thula*) and black-crowned night herons (*Nycticorax nycticorax*) within the Oakland BSA. Nesting has been documented near the intersection of Oak and 9th streets and extending north along Oak Street, west along 11th, 12th, and 13th streets, and east along 10th, 11th, and 12th streets. These birds are known to nest in urban street trees, primarily fig trees (*Ficus* sp.).

Bats

Four special-status bat species were found in trees or structures within the BSA. The pallid bat and Townsend's big-eared bat are considered SSC. SSCs are species that meet the state definition of threatened or endangered but are not formally listed under CESA, that experience population declines that may qualify for listing in the future, or that have naturally small populations or other risk factors that could lead to declines. SSCs are designated by CDFW and must be assessed for project impacts to the species under CEQA Guidelines Section 15380. Both of these bats use man-made structures for roosting, such as bridges and buildings. Roosting bats typically occupy a variety of habitats often associated with nearby water sources that attract insects and supply drinking water.

Additionally, some bat species almost exclusively roost in hollowed trees, peeling bark, and tree foliage. These species require trees for some or all of the following activities depending on the species: thermal regulation, predator avoidance, maternity roosting, and for resting between foraging flights. Bat species that depend on trees for roosting are the hoary bat and silver-haired bat. Both are protected under the CFGC.

Tidewater Goby

Tidewater gobies are small fish that have adapted to a narrow salinity range found at the interface between salt and freshwater. Entrances of freshwater tributaries, such as the Lake Merritt Channel, provide their preferred salinity ranges. They use aquatic vegetation such as sago pond weed and widgeon grass for shelter. Gobies migrate upstream into tributaries to reproduce. Migration occurs year-round but peaks in April-May. Although there are no records for tidewater gobies within the BSA, the record for Lake Merritt indicates that the goby used the Lake Merritt Channel as a corridor to travel from the Oakland Estuary to Lake Merritt. The Lake Merritt Channel's tidal salinity fluctuations is suitable habitat for tidewater gobies.

4.4.3. Environmental Consequences

PERMANENT IMPACTS

No-Build Alternative

No disturbance within the BSA would occur under the No-Build Alternative; therefore, this alternative would not result in permanent impacts to special-status animal species.

Build Alternative

Special-status Birds

Operation of the Build Alternative would not affect nests or foraging habitat for native birds, including peregrine falcons. Although the proposed project would require removal of 35 trees from within Caltrans ROW, this would not substantially reduce available nesting habitat for native birds.

Birds that currently nest within the BSA are acclimated to high levels of human activity and its associated acoustic and visual disturbances, and they are expected to acclimate to changes in human activity with the proposed project. The Build Alternative would not reduce the overall quality of bird habitat in the BSA due to acoustic or visual changes.

USFWS defines "take" for MBTA purposes as "pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR Section 10.12). However, under current USFWS guidance, the MBTA does not regulate "take" that is incidental to the purpose of a project. Under current guidance from CDFW and the Attorney General of California, the CFGC prohibits take of birds, nests, or eggs, regardless of the intent of the action. There are no project elements that could result in take of native bird species, as defined under the California FGC or the MBTA. Therefore, the Build Alternative would not result in permanent impacts to special-status birds.

Special-status Bats

The Build Alternative would result in changes to structures and vegetation within the BSA. Structural alterations to the I-880 viaduct, Tubes, and retaining walls would not result in a loss of available roosting habitat for bat species that roost in structures due to the number of other available structures in Oakland and Alameda.

The California FGC similarly prohibits take of bats as well as protection from harassment and destruction. Bats that currently roost within the BSA are acclimated to high levels of human activity and associated acoustic and visual disturbances, and they are expected to acclimate to changes in human activity with the proposed project. There are no project elements that could result in the take of bat species. Therefore, the Build Alternative would not result in permanent impacts to protected bat species or their habitat.

Tidewater Goby

There are estuarine open waters in Lake Merritt Channel that may be used by tidewater gobies during migration or during nonmigratory periods based on salinity fluctuations. Project elements over the Lake Merritt Channel are limited to roadway striping on top of the I-880 viaduct. The revised striping and traffic patterns on I-880 would not result in any direct or indirect permanent impacts to estuarine open waters in the Lake Merritt Channel. There would be no potential direct or indirect permanent impacts to tidewater gobies or their habitat.

CONSTRUCTION IMPACTS

Special-status Birds

Construction activities have the potential to disturb active bird nests if present within the BSA. There is a known rookery of snowy egret (*Egretta thula*) and black-crowned night herons (*Nycticorax nycticorax*) within the Oakland BSA. Nesting has been documented near the intersection of Oak Street and 9th Street, extending north along Oak Street, west along 11th, 12th, and 13th streets, and east along 10th, 11th, and 12th streets. These birds nest within urban street trees, primarily in *Ficus* trees. Incidental take permits are not issued under the MBTA or the California FGC; therefore, the proposed project must implement procedures to avoid the "taking" of native birds, nests, or eggs. Birds nest in a variety of places, including trees, shrubs, man-made structures, and the ground. As described under AMM-AS-6, the proposed project would include a pre-construction worker environmental awareness training, which would provide information on how to avoid impacting special-status birds and their nests.

Special-status Bats

Construction activities have the potential to disturb active bat roosts if present within the BSA. Roosting bats could be affected during construction in and around their active roosts. The Build Alternative would require tree removal, and tree-roosting bats, including the hoary and silver-haired bats, could be affected during tree removal, if present. Similarly, structure-nesting bats (pallid and Townsend's big-eared bats) could be affected if they roost within structures that are being modified as part of the Build Alternative. As described under AMM-AS-6, the proposed project would include a pre-construction worker environmental awareness training, which would provide information on how to avoid impacting special-status bats.

Tidewater Goby

No construction activities would take place within the Lake Merritt Channel. Construction activities over the Lake Merritt Channel would be confined to the I-880 viaduct. Any noise or visual disturbance from construction activity would be masked by the I-880 traffic. Construction has the potential to affect any downgradient or downstream waters if stormwater runoff carries pollutants, including sediment, from the construction site to the waters within the BSA. Project features proposed in Section 4.1. Natural Communities and Section 4.2. Wetlands and Other Waters, as well as AMM-AS-6 would be implemented to protect estuarine waters from potential changes in water quality during construction. Therefore, construction of the Build Alternative would not have direct or indirect impacts on tidewater gobies or their estuarine habitat.

PROJECT FEATURES

The project features proposed in Sections 4.1. Natural Communities, Section 4.2. Wetlands and Other Waters, and Section 2.9. Visual/Aesthetics would avoid and minimize project effects on special-status animal species and their habitat. PF-VA-2 requires preservation of existing vegetation including native species, trees, and shrubs.

4.4.4. Avoidance, Minimization, and/or Mitigation Measures

The AMMs proposed in Section 4.2. Wetlands and Other Waters will reduce project effects on special-status animal species and their habitat. The following avoidance and minimization measures will be implemented to prevent project impacts to native birds and roosting bats.

AMM-AS-1 Pre-construction Nesting Bird Surveys	• Pre-construction surveys for nesting birds will be conducted by a qualified Caltrans-approved biologist no more than 48 hours prior to starting construction activities during the nesting season (February 1-September 30). Surveys will cover any potential nesting sites within 300 feet of construction activity. • Active nest sites will be designated as environmentally sensitive areas and identified with appropriate markers for the duration eggs or juvenile birds are nest dependent. • A qualified Caltrans-approved biologist will develop buffer recommendations that are site specific and at an appropriate distance that will protect normal bird behavior to prevent nesting failure or abandonment. Buffers will be in place for the duration eggs or juvenile birds are nest dependent. • The qualified Caltrans-approved biologist will monitor the behavior of the birds (adults and young when present) at the nest site to ensure they are not disturbed by project construction. Nest monitoring will continue during construction until the biologist has confirmed the young have fully fledged (have completely left the nest site and are no longer dependent on the parents). • If it is necessary to prevent birds from nesting at a specific location within the construction area, a nesting bird exclusion plan will be prepared by the contractor. It will specify what Caltrans-approved exclusion measures can be used under what conditions. The exclusion plan will be approved by Caltrans prior to implementation.
AMM-AS-2 Pre-construction Bat Survey	• No more than 48 hours prior to tree removal and structural modifications or demolition, a qualified, Caltrans-approved biologist will conduct a pre-construction survey of trees and structures slated for removal for crevices and cavities that can provide bat roosting habitat or support active bat roosts. If an active roost is observed, a no-disturbance buffer zone will be

	implemented, and avoidance measures will be developed and approved by Caltrans.
AMM-AS-3 **Protected Species**	• If a protected species is discovered within the BSA during pre-construction surveys or construction, construction personnel will be required to immediately notify the resident engineer. The resident engineer will notify the project biologist who will implement avoidance measures as described in AMM-AS-1 and AMM-AS-2, including no disturbance buffers and work stoppages as needed to avoid impacting or taking the species. To avoid a take, the resident engineer will suspend construction activities within a 50-foot radius of the animal until it leaves the site voluntarily or it is removed by the agency-approved biologist.
AMM-AS-4 **Evaluate and Replace Trees**	• To minimize impacts to nesting bird and roosting bat habitats: • Tree removal or work within the drip line (the outer extent of tree branches) will be avoided. • Prior to any tree removals or work within the drip line of any tree, a Caltrans-approved arborist will assess tree health. The project will follow the guidance provided by the arborist for tree removals and protective measures. • Six native trees will be planted where space allows. • Where feasible, non-native trees that are removed will be replaced with native species. • Trees will be planted close to the original removal location if possible, or at a minimum, within the same city or ROW. Caltrans will coordinate with the local jurisdictions if necessary, for tree removal and replacement.
AMM-AS-5 **WEAT**	• Before commencing construction, a qualified Caltrans-approved biologist will conduct an environmental awareness training program for all on-site construction personnel. • Species to be covered will include, but not be limited to, peregrine falcons, bats, and nesting birds. The program will also include information on the protected species, and the habitats likely to be found within or adjacent to the BSA, requirements of federal and state laws pertaining to these species, identification of measures implemented to conserve the species and habitats within the BSA, and distribution of a fact sheet conveying this information to personnel who may enter the BSA. All construction personnel will receive the training. • All personnel who receive the training will sign a form to document that they have taken the training. A record of all trained personnel will be kept on-site with the resident engineer and will be available for review upon request.

As with special-status birds, trees to be removed by the proposed project will be surveyed prior to removal. AMM-AS-1 will ensure that disturbance to nests during construction is avoided and minimized. With the implementation of the project features and AMMs, the proposed project will have no impact on special-status birds during construction.

Pre-construction surveys (AMM-AS-2) will protect against impacts to roosting bats in the unlikely event a tree or structure containing bats is slated for removal. If bats are found, the proposed project will implement exclusion devices determined in consultation with CDFW. AMM-AS-3 will ensure that disturbance to roosts during construction is avoided and minimized. With the implementation of the project features and AMMs, the proposed project would have no impact on special-status bats during construction.

The Build Alternative will minimize tree removals, minimize impacts to remaining trees, and planting six native trees (AMM-AS-4). AMM-AS-3 and AMM-AS-5 will further reduce the potential for adverse effects on special-status animal species. With the incorporation of these AMMs, the Build Alternative will not significantly impact special-status animal species or their habitat; therefore, no compensatory mitigation is proposed.

4.5. THREATENED AND ENDANGERED SPECIES

4.5.1. Regulatory Setting

The primary federal law protecting threatened and endangered species is the FESA: 16 USC Section 1531, et seq. See also 50 CFR Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the FHWA (and Caltrans as assigned), are required to consult with the USFWS and the NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take Statement or a Letter of Concurrence. Section 3 of FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the CESA, California FGC Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFW is the agency responsible for implementing CESA. Section 2080 of the California FGC prohibits “take” of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California FGC as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California FGC.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

4.5.2. Affected Environment

This section summarizes threatened and endangered species with the potential to occur as evaluated in the NES-MI (March 2020). The findings of the NES-MI were based on research and field surveys as specified in Section 4.1. Natural Communities. Species lists from USFWS, NOAA Fisheries, CNPS, and CNDDB were obtained on February 18, 2020 and are included in the SLR Memo May 2020.

After literature review and database searches, it was determined that no federally threatened or endangered plant species have the potential to occur within the BSA. None were documented during the field surveys. One federally endangered species (tidewater goby) has a low potential to occur within the BSA (Table 2-57) due to the presence of suitable habitat. It was not observed during the field surveys.

4.5.3. Environmental Consequences

PERMANENT AND CONSTRUCTION IMPACTS

No-Build Alternative

The No-Build Alternative would not affect CESA- or FESA-listed species because no construction or habitat removal will occur.

Build Alternative

The Build Alternative would not affect threatened or endangered species listed under CESA or FESA. There is no work occurring within tidewater goby habitat in the Lake Merritt Channel. Temporary impacts to tidewater goby habitat could occur through changes in water quality. Project features and AMMs described in Section 4.2. Wetlands and Other Waters would result in the proposed project having no effect on either tidewater gobies or their estuarine habitat.

There are no designated critical habitats within the BSA. Therefore, the Build Alternative would not affect any designated critical habitat.

Preliminary effect findings for species listed under FESA are provided in Table 2-57. Species that receive protections under other laws and regulations are addressed in Sections 4.3. Plant Species and 4.4. Animal Species.

There has been no agency coordination regarding listed species. No additional coordination is required due to the proposed project having no effect on any listed species or critical habitats.

Table 2-57. FESA Preliminary Effect Findings

Common Name	Scientific Name	Federal Status	Potential to Occur	Effect Finding	Effect Finding for Critical Habitat
Plants					
Pallid manzanita	*Arctostaphylos pallida*	FT	None	No effect	N/A
Robust spineflower	*Chorizanthe robusta* var. *robusta*	FE	None	No effect	N/A
Presidio clarkia	*Clarkia franciscana*	FE	None	No effect	N/A
Santa Cruz tarplant	*Holocarpha macradenia*	FT	None	No effect	N/A
Contra Costa goldfields	*Lasthenia conjugens*	FE	None	No effect	N/A
Beach layia	*Layia carnosa*	FE	None	No effect	N/A
California seablite	*Suaeda californica*	FE	None	No effect	N/A
Invertebrates					
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE	None	No effect	N/A
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT	None	No effect	N/A
Fish					
Green sturgeon – southern DPS	*Acipenser medirostris*	FT	None	No effect	N/A
Critical Habitat for Green sturgeon – southern DPS	N/A	FT	None	N/A	No effect
Steelhead — central California coast DPS	*Oncorhynchus mykiss irideus*	FT	None	No effect	N/A
Critical Habitat for Steelhead — central California coast DPS	N/A	FT	None	No effect	N/A
Steelhead – Central Valley DPS	*Oncorhynchus mykiss irideus*	FT	None	No effect	N/A

Common Name	Scientific Name	Federal Status	Potential to Occur	Effect Finding	Effect Finding for Critical Habitat
Chinook salmon – Central Valley spring run ESU	*Oncorhynchus tshawytscha*	FT	None	No effect	N/A
Chinook salmon – Sacramento River winter run ESU	*Oncorhynchus tshawytscha*	FE	None	No effect	N/A
Critical Habitat for Chinook salmon – Sacramento River winter run ESU	N/A	FE	None	N/A	No effect
Delta smelt	*Hypomesus transpacificus*	FT	None	No effect	N/A
Longfin smelt	*Spirinchus thaleichthys*	FC	None	No effect	N/A
Tidewater goby	*Eucyclogobius newberryi*	FE	Low	No effect	N/A
Amphibians					
California tiger salamander	*Ambystoma californiense*	FT	None	No effect	N/A
California red-legged frog	*Rana draytonii*	FT	None	No effect	N/A
Green sea turtle	*Chelonia mydas*	FT	None	No effect	N/A
Alameda whipsnake	*Masticophis lateralis euyxanthus*	FT	None	No effect	N/A
Birds					
California Ridgway's rail	*Rallus obsoletus obsoletus*	FE	None	No effect	N/A
Western snowy plover	*Charadrius alexandrinus nivosus*	FT	None	No effect	N/A
California least tern	*Sternula antillarum browni*	FE	None	No effect	N/A
Mammals					
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	FE	None	No effect	N/A

Status Legend

FE = Listed as endangered under FESA FT = Listed as threatened under FESA FC = Candidate for listing under FESA

4.5.4. Avoidance, Minimization, and/or Mitigation Measures

No avoidance and/or minimization measures are proposed as the Build Alternative will have no effect on state or federally listed threatened or endangered species, their habitat, or designated critical habitat.

4.6. INVASIVE SPECIES

4.6.1. Regulatory Setting

On February 3, 1999, President William J. Clinton signed EO 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” FHWA guidance issued August 10, 1999 directs the use of the State’s invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the NEPA analysis for a proposed project.

4.6.2. Affected Environment

This section discusses invasive species with the potential to occur within the BSA as discussed in the NES-MI (March 2020) and the ARDR (March 2020).

Transportation corridors provide ample opportunities for invasive species to establish and spread. Invasive species can be transported by vehicles or moved site to site during spraying and mowing operations. Seeds can be introduced inadvertently during construction from contaminated equipment or construction materials (e.g., mulch, imported soil or gravel, sod). In erosion control, landscape, or wildflower projects some invasive plant species might be planted deliberately.

The California Invasive Plant Council Invasive Plant Inventory (2020) is based on information submitted by members, land managers, botanists, and researchers throughout the state as well as published sources. The inventory highlights nonnative plants that are serious problems in wildlands (i.e., natural areas that support native ecosystems). The Invasive Plant Inventory categorizes plants as high, moderate, or limited based on the species’ negative ecological impact. Plants categorized as “high” have severe ecological impacts; “moderate” have substantial and apparent, but generally not severe, ecological impacts; and “limited” are invasive, but their ecological impacts are minor.

Twelve nonnative invasive plant species were identified within the BSA as having moderate- or high-risk impacts on native plant populations. Four species observed during field surveys are ranked as having high (severe) impacts: pampas grass, English ivy, Himalayan blackberry, and Italian ryegrass. Also, high-risk grasses downy brome (*B. tectorum*) and red brome (*Bromus madritensis* ssp. *rubens*) potentially occur within the urban and grassland areas. The annual grassland habitat may support two barley species (*Hordeum marinum* and *H. murinum*) and ripgut brome (*Bromus diandrus*), which are ranked as moderate risk. Moderate-risk plant species that were observed during field surveys are acacia, myoporum, wild oats, and sweet fennel.

European starlings, house sparrows, and feral cats were observed during field surveys; no other invasive animal species were observed. However, other invasive animal species are common in urbanized areas of Oakland and Alameda.

4.6.3. Environmental Consequences

PERMANENT AND CONSTRUCTION IMPACTS

No-Build Alternative

The No-Build Alternative does not propose any construction or other disturbance in the BSA. Therefore, this alternative would not result in permanent or temporary impacts related to the introduction or spread of invasive species to/from the BSA.

Build Alternative

Implementation of the Build Alternative has the potential to spread invasive plant species. Clearing, grubbing, and earthwork in areas with invasive species can spread seeds and propagules (vegetative structures that can become detached from a plant and give rise to a new plant). Construction equipment can transport invasive species as it enters or exits the project footprint. Also, invasive species can be included in seed mixtures or construction materials, and wind erosion can transport invasive seeds off-site.

To reduce the spread of invasive plant species, the landscaping and erosion control included in the proposed project would not use species listed as invasive. None of the species on the California Invasive Plant Inventory would be used by Caltrans for erosion control or landscaping. All equipment and materials would be inspected for the presence of invasive species and cleaned when needed.

The proposed project would not contribute to the spread of invasive animal species during project operation. During project construction, waste management BMPs would be implemented to minimize potential food sources for invasive species (PF-IS-4).

PROJECT FEATURES

The following project features would be implemented to prevent the spread of invasive species.

PF-IS-1 Disposal of Invasive Species	If species ranked by the California Invasive Plant Council as moderate- or high-priority invasive weeds are disturbed or removed during construction-related activities, the contractor will contain the plant material and dispose of it in a manner that will not promote the spread of the species. The contractor will be responsible for obtaining all permits, licenses, and environmental clearances for properly disposing of materials. Areas subject to noxious weed removal or disturbance will be replanted with a local native seed mix. If seeding is not possible, the area will be covered to the extent practicable with heavy, black plastic solarization material until the end of the project. The project will be managed to reduce and minimize the propagation of invasive weeds.
PF-IS-2 Fugitive Dust	Fugitive dust emissions will be controlled to prevent wind from transporting invasive species seeds and pollen outside of the construction area.

PF-IS-3 **Landscaping Species**	The landscaping included in the project will not use species listed on the California Invasive Plant Inventory.
PF-IS-4 **Waste Management**	During construction, all food-related waste will be disposed of in closed containers and regularly removed from the job site.

4.6.4. Avoidance, Minimization, and/or Mitigation Measures

No avoidance and minimization efforts for invasive plants are proposed. With the implementation of project features, the Build Alternative would not contribute to the spread of invasive species during construction or operation.

Section 5.0. Construction Impacts

This section discusses the general processes that would be used for construction of the Build Alternative. Construction-related impacts to environmental resources are discussed within each resource section (see Sections 2.0 through 4.0).

5.1. CONSTRUCTION SEQUENCE

To understand the temporary construction impacts associated with the proposed project, a typical construction sequence is provided. Project construction would commence after all ROW has been acquired. The construction sequence would begin with mobilization/staging, and then proceed through site clearing, utility relocation, and facility construction. Construction of the Build Alternative is anticipated to take approximately 36 months.

Temporary laydown and staging areas under the I-880 viaduct, within the existing roadway ROW, and in a portion of a Laney College parking lot would be required for field trailers, materials and equipment storage, and construction activities near the project site would be needed within the Laney College parking lot (Figure 2-7) as well as TCEs in the City of Alameda between Mariner Square Loop and Webster Street (Figure 2-8).

A generic construction sequence (Steps 1 through 4) for a project of this type and scale is described below. The construction phases that were used for air quality impact assessment is described in Table 2-42, 2-43, and 2-44. The actual construction process would be determined by the contractor.

Step 1: Mobilization and Staging

The project site would be prepared for construction after completing a site survey. All utility locations would be flagged to prevent accidental damage and disruption of service. Any required preconstruction environmental surveys and/or permits would be obtained. Construction signage would be installed to alert the public to the start of construction.

The contractor would mobilize workers and equipment. Equipment and construction trailers would be staged, and construction materials would be stockpiled for future use.

The contractor may refine the construction sequence for the overall project phasing, which would break the project construction area into smaller pieces. Phasing ensures project construction follows the appropriate sequence, while limiting traffic and access disruptions to the public. In addition to the overall mobilization/staging, each construction phase would have its own construction sequence (Steps 1-4).

Step 2: Site Clearing and Demolition

Following mobilization, each construction phase would clear conflicting structures, vegetation, and debris to prepare the area for construction. Traffic control measures would be implemented to divert pedestrians, bicyclists, and motorists safely through (or around) the construction zone. BMPs would be installed around the perimeter of earthwork to prevent the off-site movement of sediment. Asphalt and concrete from roadways and sidewalks would be demolished and disposed at approved facilities off-site.

Step 3: Utility Relocation

Utilities in conflict with the proposed project improvements would be relocated or encased (protected) by the utility provider to ensure continued service. Utility work would be coordinated through the relevant utility companies, including EBMUD, PG&E, Comcast, and AT&T. Each utility would be restored or replaced in accordance with design plans.

Step 4: Facility Construction

Following utility work, the proposed project elements would be installed. Roadway, sidewalk, and retaining wall construction would involve site excavation, grading, and pavement installation. BMPs would be employed to prevent pollutants from migrating off-site (see Section 3.2. Water Quality and Stormwater Runoff). New pavement striping including bike lanes and crosswalks would be installed. Lighting and permanent signage would be installed. Any remaining soil would be stabilized with landscaping.

At the completion of construction, staging areas would be returned to preconstruction conditions. The contractor would remove trailers, equipment, and construction signage.

5.2. EXCAVATION AND GRADING

Construction of the Build Alternative would require excavation and grading. Approximately 25,000 cubic yards of excess earthwork would be excavated and disposed of off-site. An estimated 1,086 truck trips would be required to remove these excess materials. The off-site disposal site is assumed to be a maximum of 40 miles from the construction area for an estimated 80-mile roundtrip per truckload. Therefore, disposal of excess fill would require approximately 87,000 truck miles of travel.

5.3. TRAFFIC MANAGEMENT

Temporary lane closures, ramp closures, and detours would occur. It is anticipated that temporary closures of existing bicycle or pedestrian facilities would occur at times, and temporary rerouting of transit service could be required due to intersection work. A TMP would be developed and implemented as part of the project construction planning phase. The TMP would address potential impacts to circulation of all transportation modes (i.e., transit, bicycles, pedestrians, and private vehicles). Roadway and/or pedestrian access to all occupied businesses and respective parking lots would be maintained during project construction. The TMP would include an evaluation of potential impacts caused by diverting traffic to alternate routes. Also, it would include measures to minimize and avoid impacts to alternate routes, such as agreements with local agencies to provide enhanced infrastructure on arterial roads or in intersections to manage detoured traffic. The TMP could provide contracting with local agencies for traffic personnel, especially for special-event traffic through or near the construction zone. Emergency vehicle access to residences and businesses in the project study area would be provided at all times during construction.

5.4. CONSTRUCTION STAGING AREAS

The construction staging areas that could be available include space under I-880 and within the existing roadway ROW construction limits. An additional staging area may be required adjacent to the Alameda entrance to the Posey Tube and in a portion of a Laney College parking lot.

5.5. CONSTRUCTION HOURS

Construction work for the Build Alternative would be done primarily during the daytime from 7 am to 6 pm. However, nighttime work would be used to minimize construction impacts on traffic, including construction activities that could require temporary road closures. Examples of these tasks include work within the Posey and Webster tubes, striping operations, traffic control setup, structure demolition, falsework installation, storm drain modifications, and asphalt pavement mill and overlay. The TMP developed for the proposed project would include information on affected facilities and transit routes, as well as any necessary detours.

5.6. PROJECT FEATURES

Project features implemented for noise control (PF-NOI-1 and PF-NOI-2, dust abatement (PF-AQ-1 and PF-WQ-7), and security (PF-TRF-2) would minimize impacts during construction.

5.7. AVOIDANCE AND MINIMIZATION MEASURES

Construction impacts from the proposed project will be avoided and minimized with the following AMMs:

- AMM-PRF-1 will restore Neptune Park after construction.
- AMM-CCC-1 will provide notices to vacate that will be posted 72 hours prior to construction to provide adequate notice for unsheltered occupants to leave.
- AMM-TRF-1 through AMM-TRF-4 will provide information to neighborhoods and business in the project study area regarding changes in parking and available alternate transportation options. Coordination will occur with Laney College to maintain access and circulation within their parking lot during construction. Coordination will occur with AC Transit to provide advance notifications of temporary bus stop relocations.
- AMM-VA-1, AMM-VA-3, and AMM-VA-5 will minimize temporary impacts to the visual environment.
- AMM-CUL-1 will provide a qualified Caltrans-approved archaeologist who will conduct a required WEAT program for all on-site construction personnel before starting construction.
- AMM-VIB-1 and AMM-VIB-2 will prevent vibration impacts to historic buildings. A survey of existing structural conditions will occur prior to heavy construction or the use of vibratory pile driving. Vibration related damage claims will be investigated, and any damage will be repaired.
- AMM-PAL-2 and AMM-PAL-3 will provide construction crews with a paleontologically focused WEAT. A qualified paleontological monitor will be on call to inspect excavation greater than 10 feet bgs. If fossils are found, construction will halt and the PMP will be followed.
- AMM-HW-5 through AMM-HW-7 will be if hazardous contamination is encountered during construction, contaminated media will be appropriately handled and disposed of.
- AMM-AQ-1 and AMM-AQ-2 will be implemented during construction to control fugitive dust, particulate matter, and exhaust emissions.

- AMM-NOI-1 through AMM-NOI-7 will be employed to limit construction noise. Property owners and occupants located within 300 feet of construction will be notified in advance of noise-generating activities. A noise monitoring program will be instituted if construction work occurs outside of the daytime hours specified in applicable local ordinances.
- AMM-WW-1 will place silt and ESA fencing and other construction site BMPs near wetlands at the project footprint to prevent potential impacts.
- AMM-AS-1 through AMM-AS-6 will avoid and minimize impacts to animal species. These measures include pre-construction nesting bird and bat surveys, actions to be taken if a protected species is discovered on-site, project site BMPs, and tree protection guidance.
- AMM-GHG-1 through AMM-GHG-3 will reduced GHG emissions during construction by maintaining vehicle tire pressures, diverting waste, and locally sourcing materials.

5.8. MITIGATION MEASURES

The proposed project will implement MM-PAL-1 through MM-PAL-3 to mitigate impacts to paleontological resources if any are discovered during construction.

Section 6.0. Cumulative Impacts

6.1. REGULATORY SETTING

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with potential impacts of this proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project study area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the proposed project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under NEPA can be found in 40 CFR, Section 1508.7.

6.2. CUMULATIVE IMPACT ANALYSIS

6.2.1. No-Build Alternative

Under the No-Build Alternative, no construction would occur within the project footprint. Existing conditions would be perpetuated, and the impacts associated with the Build Alternative would not occur. Based on this, no cumulative impacts are anticipated under this alternative.

6.2.2. Build Alternative

METHODOLOGY

The Build Alternative's cumulative impacts analysis followed the Caltrans 8-step process established in the *Guidance for Preparers of Cumulative Impact Analysis Approach and Guidance* (2005) as follows:

- **Step 1:** Identify resources to consider in the cumulative impacts analysis.
- **Step 2:** Define the Resource Study Area (RSA), or geographic boundary, for each cumulative impact analysis.
- **Step 3:** Describe the current health of each resource.
- **Step 4:** Identify any direct and/or indirect impacts the Build Alterative may contribute to a cumulative impact on the identified resources.
- **Step 5:** Identify a set of active projects to include in the cumulative impacts analysis.
- **Step 6:** Assess cumulative impacts.

- **Step 7:** Report the results of the cumulative impacts analysis.
- **Step 8:** Assess the need for additional avoidance, minimization, or mitigation measures to address any cumulative impacts.

As specified in the Caltrans guidance, a proposed project would not contribute to a cumulative impact of a resource if that project does not result in any direct (or indirect) impact to a resource. A cumulative analysis is automatically required for resources with significant impacts. In addition, a cumulative analysis is required for resources with a less than significant impact on resources in poor health, declining health, or at risk.

EVALUATED RESOURCES

Based on the analysis presented in Chapter 2, the following would not be directly or indirectly impacted by the Build Alternative: coastal zone, farmlands/timberlands, prime farmland, land use, population/housing, growth, mineral resources, and biological resources (natural communities, wetlands and other waters, plant species, animal species, threatened and endangered species, and invasive species). Therefore, a cumulative analysis is not required for these disciplines.

The Build Alternative would result in a significant and unavoidable impact to cultural resources. Therefore, a cumulative impact analysis would be required for cultural resources. It would also result in a significant impact to public services, though mitigation for parking removal would reduce impacts to a less than significant level with mitigation. No other significant resource impacts would be associated with the proposed project.

The Build Alternative would impact several resources at a less than significant level. These are: community character, utilities/emergency services, traffic and transportation/pedestrian and bicycle facilities, visual/aesthetics, geology and soils, paleontology, hydrology, water quality, hazards and hazardous materials, air quality, parks and recreation facilities, and noise/vibration. It was determined that several of these resources were not in poor health, declining health, or at risk; therefore, they did not warrant a cumulative impact analysis. These resources were as follows:

Paleontology: No documented paleontological resources are located within the project footprint. Because of this, the health of the resource could not be confirmed as poor or at risk. As noted in Section 3.4. Paleontology artificial fill (human-made deposits) overlays the geologic formations that have the potential to contain fossils. A sensitivity analysis determined that excavations in Alameda would have no potential to disturb paleontological resources. Some of the excavations in Oakland would extend beyond artificial fill and could potentially impact fossils. A PMP would be followed during construction to ensure any encountered fossils are properly evaluated, salvaged, and curated. With PMP implementation there is expected to be a less than significant impact on paleontological resources, and a cumulative analysis is not warranted at this time.

Geology and Soils: As noted in Section 3.3. Geology/Soils/Seismic/Topography., geologic formations and soils within the project footprint are susceptible to strong seismic ground shaking and liquefaction. The Build Alternative was classified as having a less than a significant risk for substantial adverse effects (loss, injury, or death). Fault rupture was classified as extremely unlikely. In addition, liquefiable soil layers are generally shallow and thin, which would result in minor impacts from liquefaction. Based on these documented conditions, geology and soils were not considered an elevated risk as the entire region has seismic concerns. As a result, there is expected to be a less than significant impact on geology/soils, and a cumulative analysis is not warranted at this time.

Utilities/Service Systems: As noted in Section 2.7. Utilities/Emergency Services, the Build Alternative would not result in operational (long-term) impacts to utilities. Construction-related impacts would occur when utilities are relocated, or as new utilities are constructed. This could result in temporary outages or service disruptions. There was no indication that existing utility networks within the project footprint were in poor health, declining health, or at risk. Because of this, a cumulative analysis was not warranted. Project features would require coordination with affected utility companies to minimize any disruptions. Customers would be notified in advance of any scheduled service interruptions. As a result, there is expected to be a less than significant impact on utilities further supporting that a cumulative analysis is not warranted at this time.

Hazards and Hazardous Materials: The Build Alternative does not represent a significant hazard for the public or environment. As noted in Section 3.5. Hazardous Waste/Materials, existing hazardous contamination could be encountered within the project footprint. Any discovered hazardous material would be handled safely and securely according to applicable local, state, and federal laws. Testing during the design phase would identify the extent of contamination, if any. Since hazardous contamination (and its extent) is not confirmed, the health of this resource could not be classified as in poor health, declining health, or at risk. As a result, there is expected to be a less than significant impact on hazards/hazardous materials and a cumulative analysis is not warranted at this time.

Parks and Recreation Facilities: Under the Build Alternative, a TCE would be acquired for Neptune Park in Alameda to widen an existing shared-use path. As noted in Appendix A, this would represent an enhancement to a recreational resource. There is no indication that the park is in poor health, declining health, or at risk. In addition, no current or proposed projects within this park were identified. Therefore, this resource was not anticipated to be at risk for cumulative impacts. As a result, there is expected to be a less than significant impact on parks/recreation facilities and a cumulative analysis is not warranted at this time.

Noise/vibration, visual/aesthetics, hydrology, water quality, air quality, and traffic and transportation/pedestrian and bicycle facilities were all identified as being in poor health, declining health, or at risk. Since each one would be impacted by the Build Alternative, a cumulative impact analysis was warranted for each.

RESOURCE STUDY AREAS

A RSA corresponds to a geographic area cumulative impacts to a particular resource can be analyzed within. Only active projects, defined as currently under construction or planned, were considered within each RSA. Active projects were identified using information obtained from city, county, and agency websites within each RSA. While this list of active projects was not exhaustive, it included major projects that could contribute to cumulative impacts.

RSAs vary by resource. However, resources generally fit into one of the following three categories as illustrated in Figure 2-53:

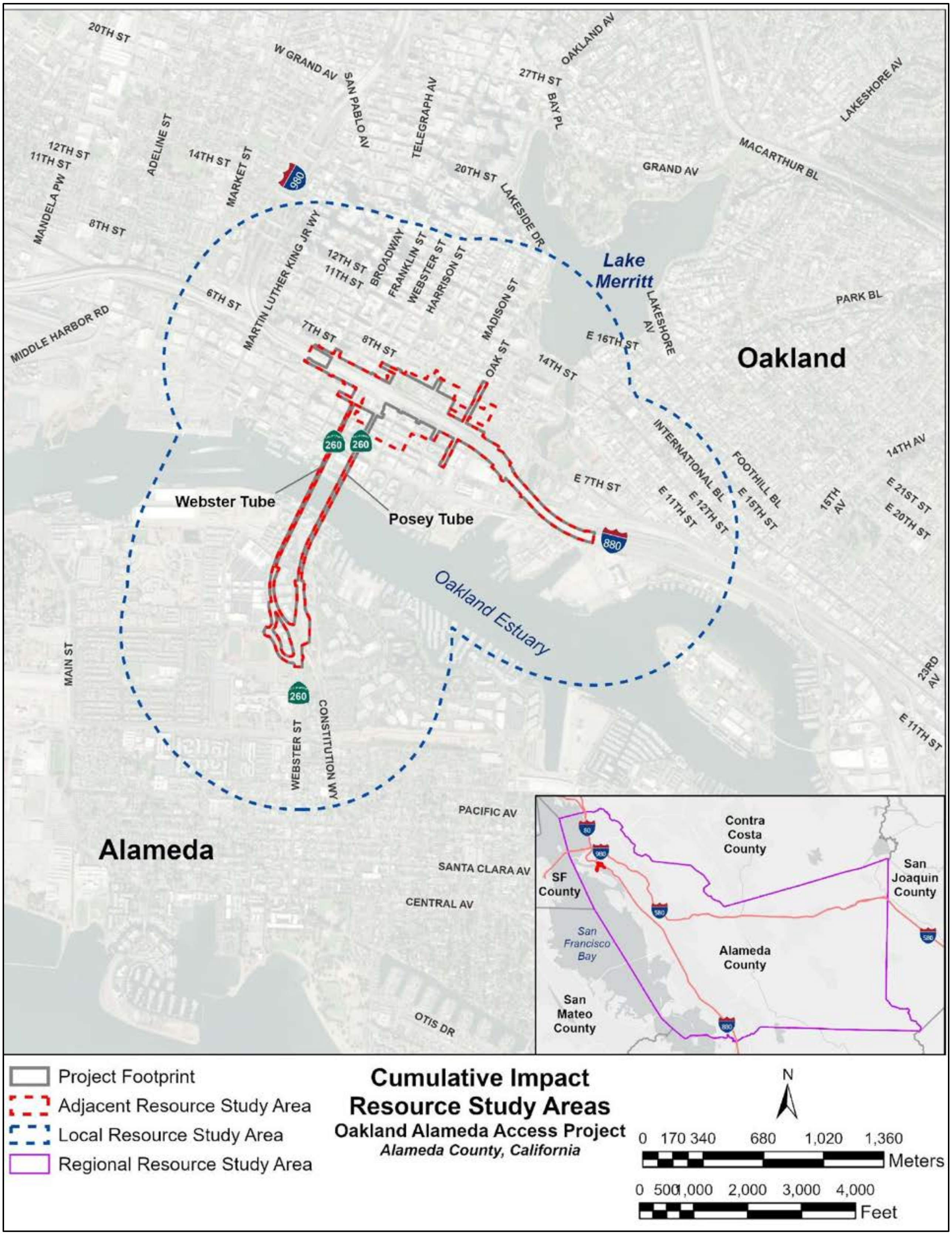
1. The **Adjacent RSA** includes active projects located within the Build Alternative's architectural history APE boundary, which corresponds to potential indirect effects from the proposed project. This RSA includes a portion of downtown Oakland and includes the full extent of two historic districts, I-880, the Tubes, and local roadways in Alameda.

2. The **Local RSA** includes active projects located within a half-mile radius of the Build Alternative's project footprint. This RSA includes downtown Oakland and surrounding communities in Alameda, both of which include industrial, commercial, and residential land uses.
3. The **Regional RSA** includes active projects located within Alameda County. This county is the seventh most populous in the state, and it has a total area of approximately 820 square miles. Major cities within the county include Oakland, Alameda, Berkeley, Dublin, Fremont, Hayward, and Livermore.

<u>Adjacent RSA</u>

All known projects within the Adjacent RSA are noted in Table 2-58.

This RSA was used to evaluate cumulative impacts to cultural resources.



Source: HNTB (2020)

Figure 2-53. Cumulative Impact Resource Study Areas

Table 2-58. Projects within the Adjacent RSA

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Transportation				
Downtown Highway Safety Improvement Project 8 (HSIP8)	City of Oakland	Traffic signal modifications, crosswalk enhancements, street signs, and pavement markings on Broadway, Franklin, Webster, and Harrison streets	Under construction (scheduled for completion in 2021)	None identified
Paving Projects (Mill/Overlay)	City of Oakland	*Oakland's 2019 3-Year Paving Plan* includes several downtown roadways, including Alice Street and Broadway	Construction projects between 2019 and 2022	None identified
Parks and Recreation				
East Bay Greenway	Alameda CTC	16-mile regional trail from the Lake Merritt to South Hayward BART stations	Initial Study (IS)/Mitigated Negative Declaration (MND) approved in March 2018; under final design; construction schedule not known	Aesthetics, biological resources, cultural resources, hazards and hazardous materials, air quality, and noise
Multi-use Development				
4th & Madison	City of Oakland	330 residential units with 5,000 square feet of retail space over a 2.07-acre site	EIR approved in 2016; under construction (completion date not known)	Transportation, cultural resources, air quality, noise and vibration
412 Madison	City of Oakland	157 residential units with 3,000 square feet of retail space	DOSP Draft EIR in 2019; preliminary development plan application approved by city in 2018; construction schedule not known	None identified

Sources: City of Oakland (2020), City of Alameda (2020), Caltrans (2020), Alameda County (2020)

Cultural Resources

Cumulative impacts to cultural resources were evaluated within the Adjacent RSA, which matched the indirect effects APE analyzed under the Build Alternative.

As noted in Section 2.10. Cultural Resources, surface and subsurface surveys revealed no archaeological resources within the project footprint. Because of this, no impacts to archaeologic resources are anticipated under the Build Alternative. Therefore, no cumulative impacts for archaeological resources were evaluated.

Four architectural resources were identified within the proposed project's APE: two historic districts and their contributing properties (7th Street/Harrison Square Residential District and Oakland Waterfront Warehouse District), George A. Posey Tube (Posey Tube), and American Bag Company/Union Hide Company Building. The Build Alternative would have a significant and adverse effect on historic properties. Because of this, a cumulative analysis was warranted. Each identified architectural resource was evaluated separately as noted in the following sections.

7th Street/Harrison Square Residential District

The 7th Street/Harrison Square Residential District is assumed to be significant under NRHP Criterion A for its association with residential growth in Oakland and Criterion C for its distinct residential architecture. This historic district has 97 contributing buildings. Two contributing properties have been removed, further suggesting the at-risk nature of this historic district. Chinese Garden Park is located within the 7th Street/Harrison Square Residential District, but it is not listed as a contributing property.

Under the Build Alternative, the NB I-880 Broadway off-ramp structure along 6th Street would be removed, a new horseshoe connector below the I-880 viaduct would be installed, a new retaining wall along the NB I-880 Jackson Street on-ramp would be installed, and local street improvements on 6th, 7th, 8th, Harrison, Alice, Jackson, Madison, and Oak streets would be constructed. Local street improvements would include traffic lights, pavement striping, parking reconfiguration, sidewalk reconstruction, and bicycle/pedestrian infrastructure. The proposed project would not have an adverse effect on the 7th Street/Harrison Square Residential District.

Two City of Oakland projects were identified within the 7th Street/Harrison Square Residential District: paving projects and HSIP8 improvements. Neither project identified potential cultural resource impacts. Downtown paving operations are classified as maintenance, and they are not expected to alter the appearance of local roadways. The Build Alternative would assess the pavement condition of each local roadway during the design phase. Sections in good shape would not be repaved. The City's proposed signal/crosswalk improvements project would result in minor visual changes. It is unlikely that either project would involve work on (or require ROW from) a contributing property associated with the 7th Street/Harrison Square Residential District. Based on the minor visual changes associated with both projects, no cumulative impacts are anticipated.

The proposed East Bay Greenway recreational trail project would be near the 7th Street/ Harrison Square Residential District. The Initial Study (IS)/MND (2018) for the proposed East Bay Greenway project did not detail any impacts to the District. The proposed recreational trail would install a 12-foot-wide cycle track along the north side of 9th Street between Oak and Fallon streets, and 9th Street would be re-striped to include two eastbound travel lanes (one less travel lane than existing). New crosswalks would be striped, and parking would be provided along the north side of 9th Street between the proposed travel lanes and cycle track. This work would occur approximately one block from the northern boundary of the District. The improvements would be minor in nature and are not anticipated to result in adverse impacts to the 7th Street/Harrison Square Residential District. Since no additional cultural resource impacts were identified to the 7th Street/Harrison Square Residential District, no cumulative impacts would be anticipated.

Oakland Waterfront Warehouse District

The Oakland Waterfront Warehouse District is classified as significant under NRHP Criterion A for its association with Oakland's industry between World War I and II. It is also significant under NRHP Criterion C because of its distinctive architecture. This historic district has 24 contributing properties. Four contributing properties were previously destroyed, further suggesting the at risk nature of this historic district. The Posey Tube Portal and American Bag Company/Union Hide Company buildings are both contributing properties to the District.

Under the Build Alternative, the following would be constructed: a new horseshoe connector below the I-880 viaduct, right-turn-only lane from the Posey Tube to 5th Street in Oakland, two-way bicycle/pedestrian walkway through the Posey Tube, and improvements to 4th, 5th, and Harrison streets. These improvements were evaluated, and none represented an adverse effect on the District. However, because the Posey Tube would be adversely affected, the overall impact to the Oakland Waterfront Warehouse District was classified as adverse.

Potential cumulative impacts to the Oakland Waterfront Warehouse District were evaluated. Within the District, one multi-use development project was identified, the 4th & Madison Project (under construction). The EIR (2015) for this project identified potential archaeological resource impacts. However, no impacts to this historic district were discussed. While the 4th and Madison project is located within the boundary of the Oakland Waterfront Warehouse District, it does not involve work on any of its contributing properties. Therefore, no impacts to the District are anticipated.

A second multi-use development project, 412 Madison, is adjacent to the eastern boundary of the Oakland Waterfront Warehouse District. The environmental document for this project has not been prepared, so its potential effects are not known. This property was not identified by the Build Alternative as a cultural resource, and this development would occur outside the District. Based on this, no cumulative impacts are anticipated.

Based on this analysis, no cumulative impacts to the Oakland Waterfront Warehouse District are anticipated between the Build Alternative and these two active projects in the Adjacent RSA.

George A. Posey Tube

The Posey Tube Portal building is located within the Oakland Waterfront Warehouse District. This resource was determined to be individually eligible for the NRHP under Criterion A due to its association with automobile development as the primary transportation mode in California. It was also listed under Criterion C for its innovative engineering and portal building architecture.

Under the Build Alternative, a right-turn-only lane from the Posey Tube to 5th Street would modify this resource by demolishing the entirety of the approach's eastern wall. This portion of the new wall would be constructed to accommodate a right-turn only lane, and a bicycle/pedestrian ramp would be constructed around the Posey Tube Portal building. A new left-turn pocket would be constructed to accommodate the turn onto 6th Street requiring removal of a section of the historic Posey Tube's western approach as well. As a result, the Build Alternative would have an adverse effect on this cultural resource.

Active projects within the Adjacent RSA were reviewed. No projects were identified that involved work on (or near) the Posey Tube Portal building. Because of this, no potential cumulative impacts are anticipated to this cultural resource.

American Bag Company/Union Hide Company Building

The American Bag Company/Union Hide Company Building was individually eligible for the NRHP under Criterion C due to its distinctive architecture. This building is located within the Oakland Waterfront Warehouse District. Under the Build Alternative, all proposed construction would be conducted outside the boundaries of this historic property. The closest project element would be construction of a proposed bicycle/pedestrian path that would wrap around the Oakland Portal building one block to the northeast. It was determined this work would not have an adverse effect on the American Bag Company/Union Hide Company Building.

Active projects within the Adjacent RSA were reviewed. No projects were identified that involved work on (or near) this property. Because of this, no cumulative impacts are anticipated to this cultural resource.

<u>Local RSA</u>

The Local RSA comprised a half-mile radius around the project footprint. All active projects within the RSA are listed in Table 2-58 and Table 2-59. This RSA was used to evaluate cumulative impacts from noise/vibration and to visual/aesthetic resources.

Table 2-59. Projects within the Local RSA

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Transportation				
Bridge Replacement	City of Oakland	Replacement of the Hanlon Lead Railroad Bridge near the Lake Merritt Channel to address seismic safety concerns	Categorical Exemption (CE) approved in 2016; under construction (2-year total construction window)	Transportation, utilities, aesthetics, air quality, cultural resources, geology/soils, hazardous waste/materials, hydrology, water quality, noise, biological resources
Parks and Recreation				
Shoreline Park - Brooklyn Basin	City of Oakland	Development of a 10-acre park	EIR approved in 2006; under construction (completion date not known)	Land use, transportation, air quality, hydrology, water quality, cultural resources, geology/soils, hazardous waste/materials, noise, biological resources
Cross Alameda Trail	City of Alameda	0.9-mile segment of the trail from Main Street to Constitution Way is under construction; the trail will ultimately be 4-miles long from Alameda Point to the Miller-Sweeney Bridge	Construction of current segment will be completed in 2020; other segments are proposed	None identified
Alameda Landing Waterfront Park	City of Alameda	Waterfront plaza and promenade on a 4.5-acre site	Supplemental EIR issued in 2006; construction began February 2019 and will be completed by end of 2025	Growth, aesthetics, air quality, cultural resources, coastal zone, hydrology and water quality, growth, geology/soils, noise, parks and recreational facilities, hazardous waste/materials, transportation, biological resources

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Residential				
Empyrean Towers	City of Oakland	66 residential units	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; under construction (completion date not known)	Transportation, aesthetics, utilities, air quality, cultural resources, paleontological resources, hazardous waste/materials
Jack London Square Site D	City of Oakland	135 residential units	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; preliminary development plan application approved in 2004	Land use, transportation, air quality, parks and recreational facilities, utilities, cultural resources, geology/soils, aesthetics, hazardous waste/materials, noise, hydrology, water quality, biological resources
Jack London Square Site F2	City of Oakland	338 residential units	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; preliminary development plan application approved in 2004	Land use, transportation, air quality, parks and recreational facilities, utilities, cultural resources, geology/soils, aesthetics, hazardous waste/materials, noise, hydrology, water quality, biological resources
Alameda Shipways Residential Project	City of Alameda	292 residential units with a 2.5-acre public waterfront park	EIR approved in 2019	Transportation, cultural resources, air quality, biological resources, geology/soils, hazardous waste/materials, hydrology, water quality, and utilities/services

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
925 Fallon Street	City of Oakland	58 residential units	CE approved (in-fill development and project consistent with a community plan/zoning); preliminary development plan application approved in 2017	None identified
Multi-use Development				
Brooklyn Basin – Parcel B	City of Oakland	241 residential units with 2,800 square feet of retail space	EIR approved in 2006; under construction (completion date not known)	Land use, transportation, air quality, hydrology, water quality, cultural resources, geology/soils, hazardous waste/materials, noise, biological resources
Brooklyn Basin – Parcel F	City of Oakland	211 residential units	EIR approved in 2006; under construction (completion date not known)	Land use, transportation, air quality, hydrology and water quality, cultural resources, geology/soils, hazardous waste/materials, noise, biological resources
377 2nd Street	City of Oakland	134 residential units with 5,500 square feet of retail space	CE approved (in-fill development and project consistent with a community plan/zoning); under construction (completion date not known)	None identified

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
W-12 (Phase 1)	City of Oakland	333 residential units with 25,000 square feet of retail space	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; under construction (completion date not known)	Transportation, aesthetics, utilities, air quality, cultural resources, paleontological resources, hazardous waste/materials, geology/soils, hydrology, water quality, noise, biological resources
1314 Franklin	City of Oakland	607 residential units with 16,500 square feet of retail space	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; under construction (completion date not known)	Transportation, aesthetics, utilities, air quality, cultural resources, paleontological resources, hazardous waste/materials, geology/soils, hydrology, water quality, noise, biological resources
226 13th Street	City of Oakland	251 residential units with 16,500 square feet of retail space	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; under construction (completion date not known)	Transportation, aesthetics, utilities, air quality, cultural resources, paleontological resources, hazardous waste/materials, geology/soils, hydrology, water quality, noise, biological resources
Brooklyn Basin – Parcel C	City of Oakland	241 residential units with 4,000 square feet of retail space	EIR approved in 2006; preliminary development plan application approved in 2005; construction schedule not known	Land use, transportation, air quality, hydrology, water quality, cultural resources, geology/soils, hazardous waste/materials, noise, biological resources

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
101 East 12th Street	City of Oakland	Residential units with 1,500 square feet of retail space	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; preliminary development plan application approved (date unknown)	Transportation, aesthetics, utilities, air quality, cultural resources, paleontological resources, hazardous waste/materials, geology/soils, hydrology, water quality, noise, biological resources
Balco	City of Oakland	380 residential units with 8,000 square feet of retail space	Preliminary development plan application approved (date unknown); environmental status unknown	None identified
East Bay Asian Local Development Corporation	City of Oakland	65 residential units with 3,500 square feet of retail space	Preliminary development plan application approved in 2015; environmental status unknown	None identified
T5/6 – 1100 Clay Street	City of Oakland	262 residential units with 5,000 square feet of retail space	CE approved (in-fill development and project consistent with a community plan/zoning); under construction (completion date not known)	None identified
Brooklyn Basin – Parcel A	City of Oakland	254 residential units with 1,600 square feet of retail space	EIR approved in 2006; preliminary development plan application filed; construction schedule not known	Land use, transportation, air quality, hydrology, water quality, cultural resources, geology/soils, hazardous waste/materials, noise, biological resources

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Brooklyn Basin – Parcel G	City of Oakland	356 residential units with 43,000 square feet of retail space	EIR approved in 2006; preliminary development plan application filed; construction schedule not known	Land use, transportation, air quality, hydrology, water quality, cultural resources, geology/soils, hazardous waste/materials, noise, biological resources
Monarch Tower (1251 Harrison Street)	City of Oakland	185 residential units with 121,000 square feet of office space	Preliminary development plan application filed and environmental document pending	None identified
Commercial/Office Developments				
Downtown Hampton Inn	City of Oakland	122 hotel rooms	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; under construction (completion date not known)	Transportation, aesthetics, utilities, air quality, cultural resources, paleontological resources, hazardous waste/materials, geology/soils, hydrology, water quality, noise, biological resources
Key System Building	City of Oakland	310,000 square feet of office space	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; under construction (completion date not known)	Land use, transportation, air quality, parks and recreational facilities, utilities, cultural resources, geology/soils, aesthetics, hazardous waste/materials, noise, hydrology, water quality, biological resources

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
T12 601 12th Street	City of Oakland	600,000 square feet of office space with 10,000 square feet of retail space	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; under construction (completion date not known)	Land use, transportation, air quality, parks and recreational facilities, utilities, cultural resources, geology/soils, aesthetics, hazardous waste/materials, noise, hydrology, water quality, biological resources
420 13th Street	City of Oakland	55,000 square feet of office space	Proposed project; preliminary development plan application approved in 2016; environmental document status not known	Land use, transportation, air quality, parks and recreational facilities, utilities, cultural resources, geology/soils, aesthetics, hazardous waste/materials, noise, hydrology, water quality, biological resources
Jack London Square Site F3	City of Oakland	155 hotel rooms	Covered under the Lake Merritt Station Area Plan EIR approved in 2014; preliminary development plan application filed	Land use, transportation, air quality, parks and recreational facilities, utilities, cultural resources, geology/soils, aesthetics, hazardous waste/materials, noise, hydrology, water quality, biological resources

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Oakland Waterfront Ballpark District Project	City of Oakland	New Oakland A's baseball stadium at the Charles P. Howard Terminal within the Port of Oakland; improvements will include a new ballpark, 3,000 residential units, hotel, and roadway/sidewalk improvements over a 55-acre site	Draft EIR in process; construction schedule not known	Transportation, growth, utilities, aesthetics, air quality, cultural resources, geology/soils, hazardous waste/materials, hydrology, water quality, noise/ vibration, biological resources
Lake Merritt Transit-oriented Development	BART	560 residential units and 570,000 square feet of commercial and retail space	CEQA clearance estimated completion 2020; NEPA clearance late 2021; construction for Phase I completed in late 2024	None identified

Source: City of Oakland (2020), City of Alameda (2020), Caltrans (2020), Alameda County (2020)

Public Services/Community Character

Public services and community character would be impacted by the proposed project's parking removal in downtown Oakland. Approximately 156 on-street and 128 off-street parking spaces (Caltrans leased parking lots under I-880) would be removed. While parking loss is not expected to impact residents due to available on- and off-street parking nearby, the removal of on-street parking has the potential to adversely impact local businesses. Public services and community character were perceived to be at risk for cumulative impacts based upon other development projects in downtown Oakland, which could either directly remove parking or indirectly remove parking though increased demand from added residential units.

The Local RSA matches the study area used in the CIA (September 2020) to assess the project's impacts to public services and community character. This radius also captures downtown Oakland, where potential cumulative impacts from parking removal could occur. Therefore, the Local RSA was selected for a cumulative analysis. Note this RSA includes portions of Alameda where no parking removal is proposed. Because of that, the Alameda portion of the RSA was not evaluated for cumulative impacts.

Parking removal associated with the proposed project would be mitigated to a less than significant level by converting privately leased Caltrans parking spaces in existing lots under I-880 into publicly available spaces near where the majority of parking loss will occur. These spaces, located in existing lots under I-880, would be near the hardest hit streets for parking loss (5th and 6th streets). This would, therefore, offset potential impacts to the hardest hit businesses within the project footprint. The details of this mitigation would be coordinated with the City of Oakland to ensure it is sufficient.

Private development projects in downtown Oakland are guided by the following city plans:

- The *City of Oakland General Plan* defines long-range community goals and includes both the *Bicycle Master Plan* and the *Pedestrian Plan*.
- The *Lake Merritt Station Area Plan* encompasses the area within a 0.5-mile radius of the Lake Merritt BART Station. The plan includes policies that address land use, housing, circulation, transit improvements, and parks and public spaces.
- The DOSP is expected to be adopted in 2020. This plan establishes policies to ensure downtown development serves the broad needs of the entire community and includes policies on economic opportunity, housing, mobility, and land use.

The City of Oakland would continue to develop current and future development projects under the framework of these plans, which include policies for expanding bikeways, expanding pedestrian walkways, and promoting alternative modes of transportation to motor vehicles. As noted in the *Final Lake Merritt Station Plan EIR* (2014), city plans have been effective in reducing the overall automobile trips within downtown Oakland. As a result, the *Lake Merritt Station Plan* adopted a reduction in parking requirements for new development projects due to the decreased demand. This suggests that numerous residential development projects proposed in the Local RSA are unlikely to increase parking demand.

Several City of Oakland strategies would further buffer against cumulative impacts associated with development projects in downtown Oakland:

- The City of Oakland Department of Transportation created “Park Oakland,” a federally funded program to improve parking and mobility. The program provides parking management tools to better manage on-street parking, including the addition of parking meters, posting time limits, and permit parking. The goal is to discourage long-term parking, especially in areas of free on-street parking. This would benefit downtown businesses by designating spaces for customers and/or employees rather than residents.
- The *Downtown Oakland Parking Management Report* (2016) established priority for curb space uses. Bicyclists, pedestrians, and transit are the first priority while short- or long-term parking is the last priority. This highlights the value the city places on bicycle and pedestrian infrastructure.

Based upon the City of Oakland’s guiding plans for development, cumulative impacts associated with parking removal are not anticipated.

Noise and Vibration

The Local RSA included a wide geographic area (half-mile radius around the project footprint) to ensure active projects that could generate noise and vibration and contribute to cumulative impacts were adequately evaluated. Even though noise and vibration dissipate over distance, multiple projects could cumulatively result in elevated operational noise levels or construction-related noise/vibration levels.

Noise

Per the *Noise Study Report* (April 2020), the proposed project would not result in a substantial increase in noise levels between existing conditions and the design year (Table 2-46). However, existing noise levels at several receptors within the project footprint exceeded the NAC. Noise levels also approached the NAC (within 1 dBA) at several additional receptors under the Build Alternative. Eight noise barrier walls were evaluated for the proposed project but did not meet the feasibility and/or reasonableness requirements; therefore they were not recommended for construction. Based on this, it was determined the existing noise environment within the project footprint was either in poor health or at risk, which warranted a cumulative analysis.

Three active transportation projects within the Local RSA were evaluated for potential cumulative impacts to operational noise levels. These projects (repaving operations, signal/sidewalk improvements, and bridge replacement) would not increase vehicular traffic; therefore, they would not increase operational noise levels on local roadways. In addition, four active parks and recreation projects have the potential to increase bicycle and pedestrian modes of transportation within the Local RSA. This could decrease operational noise by decreasing vehicular transportation through encouraging the use of other modes of active transportation. Based on this, no long-term cumulative noise impacts are identified between the Build Alternative and the active transportation projects in the Local RSA.

In addition to the transportation and parks and recreation projects, 26 residential, commercial, and mixed-use development projects were identified within the Local RSA. The environmental documents for active projects were reviewed, when available. Eighteen active projects identified construction-related noise as a potential impact. The environmental documents for these projects generally included measures to avoid/minimize temporary noise impacts. Measures included following the city noise ordinance, dBA thresholds, limiting noise generating activities to weekdays and daytime hours, and implementing noise monitoring programs. Following these measures would help keep construction-related noise at acceptable levels.

Construction of the active projects in the Local RSA would be staggered with no active projects identified within the Build Alternative's proposed construction window. However, multiple active projects have not set their construction schedule, or do not have a publicly available schedule. Seven active projects are currently under construction and will be completed prior to construction of the Build Alternative. With no identified overlapping construction windows, the Build Alternative is unlikely to have cumulative impacts from construction-related noise.

Vibration

As noted in Section 2.10, historic structures can potentially be damaged by lower levels of vibration as compared to modern structures. Numerous historic structures are located within the Local RSA. Due to the at-risk nature of these cultural resources, cumulative impacts were evaluated.

Major sources of vibration during construction typically occur from impact pile driving, blasting, crack-and-seat operations, and heavy equipment movement. None of these activities are proposed under the Build Alternative. However, vibration sources under the proposed project would include heavy construction and vibratory pile driving. The proposed project would implement AMMs to minimize vibration-related damage to adjacent properties, some of which are historic buildings.

The Local RSA was reviewed, and no active projects other than the bridge replacement project were identified as potentially having similar levels of heavy construction. As noted for construction-related noise, no active projects have overlapping construction windows with the Build Alternative. This would prevent cumulative vibration impacts as well. Based on this, no cumulative impacts from vibration are anticipated in the Local RSA.

Visual/Aesthetics

Visual impacts take into consideration viewers who would have the ability to see the proposed project(s). Viewers from high vantage points, such as low- and high-rise buildings and the I-880 viaduct, would have a wide viewshed. The Local RSA was selected to capture a sizable viewshed around the Build Alternative, and to allow analysis of cumulative visual impacts within the Local RSA.

Within the Build Alternative, Oak Street is a city-designated scenic route. There are no state scenic highways within the project footprint. For the Build Alternative, the existing visual character and quality were documented at 13 viewpoints. Over half of these viewpoints were classified as having low levels of quality character/quality. Only two of these viewpoints were classified as being of moderate-high quality, and none were classified as high quality. Based on this, the project footprint generally has a low quality visual environment, justifying a cumulative impact analysis for visual resources.

As noted in Section 2.9. Visual/Aesthetics, the Build Alternative would generally have positive impacts on the visual environment as follows:

- Approximately 1.4 acres of overhead concrete ramp structures would be removed. This would allow increased daylight and reduce shadowing within the project footprint. Ramp removal would increase horizontal space and vertical clearance allowing for increased views of the horizon.
- The proposed landscaping features, including street trees, would add natural elements within the project footprint.
- Improvements along 6th Street would create a connected and harmonious corridor where one does not currently exist.
- Context-sensitive architectural textures and motifs on retaining walls would enhance their appearance within the project footprint.

The Build Alternative would diminish the visual quality of the Posey Tube Portal building through the removal of a portion of the approach/retaining wall. This impact would be minimized by integrating existing architectural features into the design of the new wall. However, the final design of the retaining wall would be subject to review in accordance with Section 106 of the NHPA to resolve adverse effects to the Posey Tube.

The Local RSA was reviewed, and no additional projects were identified on, or near, the Posey Tube. Therefore, there would be no additional direct modifications to this high quality visual resource. Several residential/mixed-use development projects were identified south of I-880, but these are approximately 0.2 miles (or farther) away. Based on this analysis, no indirect cumulative impacts to the Posey Tube's visual quality are anticipated.

Three active transportation projects within the Local RSA were evaluated for potential cumulative visual impacts. Paving operations within downtown Oakland are routine maintenance and would not alter the appearance of local roadways. The proposed signal/crosswalk improvements would involve minor elements (signage, crosswalks, etc.) that would not result in visual impacts.

The *2016 EIR Addendum* for the bridge replacement project over the Lake Merritt Channel was reviewed. This project will replace the existing bridge on its current alignment and include a new elevated bicycle/pedestrian path. The addendum concluded the bridge replacement project would not degrade the existing visual quality or character of the site or its surroundings. Conversely, the bridge project would improve the visual character and quality of recreation uses. Therefore, no potential cumulative visual impacts are anticipated with this bridge replacement project.

Within the Local RSA, 26 major residential, commercial, or mixed-use development projects were identified. Thirteen of these projects noted potential impacts to aesthetics. When available, the environmental documents for these projects were reviewed. Projects generally had measures to minimize or avoid impacts to the visual environment. The EIR for the 4th and Madison Project, for example, stated that the project would comply with Oakland's Design Review Process to ensure the project's integrity and design features matched its surroundings. The *Lake Merritt Station Area Plan EIR* (2014), which covers multiple developments in downtown Oakland, placed a strong emphasis on improving the visual character of the area by creating design guidelines that ensured new buildings were high quality and complemented their surroundings. Based on this literature review, detrimental impacts to the visual environment were not identified.

Cumulatively, residential, commercial, or mixed-use development projects could alter the downtown Oakland skyline. However, the skyline is not considered a scenic resource. These development projects could partially block views of the horizon and distant views of visual resources, such as the East Bay Hills, San Francisco Bay, and San Bruno Mountain. The Build Alternative would not diminish views of the horizon or these visual resources. Conversely, the proposed project would expand views of the horizon. While these development projects could have a cumulative impact on the visual environment, the Build Alternative would not add to this impact.

Based on this analysis, no cumulative visual impacts were identified within the Local RSA.

<u>Regional RSA</u>

Active projects within in the Regional RSA include those listed in Table 2-60, as well as the active projects previously provided in Table 2-60 and Table 2-59. Alameda County is comprised of 14 incorporated cities, each with their own major and minor list of active projects. Evaluating all active development projects in these communities was beyond the scope of this cumulative analysis. This analysis did include all major active transportation projects proposed by Caltrans, Alameda CTC, Alameda Public Works Department, and MTC. In addition, all major development projects within Oakland and Alameda were evaluated. Each city had their own definition of a "major" development project. Oakland, for example, defines this as a project that creates more than 325 dwelling units or 100,000 square feet of space. Both the City of Oakland and the City of Alameda maintain up-to-date lists of projects they define as major development projects online.

This RSA was used to evaluate cumulative impacts to hydrology, water quality, air quality, and transportation.

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Table 2-60. Major Projects within the Regional RSA

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Transportation				
Global Opportunities at the Port of Oakland	Alameda CTC/ City of Oakland	Improve truck and rail access to the Port of Oakland 7th Street Grade Separation (West) 7th Street Grade Separation (East) Freight Intelligent Transportation System	Oakland Army Base Redevelopment EIR approved in 2019; under construction (completion in 2026)	Transportation, air quality, cultural resources, aesthetics, biological resources
I-580 Rehabilitation/ Roadway Improvement Project	Caltrans	Construction along I-580 will include replacing slabs, resurfacing shoulders and ramps, constructing guardrails and concrete barrier rails, and drainage work	CE/CE approved in 2014; construction completion in fall 2020	Aesthetics, geology/soils, air quality, cultural resources, hazardous waste/materials, water quality, noise, biological resources
I-680 Sunol Express Lanes Project	Caltrans	Construction of a high-occupancy vehicle (HOV) express lane on NB I-680 from SR-237 in Santa Clara County to SR-84 in Alameda County; freeway widening; other improvements include bridge modifications and pavement resurfacing	IS Negative Declaration (ND)/EA FONSI; under construction; scheduled for completion in fall 2020	Farmlands, utilities, emergency services, transportation, aesthetics, cultural resources, hydrology, water quality, geology/soils, paleontology, hazardous waste/materials, air quality, noise, biological resources

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Niles Canyon Safety Improvements Project (Medium-Term Improvements)	Caltrans	Spot safety improvements along SR-84 between SR-238 and I-680; improvements include signalization of several intersections, shoulder widening, guardrail installation, lighting, and sign/beacon installation	EIR/EA approved in 2017; under construction; scheduled for completion in 2021	Community character/ cohesion, utilities, transportation, aesthetics, cultural resources, water quality, geology/soils, paleontology, hazardous waste/materials, air quality, noise, energy
Alameda Creek Bridge Replacement Project	Caltrans	Replacement of the SR-84 bridge over Alameda Creek	EIR/EA approved in 2018; under construction; scheduled for completion in 2022	Land use, utilities, aesthetics, cultural resources, water quality, paleontology, hazardous waste/materials, biological resources
I-880 Express Lanes Between Oakland and Milpitas	MTC/Caltrans	Conversion of existing HOV lanes to express lanes; includes highway widening at three locations, pavement striping, and new sign/lighting installation	CE approved in 2015; under construction; completion in summer 2020	Transportation, air quality, environmental justice
Stanton Avenue Sidewalk Improvement Project	Alameda County Public Works Agency	Safe Routes to School Project will close sidewalk gaps along Stanton Avenue between Castro Valley Boulevard and Miramar Avenue; work will include a buffered bike lane, stormwater treatment areas, bus stops, and streetscaping	Covered under the IS/ND for the *2019 Alameda County Bicycle and Pedestrian Master Plan* for Unincorporated Areas; under construction; end date not known	None (all resource impacts were classified as “No Impact”)

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
East 14th Street Corridor Improvement Project	Alameda County Public Works Agency	Phase II of the project from 162nd Avenue to I-238 will install new sidewalks, crosswalks, and bike lanes; pavement will be resurfaced; stormwater treatment is proposed	Covered under the IS/ND for the *2019 Alameda County Bicycle and Pedestrian Master Plan for Unincorporated Areas*; under construction; scheduled for completion in early 2022	None (all resource impacts were classified as "No Impact")
Hesperian Boulevard Corridor Improvement Project	Alameda County Public Works Agency	Hesperian Boulevard between I-880 and A Street will be rehabilitated; improvements will include sidewalk widening, Class II buffered bike lanes, gateways, crosswalks, lighting, and streetscaping	Covered under the IS/ND for the *2019 Alameda County Bicycle and Pedestrian Master Plan for Unincorporated Areas*; under construction; scheduled for completion in spring 2022	None (all resource impacts were classified as "No Impact")
I-80 MacArthur Maze Vertical Clearance Project	Caltrans	Proposed project is located where I-80, I-580, and I-880 intersect near the San Francisco-Oakland Bay Bridge and would address vertical clearance deficiencies	IS ND/EA FONSI issued February 2020; No-Build Alternative was selected; no construction will occur	None
Otis Drive Traffic Calming Project	City of Alameda	Improvements along a one-mile stretch of Otis Drive between Westline Drive and Willow Street; improvements include reducing travel lanes, installing a bikeway, and streetscaping	Covered under a CE; construction to start in fall 2020; completion in 2021	None identified

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
SR-84 Widening and I-680 Interchange Improvements	Caltrans	SR-84 will be widened to expressway standards; SR-84/I-680 interchange ramps will be improved; an HOV lane will be extended along NB I-680 for 2 miles	EIR/EA approved in 2018; construction duration will be from early 2021 to fall 2023	Community character/ cohesion, utilities, transportation, aesthetics, cultural resources, water quality, geology/soils, paleontology, hazardous waste/materials, air quality, noise, energy
Central Avenue	City of Alameda/Caltrans	Complete streets project along Central Avenue between Pacific Avenue and Sherman Street; Central Avenue is designated as SR-61 between Webster Street and Sherman Street; vehicle travel lanes will be resurfaced, and bike lanes will be installed	CE/CE in 2021; construction to start and end in 2022	Parks and recreational facilities, aesthetics, cultural resources, hydrology, water quality, geology/soils, air quality, hazardous waste/ materials, noise
Clement Avenue	City of Alameda/Caltrans	Bicycle and pedestrian infrastructure improvements along Clement Avenue between Grant Street and Broadway	CE/CE in 2020; construction completion in 2021	Cultural resources, hazardous waste/materials, hydrology, water quality, noise
Clement Avenue Extension/Tilden Way	City of Alameda	Complete streets project that will use abandoned railroad ROW at the eastern terminus of Clement Avenue to extend the street and the Cross Alameda Trail	Early planning; construction schedule estimated to begin in 2019 and end in 2021.	None identified

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
I-80/Gilman Street Interchange Improvement Project	Caltrans	Reconfiguration of the I-80/ Gilman interchange with two roundabouts; a pedestrian overcrossing will be installed over I-80; local roadway improvements include installing bicycle/ pedestrian infrastructure	IS/EA approved in 2018; construction expected early 2021 to summer 2023	Parks and recreational facilities, environmental justice, utilities and emergency services, transportation, aesthetics, cultural resources, hazardous waste/materials, noise, biological resources
Dublin Boulevard – North Canyons Parkway Extension	Alameda CTC/City of Dublin/City of Livermore	1.5 mile roadway extension in Livermore will include 4-6 travel lanes, bike lanes, sidewalks, and traffic signals	EIR approved in 2019; EA scheduled for completed in 2020; construction scheduled to begin in 2022	Transportation, growth, utilities, air quality, cultural resources, hydrology, water quality, biological resources
I-580 and I-205 Roadside Safety Improvement Project	Caltrans	Extending/paving gore areas and construction maintenance vehicle pullouts in 14 locations between Livermore and the San Joaquin County line (9.6 miles)	Draft IS ND/CE circulated April 2020; construction will begin in June 2022 and end in December 2022	Transportation and biological resources
University Avenue I-80 Overcrossing	Caltrans	Project will increase the vertical clearance at the I-80/University Avenue overcrossing to current standards by either raising or replacing the existing structure	IS ND/CE construction tentatively scheduled from 2022 to 2024	Aesthetics and water quality
I-80/Ashby Avenue (SR-13) Interchange Improvements	Caltrans	Project will reconstruct the Ashby Avenue interchange with a roundabout; existing bridges will be replaced with new bridges; bicycle/pedestrian access over I-80 will be evaluated	IS/EA in process; construction tentatively scheduled from late 2022 to summer 2025	Aesthetics and water quality

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
I-880 Interchange Improvements - Winton Avenue and A Street	Caltrans	Interchange improvements at two locations (Winton Avenue and A Street) in Hayward	IS/EA in process; construction tentatively scheduled from 2025 to 2028	Aesthetics and water quality
I-880 Interchange Improvements - Whipple Road and Industrial Parkway West	Caltrans	Interchange improvements at two locations (Whipple Road and Industrial Parkway West) in Hayward	IS/EA in process; construction tentatively scheduled from 2023 to 2026	None identified
SR-262 Mission Boulevard Cross Connector	Caltrans	Improvements along SR-262 and associated ramp modifications between I-880 and I-680; includes multimodal project components	Early planning (project initiation document phase); environmental document schedule not known; construction schedule not known	None identified
I-680 Express Lanes from SR-84 to Alcosta Boulevard	Caltrans	Construction of HOV express lanes on NB and SB I-680; project will close a 9-mile gap in HOV lanes	IS/EA in process; construction tentatively scheduled from spring 2023 to fall 2026	Aesthetics and water quality
Mission Boulevard Improvement Project	Alameda County Public Works Agency	Improvements are proposed to Mission Boulevard between I-238 and Rose Street in Hayward; includes pavement, sidewalks, crosswalks, bikeways, and lighting	Early planning; construction schedule not known	None identified
San Pablo Avenue (SR-123) Corridor Project	Caltrans	Transit priority treatments, traffic signal modernizations, and bicycle/pedestrian infrastructure improvements from San Pablo to Oakland	Environmental document in process; construction tentatively scheduled for 2027	None identified

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
BART to Livermore Extension	Alameda CTC/BART	4.8-mile extension of the Dublin-Pleasanton line along I-580	Early scoping/planning; BART has not selected an alternative for advancement	None identified
Residential				
MacArthur BART Transit Village Project	BART/Oakland	880 residential units with 40,000 square feet of commercial/retail space; improvements include new bicycle/pedestrian infrastructure	EIR approved in 2008; under construction (completion date not known)	Transportation, utilities, aesthetics, air quality, noise/vibration, hydrology, water quality, geology/soils, hazardous waste/materials, cultural resources, paleontological resources
West Oakland BART Development	BART/Oakland	762 residential units, 382,460 square feet of office space, and 75,000 square feet of retail space over a 5.58-acre site	Preliminary development plan approved; construction schedule not known	None identified
Multi-use Development				
Alameda Marina Project	City of Alameda	760 residential units, 150,000 square feet of commercial space, and waterfront parks	EIR approved in 2018; construction completion expected in 2027	Land use, growth, transportation, utilities, aesthetics, air quality, cultural resources, geology/soils, hazardous waste/materials, hydrology, water quality, noise, biological resources
Del Monte Warehouse Project (1501 Buena Vista Avenue)	City of Alameda	Mixed-use housing development on an 11-acre site; redevelopment of the historic Del Monte Warehouse property; 308 residential units and 30,000 square feet of commercial space proposed	IS/MND approved in 2014; development agreement signed in 2015; construction is expected to be completed in early 2022	Transportation, air quality, geology/soils, hydrology, water quality, cultural resources, hazardous waste/materials, noise, biological resources

Project Title	Lead Agency(s)	Description	Project Status	Relevant Environmental Factors
Encinal Terminals (1524 Buena Vista Avenue)	City of Alameda	Mixed-use housing development with 589 new residential units, 30,000 square feet of commercial space, and 3 acres of waterfront open space	Supplemental EIR approved in 2017; Alameda adopted master plan in 2018; construction schedule not set	Land use, growth, transportation, utilities, air quality, noise, biological resources

Sources: City of Oakland (2020), City of Alameda (2020), Caltrans (2020), Alameda County (2020)

Hydrology and Water Quality

The Build Alternative would add impervious surface to the San Francisco Bay's watershed, and it could potentially discharge construction and post-construction-related stormwater pollutants that would negatively impact water quality in the San Francisco Bay, the project's ultimate receiving water. Stormwater discharge from the proposed project would enter the Bay via the Lake Merritt Channel and Oakland Estuary. Per Sections 3.1 and 3.2, the Build Alternative would have a less than significant effect on hydrology and water quality.

The Bay (Central Basin) has 11 listed impairments on the CWA 303(d) list: chlordane, DDT, dieldrin, dioxin compounds, furan compounds, invasive species, mercury, PCBs, dioxin-like PCBs, selenium, and trash. This suggests the Bay's water quality is poor, or at risk, which warrants a cumulative impacts analysis.

The current health of the Bay was evaluated using the *State of the Estuary Report* (2015) published by the San Francisco Estuary Partnership. This partnership was established in 1988 by the state of California and the U.S. EPA under the CWA National Estuary Program. It is a collaboration of local, state, and federal agencies, non-governmental organizations, academia, and business leaders working to protect the San Francisco Bay. The 2015 report rated the health of the Bay as stable (neither improving nor deteriorating from historic levels). Fish consumption was rated as "fair" with mercury and PCBs noted as primary concerns. The Bay was rated as "good" for swimming. It also received a "fair" rating for aquatic life habitat. The report noted the pollutants posing the greatest threats to aquatic life in the Bay were mercury, invasive species, pesticides, and trash. The report concluded that monitoring and regulatory programs are important for addressing ongoing water quality challenges. This report further supports the at-risk nature of this aquatic resource, further justifying the need for a cumulative impacts analysis.

The San Francisco Bay watershed was not used as the Regional RSA. Per the U.S. EPA, this watershed covers approximately 4,600 square miles and includes several large rivers (Sacramento River, San Joaquin River, Petaluma River, Napa River, and Guadalupe River). It is comprised of numerous counties, nine of which are directly adjacent to the Bay, and it extends through northern California into Oregon. Assessing the cumulative impacts of the Build Alternative with all the active projects within this enormous geographic area was outside the scope of this hydrology and water quality cumulative analysis.

To identify an appropriate Regional RSA, the overall regulatory environment was considered. The RWQCB issues 5-year municipal stormwater permits to cities, counties, and flood control districts that specify BMPs to reduce or eliminate stormwater pollution. The Build Alternative is subject to the Alameda County stormwater permit requirements issued by the RWQCB. Cities within this county, including Oakland and Alameda, have joined together to form the Alameda Countywide Clean Water Program. This program is subject to NPDES Permit Number CAS612008 issued by Order Number R2-2009-0074 (October 14, 2009) and amended by Order Number R2-2015-0049 (November 19, 2015). Each of the member agencies of the Alameda Countywide Clean Water Program regularly inspect commercial and industrial facilities and construction sites (private and public) for compliance. This ensures proper operational procedures and management practices are employed to prevent impairment of local waterways. Because all the cities within Alameda County operate under this program and the same NPDES permit, the county boundary was determined to be an appropriate Regional RSA boundary for hydrology and water quality.

Twenty-seven active transportation and development projects were identified within the Regional RSA. All of these active projects would be subject to stormwater permit requirements, including the implementation of construction and post-construction BMPs. Through compliance with the municipal stormwater permit, stormwater discharged by these projects should meet (or exceed) the county's requirements established to improve water quality within the San Francisco Bay. Because of this, the net effect of all these projects should not diminish water quality.

The Build Alternative would implement BMPs to remove pollutants (including trash) from stormwater before it discharged into the San Francisco Bay. This includes appropriate erosion/sediment control measures and site management practices, such as a material management and spill prevention plan. The proposed project would implement source control measures, such as markers on storm drain inlets, protecting existing vegetation, and employing proper plant selection and pesticide management for new landscaping. Trash inserts would be incorporated to further remove litter and solids from stormwater. Design and treatment BMPs would be refined as the design progressed, and are a condition of the Caltrans MS4 permit, MRP, CGP, and other regulatory agency requirements. With proper implementation of these design features, construction-related water quality impacts and permanent water quality impacts would be avoided. Therefore, the Build Alternative would not contribute to a cumulative degradation of the San Francisco Bay's water quality.

Air Quality

The Build Alternative is located within the San Francisco Bay Air Basin, which is under the jurisdiction of MTC, BAAQMD, and CARB. Within the Air Basin, the attainment status of the various air quality NAAQS and CAAQS is established for each county. Therefore, the Regional RSA covering Alameda County was used for a cumulative air quality impact analysis.

As noted in Section 3.6, the following NAAQS for Alameda County are classified as non-attainment: O_3 (8-hour) and $PM_{2.5}$ (24 hours and annual). The county's status for the CO (1-hour) NAAQS is classified as maintenance. The following CAAQS for Alameda County were classified as non-attainment: O_3 (1-hour and 8-hour), PM_{10} (24 hours and annual), and $PM_{2.5}$ (annual). The non-attainment and maintenance statuses for several air quality standards suggested poor air quality within Alameda County, which validated the need for a cumulative impact analysis.

The Build Alternative is anticipated to have a less than significant impact on air quality. The proposed project would alleviate traffic congestion and improve connectivity, including multimodal improvements between Oakland and Alameda. The regional conformity analysis for O_3 indicated the Build Alternative would not contribute to, or worsen, air quality. In addition, the proposed project was determined not to be a POAQC. Long-term roadway operation emissions estimates indicated slight reductions in CO as a result of the proposed roadway network improvements. Finally, MSAT emissions under the Build Alternative would be similar to or slightly lower than the emissions associated with the No-Build Alternative.

MTC is the primary agency and author of *Plan Bay Area*, which provides a blueprint for meeting NAAQS and CAAQS. These standards are set at levels that protect public health with a margin of safety. All of the active transportation projects identified in Alameda County, including the Build Alternative, must undergo a conformity analysis to ensure compliance with air quality standards. All projects forecasted over the next 20 years are included in the RTP. This ensures their cumulative air emissions work towards meeting air quality standards, and that air quality does not worsen within the Regional RSA.

There are three active transportation projects within Alameda County that are classified as capacity reducing due to improvements such as converting existing lanes to HOV lanes. Twelve transportation projects, including the Build Alternative, would improve transit, bicycle, and pedestrian infrastructure. Multiple residential development projects, including those adjacent to the project footprint, are located near public transportation (BART, AC Transit, etc.). Cumulatively, these active projects could reduce emissions associated with vehicular travel, resulting in reduced air emissions within Alameda County. However, new development projects near public transportation may not reduce emissions if existing residences are in the same locations.

During construction, there will be a temporary increase in emissions (Table 2-43 and Table 2-50) that will be minimized with AMMs. All 18 of the active Caltrans projects in Alameda County would comply with the Caltrans' standardized practices to minimize air pollutant emissions during construction. BMPs will reduce construction emissions on these projects; however, there will still be short-term increase in emissions. These projects are expected to improve air quality after construction. Construction emissions are expected to be offset by emissions reductions during project operation.

Based on an analysis of the active projects and regulatory environment within Alameda County, no cumulative impacts to air quality are anticipated as a result of the Build Alternative.

Transportation

As noted in Section 2.9, local streets within the project footprint are congested during peak hours. Several local intersections and portions of I-880 operate at deficient LOS due to high traffic volumes. This suggests the poor health of the existing transportation environment, which warranted a cumulative impacts analysis.

The Regional RSA was selected to review potential cumulative impacts. This broad geographic region allows consideration of all major active transportation projects (state, county, and local) within Alameda County. Cumulative impacts were considered on both a temporary (construction-related) and permanent (operational) basis.

Construction-related Impacts

Construction of the Build Alternative would begin in mid-2023 and end in late 2026. The Build Alternative could temporarily impact motorists, bicyclists, and pedestrians with roadway closures and detours. Nighttime closures of the Tubes could affect public transportation as well.

During the design phase, the proposed project would prepare a TMP detailing traffic detours, if required. The TMP would evaluate the effect of closures on bicyclists and pedestrians, and outline alternatives (such as shuttle service) to be provided during construction. Finally, the TMP would inform the public in advance of any activities that would affect motorists and transit users. By implementing the TMP, the Build Alternative's temporary transportation impacts would be minimized.

Only the active transportation and parks and recreation projects within the Regional RSA were evaluated. Closures/detours are not anticipated from residential, commercial, or mixed-use development projects. In addition, active projects with construction completion dates prior to 2023 or start dates after 2026 were dismissed because these projects would not overlap with the Build Alternative's construction window.

Construction schedules for 10 active projects in the Regional RSA would overlap with the Build Alternative. These projects are as follows:

- Global Opportunities at the Port of Oakland
- I-680 Express Lanes Project from SR-84 to Alcosta Boulevard
- I-880 Interchange Improvements Project (Whipple Road and Industrial Parkway West)
- I-880 Interchanges Improvements Project (Winton Avenue and A Street)
- I-80/Ashby Avenue (SR-13) Interchange Improvements Project
- University Avenue I-80 Overcrossing Project
- Dublin Boulevard – North Canyons Parkway Extension
- I-80/Gilman Street Interchange Improvement Project
- Central Avenue Complete Streets Project
- SR-84 Widening and I-680 Interchange Improvements Project

These projects could result in cumulative transportation impacts. However, PF-TRF-1 (Section 2.8) would ensure that construction of the Build Alternative is closely coordinated with local agencies, transit services, and affected drivers. Detours would be coordinated with the cities of Oakland and Alameda, emergency service providers, transit operators, and users of I-880, SR-260, and I-980. This coordination would ensure cumulative impacts are avoided during construction.

Operational Impacts

The Build Alternative would modify existing access to I-880 by building a more direct connection between the interstate and the Tubes. This would improve local circulation by removing traffic traveling from Alameda to I-880 from local streets. The proposed project would improve bicycle and pedestrian infrastructure, which may encourage less vehicular travel and further decrease congestion on local roadways.

The proposed project would have some effects on transportation as follows:

- Increased traffic would occur on I-880 off-ramps within the project footprint.
- NB I-880 operating conditions would degrade slightly leading to additional congestion. There would be no impact to SB I-880.
- The proposed project would include several nonstandard geometric design features within the Tubes and along I-880.

The nonstandard geometric design features would be addressed by restriping on-ramps to meet current standards, reducing the speed limit inside the Tubes, and installing project elements (warning signs, flashing beacons, loop detectors, variable message signs, and rumble strips). The benefits associated with these improvements would occur locally; therefore, they would not have a cumulative effect within the Regional RSA.

The Build Alternative is expected to have a slight decrease in VMT compared to the No-Build Alternative. While this is presumed to be a less than significant impact under CEQA 15064.3, it would not contribute operationally to traffic congestion in the Regional RSA. In addition, 15 major projects in the Regional RSA have the potential to reduce vehicular travel (HOV lanes and bicycle/pedestrian infrastructure). All 18 of the active Caltrans projects in Alameda County would be coordinated by the department to ensure there is no cumulative operational transportation impacts within the region.

Based on this analysis, no cumulative operational impacts to transportation are anticipated within the Regional RSA.

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Chapter 3 - California Environmental Quality Act (CEQA) Evaluation

Section 1.0. Determining Significance Under CEQA

The proposed project is a joint project by the Caltrans and the FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the MOU dated December 23, 2016, and executed by the FHWA and Caltrans. Caltrans is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (proposed project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated, and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the proposed project and ways to mitigate each significant effect. If the proposed project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this proposed project and CEQA significance.

Section 2.0. CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects will indicate that there are no impacts to a particular resource. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, and standardized measures that are applied to all or most Caltrans projects such as BMPs and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the proposed project and have been considered prior to any significance determinations documented in this section; see Chapter 1 and Chapter 2 for a detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapter 1 and Chapter 2.

AESTHETICS

Except as provided in Public Resources Code Section 21099, would the proposed project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Less Than Significant with Mitigation Incorporated
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	No Impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less Than Significant Impact

CEQA Significance Determinations for Aesthetics

a, c) No Impact

The proposed project would have no impact on a scenic vista. Views of scenic resources are limited due to intervening structures. The views would not be enhanced or diminished by the project elements; therefore, it would have no impact on scenic resources. The proposed project improvements would either maintain or enhance the overall existing visual character and quality, including expansion of views of the horizon, the addition of natural elements (such as landscaping), and reduction of light shadowing within the project study area.

b) Less Than Significant Impact with Mitigation Incorporated

The proposed project would involve work on the balustrade walls associated with the Posey Tube, an NRHP-eligible property. Per MM-VA-1 (Posey Tube and Approaches Aesthetic Treatments), the architectural details of the replacement walls would be context sensitive and in accordance with Section 106 consultation. Changes to this resource are subject to review in accordance with Section 106 of the NHPA (Chapter 2, Section 2.10) and Section 4(f) Individual Evaluation (Appendix A). MM-CUL-1 (Section 106 Consultation) (Chapter 2, Section 2.10.4) will require consultation with consulting parties, including SHPO, to resolve adverse effects and develop appropriate mitigation measures.

Under the Build Alternative, tree removal would occur, which contributes to visual quality and scenery. The proposed project would implement Caltrans standard project features PF-VA-1(Preserve Existing Vegetation), PF-VA-2 (Landscape Plantings), and PF-VA-3 (PEP). AMM-VA-1 (Vegetation Removal Measures), AMM-VA-2 (Vegetation Replacement), AMM-VA-3 (Revegetation Planting), AMM-VA-4 (Aesthetic Treatments), and AMM-VA-5 (Construction Impact Measures) will further avoid and/or minimize potential visual impacts (Chapter 2, Section 2.9.4). AMM-AS-4 (Evaluate and Replace Trees, Chapter 2, Section 4.4.4) will limit tree removal and replace native trees that are removed.

With just the Caltrans standard project features, the proposed project would have a significant impact on scenic resources. With the implementation of AMMs, the proposed project would have a less than significant impact on scenic resources.

d) Less Than Significant Impact

New lighting elements are proposed along 5th and 6th streets, but the visual impacts from these proposed project elements are anticipated to be low. The proposed project, without additional measures, could potentially have a significant impact due to glare. New retaining walls would include aesthetic treatments to reduce glare (AMM-VA-4 [Aesthetic Treatments] per Chapter 2, Section 2.9.4). With the implementation of an AMM, the proposed project would have a less than significant impact due to light or glare.

AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by CARB. Would the proposed project:

Question	CEQA Determination
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	No Impact

CEQA Significance Determinations for Agriculture and Forest Resources

a, b, c, d, and e) No Impact

There are no farmlands, agricultural lands, or forest resources/timberlands located within the project study area. The proposed project is located within a heavily urbanized area. No conversions occur as a result of the proposed project. No further analysis is required.

AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the proposed project:

Question	CEQA Determination
a) Conflict with or obstruct implementation of the applicable air quality plan?	Less Than Significant Impact
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	Less Than Significant Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	Less Than Significant Impact
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	Less Than Significant Impact

CEQA Significance Determinations for Air Quality

a, b, c, d) Less Than Significant

The proposed project is located in the San Francisco Bay Area Basin and is within the jurisdiction of the MTC, BAAQMD, and CARB. The MTC is the primary agency responsible for writing the *Plan Bay Area* in cooperation with ABAG, local governments, and the private sector. The *Plan Bay Area* provides the blueprint for meeting state and federal ambient air quality standards. This project is not a capacity-increasing transportation project. VMT would be reduced overall with implementation of the project compared to existing conditions and the project would generate a less than significant amount of pollutants during construction due to the relatively short duration of project construction.

Temporary construction activities would generate fugitive dust, exhaust, and NO_x from the operation of construction equipment. Construction standards adopted by the BAAQMD and *Plan Bay Area*, as well as Caltrans standardized procedures (PF-AQ-1 Dust Control) for minimizing air pollutants during construction, will be followed by the proposed project. The proposed project is included in MTC's most recent RTP and TIP both of which were found to be conforming (see Chapter 2, Section 3.6. Air Quality). The proposed project would not expose sensitive receptors to substantial pollutant concentrations, nor would it result in emissions or odors that would adversely affect a substantial number of people. With the incorporation of Caltrans standard project features, the proposed project would not be in conflict with *Plan Bay Area*, violate or contribute to a violation of any air quality standard, result in a net increase of any criteria pollutant, or expose sensitive receptors to substantial pollutant concentrations. The overall impact would be less than significant.

Project impacts will be minimized with AMM-AQ-1 (Dust Control) and AMM-AQ-2 (Exhaust Emissions) (Chapter 2, Section 3.6.4). The following hazardous waste measures will further reduce impacts: AMM-HW-1 (Lead in Soils), AMM-HW-2 (ACM Investigation), AMM-HW-3 (Lead Abatement), and AMM-HW-6 (Contaminated Soil Handling, Chapter 2, Section 3.5.4). Implementation of AMM-AQ-2 (Exhaust Emissions) would result in a less than significant impact to air quality. With the incorporation of AMMs, the overall impact would be less than significant on air quality.

BIOLOGICAL RESOURCES

Would the proposed project:

Question	CEQA Determination
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	No Impact
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	No Impact

CEQA Significance Determinations for Biological Resources

a, b, c, d, e, f) No Impact

Implementation of AMM-AS-1 (Pre-construction Nesting Bird Surveys), AMM-AS-2 (Pre-construction Bat Survey), AMM-AS-3 (Protected Species), AMM-AS-4 Evaluate and Replace Trees, and AMM-AS-5 (WEAT) (Chapter 2, Section 4.4.4) will ensure there are no impacts to special-status species, including nesting and native birds, bats, or peregrine falcons. One federally listed endangered fish species has a low potential to occur within the BSA. The anticipated effect finding for each is “no effect.” No mitigation is proposed as the implementation of the proposed project will have no impact on special-status species or their habitats.

The proposed project would incorporate Caltrans standard project features PF-NC-1 (High Visibility Fencing), PF-NC-2 (BMPs), PF-WW-1 (BMP Inspection), and PF-WW-2 (Protect Environmentally Sensitive Areas). By incorporating AMM-WW-1 (Silt and ESA Fence)

(Chapter 2, Section 4.2.4), AMM-AS-4 (Evaluate and Replace Trees), and AMM-AS-5 (WEAT) (Chapter 2, Section 4.4.4), there would be no direct or indirect impacts to riparian habitat or other sensitive natural communities. No mitigation is proposed as the proposed project would have no impact on riparian habitat or sensitive natural communities.

The proposed project would have no impact on any migratory wildlife corridors or the movement of any native resident or migratory fish or wildlife species, and it would not impede the use of native wildlife nursery sites. No mitigation is proposed.

As detailed in Chapter 2, Section 4.4. Animal Species, tree removals would be minimized and replaced per AMM-AS-4 (Evaluate and Replace Trees). The proposed project would have no impact on local biological policies or ordinances. No mitigation is proposed.

The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No mitigation is proposed.

With the incorporation of AMMs, the proposed project would have no impact on biological resources.

CULTURAL RESOURCES

Would the proposed project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	Significant and Unavoidable Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	No Impact
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	No Impact

CEQA Significance Determinations for Cultural Resources

a) Significant and Unavoidable Impact

Under the Build Alternative, existing freeway ramps would be removed and modified and the Posey Tube exit in Oakland would be modified. Class IV two-way cycle tracks would be constructed within the project study area and improvements for non-motorized vehicles and pedestrians would be implemented across I-880 between downtown Oakland and the Jack London District. The Build Alternative would also implement bicycle and pedestrian improvements at the Tubes' approaches in Alameda and Oakland. Access to NB and SB I-880 from the Posey Tube would be improved by adding a right-turn-only lane from the Posey Tube to 5th Street and a new horseshoe connector at Jackson Street below the I-880 viaduct that would connect to the existing NB I-880/Jackson Street on-ramp. Construction of the new right-turn-only lane onto 5th Street would require new retaining walls along the right side of the Posey Tube exit replacing the historic wall.

Caltrans determined the Posey Tube is individually eligible for the NRHP. The Posey Tube is listed on the CRHR. The Oakland Portal building, a key contributing element to the Posey Tube, is also listed on the NRHP as a contributor to the Oakland Waterfront Warehouse District. The Oakland Waterfront Warehouse District is listed on the NRHP and the CRHR. The Build Alternative would result in a significant and unavoidable impact to these two historical resources (the Posey Tube and the Oakland Waterfront Warehouse District) because it would demolish the eastern approach wall, a portion of the western approach wall, a staircase of the Posey Tube's Oakland approach, and the existing concrete sidewalk and curb on the west side (4th Street) of the Oakland Portal building. These construction activities would be located within the Oakland Waterfront Warehouse District boundaries, and they would cause the partial removal of, physical destruction of, or damage to the Posey Tube under 36 CFR 800.5(a)(2)(i) and (ii).

Even with the implementation of MM-CUL-1 (Section 106 Consultation), in which specific mitigation measures will be developed through consultation under a MOA with the SHPO and consulting parties and AMM-CUL-1 (WEAT and Sensitivity Training), the destruction and replacement of portions of the two historical resources would be considered significant and unavoidable impacts under CEQA (Chapter 2, Section 2.10.4 and Section 3.7.4).

b, c) No Impact

Phase I archaeological surveys and extended Phase 1 archaeological excavations did not result in the identification of archaeological sites within the APE. With the incorporation of Caltrans standard project features PF-CUL-1 (Cultural Resource Discovery) and PF-CUL-2 (Human Remains) and AMM-CUL-1 (WEAT and Sensitivity Training), no impacts to human remains under the Build Alternative are anticipated.

ENERGY

Would the proposed project:

Question	CEQA Determination
a) Result in potentially significant environmental impact due to wasteful inefficient, or unnecessary consumption of energy resources, during project construction or operation?	No Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No Impact

CEQA Significance Determinations for Energy

a, b) No Impact

The Build Alternative is not a capacity increasing project. The proposed project would result in direct energy use during construction. However, that energy expenditure would be offset by the long-term operational energy savings associated with reduced local traffic congestion. The Build Alternative would encourage alternative modes of transportation and reduced direct energy consumption through bicycle and pedestrian infrastructure improvements. These modes of transportation do not consume fossil-fuel related energy. Although the proposed project would have no impact on energy use (factoring in both operation and construction), AMM-GHG-1 (Tire Pressure), AMM-GHG-2 (Recycling), AMM-GHG-3 (Local Sourcing), and AMM-GHG-5 (Lighting) (Chapter 3, Section 3.3.2 and Section 3.4.3) and AMM-TRF-4 (AC Transit) (Chapter 2, Section 2.8.4), would further reduce energy use.

GEOLOGY AND SOILS

Would the proposed project:

Question	CEQA Determination
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	No Impact
ii) Strong seismic ground shaking?	Less than Significant Impact
iii) Seismic-related ground failure, including liquefaction?	Less than Significant Impact
iv) Landslides?	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less than Significant Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less than Significant Impact

CEQA Significance Determinations for Geology and Soils

a.i, a.iv, b, d, e) No Impact

The proposed project is not in the Fault Zoning Map. Caltrans and Alameda CTC would ensure the proposed project would not result in substantial soil erosion or loss of topsoil during construction. No expansive soils have been identified in the project footprint. The proposed project does not require septic tanks or alternative wastewater disposal systems.

a.ii, a.iii, c, f) Less than Significant Impact

Although the proposed project is within an area at high risk of strong ground shaking, all project components including the foundations would be designed to meet current Caltrans design standards for structures (PF-GE-1 Geotechnical Surveys). Following the Caltrans seismic design procedures would ensure the proposed project's structural integrity. The project footprint is underlain by potentially liquefiable soils. With PF-GE-1, the proposed project would have a less than significant impact due to strong seismic ground shaking.

Fossil-bearing geologic formations occur beneath the proposed project. The specific depth, location, and paleontological contents of these formations has not been confirmed. Without this information, the possibility that project excavations could encounter fossil resources cannot be eliminated. Without measures in place, if project excavations damage a unique paleontological resource, it would potentially be a significant impact. Incorporation of the following AMMs will prevent significant impacts to paleontological resources: AMM-PAL-1 (Paleontological Mitigation Plan), AMM-PAL-2 (Worker Environmental Awareness Training), AMM-PAL-3 (Paleontological Monitoring), AMM-PAL-4 (Salvage and Recovery Operations), AMM-PAL-5 (Donation to Repository Institution), and AMM-PAL-6 (Paleontological Mitigation Report) (Chapter 2, Section 3.4.4).The proposed project will have a less than significant impact on paleontological resources.

GREENHOUSE GAS EMISSIONS

Would the proposed project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less Than Significant Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	No Impact

CEQA Significance Determinations for Greenhouse Gas Emissions

a) Less than Significant Impact

The proposed project would result in a decrease in VMT during project operation. Greenhouse gasses emitted during construction would be temporary and would be offset by the emissions reductions during project operation. Without the implementation of GHG reduction measures, the proposed project would have a less than significant impact on GHG emissions. AMM-GHG-1 (Tire Pressure), AMM-GHG-2 (Recycling), AMM-GHG-3 (Local Sourcing), AMM-GHG-4 (Landscaping), and AMM-GHG 5 (Lighting) (Chapter 3, Section 3.3.2 and Section 3.4.3) would be implemented to further avoid and minimize release of GHGs during project construction and operation.

b) No Impact

Without appreciable increases in VMT as a result of the proposed project, there will not be any conflicts with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.

HAZARDS AND HAZARDOUS MATERIALS

Would the proposed project:

Question	CEQA Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Less Than Significant Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Less Than Significant Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No Impact

CEQA Significance Determinations for Hazards and Hazardous Materials

<u>a, b, e, f, g) No Impact</u>

Any hazardous materials encountered or used during construction would be handled safely and securely according to applicable local, state, and federal regulations, and by incorporating Caltrans standard project features PF-HW-1 (Yellow Paint and Thermoplastic), PF-HW-2 (Treated Wood Waste), and PF-HW-3 (Material Disposal). However, without additional measures, the proposed project could result in a significant hazard to the public or the environment. AMM-HW-1 (Lead in Soils), AMM-HW-2 (ACM Investigation), AMM-HW-3 (LBP Abatement), AMM-HW-4 (Contaminant Characterization), AMM-HW-5 Unexpected Contamination), AMM-HW-6 (Contaminated Soil Handling), and AMM-HW-7 (Dewatering Treatment and Disposal) (Chapter 2, Section 3.5.4), would prevent impacts to the public or the environment during construction. The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials.

The Oakland Airport's Airport Land Use Compatibility Plan applies to all lands within the airport influence area (AIA). The AIA is based on political boundaries, noise contours, and flight paths. It extends north from the Oakland Airport to High Street in Alameda (Alameda County Airport Land Use Commission 2012). The proposed project is outside the AIA, and it is not subject to an airport land use plan.

The proposed project will not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The City of Alameda does not have specific evacuation or emergency plans. The City recommends using alternate routes in the case of emergency. Alternate routes include the Fruitvale, Park Street, High Street, and Bay Farm Island bridges as well as ferry service, which would not be affected by the proposed project. The proposed project would not require changes to the Tubes' emergency response plans. Temporary construction detours would be required and planned to avoid and minimize impacts to emergency response and evacuation plans. Temporary traffic impacts are described in Traffic and Transportation (Chapter 2, Section 2.8).

The proposed project is not within a high-fire hazard zone, as identified by the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (2008). The proposed project is located approximately 2.4 miles from the nearest very high fire hazard zone.

c, d) Less Than Significant Impact

If hazardous or acutely hazardous materials, substances, or waste are encountered during construction, it would be handled, treated, and disposed of using methods to prevent impacts to the public or the environment, including any schools within 0.25 miles of the proposed project. With the incorporation of PF-HW-1 (Yellow Paint and Thermoplastic), PF-HW-2 (Treated Wood Waste), and PF-HW-3 (Material Disposal), the project could potentially have a significant impact. AMM-HW-1 (Lead in Soils), AMM-HW-2 (ACM Investigation), AMM-HW-3 (LBP Abatement), AMM-HW-4 (Contaminant Characterization), AMM-HW-5 (Unexpected Contamination), AMM-HW-6 (Contaminated Soil Handling), and AMM-HW-7 (Dewatering Treatment and Disposal), Chapter 2, Section 3.5.4), reduces the potential impact to less than significant.

Three hazardous materials sites were identified pursuant to Government Code Section 65962.5: APNs 1-185-26 and 1-163-3 in Oakland and 74-1366-2-1 in Alameda. Adjacent proposed project elements are limited to surface work for bicycle paths, striping, resurfacing, and curb and gutter work. These sites would not be impacted by construction activities; however, contaminants from these sites may have migrated into the project footprint. If present, contamination could be encountered during excavation for retaining walls, abutment, and sign foundations. With the incorporation of PF-HW-3 (Material Disposal), the proposed project could potentially have a significant impact. AMM-HW-4 (Contaminant Characterization) would be implemented to characterize any contamination, if present, in the soil and groundwater in the vicinity of project excavations. If necessary, treatment and disposal of any contamination will be done in a manner to protect the public, workers, and environment (AMM-HW-5 [Unexpected Contamination], AMM-HW-6 [Contaminated Soil Handling], and AMM-HW-7 [Dewatering Treatment and Disposal]). With the incorporation of AMMs, the proposed project would have a less than significant impact to listed hazardous waste sites.

HYDROLOGY AND WATER QUALITY

Would the proposed project:

Question	CEQA Determination
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	Less Than Significant Impact
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site;	Less Than Significant Impact
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	No Impact
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	Less Than Significant Impact
(iv) impede or redirect flood flows?	No Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	Less Than Significant Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	Less Than Significant Impact

CEQA Significance Determinations for Hydrology and Water Quality

a, b, c. i, c. iii, d, e) Less Than Significant

The proposed project would result in a small increase in impervious surface area, which would be treated within Caltrans ROW to the maximum extent practicable. Any untreated new impervious surface areas would have a less than significant impact on water quality. The proposed project would incorporate Caltrans standard project features PF-WQ-1 (Stormwater Design Features), PF-WQ-2 (Maintenance BMPs), PF-WQ-3 (Permanent Erosion Control BMPs), PF-WQ-4 (Treatment BMPs), PF-WQ-5 (SWPPP), PF-WQ-6 (Obtain CGP Coverage), PF-WQ-7 Construction BMPs), PF-WQ-8 (Dewatering), and PF-WQ-9 (Spill Response). With these standard features, the proposed project would have a less than significant impact to water quality, except with regards to trash reduction. With the incorporation of AMM-WQ-1 (Trash Inserts) (Chapter 2, Section 3.2.4) and AMM-WW-1 (Silt and ESA Fence) (Chapter 2, Section 4.2.4), the proposed project would have a less than significant impact on water quality. The proposed project would not violate any water quality standards or WDR or otherwise substantially degrade surface or ground water quality. No mitigation would be required.

The proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces. No work would take place in water or within the bed or bank of a stream as part of the proposed project. The net new impervious area would be 0.92 acre. Untreated new impervious surface would have a less than significant effect on erosion and runoff. With the incorporation of Caltrans standard project features PF-WQ-1 (Stormwater Design Features), PF-WQ-2 (Maintenance BMPs), PF-WQ-3 (Permanent Erosion Control BMPs), PF-WQ-4 (Treatment BMPs), PF-WQ-5 (SWPPP), PF-WQ-6 (Obtain CGP Coverage), and PF-WQ-7 Construction BMPs), the proposed project would have a less than significant effect on water quality due to erosion. AMM-WW-1 (Silt and ESA Fence) further minimizes erosion. With this AMM, the proposed project would have a less than significant impact to water quality due to erosion.

The proposed project is not within a tsunami zone. There is no data on the local occurrence or impact of seiches, and none have been recorded in the Bay Area. Due to the shallowness of Lake Merritt, the *Oakland General Plan* concludes that there is not sufficient volume of water to produce sufficient waves to damage adjacent areas. The proposed project is not within the tsunami run-up zone. Pollutants could be released if the proposed project is inundated (flooded) during or after construction because parts of the project footprint in the cities of Oakland and Alameda are within the Zone AE and the shaded Zone X flood hazard zones. However, the proposed project would have a less than significant effect on water quality with respect to the risk of pollutant release due to inundation (flooding) of the project.

With respect to water quality control plans, standard project features PF-WQ-1 (Stormwater Design Features), PF-WQ-2 (Maintenance BMPs), PF-WQ-3 (Permanent Erosion Control BMPs), PF-WQ-4 (Treatment BMPs), PF-WQ-5 (SWPPP), PF-WQ-6 (Obtain CGP Coverage), PF-WQ-7 Construction BMPs), PF-WQ-8 (Dewatering), and PF-WQ-9 (Spill Response) would result in the proposed project having a less than significant impact, except with regards to trash. With the incorporation of AMM-WQ-1 (Trash Inserts), the proposed project would not conflict with implementation of a water quality control plan or a sustainable groundwater management plan, and the proposed project would have a less than significant impact on water quality and groundwater plans.

b, c. ii, c. iv) No Impact

The proposed project would not decrease groundwater supplies or interfere with groundwater recharge; therefore, it would not impede sustainable groundwater management. In the context of the highly urbanized downtown Oakland and Alameda with extensive impervious surface areas, the proposed project's addition of 0.92 acres of net new impervious area would have no impact on groundwater supplies, groundwater recharge, or sustainable groundwater management. The proposed project's additional impervious area would not result in flooding on- or offsite.

Proposed project elements are within the Zone AE (100-year) and the shaded Zone X (500-year) flood hazard zones. The work in the Zone AE flood zone is limited to striping on the I-880 viaduct; however, the floodplain adjacent to the Lake Merritt Channel is below the elevation of I-880. In Alameda, the project footprint is entirely within Zone AE and the majority of the project footprint is within shaded Zone X. The work in Alameda is limited to bicycle path improvements, surface road work, striping, utility improvements, and installation of a road sign. These features are at a similar elevation to existing grade; therefore, they would not impede or redirect flood flows, nor would they affect flood surface elevations.

LAND USE AND PLANNING

Would the proposed project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	No Impact

CEQA Significance Determinations for Land Use and Planning

a, b) No Impact

The proposed project is a transportation project that would be constructed primarily within existing Caltrans and City ROW. It would not divide or bisect neighborhoods, change social patterns, or impede access to neighborhoods or community facilities for those living in, working in, and visiting the project study area. The removal of the elevated northbound Broadway off-ramp would narrow the barrier effect on neighborhoods created by the original construction of I-880. The proposed improvements to the bicycle network would creating new and improved connections between neighborhoods in Oakland and between the cities of Oakland and Alameda.

The proposed project is consistent with local and regional plans, existing land use, and adopted goals and policies. The *Bay Plan* was reviewed, and there were no applicable goals and policies because only the subterranean portions of the Tubes are within its jurisdiction and proposed project improvements are inside the Tubes.

MINERAL RESOURCES

Would the proposed project:

Question	CEQA Determination
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	No Impact
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	No Impact

CEQA Significance Determinations for Mineral Resources

a, b) No Impact

The proposed project would be constructed in heavily disturbed soils comprised mostly of engineered fill. As a result, no impacts to mineral resources would be expected from project construction.

NOISE

Would the proposed project result in:

Question	CEQA Determination
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less Than Significant Impact
b) Generation of excessive groundborne vibration or groundborne noise levels?	Less Than Significant Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	No Impact

CEQA Significance Determinations for Noise

a, b) Less Than Significant

Existing noise levels in the project study area already approach or exceed the NAC at 12 receptors. Predicted noise levels in 2045 under the Build Alternative would be in the same range as existing conditions with changes in noise levels ranging from a 1 dBA decrease to a 1 dBA increase over existing levels as a result of the proposed project. Therefore, the Build Alternative would also not result in a substantial increase ($\geq$12 dBA) in noise. During construction, the proposed project would implement Caltrans standard project features PF-NOI-1 (Noise Control) and PF-NOI-2 (Noise Complaints). However, with these project features the proposed project could still have a significant impact due to construction noise. AMM-NOI-1 (Equipment Idling), AMM-NOI-2 (Stationary Equipment), AMM-NOI-3 (Noise Monitoring Program), AMM-NOI-4 (Vibratory Pile Driving), AMM-NOI-5 (Equipment Muffling), AMM-NOI-6 (Construction Staging), AMM-NOI-7 (Notification Requirements) (Chapter 2, Section 3.7.4) would minimize noise produced during construction. Vibration impacts would occur during construction from heavy equipment operations (e.g., vibratory pile driving). AMM-VIB-1 (Hydraulic Breakers) and AMM-VIB-2 (Vibration Monitoring) (Chapter 2, Section 3.7.4) will be incorporated into the construction control to minimize vibration impacts to surrounding properties, including historic structures. With the incorporation of AMMs, the proposed project would have a less than significant impact on noise or vibration levels.

c) No Impact

The proposed project would not result in a substantial permanent increase in ambient noise levels above existing levels. There are no public airports within 2 miles of the project study area and the proposed project is not covered under an airport land use plan. The closest private heliport (1221 Oak Street) is located approximately 0.2 miles north of the project and approximately 0.35 miles from locations where vibratory pile driving would occur. As a result, the proposed project is not expected to result in excessive noise levels for people residing or working near this facility.

POPULATION AND HOUSING

Would the proposed project:

Question	CEQA Determination
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact

CEQA Significance Determinations for Population and Housing

a, b) No Impact

The proposed project would not induce substantial unplanned population growth or would not result in relocations. The proposed project modifies an existing interchange to improve access and mobility. The proposed project has been designed to fit largely within existing Caltrans and City ROW. The only property acquisition is a partial property acquisition from the edge of a commercial lot in Alameda.

PUBLIC SERVICES

Would the proposed project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

Question	CEQA Determination
a) Fire protection?	No Impact
b) Police protection?	No Impact
c) Schools?	No Impact
d) Parks?	No Impact
e) Other public facilities?	Less Than Significant with Mitigation Incorporated

CEQA Significance Determinations for Public Services

a, b, c, d) No Impact

The proposed project would not impact emergency services (fire or police). Proposed project improvements would reduce congestion and improve travel and response times for emergency service providers.

A maintenance easement would be required from Laney College. However, this easement would not impact the college, its associated parking, or events held on campus.

No parks would be impacted by the proposed project. Overall, the proposed project would be beneficial to parks and recreational facilities in Oakland and Alameda due to improved bicycle and pedestrian connections to these facilities.

e) Less than Significant with Mitigation Incorporated

The proposed project does not require the construction or alteration of government facilities or other public services. The proposed project is a transportation project that does not result in unplanned growth that would require the construction of new public services.

The removal of approximately 156 on-street, publicly available parking spaces would have the potential to cause localized impacts on area businesses. This parking loss may impact businesses along city blocks where parking loss would be highest (especially 5th 6th, and Harrison streets). To offset potential localized impacts to businesses, Alameda CTC and Caltrans would work with the City of Oakland to mitigate for localized impacts to area businesses (MM-CCC-1 Parking Spaces, Chapter 2, Section 2.4.4).

RECREATION

Question	CEQA Determination
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	No Impact

CEQA Significance Determinations for Recreation

a, b) No Impact

The proposed project is a transportation project that does not require property or result in substantial changes to parks and recreation facilities. The proposed project would improve the level of safety and access to recreation facilities with the addition of new bicycle facilities and pedestrian improvements and is consistent with local goals and policies related to pedestrian and bicyclist safety. Within Neptune Park, located in Alameda, an existing sidewalk would be widened to improve safety for both pedestrians and bicyclists. New sidewalks would be added, and existing sidewalks modified to improve safety and accessibility adjacent to Chinese Garden Park in Oakland. There are no adverse physical effects on the parks because the proposed project would result in benefits. Access to the parks will be maintained at all times during construction. Neptune Park will be restored after construction. AMM-PRF-1 (Neptune Park Restoration) will ensure there are no impacts to recreational facilities.

TRANSPORTATION

Would the proposed project:

Question	CEQA Determination
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	No Impact
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	Less Than Significant Impact
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Less Than Significant Impact
d) Result in inadequate emergency access?	Less Than Significant Impact

CEQA Significance Determinations for Transportation

a) No Impact

The proposed project does not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, pedestrian, and bicycle facilities. The proposed project is consistent with the cities of Oakland and Alameda General Plans, the City of Oakland Bicycle Master Plan ("Let's Bike Oakland!"), the City of Oakland Pedestrian Master Plan ("Oakland Walks!"), the City of Alameda Bicycle Plan (updated 2010), the MTC Bay Area Plan, the Estuary Policy Plan, the Lake Merritt Station Plan, and the DOSP. There are no conflicts with applicable programs, plans, ordinances, or policies; therefore, there are no impacts. For more detailed information regarding consistency with plans, please see Chapter 2, Section 2.1 Land Use.

b, c, d) Less than Significant

The proposed project would not conflict or be inconsistent with CEQA Guidelines 15064.3(b)(2). It is projected to result in a very slight decrease in VMT between the 2045 Build and 2045 No-Build scenarios, a change of 0.11% (DKS, *VMT Analysis Memo,* December 2019), which under CEQA 15064.3 (b) 2 is presumed to be a less than significant impact. In addition, the proposed project is within a half mile of an existing high-quality transit corridor (AC Transit bus lines 51A and 1 and the Lake Merritt BART Station). For more detailed information, see Chapter 2, Section 2.8. Traffic and Transportation/Pedestrian and Bicycle Facilities. The proposed project would have a less than significant impact.

The proposed project includes several nonstandard geometric design features (HNTB, *Design Standard Decision Document*, March 2020). The Tubes would have less than standard lane widths, shoulder widths, and horizontal and vertical clearances, but it does not substantially increase hazards due to these geometric design features. The I-880 mainline would have less than standard lane and shoulder widths for a 2,000-foot stretch between the Lake Merritt Channel and Oak Street. To address these conditions, the proposed project would restripe the on-ramps to meet current standards, speeds would be reduced inside the Tubes, and project elements, such as warning signs, flashing beacons, loop detectors, variable message signs, and rumble strips are proposed which would result in a less than significant impact. For more detailed information, see Chapter 1, Section 2.2.2. Safety. The proposed project would have a less than significant impact.

The proposed project would modify several streets, including Harrison Street between 4th and 5th streets, and 5th Street between Harrison and Alice streets. A 20-foot minimum width has been identified and incorporated based on meetings with the Oakland Fire Department. The proposed project also provides a dedicated emergency access lane on Jackson Street between 5th and 6th streets at the request of the Oakland Fire Department. During construction, emergency access would be maintained to the surrounding residential and commercial properties. The proposed project has less than significant impact.

Construction activities would result in temporary impacts to congestion levels that could impact emergency service providers response and travel times. To avoid emergency service delays and to ensure all providers are aware of lane closures well in advance of their implementation, coordination would be conducted with emergency service providers and a public information program would be implemented. Proactive public information systems, such as changeable message signs, would notify travelers of pending construction activities. As a Caltrans standard project feature, a TMP would be developed to address traffic impacts from staged construction, lane closures, and specific traffic handling concerns, such as emergency access during construction (PF-TRF-1 Transportation Management Plan). With standard project features, the project could still potentially have significant impacts to transportation. AMM-TRF-1 (Parking Restrictions), AMM-TRF-2 (Temporary Parking Removal Notification), AMM-TRF-3 Laney College), and AMM-TRF-4 (AC Transit) (Chapter 2, Section 2.8.4) would be implemented to reduce transportation impacts during construction to less than significant. For more detailed information, see Chapter 2, Section 2.7. Utilities/Emergency Services.

TRIBAL CULTURAL RESOURCES

Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

Question	CEQA Determination
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	No Impact
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No Impact

CEQA Significance Determinations for Tribal Cultural Resources

a, b) No Impact

The proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074, as no tribal resources were identified through the proposed project's background research, field investigations, and tribal outreach efforts (summarized in Chapter 2, Section 2.10.2). AB 52 compliance was initiated with all nine tribal representatives from the NAHC's contact list for this proposed project via email on March 24, 2020 or with a follow-up mailed letter on March 27, 2020 for Chairperson Zwierlein (see

Chapter 4, Section 3.0 and Chapter 2, Section 2.10.2 for a detailed account of AB 52 consultation efforts). Only Mr. Galvan (Ohlone Tribe) requested AB 52 consultation.

Caltrans sent an email on June 22, 2020 with updated project information and an invitation to contact the Caltrans District Native American Coordinators if additional discussion was desired. To date, there has been no response.

Follow-up phone conversations were conducted on June 4, 2020, with two tribal representatives, Ms. Sayers (Indian Canyon Mutsun Band of Costanoan) and Chairperson Zwierlein (Amah Mutsun Tribal Band of Mission San Juan Bautista), and they are documented in Chapter 2, Section 2.10.2 and Chapter 4, Section 3.0. Six tribal representatives could not be reached via phone and email messages were sent in those cases. As a result of this round of outreach, Ms. Sayers requested a WEAT measure covering archaeological sensitivity be added to the proposed project, and Chairperson Zwierlein requested inadvertent discovery protocols be followed. Confirmation phone calls to discuss the project protocols, the addition of AMM-CUL-1 (WEAT and Sensitivity Training), and clarification that an Inadvertent Discovery Plan was not being prepared for the proposed project were conducted with Ms. Sayers' daughter, Ms. Kanyon Sayers-Rood, who was taking care of correspondence for Ms. Sayers on June 6, 2020. Ms. Sayers-Rood requested and was emailed the text of the minimization measures and was positive about the inclusion of the described measures on the call. The measures were emailed again on June 9, 2020 along with a clarification that the environmental document type is an EIR/EA not an EIR/EIS as had been previously communicated. Chairperson Zwierlein was contacted on June 6, 2020, to discuss the addition of AMM-CUL-1 (WEAT and Sensitivity Training). Chairperson Zwierlein requested and was sent via email a copy of the cultural resources minimization measures for the proposed project. On June 9, 2020, Chairperson Zwierlein was emailed a clarification that the environmental document is an EIR/EA and not an EIR/EIS as had been previously communicated.

UTILITIES AND SERVICE SYSTEMS

Would the proposed project:

Question	CEQA Determination
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	Less Than Significant Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	No Impact
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	No Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No Impact

CEQA Significance Determinations for Utilities and Service Systems

a) Less Than Significant

Under the proposed project, there would be relocation of existing utilities and service systems and construction of new service system connections. Construction activities in Oakland would result in temporary impacts to both underground and overhead utilities and service systems. New service system connections and relocated utilities would be placed to avoid and minimize impacts to environmental resources. Installation of relocated utilities would be done within the project footprint and within areas that are already disturbed by the project where feasible. Utility and service system relocations could require trenching to a depth of approximately six feet, including protecting in place or relocating existing utilities and installing new utilities. There would be no construction-related utility or service system impacts in Alameda. Utility and service system installation, protection, or relocation may require temporary outages that could have short-term impacts on customers.

An existing EBMUD recycled water transmission line, city of Oakland sewer and storm drain, PG&E gas and electric, and AT&T fiber optic would be protected in place or temporarily or permanently relocated depending on its location. The proposed project would incorporate permanent treatment BMPs such as bioretention or biofiltration for stormwater management purposes. Temporary construction site BMPs would be implemented to reduce stormwater impacts associated with construction activities. Stormwater generated from the site would continue to drain to the cities of Oakland and Alameda’s storm sewer systems as it does currently. For more detailed information, see Chapter 1, Section 4.1.3. Utilities, Table 1-3.

The proposed project would not result in the construction of any new buildings or developments, and it would not require new water or wastewater treatment facilities. Any construction-related materials or debris, including asphalt, would be disposed of or recycled at an appropriately certified landfill or transfer station facility.

Caltrans would implement standard project feature PF-COM-1 (Utility Relocations). With this project feature, the proposed project could still potentially result in significant impacts during construction. Installation of new or relocated utilities would implement all construction AMMs to avoid and minimize impacts to traffic, biological resources, cultural resources, hazards and hazardous materials, water and air quality, and noise and vibration. With the implementation of construction-related AMMs, the proposed project would have a less than significant impact as a result of utility and service system relocation or installation.

b, c, d, e) No Impact

The proposed project would not exceed wastewater treatment requirements. EBMUD provides water service for Oakland residents and businesses, including those in the project study area. The proposed project would comply with all regulations regarding solid waste.

WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Question	CEQA Determination
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	No Impact

CEQA Significance Determinations for Wildfire

a, b, c, d) No Impact

The proposed project is not in a high fire hazard zone according to the California Department of Forestry and Fire Protection and is not near State Responsibility Areas. The proposed project is located approximately 2.4 miles from the nearest very high fire hazard zone. Therefore, the proposed project would have no impact on wildfire, nor would it exacerbate wildfire risks.

MANDATORY FINDINGS OF SIGNIFICANCE

Question	CEQA Determination
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	Significant and Unavoidable Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	No Impact
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	Less Than Significant Impact

CEQA Significance Determinations for Mandatory Findings of Significance

a) Significant and Unavoidable Impact

The Build Alternative would have a significant and unavoidable impact due to eliminating parts of the Posey Tube approach and the Oakland Waterfront Warehouse District, which are historic resources and are important examples of major periods in California history. The Build Alternative would demolish the Posey Tube's eastern wall, a portion of the western wall, and the staircase at the Oakland approach, as well as the existing concrete sidewalk and curb on the west (4^{th} Street) side of the Oakland Portal building. The Oakland Waterfront Warehouse District will remain listed on the NRHP and CRHR. The Posey Tube will still remain eligible for listing on the NRHP and CRHR.

The proposed project would have no impact on prehistoric or historic archaeological resources. Therefore, the proposed project would not eliminate important examples of the major periods of California prehistory. The Build Alternative would have no impact on biological resources.

b) No Impact

The Build Alternative would not result in cumulatively considerable impacts for any environmental resource.

c) Less Than Significant Impact

The Build Alternative would have less than significant impacts on aesthetics, air quality, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, paleontology, and transportation. Although these impacts are adverse, they are not of sufficient magnitude to be considered substantial.

Section 3.0. Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to GHG emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2.

Two terms are typically used when discussing how we address the impacts of climate change: "GHG mitigation" and "adaptation." GHG mitigation covers the activities and policies aimed at reducing GHG emissions to limit or "mitigate" the impacts of climate change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels). This analysis includes a discussion of both.

3.1. REGULATORY SETTING

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

3.1.1. Federal

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.

NEPA (42 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.

FHWA recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2019). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values—"the triple bottom line of sustainability" (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate

Average Fuel Economy (CAFE) Standards. This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the CAFE program based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Energy Policy Act of 2005, 109th Congress H.R.6 (2005–2006): This act sets forth an energy research and development program covering: 1) energy efficiency; 2) renewable energy; 3) oil and gas; 4) coal; 5) the establishment of the Office of Indian Energy Policy and Programs within the Department of Energy; 6) nuclear matters and security; 7) vehicles and motor fuels, including ethanol; 8) hydrogen; 9) electricity; 10) energy tax incentives; 11) hydropower and geothermal energy; and 12) climate change technology.

The U.S. EPA, in conjunction with the National Highway Traffic Safety Administration (NHTSA), is responsible for setting GHG emission standards for new cars and light-duty vehicles to significantly increase the fuel economy of all new passenger cars and light trucks sold in the United States. Fuel efficiency standards directly influence GHG emissions.

3.1.2. State

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and executive orders including, but not limited to, the following:

EO S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to 1) year 2000 levels by 2010, 2) year 1990 levels by 2020, and 3) 80% below year 1990 levels by 2050. This goal was further reinforced with the passage of AB 32 in 2006 and SB 32 in 2016.

AB 32, Chapter 488, 2006, Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3-05, while further mandating that the CARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code [H&SC] Section 38551[b]). The law requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

EO S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard (LCFS) for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10% by the year 2020. CARB re-adopted the LCFS regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the governor's 2030 and 2050 GHG reduction goals.

SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires CARB to set regional emissions reduction targets for passenger vehicles. The MPO for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land use, and housing policies to plan how it will achieve the emissions target for its region.

SB 391, Chapter 585, 2009, California Transportation Plan (CTP): This bill requires the state's long-range transportation plan to identify strategies to address California's climate change goals under AB 32.

EO B-16-12 (March 2012) orders State entities under the direction of the Governor, including CARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

EO B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40% below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent (MMTCO2e). GHGs differ in how much heat each trap in the atmosphere (global warming potential or GWP). CO2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called “carbon dioxide equivalent” (CO2e). The GWP of CO_2 is assigned a value of 1, and the GWP of other gases is assessed as multiples of CO_2. Finally, it requires the Natural Resources Agency to update the state’s climate adaptation strategy, Safeguarding California, every three years, and to ensure that its provisions are fully implemented.

SB 32, Chapter 249, 2016 codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40% below 1990 levels by 2030.

SB 1386, Chapter 545, 2016 declared “it to be the policy of the state that the protection and management of natural and working lands … is an important strategy in meeting the state’s GHG reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands.”

AB 134, Chapter 254, 2017 allocates GHG Reduction Funds and other sources to various clean vehicle programs, demonstration/pilot projects, clean vehicle rebates and projects, and other emissions-reduction programs statewide.

SB 743, Chapter 386 (September 2013): This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on vehicle miles travelled, to promote the state’s goals of reducing GHG emissions and traffic related air pollution and promoting multimodal transportation while balancing the needs of congestion management and safety.

SB 150, Chapter 150, 2017, Regional Transportation Plans: This bill requires CARB to prepare a report that assesses progress made by each MPO in meeting their established regional GHG emission reduction targets.

EO B-55-18 (September 2018) sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

EO N-19-19 (September 2019) advances California’s climate goals in part by directing the California State Transportation Agency to leverage annual transportation spending to reverse the trend of increased fuel consumption and reduce GHG emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This EO also directs CARB to encourage automakers to produce more clean vehicles, formulate ways to help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

3.2. ENVIRONMENTAL SETTING

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 project study area has well-developed road and street network is mainly residential and commercial buildings, with some governmental and institutional uses. Traffic congestion during peak hours is common in the project study area. MTC's Plan Bay Area 2040 (RTP) guides transportation and housing development in the project study area. The project study area is also covered by city and county climate plans and sustainability elements of general plans. A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and the CARB does so for the state, as required by H&SC Section 39607.4.

3.2.1. National GHG Inventory

The U.S. EPA prepares a national GHG inventory every year and submits it to the United Nations in accordance with the Framework Convention on Climate Change. The inventory provides a comprehensive accounting of all human-produced sources of GHGs in the United States, reporting emissions of CO_2, CH_4, N_2O, HFCs, perfluorocarbons, SF_6, and nitrogen trifluoride. It also accounts for emissions of CO_2 that are removed from the atmosphere by "sinks" such as forests, vegetation, and soils that uptake and store CO_2 (carbon sequestration). The 1990–2016 inventory found that of 6,511 MMTCO2e GHG emissions in 2016, 81% consist of CO_2, 10% are CH4, and 6% are N_2O; the balance consists of fluorinated gases (Figure 3-1, U.S. EPA 2018). In 2016, GHG emissions from the transportation sector accounted for nearly 28.5% of U.S. GHG emissions.

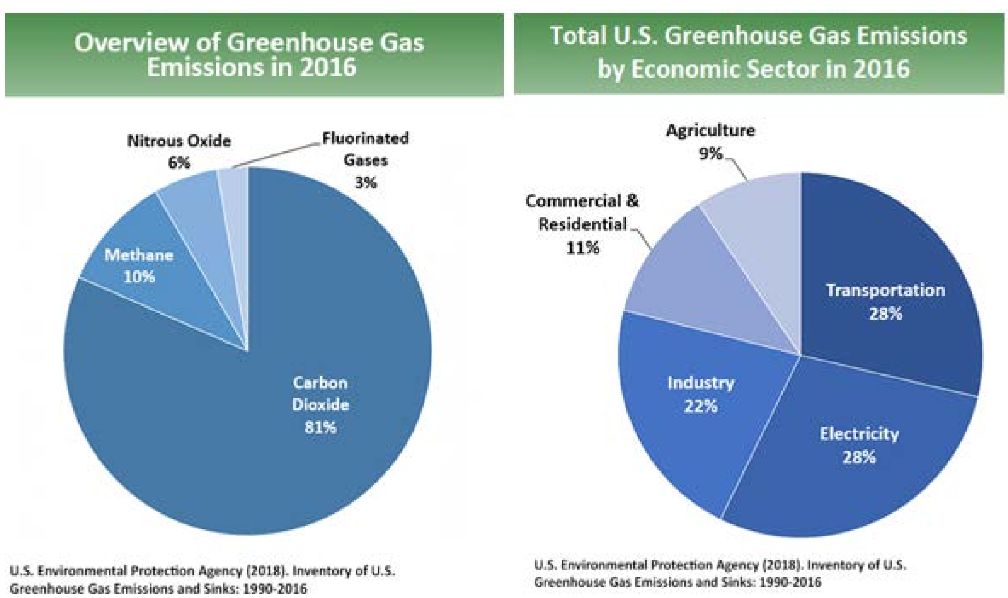


Figure 3-1. U.S. 2016 Greenhouse Gas Emissions

3.2.2. State GHG Inventory

CARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2019 edition of the GHG emissions inventory found total California emissions of 424.1 MMTCO2e for 2017, with the transportation sector responsible for 41% of total GHGs. It also found that overall statewide GHG emissions declined from 2000 to 2017 despite growth in population and state economic output (CARB 2019a), see Figure 3-2 and Figure 3-3.

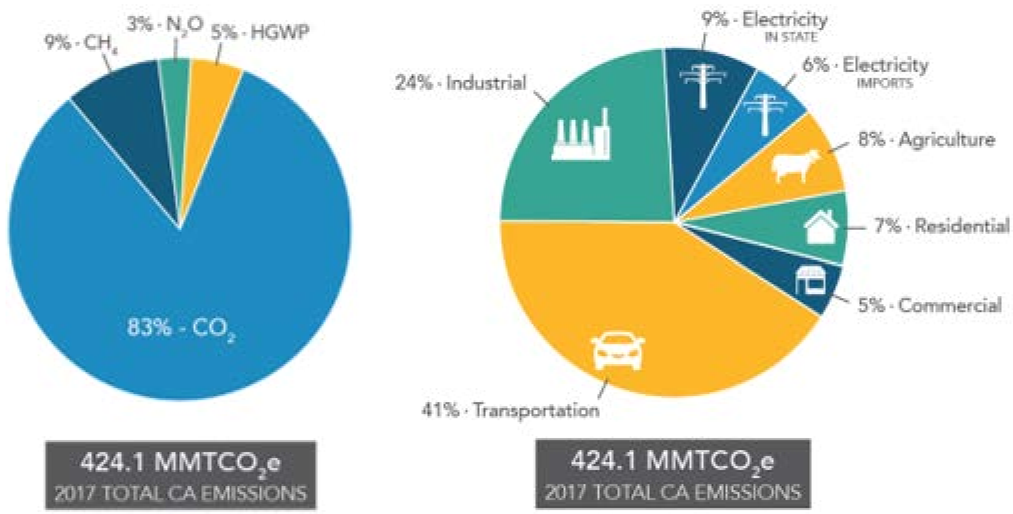
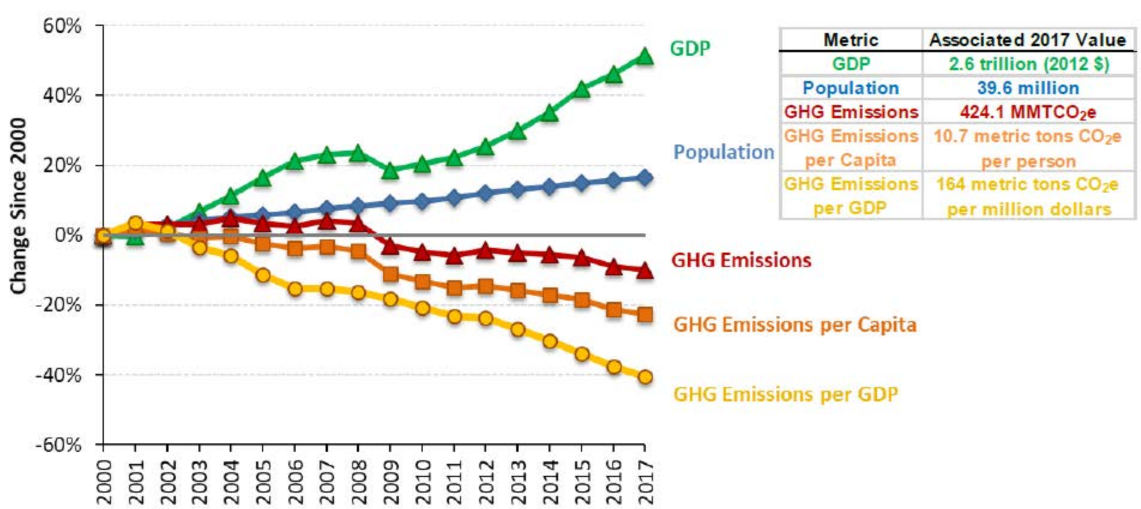


Figure 3-2. California 2017 Greenhouse Gas Emissions



Source: CARB 2019b

Figure 3-3. Change in California GDP, Population, and GHG Emissions Since 2000

AB 32 required CARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every five years. CARB adopted the first scoping plan in 2008. The second updated plan, California's 2017 Climate Change Scoping Plan, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions.

3.2.3. Regional Plans

CARB sets regional targets for California's 18 MPOs to use in their RTP/SCS to plan future projects that will cumulatively achieve GHG reduction goals. Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The proposed project is included in MTC's RTP/SCS for the Bay Area. The regional reduction target for MTC is 19% by 2035 (CARB 2019c).

Alameda County adopted the Alameda County Climate Action Plan for Government Services and Operations in 2010. This action plan specifies 16 commitments to climate protection that provide overarching vision, a goal of 15% GHG reductions by 2020, and 80 recommended actions that will enable the County to reach these goals. In their 2019 Climate Action and Resiliency Plan (CARP), the City of Alameda proposed GHG reduction and climate change adaptation measures for transportation, buildings, carbon sequestration, and waste management to achieve a goal of 50% reduction in GHG emissions below 2005 levels by 2030. The City of Alameda also has drafted an update to their General Plan for the Conservation and Climate Action Element, which specifies objectives and policies to implement comprehensive climate action (including net zero GHG emissions), reduce GHG emissions from transportation and buildings, make Alameda a zero waste community, and increase resilience to climate change.

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These thresholds (updated in May 2017) were designed to establish the level at which BAAQMD believed GHG emissions would cause significant environmental impacts under CEQA. The significance thresholds identified by BAAQMD for GHGs are summarized in Table 3-1.

Table 3-1. BAAQMD GHG Significance Thresholds

Pollutant	2020 Threshold	2030 Threshold
GHG Annual Emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020)	Compliance with a Qualified GHG Reduction Strategy OR 660 metric tons annually or 2.8 metric tons per capita (for 2030)*

Note: BAAQMD does not have a recommended post-2020 GHG threshold; therefore, the threshold listed is the original threshold adjusted downward by 40% to achieve 2030 Statewide GHG reduction goals.

Source: BAAQMD (2017)

The City of Oakland adopted an Energy and Climate Action Plan in 2012, which establishes GHG reduction actions, and a framework for implementation, monitoring, and reporting. The City of Oakland's SLR Roadmap identified assessment needs, provides guidance for developing an SLR adaptation plan for Oakland, and identifies opportunities for coordination.

3.3. PROJECT ANALYSIS

This section summarizes information from the SLR Memo (May 2020) and the AQR (May 2020).

GHG emissions from transportation projects can be divided into those produced during operation of the State Highway System and those produced during construction. The primary GHGs produced by the transportation sector are CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of CH_4 and N_2O are emitted during fuel combustion. In addition, a small amount of HFC emissions are included in the transportation sector.

The CEQA Guidelines generally address GHG emissions as a cumulative impact due to the global nature of climate change (PRC, § 21083[b][2]). As the California Supreme Court explained, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself." (Cleveland National Forest Foundation v. San Diego Assn. of Governments [2017] 3 Cal.5th 497, 512.) In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064[h][1] and 15130).

To make this determination, the incremental impacts of the proposed project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment.

3.3.1. Operational Emissions

GHG emissions were estimated using the CT-EMFAC 2017 model for the baseline and future years for the No-Build and Build Alternative based on VMT. The CO2e for the No-Build and Build Alternative and year scenario was calculated by multiplying the total emissions (grams/day) of CO_2, CH_4, N_2O by their GWPs and converting to annual metric tons of CO2e. Table 3-2 lists the GHG emissions for the baseline (2015), opening (2025), horizon (2040), and design year (2045). As shown in Table 3-2, with or without the proposed project, the mobile GHG emissions in the area would decrease due to the improvements in vehicle technology and reformulation of fuels. Modeling shows that the Build Alternative would have lower GHG emissions than the No-Build Alterative for all future years.

Table 3-2. Modeled Annual CO2e Emissions and Vehicle Miles Traveled, by Alternative

Measure	Baseline 2015	No-Build 2025	Build 2025	No-Build 2040	Build 2040	No-Build 2045	Build 2045
GHG emissions (metric tons, MT, CO2e)	114,861	97,934	97,823	83,598	83,435	84,427	84,281
Difference between No-Build and Build (MT CO2e)			-112		-163		-146
Change from baseline (MT CO2e)			-17,038		-31,427		-30,581

Measure	Baseline 2015	No-Build 2025	Build 2025	No-Build 2040	Build 2040	No-Build 2045	Build 2045
Average daily VMT	677,973	758,440	757,430	822,125	821,198	843,353	842,454
Average annual VMT	235.2 million	263.2 million	262.8 million	285.3 million	285.0 million	292.6 million	292.3 million

Source: Illingworth & Rodkin using CT-EMFAC 2017 version 1.0.2 (2020)

Annual VMT values derived from Daily VMT values multiplied by 347, per CARB methodology (CARB 2008)

The Build Alternative would have overall lower operational GHG emissions when compared to the baseline. When compared to the No-Build Alternative conditions, the Build Alternative emissions would be similar or slightly lower. The TSM and TDM measures implemented by the Build Alternative, in particular the 1.52 miles of separated bicycle facilities (Classes I, II, IV), 0.32 miles of new sidewalks, and 1.49 miles of new bicycle/pedestrian walkway in the Webster Tube, will further reduce GHG emissions with the Build Alternative. With the reduction in operational GHG emissions, the Build Alternative would not exceed the 2020 or 2030 BAAQMD significance threshold for GHGs.

While EMFAC (and the CT-EMFAC 2017 model that is based on it) has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its emission rates are based on tailpipe emission test data and have limitations. The CO2e emissions estimates are used for comparison of alternatives. However, the model does not account for factors such as the vehicle operation mode (e.g., rate of acceleration) and the vehicles' aerodynamics, which would influence CO2e emissions. CARB's GHG Inventory follows the IPCC guideline by assuming complete fuel combustion, while still using EMFAC 2017 emission factors to calculate CH_4 and N_2O emissions.

3.3.2. Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved TMPs, and changes in materials, the GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

Construction emissions were estimated for the Build Alternative using the latest Sacramento Metropolitan Air Quality Management District's RCEM, which uses EMFAC 2017 emission factors. Construction for the Build Alternative is scheduled to last approximately 36 months. Construction would occur over two stages with Stage 1 focusing on activities south of I-880 (the construction of the Jackson Horseshoe on-ramp) and Stage 2 focusing on activities north of I-880 (the removal of the Broadway off-ramp and construction of a through 6th Street). Construction staging would be done within the project footprint, primarily within the Caltrans ROW underneath I-880, as well as next to the Oak Street off-ramp and at the Alameda entrance to the Posey Tube. The total expected GHG emissions during construction is 6,384.3 MTCO2e (comprised of the GWP of CO_2, CH_4, and N_2O). Table 3-3 shows the modeled CO2e emissions by construction phase. Calculation methods and assumptions are provided in the AQR.

Table 3-3. Greenhouse Gas Emissions During Construction

Activities	CO2e (MT/phase)
1A: Clearing, grubbing, mobilization, 5th Street entrance, Webster Tube construction (walkway and striping)	795.88
1B: Retaining walls 1-4, 6, 8L, 8R, horseshoe, connect Posey Tube to horseshoe, reconstruct Jackson off-ramp	2343
1C: Construct 5th Street curb/gutter, sidewalk and pavement	62.5
1D: Retaining wall 9, overhead signs, restripe Posey Tube and Harrison Street	290.25
Phase 1 Average Daily Emissions	9.19 MT/day
Phase 1 Total Construction Emissions	3,491.62
2A: Widen Oak Street Off-ramp and prepare 6th Street, retaining walls 5, 7, and 10	1,194.55
2B: Remove Broadway off-ramp structure and approach	418.61
2C: 6th Street	896.91
2D: Construct bicycle path and cycle tracks on local streets, traffic signals	357.61
2E: Landscaping	25.19
Phase 2 Average Daily Emissions	7.89 MT/day
Phase 2 Total Construction Emissions	2,892.68
Total	**6,384.30**

Construction-phase emissions for the Build Alternative would exceed the BAAQMD Significance Thresholds for GHGs. Averaged over a 36 month construction period, the Build Alternative would average 2,128.1 MT annually. This would exceed the 2020 BAAQMD threshold of 1,100 MT of CO2e for annual GHG emissions.

The AMMs would address energy efficiency, material use/choice, fuel consumption, and construction methods and are included in the project to reduce the GHG emissions and potential climate change impacts.

All construction contracts include Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, which require contractors to comply with all laws applicable to the project and to certify they are aware of and will comply with all CARB emission reduction regulations; and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

Standard Specification 10-4 requires that the project will institute water conservation measures and prepare a water conservation plan in the event of a water shortage or mandated water rationing.

AMM-AQ-2 will be implemented to minimize exhaust emissions, which will reduce CO2e produced during construction. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (zero to 25 mph) and speeds greater than 55 mph; the most severe emissions occur from zero to 25 mph. PF-TRF-1 will implement a TMP to minimize disruptions to motor vehicle, transit, bicycle, and pedestrian delays during construction to minimize detour length and emissions from idling vehicles.

Additionally, the following measures will be implemented to minimize CO2e emissions during construction.

AMM-GHG-1 Tire Pressure	All motor vehicles used as part of the project, including haul trucks and off-road equipment, will maintain proper tire pressures.
AMM-GHG-2 Recycling	The contractor will maximize waste diversion to recycling and composting, including construction materials, landscape materials, and food waste. The contractor will provide recycling and composting for use by on-site workers. The contractor will also maximize the use of recycled materials in project construction, such as recycled fiber for erosion control, concrete, water, steel, polyvinyl chloride, and paint, that meet the requirements of Caltrans Standard Specifications.
AMM-GHG-3 Local Sourcing	The contractor will, where feasible, use local sources of materials and local disposal sites to reduce emissions associated with transport of construction materials to and from the site.

3.3.3. CEQA Conclusion

While the proposed project would result in GHG emissions during construction, it is anticipated that the proposed project would result in a decrease in operational GHG emissions. The GHG emissions during construction (total of 6,384.30 MT CO2e) would be offset by the emissions reductions during the first year of project operation (-17,038 MT CO2e in 2025). The proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. With implementation of construction GHG-reduction measures, the impact would be less than significant.

Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

3.4. GREENHOUSE GAS REDUCTION STRATEGIES

3.4.1. Statewide Efforts

Major sectors of the California economy, including transportation, will need to reduce emissions to meet the 2030 and 2050 GHG emissions targets. Former Governor Edmund G. Brown promoted GHG reduction goals that involved 1) reducing today's petroleum use in cars and trucks by up to 50%; 2) increasing from one-third to 50% our electricity derived from renewable sources; 3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; 4) reducing the release of methane, black carbon, and other short-lived climate pollutants; 5) managing farms and rangelands, forests, and wetlands so they can store carbon; and 6) periodically updating the state's climate adaptation strategy, *Safeguarding California* (see Figure 3-4).

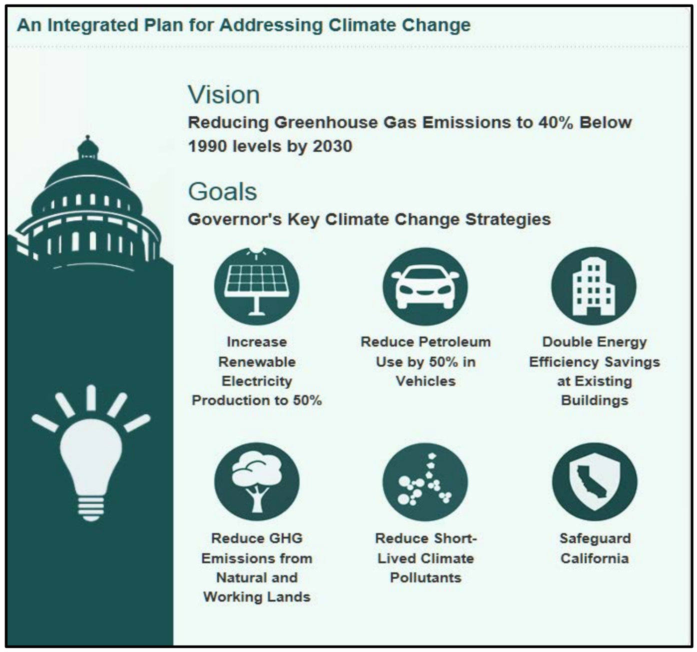


Figure 3-4. California Climate Strategy

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of VMT. A key state goal for reducing GHG emissions is to reduce today's petroleum use in cars and trucks by up to 50% by 2030 (State of California 2019).

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove carbon dioxide from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

3.4.2. Caltrans Activities

Caltrans continues to be involved on the Governor’s Climate Action Team as the CARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set an interim target to cut GHG emissions to 40% below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

CALIFORNIA TRANSPORTATION PLAN

The CTP 2040 is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. In 2016, Caltrans completed the CTP 2040, which establishes a new model for developing ground transportation systems, consistent with CO_2 reduction goals. It serves as an umbrella document for all the other statewide transportation planning documents. Over the next 25 years, California will be working to improve transit and reduce long-run repair and maintenance costs of roadways and developing a comprehensive assessment of climate-related TDM and new technologies rather than continuing to expand capacity on existing roadways.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

CALTRANS STRATEGIC MANAGEMENT PLAN

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

FUNDING AND TECHNICAL ASSISTANCE PROGRAMS

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several sustainable transportation planning grants. These grants encourage local and regional multimodal transportation, housing, and land-use planning that furthers the region's RTP/SCS; contribute to the State's GHG reduction targets and advance transportation-related GHG emission reduction project types/strategies; and support other climate adaptation goals (e.g., *Safeguarding California*).

CALTRANS POLICY DIRECTIVES AND OTHER INITIATIVES

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. Caltrans *Activities to Address Climate Change* (April 2013) provides a comprehensive overview of Caltrans' statewide activities to reduce GHG emissions resulting from agency operations.

3.4.3. Project-level GHG Reduction Strategies

The following measures would also be implemented in the proposed project to reduce GHG emissions and potential climate change impacts from the proposed project. Measures to address construction-phase GHG emissions are addressed under Chapter 3, Section 3.3.2.

The Build Alternative would result in less CO2e emissions during project operation due to the improved traffic flow when compared to the No-Build Alternative and existing conditions. In addition to the modelled reductions in CO2e, the proposed project design includes improvements to bicycle and pedestrian infrastructure and system connectivity, to support and encourage non-motorized modes of travel. The measures below would address energy efficiency, carbon sequestration, and heat island reduction and are included in the proposed project to reduce the GHG emissions and potential climate change impacts.

AMM-GHG-4 Landscaping	Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. The project will include plantings in the medians and roadsides. These plantings will help offset potential CO_2 emissions increase through carbon sequestration and reducing the heat island effect.
AMM-GHG-5 Lighting	The project will incorporate the use of energy-efficient lighting and traffic signals.

In addition to AMM-GHG-4 (Landscaping), AMM-AS-4 (Evaluate and Replace Trees) will maximize vegetative cover, including landscaping and trees and will minimize tree removals during design and construction. Three native trees will be replaced for each one removed and non-native trees will be replaced if feasible.

3.5. ADAPTATION

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

3.5.1. Federal Efforts

Under NEPA assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The U.S. Global Change Research Program (USGCRP) delivers a report to Congress and the president every four years, in accordance with the Global Change Research Act of 1990 (15 U.S.C. ch. 56A § 2921 et seq). The Fourth National Climate Assessment, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways." Chapter 12, "Transportation," presents a key discussion of vulnerability assessments. It notes that "asset owners and operators have increasingly conducted more focused studies of particular assets that consider multiple climate hazards and scenarios in the context of asset-specific information, such as design lifetime" (USGCRP 2018).

The U.S. DOT Policy Statement on Climate Adaptation in June 2011 committed the federal DOT to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions" (U.S. DOT 2011).

FHWA order 5520 (Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events, December 15, 2014) established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

3.5.2. State Efforts

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. California's *Fourth Climate Change Assessment* (2018) is the state's effort to "translate the state of climate science into useful information for action" in a variety of sectors at both statewide and local scales. It adopts the following key terms used widely in climate change analysis and policy documents:

- Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- Adaptive capacity is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."
- Exposure is the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.
- Resilience is the "capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience". Adaptation actions contribute to increasing resilience, which is a desired outcome or state of being.
- Sensitivity is the level to which a species, natural system, or community, government, etc., would be affected by changing climate conditions.
- Vulnerability is the "susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt." Vulnerability can increase because of physical (built and environmental), social, political, and/or economic factor(s). These factors include, but are not limited to ethnicity, class, sexual orientation and identification, national origin, and income inequality. Vulnerability is often defined as the combination of sensitivity and adaptive capacity as affected by the level of exposure to changing climate.

Several key state policies have guided climate change adaptation efforts to date. Recent state publications produced in response to these policies draw on these definitions.

EO S-13-08, issued by then-governor Arnold Schwarzenegger in November 2008, focused on SLR and resulted in the California Climate Adaptation Strategy (2009), updated in 2014 as Safeguarding California: Reducing Climate Risk (Safeguarding California Plan). The Safeguarding California Plan offers policy principles and recommendations and continues to be revised and augmented with sector-specific adaptation strategies, ongoing actions, and next steps for agencies.

EO S-13-08 also led to the publication of a series of SLR assessment reports and associated guidance and policies. These reports formed the foundation of an interim State of California *Sea-Level Rise Interim Guidance Document* (SLR Guidance) in 2010, with instructions for how state agencies could incorporate "SLR projections into planning and decision making for projects in California" in a consistent way across agencies. The guidance was revised and augmented in 2013. *Rising Seas in California – An Update on Sea-Level Rise Science* was published in 2017 and its updated projections of SLR and new understanding of processes and potential impacts in California were incorporated into the State of California *Sea-Level Rise Guidance Update* in 2018.

EO B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change other than SLR also threaten California's infrastructure. At the direction of EO B-30-15, the Office of Planning and Research published Planning and Investing for a Resilient California: A Guidebook for State Agencies in 2017, to encourage a uniform and systematic approach. Representatives of Caltrans participated in the multi-agency, multidisciplinary technical advisory group that developed this guidance on how to integrate climate change into planning and investment.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group, which in 2018 released its report, *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California.* The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts.

3.5.3. Caltrans Adaptation Efforts

CALTRANS VULNERABILITY ASSESSMENTS

Caltrans is conducting climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects including precipitation, temperature, wildfire, storm surge, and SLR. The approach to the vulnerability assessments was tailored to the practices of a transportation agency, and involves the following concepts and actions:

- *Exposure:* Identify Caltrans assets exposed to damage or reduced service life from expected future conditions.
- *Consequence:* Determine what might occur to system assets in terms of loss of use or costs of repair.
- *Prioritization:* Develop a method for making capital programming decisions to address identified risks, including considerations of system use and/or timing of expected exposure.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments will guide analysis of at-risk assets and development of adaptation plans to reduce the likelihood of damage to the State Highway System, allowing Caltrans to both reduce the costs of storm damage and to provide and maintain transportation that meets the needs of all Californians.

3.5.4. Project Adaptation Analysis

This section summarizes information from the SLR Memo (May 2020). Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding, the increased frequency and intensity of storms and wildfires, rising temperatures, and rising sea levels. Caltrans is actively engaged in working towards identifying these risks throughout the state and will work to incorporate this information into all planning and investment decisions as directed in EO B-30-15. The following sections analyze potential adaptation measures that could be implemented to improve the project footprints' resiliency to SLR, changes to floodplain characteristics, and wildfire. The need for potential adaptation measures was evaluated where SLR may affect the proposed project, based on Caltrans' *Guidance on Incorporating Sea Level Rise – For use in the planning and development of Project Initiation Documents* (2011).

SEA-LEVEL RISE

Although the proposed project is not in the coastal zone, portions of the proposed project are subject to BCDC jurisdiction and are susceptible to inundation (flooding) from future SLR. Elevations within the project footprint range from sea level to 35 feet in Oakland, and from sea level to 13 feet in Alameda (all elevations are in NAVD 88). The proposed project was assessed in the SLR Memo (May 2020) to determine the extent to which it would be affected by SLR and if there were adaptation measures that were reasonable and feasible to incorporate into the proposed project.

With the completion of all project-related construction activities by 2027, proposed project elements are designed to accommodate public use through 2077. The PDT reviewed the proposed project's design elements and decided on a project design life of 50 years, a SLR scenario with high levels of CO_2e emissions, and a medium-to-high risk aversion. Based on a SLR scenario with high levels of CO_2e emissions and a medium-to-high risk aversion, SLR in the year 2077 would be 4.3 feet (SLR Memo, May 2020). When combined with mean high high water (with an elevation of 6.4 feet), water surface elevation would be 10.7 feet. Under these conditions, the proposed project would be prone to inundation in the project footprint and project study area as shown in Figure 3-5 and Figure 3-6. The elevation 10.7 feet does not account for events such as El Niño, storm surges, or King Tides. Areas of the project footprint that are at or below 10.7 feet would be flooded by SLR in 2077, including areas adjacent to the 5th Street on-ramp to I-880 near the Lake Merritt Channel, and a majority (approximately 70%) of the project footprint in the City of Alameda.

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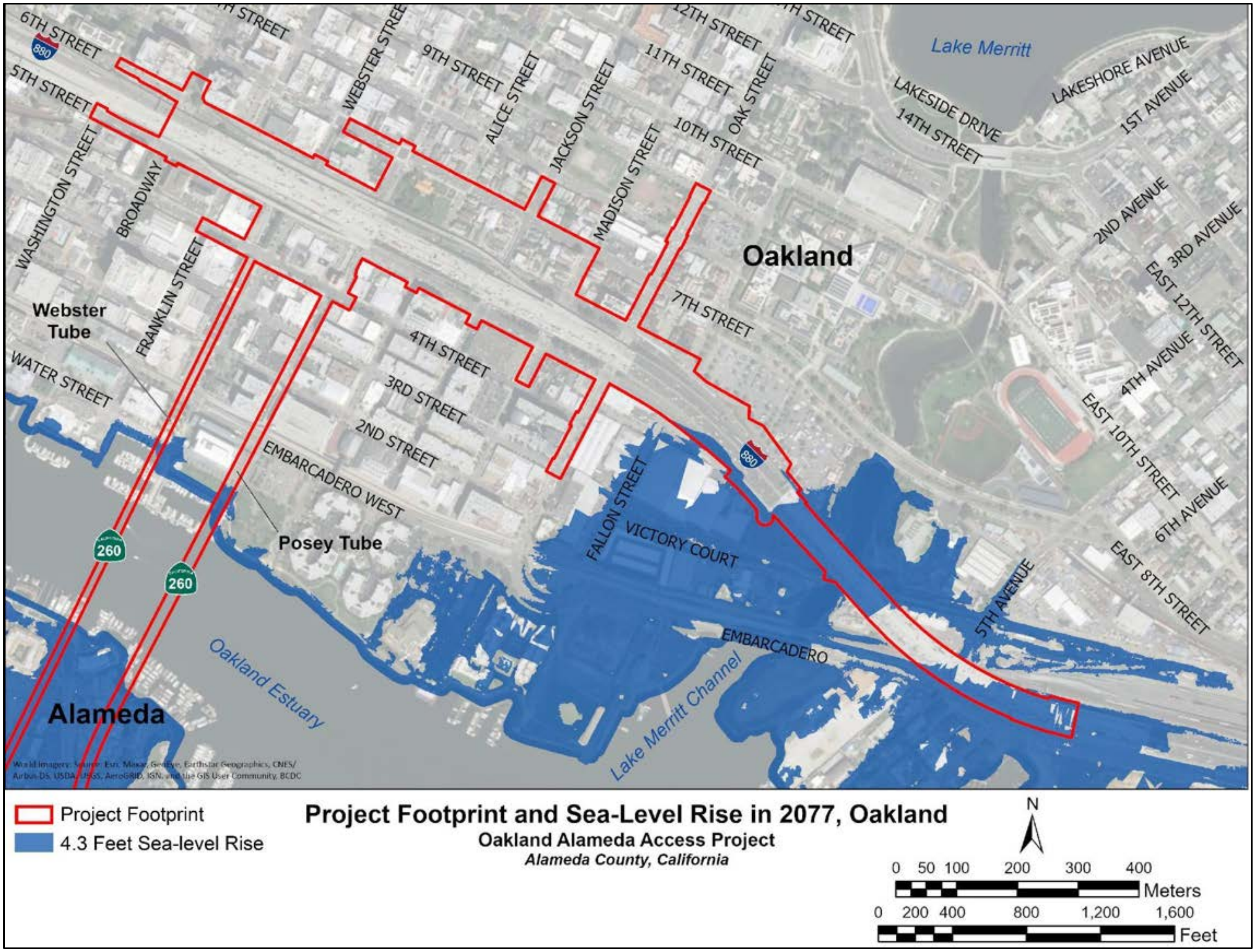

Source: HNTB (2020)

Figure 3-5. Project Footprint and SLR in 2077 in Oakland

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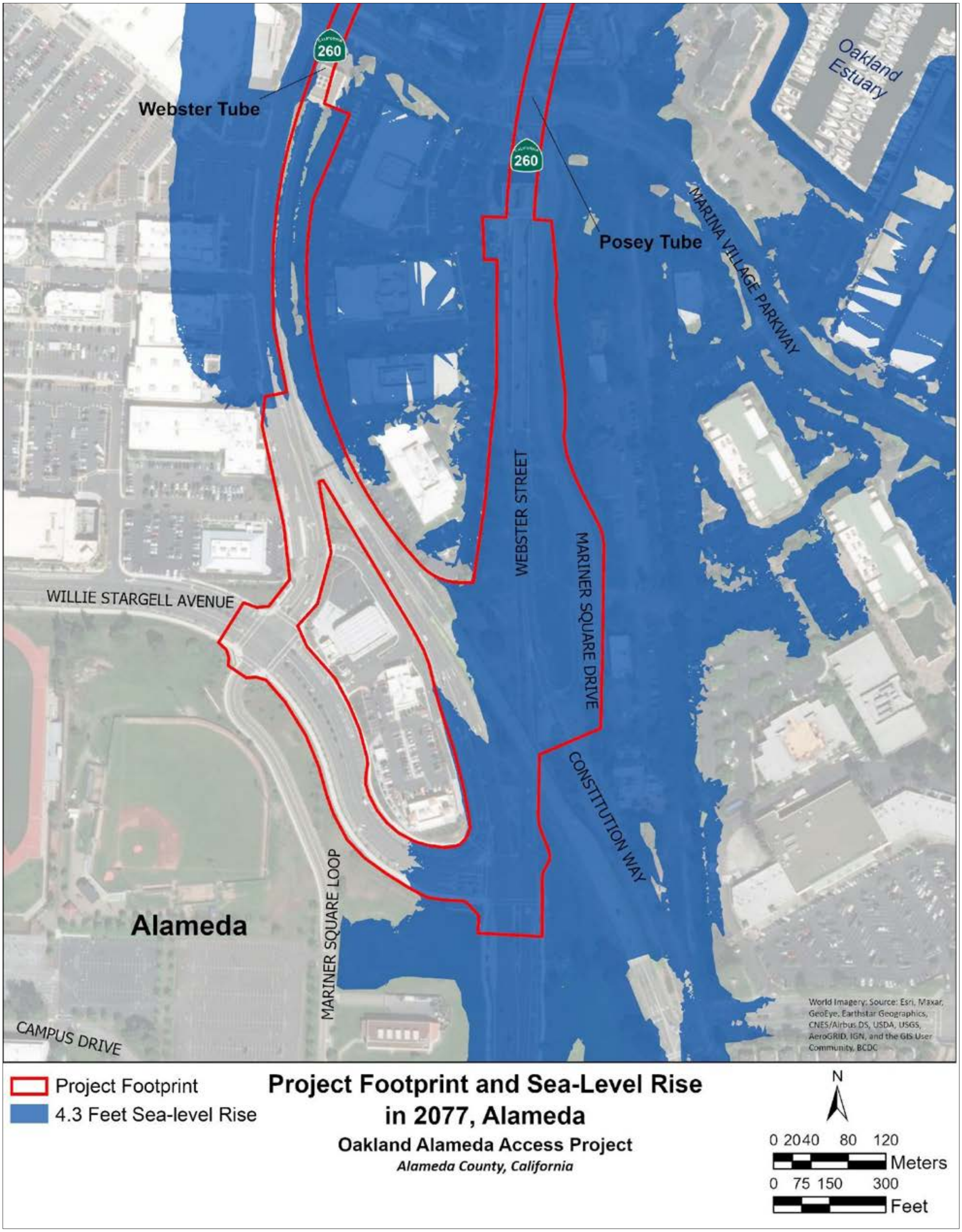

Source: HNTB (2020)

Figure 3-6. Project Footprint and SLR in 2077 in Alameda

Based on Caltrans Guidance, 10 steps and factors were used to inform whether the proposed project should consider implementing SLR adaptation measures. These 10 factors were categorized as supporting incorporating or not incorporating SLR adaptation measures for the cities of Oakland and Alameda, as shown in Table 3-4 and Table 3-5 respectively. Projects that have a longer design life (Factor 1) of greater than 20 years should include further analysis of potential adaptation measures to incorporate. These projects have a very high likelihood of being impacted by SLR during their lifespan. The proposed project has a design life of 50 years, which increases the likelihood of being impacted by SLR.

The proposed project routes in both the cities of Oakland and Alameda were determined to be non-critical routes for interstate or commercial goods movement (Factor 4), which makes it less of a priority to incorporate adaptation measures. The proposed project includes elements that would reduce pedestrian-vehicle conflicts. Delaying the project to incorporate SLR adaptation measures is not desirable as it would result in a delay in improving traveler safety (Factor 6). SLR would require substantial expenditures of public funds for both the cities of Oakland and Alameda to address increased maintenance costs and repairs (Factor 7), so incorporating adaptation measures into the current project could result in lower costs over the long term. Both in Alameda and Oakland, the proposed project is a substantial, linear project that is important to the local community (Factor 8), and, therefore, is more important to address SLR than other projects at a single point location. Incorporation of SLR adaptation measures could substantially increase interconnectivity issues between Caltrans infrastructure and local roadways (Factor 9), making it more challenging to address in the proposed project. For Factor 10, both in Oakland and Alameda, SLR adaptation measures would result in secondary environmental impacts that would require substantial additional environmental analysis, permitting, regulatory coordination, and property acquisition, making it more challenging to incorporate into the proposed project.

Factors 2, 3, and 5 vary by city. Implementing SLR adaptation measures should be more seriously considered for projects where the State Highway System and local road networks do not have alternate or redundant transportation routes (Factor 2). Travel delays will be more substantial where there is inundation, in comparison to intermittent wave splashing (Factor 3). If the route is vital for emergency evacuations, and SLR impacts would greatly increase emergency response time, the project should incorporate SLR adaptation measures (Factor 5). These are discussed for each city after Table 3-4 and Table 3-5.

Table 3-4. Factors to Consider in Whether to Incorporate SLR Adaptation Measures into Project Programming and Design (Oakland)

Factor	Towards Incorporating SLR into Project Design		— —	Towards Not Incorporating SLR into Project Design	
1. Project design life	Long (20+ years)	✓		Short (less than 20 years)	
2. Redundancy/ alternative route(s)	No redundant/ alternative route			Redundant/ alternative route	✓
3. Anticipated travel delays	Substantial delays			Minor or no delay	✓
4. Goods movement/ interstate commerce	Critical route for commercial goods movement			Non-critical route for commercial goods movement	✓

Factor	Towards Incorporating SLR into Project Design	— —	Towards Not Incorporating SLR into Project Design
5. Evacuations/ emergencies	Vital for emergency evacuations; loss of route would result in major increases to emergency response time ☐	☐	Minor or no delay in the event of an emergency or evacuation ☑
6. Traveler safety (delaying the project to incorporate SLR would lead to ongoing or new safety concerns)	Safety project in which little or no delay would result; non-safety project ☐	☐	Safety project and delay would be substantial ☑
7. Expenditure of public funds	Large investment ☑	☐	Small investment ☐
8. Scope of project — "point" vs. "linear"	Project scope is substantial — e.g., new section of roadway ☑	☐	Project scope is not substantial — e.g., ? ☐
9. Effect of incorporating SLR on non-state highways (interconnectivity issues with local streets and roads)	Minor or no effect — adjacent local streets and roads would not have to be modified ☐	Medium to minor inter-connectivity issues ☐	Substantial interconnectivity issues ☑
10. Environmental constraints	Minor or no increase in project footprint in an ESA ☐	Less than significant increase in project footprint in ESAs ☐	Substantial increase in project footprint in ESAs ☑

As shown in Table 3-4, most of the factors applied to the proposed project in the City of Oakland support not incorporating SLR adaptation measures into this proposed project. Within the 2077 inundation areas in Oakland, the proposed project would not include the following: substantial alteration to existing topography, placement of new facilities, increased public exposure to SLR, or other contributions to SLR. Both in the Build and No-Build Alternatives, flooding depths on Oak Street could be up to one foot. For both alternatives, the flooding adjacent to Lake Merritt Channel would be underneath I-880, which has a minimum elevation of 15.4 feet, so the traffic on I-880 would not be affected.

In the City of Oakland, there would be multiple alternative emergency routes available during SLR flood events. Roadway closures, if necessary due to inundation, would not result in substantial travel delays because of the multiple available alternative routes and minimal extent of SLR inundation within the footprint. Therefore, potentially flooded roadways within the project footprint would not impact emergency evacuation routes. The City of Oakland does not have any adopted plans for SLR adaptation measures; therefore, the proposed project would not conflict with or preclude implementation of municipal measures. No SLR adaptation measures were evaluated in Oakland because the project study area in Oakland has multiple alternative routes and would have minimal flooding based on the SLR projections.

Table 3-5. Factors to Consider in Whether to Incorporate SLR Adaptation Measures into Project Programming and Design (Alameda)

Factor	Towards Incorporating SLR into Project Design	— — ·	Towards Not Incorporating SLR into Project Design
1. Project design life	Long (20+ years) ☐	☑	Short (less than 20 years) ☑
2. Redundancy/ alternative route(s)	No redundant/ alternative route ☑	☐	Redundant/ alternative route ☐
3. Anticipated travel delays	Substantial delays ☑	☐	Minor or no delay ☐
4. Goods movement/ interstate commerce	Critical route for commercial goods movement ☐	☐	Non-critical route for commercial goods movement ☑
5. Evacuations/ emergencies	Vital for emergency evacuations; loss of route would result in major increases to emergency response time ☑	☐	Minor or no delay in the event of an emergency or evacuation ☐
6. Traveler safety (delaying the project to incorporate SLR would lead to ongoing or new safety concerns)	Safety project in which little or no delay would result; non-safety project ☐	☐	Safety project and delay would be substantial ☑
7. Expenditure of public funds	Large investment ☑	☐	Small investment ☐
8. Scope of project - “point” vs. “linear”	Project scope is substantial — e.g., new section of roadway ☑	☐	Project scope is not substantial — e.g., ? ☐
9. Effect of incorporating SLR on non-state highways (interconnectivity issues with local streets and roads)	Minor or no effect — adjacent local streets and roads would not have to be modified ☐	Medium to minor interconnectivity issues ☐	Substantial interconnectivity issues ☑
10. Environmental constraints	Minor or no increase in project footprint in an ESA ☐	Less than significant increase in project footprint in ESAs ☑	Substantial increase in project footprint in ESAs ☑

Within the project footprint in the City of Alameda, the Build Alternative would not substantially alter topography, place new facilities within the 2077 inundation areas, would not increase public exposure to SLR and would not otherwise contribute to SLR. Flood depths could be greater than 15 feet near the Tube Portals in the City of Alameda, which would render the Tubes impassible by vehicles. There are four other ground transportation routes that connect the cities of Oakland and Alameda, none of which are located close to the Tubes. These routes, as well as ferry access, also are anticipated to be impacted by SLR inundation. Therefore, substantial travel delays would occur due to roadway closures within the project footprint during future SLR inundation. In the City of Alameda, roadways within the footprint serve as emergency evacuation routes and SLR inundation is anticipated to increase emergency response time substantially. Most of the factors identified in Table 3-5 for the City of Alameda supported incorporating SLR adaptation measures. Adaptive measures were evaluated for the feasibility of incorporating them into the proposed project.

In their SLR resiliency plan (CARP 2019), the City of Alameda proposed SLR adaptation measures. CARP outlined both short-term (less than 5 years) and long-term (5-10 years) measures to address SLR inundation at the Tubes. Short-term measures included flood-proofing of facilities, regrading of SR-260, floodwall construction, and installing salt-resistant pumps. These measures are not currently programmed or funded.

The proposed project would not interfere with implementation of the CARP, any adaptation measures proposed by CARP, or other measures planned by developers in the City of Alameda. Caltrans' maintenance plan for the Tubes does not currently address SLR inundation; however, Caltrans is currently working on an update. Proposed project improvements within the Tubes would not preclude future measures to maintain or improve the Tubes resiliency to SLR.

Adaptive measures to reduce risk or exposure of the Alameda footprint to SLR would involve considerably greater costs and environmental impacts than currently planned or evaluated for the proposed project. The SLR Memo evaluated adaptive measures along the Oakland Estuary shoreline as well as in the project footprint in Alameda to determine if they could be incorporated into the proposed project. Adaptive measures (both along the shoreline and within the footprint) were evaluated for their ability to reduce facility exposure, reduce the consequences of SLR, target high-priority facilities, or improve facility resilience in a cost-effective way that minimizes secondary environmental impacts. The following measures were evaluated:

- Constructing measures along the Oakland Estuary (including seawalls, tide gates, and levees)
- Portal plugs for the tube portals
- Raising retaining walls around the Tubes
- Raising roadways and/or bicycle/pedestrian paths
- Inflatable dams

These measures were found to require significant additional permitting, extensive reconstruction of connecting streets, as well as potentially requiring the relocation of utilities, signage, lighting, and other infrastructure. The cost of these improvements would render the proposed project infeasible within the current budget. Other measures, such as improvements to electrical equipment and construction of inflatable dams, were determined to be of limited benefit and not cost effective. Placement, relocation, and protection of electrical equipment that may be vulnerable to inundation (such as communications and power equipment) above the projected SLR inundation elevation could avoid and/or reduce potential loss or damage. However, the existing electrical infrastructure in the Tubes is already placed at relatively high elevations. The improvements to electrical equipment outside the Tubes would not be cost effective because the light poles and lights would need to be replaced multiple times over the design life of the proposed project and would be more efficiently addressed at that time. The CARP included cost estimates to provide protection against 2030, 2050, and 2100 SLR plus 100-year flood scenarios at the Tubes and the shoreline near the Tubes. These estimates range from $1.7 to $2.2 million. This would be a substantial cost increase (2.5%) for the proposed project. Due to cost, as well as secondary environmental impacts of the adaptation measures, the SLR adaptation measures discussed in the CARP were determined to be infeasible for incorporation into the proposed project.

Based on the evaluation of adaptation measures provided in the SLR Memo, there are no adaptation measures that could feasibly be incorporated into the proposed project to improve resilience.

FLOODPLAINS

As described in Section 3.1. Hydrology and Floodplain, the proposed project would not result in land use changes or a substantial increase in impervious surfaces within the watershed. The Caltrans District 4 *Climate Change Vulnerability Assessment* Technical Report (2018) indicated that the project study area is projected to have a minor (0-5%) change in precipitation. Therefore, the proposed project would not exacerbate or contribute to increased flood magnitude or frequency in combination with climate change.

WILDFIRE

The proposed project is not within a high fire hazard zone, as identified by the California Department of Forestry and Fire Protection’s Fire and Resource Assessment Program (2008). The Caltrans District 4 *Climate Change Vulnerability Assessment* Technical Report (2018) does not indicate any wildfire concerns within the project footprint. Therefore, the proposed project would not exacerbate the risk of, severity of, or exposure to wildfire.

Chapter 4 - Comments and Coordination

Section 1.0. Early Coordination and Consultation

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization, and/or mitigation measures and related environmental requirements. Agency consultation, tribal consultation, and public participation for this project have been accomplished through a variety of formal and informal methods, including PDT meetings, workshops, public open house meetings, stakeholder working group (SWG) meetings, project website updates, and interagency coordination meetings. This chapter summarizes the results of Caltrans and Alameda CTC's efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

Throughout the formal and informal scoping for the proposed project, public participation and stakeholder input refined the project design. Detailed information about public meetings, concerns raised, and public comments can be found in Section 2.0. Consultation and Coordination with Public Agencies.

Section 2.0. Public Participation

2.1. PUBLIC SCOPING MEETING

Three previous attempts were made to advance the proposed project, including one attempt that started (but did not finish) the environmental process. None of these attempts were completed.

Caltrans issued a NOP on September 15, 2017, stating that an EIR would be prepared for the proposed project. On September 28, 2017, Alameda CTC and Caltrans hosted a public scoping meeting at the Oakland Asian Cultural Center (388 9th Street) from 4:30 to 7 pm to provide the public with an overview of the proposed project, its purpose and benefits, and its schedule. This meeting was promoted using mailers (2,114 total contacts), multi-lingual advertisements and press releases (151 contacts including print and radio outlets), email blast (approximately 320 emails), social media announcements on the Caltrans and the Alameda CTC websites, and numerous one-on-one discussions with community leaders.

The public scoping meeting was well attended with approximately 90 community members present. Attendees were encouraged to sign in. An informal open house format allowed participants to view stations with educational displays and illustrations at their own pace and to interact with members of the project team. Televisions provided a 10-minute presentation with closed captioning in multiple languages. Written comments were collected via comment cards or a court reporter. Comments could be submitted after the public scoping meeting until October 31, 2017, via hard copy letters, emails, or the online comment form.

During the public scoping meeting, 14 comment cards were received, and seven individuals provided responses via a court reporter. Following the meeting, 20 emails and one hard-copy mailing were received. In addition, 59 responses were received via the project's website. Comments are summarized as follows:

- Several comments expressed support for the proposed project. This included the City of Oakland who expressed strong support for removal of the freeway-bound traffic off local streets, the proposed pedestrian safety improvements, and reestablishment of 6th Street as a continuous roadway.

- Comments were received regarding the proposed bicycle/pedestrian improvements. These included eliminating right-turn movements on red, improving 5th Street similarly to 6th Street, improving underpasses, and recommendations for crosswalks and bike lanes. Several comments expressed concern about bicyclist/pedestrian safety, including the need to physically separate bicyclists/motorists and the high-speed of traffic that could occur along 5th and 6th streets. A representative of the San Francisco Bay Trail asked that the trail's alignment be maintained. The City of Oakland provided recommendations regarding ramp access to the Webster Tube, crosswalk widths, and for improvements along 5th Street and the underpasses. The City of Alameda asked project sponsors to work with them to create safe, low-stress, and well-connective facilities. Alameda also recommended employing intelligent transportation systems (ITS) to increase safety within the Tubes.
- The design team considered this input when evaluating design features. No proposed changes would occur to the Bay Trail alignment. Monthly coordination meetings have been held with both the cities of Oakland and Alameda to ensure bicycle/pedestrian improvements are adequately connected to adjacent areas. Safety was a key priority in design of these project features.
- Several comments focused on proposed improvements to the Tubes. Concerns were received regarding air quality for bicyclists/pedestrians, traffic queueing in the Posey Tube, speed limit reductions in the Posey Tube, future traffic demand, and safety measures needed for bicyclists.
- The design team considered all of this input while developing the proposed project. The travel demand model assumptions were checked, and additional coordination was conducted with bicycle advocacy groups to ensure the proposed project accurately addressed demand and safety considerations.
- Local roadway improvements in Oakland were the subject of several comments, which included vehicle idling and traffic congestion in Chinatown, parking loss, traffic light synchronization, potential conversion of Jackson Street to a one-way street, impacts of future private developments (including the new Oakland Athletics stadium), presence of existing unsheltered persons encampments, and proposed intersection configurations to limit turning movements or help prevent motorist confusion.
- The design team considered this input while developing the proposed project. Public comments related to design elements, such as queuing concerns, lane markings, and pedestrian signals, have been addressed by the proposed project or were incorporated into the design. Monthly coordination meetings were held with the City of Oakland to ensure future private development projects were considered. Coordination has also been conducted with the Oakland Athletics to identify how the two projects could interact with each other.
- Comments were received from AC Transit regarding bus services, including traffic delays for buses during construction, dedicated transit lanes within the Tubes, and dedicated bus lanes along 6th Street. AC Transit noted that adequate public notification would be needed for any bus detours. Follow-up coordination has occurred with AC Transit since the public scoping meeting to incorporate their feedback into the proposed

project and to inform them of project developments. Coordination with this agency will occur during preparation of the TMP per PF-TRF-1 and AMM-TRF-4.

- Comments were received from local residents and tenants with specific concerns about proposed project features. For example, driveway curb cuts were questioned by one resident. Where possible, these comments were incorporated into the project design.
- Some comments were received regarding I-880 within the project study area. One comment did not support the removal of the northbound Broadway off-ramp citing possible increases in congestion and increased safety concerns. Another comment asked if improvements could be made to merging onto NB I-880. The proposed project's TOAR (March 2020) provided a detailed traffic analysis for the existing and proposed conditions. This study helped guide proposed project features to ensure congestion was reduced as much as possible within the project footprint.
- Project sponsors were asked to consider environmental impacts including traffic, community character, noise, construction, air quality, SLR, and GHG emissions. These disciplines were evaluated in detail and are discussed in Chapter 2.
- The Jack London Improvement District and several residents of the District expressed their concern over the lack of District involvement in the proposed project. Residents of the District commented on pedestrian needs along 5th Street and concerns over traffic pattern changes. Since the public scoping meeting, six meetings have been held with the District to ensure their active involvement in the proposed project, and that their concerns were fully evaluated by the project team.
- Regional considerations were the subject of several comments. These included interactions between the proposed project and other future development projects in Oakland and Alameda. Additional regional considerations included a separate bicycle/pedestrian bridge, an autonomous bus service between Oakland and Alameda, direct freeway access for Alameda, and a contraflow lane within the Tubes.
- Viable suggestions, comments and concerns were carefully considered by the design and environmental team and changes and modifications to the current Build Alternative were incorporated to the extent possible and as appropriate. Extensive, regular stakeholder coordination meetings, including coordination with both the cities of Oakland and Alameda are ongoing.

2.2. PUBLIC HEARING

Upon release of the Draft EIR/EA, a public hearing will be held to receive public comments, and to answer questions about the proposed project alternatives and the environmental impacts. An informational postcard/mailer will be developed and sent out to the community that will announce the availability of the environmental document and the logistics of the public hearing. Additional media outreach will occur, and public notices will be published in applicable newspapers, websites, and online resources prior to the public hearing. The public hearing is scheduled for October 20, 2020. With current COVID-19 mandates for social distancing, Caltrans and Alameda CTC will be unable to host an in-person public hearing. The project sponsors will instead host a live public hearing (virtual), which will be hosted through the proposed project's open house website (OaklandAlamedaAccessProject.com).

Section 3.0. Native American Consultation and Coordination

Native American consultation is ongoing. Between December 2015 and July 2018, the project team sent three letters to the NAHC requesting a search of the Sacred Lands File for information regarding cultural resources within the APE and the project vicinity. Multiple letters were required because the project study area was revised, requiring updated coordination with NAHC in order to maintain current search information and contact lists.

The initial request letter was sent to the NAHC on December 3, 2015, and a response letter was received on December 14, 2015. In its response, NAHC indicated that a search of the Sacred Lands File had failed to indicate the presence of cultural resources "in the immediate project area," and it provided a list of nine tribal groups or individuals who may have knowledge of cultural resources in the APE or who may have an interest in the proposed project.

- Tony Cerda, Costanoan Rumsen, Carmel Tribe
- Andrew Galvan, The Ohlone Indian Tribe
- Ramona Garibay, Trina Marine Ruano Family
- Katherine Erolinda Perez, Ohlone/Costanoan, Northern Valley Yokuts Tribe, Bay Miwok
- Jakki Kehl, Ohlone/Costanoan
- Rosemary Cambra, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Ann Marie Sayers, Indian Canyon Mutsun Band of Costanoan
- Linda G. Yamane, Ohlone/Costanoan
- Irene Zwierlein, Amah Mutsun Tribal Band of Mission San Juan Bautista

Letters were sent to each of the nine individuals listed on February 17, 2016. The letters provided a brief description of the proposed project, and they requested input on cultural resources in the APE.

After an addendum to the project study area in Alameda, a second request letter was sent to NAHC on February 17, 2016. A response letter from NAHC was received on February 29, 2016, indicating that a search of the Sacred Lands File failed to indicate the presence of cultural resources "in the immediate project area," and it provided a list of five tribal groups or individuals who may have knowledge of cultural resources in the APE or who may have an interest in the proposed project. The December 2015 list included all suggested contacts.

After a third addendum to the project study area, a new request letter was sent to NAHC on December 15, 2017. A response letter from NAHC was received on January 4, 2018, indicating the search of the Sacred Lands File failed to indicate the presence of cultural resources "in the immediate project area," and it provided a list of six tribal groups or individuals who may have knowledge of cultural resources in the APE or who may have an interest in the proposed project. The December 2015 list included all suggested contacts. Letters were sent to each of the six individuals on January 10, 2018. The letters provided a brief description of the current status of the proposed project, and they requested input on cultural resources in the APE.

Only one response was received after the initial letter was sent. Follow-up phone calls were made in July 2018, which resulted in contact with four of the individuals (Mr. Tony Cerda, Ms. Ann Marie Sayers, Mr. Andrew Galvan, and Chairperson Irene Zwierlein). Native American monitoring during archaeological and construction excavation was requested by Mr. Tony Cerda, Ms. Ann Marie Sayers, and Mr. Andrew Galvan, and a Native American monitor during construction sensitivity trainings was requested by Ms. Ann Marie Sayers and Chairperson, Irene Zwierlein. All four requested that they be kept informed about the proposed project and its potential impacts.

Additional follow-up emails detailing the results of the Extended Phase I archaeological investigations and to initiate AB 52 consultation were sent to all nine contacts on April 24, 2020 (see Chapter 2, Section 2.10.2).

- On April 26, 2020, Ms. Ballard received an email notice that the email to Chairperson Zwierlein could not be delivered because the recipient's email inbox was full. Consequently, on April 27, 2020, a follow-up letter was sent to Chairperson Zwierlein via the U.S. Postal Service. Ms. Ballard called Chairperson Zwierlein on June 4, 2020. Chairperson Zwierlein recommended doing a sensitivity training for the construction crew and bringing in a Native American monitor if there is an archaeological discovery. Ms. Ballard contacted Chairperson Zwierlein to review the addition of AMM-CUL-1 (WEAT and Sensitivity Training) with her in response to her request on June 4, 2020.
- Ms. Ballard called Ms. Sayers on June 4, 2020, and discussed the results of testing to date. Ms. Sayers was fine with the use of an inadvertent discovery plan. Ms. Ballard followed up in a phone call with information regarding project protocols including use of PF-CUL-1 (Cultural Resource Discovery) and PF-CUL-2 (Human Remains) on June 6, 2020. The project protocols, the addition of AMM-CUL-1 (WEAT and Sensitivity Training), and clarification that an Inadvertent Discovery Plan was not being prepared for the proposed project were discussed with Ms. Sayers' daughter, Ms. Kanyon Sayers-Rood, who was taking care of correspondence for Ms. Sayers. Ms. Sayers-Rood requested and was emailed the text of the minimization measures and was positive about the inclusion of the described measures on the call. The measures were emailed again on June 9, 2020 along with clarification that the environmental document type is an EIR/EA and not an EIR/EIS as had been previously communicated.
- Mr. Galvan responded via email on June 4, 2020. Mr. Galvan indicated that the Ohlone Indian Tribe would like to consult regarding AB 52. Caltrans sent a follow up email to Mr. Galvan on June 22, 2020, with a brief project update including the project schedule and the status of cultural findings. To date, no response has been received.
- Ms. Ballard was unsuccessful with her phone calls to the remaining contacts. A follow-up email was sent to each representative on June 4, 2020. To date, no responses have been received.
- Chairperson Zwierlein was contacted on June 6, 2020, to discuss the addition of AMM-CUL-1 (WEAT and Sensitivity Training). Chairperson Zwierlein requested and was sent via email a copy of the cultural resources minimization measures for the proposed project. On June 9, 2020, Chairperson Zwierlein was emailed a clarification that the environmental document is an EIR/EA and not an EIR/EIS as had been previously communicated.

Section 4.0. Consultation and Coordination with Public Agencies

As part of the project development process, consultation and coordination was conducted with 17 public agencies. Efforts with each public agency are described in the following sections.

4.1. FEDERAL HIGHWAY ADMINISTRATION

FHWA's transportation plans, transportation improvement programs, and projects funded or approved by FHWA or the FTA in areas that do not meet or previously have not met air quality standards for ozone, carbon monoxide, particulate matter, or NO_2 are required to conform to the applicable SIP for achieving NAAQS. The Build Alternative's design, scope, and open-to-traffic date are consistent with the regional emissions analysis. Caltrans would request that FHWA issue a project-level conformity determination for the proposed project prior to completion of the environmental process, confirming that it conforms to the purpose of the SIP for achieving the NAAQS.

4.2. STATE HISTORIC PRESERVATION OFFICER

Federally funded transportation projects must follow FHWA and Caltrans' procedures for historic preservation. Caltrans has determined that the undertaking as a whole would have an Adverse Effect on two historic properties, and it is seeking SHPO concurrence with these findings pursuant to Section 106 PA Stipulation X.C and 36 CFR 800.5. SHPO concurred on ineligibility determinations for seven properties on June 8, 2020. Caltrans will seek SHPO concurrence on an Adverse Effect finding pursuant to the Section 106 PA Stipulation XI.C and 36 CFR 800.5, Stipulation XI, and 36 CFR 800.6. Mitigation measures will be developed in consultation with identified Section 106 stakeholders, including the SHPO, and will be included in a MOA.

4.3. STATE WATER RESOURCES CONTROL BOARD

Projects that disturb one acre or more of soil must obtain coverage under the statewide CGP (SWRCB Order No. 2009-0009-DWQ, amended by 2010-0014-DWQ and 2012-0006-DWQ). To obtain coverage, a Notice of Intent and a SWPPP would be filed with the SWRCB prior to the commencement of construction.

4.4. AIR QUALITY CONFORMITY TASK FORCE

Alameda CTC, as the Build Alternative sponsor, initiated consultation with the Air Quality Conformity Task Force by submitting a Build Alternative Assessment Form for $PM_{2.5}$ Interagency Consultation. The Task Force considered future traffic conditions with and without the Build Alternative and whether the Build Alternative met the specific regulatory definition of a POAQC set forth in 40 CFR Part 93. On December 12, 2019, the Task Force determined the Build Alternative is not a POAQC. Therefore, the proposed project is not required to include a hot-spot analysis.

4.5. SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

Portions of the Tubes under the Oakland Estuary fall within BCDC's jurisdiction. All work within its jurisdiction would take place inside the Tubes. Neither Tube would be enlarged, instead, work would be limited to repairing, replacing, and/or upgrading the existing facilities. As a result, this work would not directly impact the San Francisco Bay, views of the Bay, or public access. Therefore, work within BCDC's jurisdiction would be covered by the Caltrans' programmatic maintenance permit during the design phase. Caltrans will prepare a courtesy notice in the form of a letter or email to BCDC notifying them of the project prior to completion of the Final Environmental Document. No additional permit or authorization from BCDC would be required.

4.6. CITY OF OAKLAND

A total of 49 meetings were held with the City of Oakland between 2015 and 2020. Early meetings focused on the City's expectations for the proposed project, which included improving access to the Tubes without impacting the local community, improving access to downtown Oakland, and slowing traffic on local roadways. The City provided feedback on project alternatives and design refinements, which included the design of local roadways/intersections, pedestrian and bicyclist infrastructure, parking, and landscaping. Feedback from the City's fire marshal was incorporated into roadway design elements and emergency access to the Tubes was discussed. Transit and high-occupancy vehicle project features were evaluated as well, but they were not incorporated. Through these meetings, the project team was able to ensure the proposed project was as consistent as possible with existing City plans (*Bicycle Master Plan, Citywide Vison Zero, Downtown Oakland Specific Plan*, etc.) and future development projects within or near the project study area.

At these meetings, stakeholder coordination and public outreach were routinely discussed. The City provided feedback on presentation materials provided at the 2017 public scoping meeting, and staff participated at the meeting. Also, feedback from the City of Alameda was relayed at these meetings, facilitating cross-city development of the proposed project.

Three meetings with the City of Oakland were held in regard to potential work within Chinese Garden Park. Two meetings (April 2 and April 20, 2020) were held to discuss the proposed design for Chinese Garden Park. The design includes a sidewalk along Alice Street, additional parallel parking spaces along Harrison and 7th streets, and minor expansion of the park at the corner of Harrison and 7th streets where two free right-turn lanes would be removed. In the April 20, 2020 meeting, two design options were discussed along 6th Street. Option 1 would leave the existing fence, which is currently located beyond the actual park boundaries, and construct a 5-foot wide sidewalk south and outside of the park. Option 2 would relocate the fence 13 feet north of its current location, construct a 10-foot wide sidewalk outside of the park, and provide 11 new parking spaces along 6th Street. This option would require removal of some of the trees currently planted near and along the existing fence and possibly relocation and reconstruction of an existing looping path inside the park. A follow-up meeting was held on May 7, 2020, with representatives of the City of Oakland, Chinatown, and Family Bridges Daycare (current tenant). The proposed improvements were discussed again, including the two options along 6th Street. Chinatown representatives preferred Option 1 which would preserve open park space. Based on this feedback, Option 1 was advanced in the proposed project.

One meeting in 2017 and three meetings in 2020 were held with the City of Oakland to discuss emergency services. Two meetings with the Oakland Police Department focused on the potential loss of nine reserved department parking spaces along 6th Street. Replacement parking will be evaluated on Washington Street near its intersection with 6th Street. Other design options that would create parking along 6th Street were proposed by the department. These options will be evaluated further during the design phase. During two meetings with the Oakland Fire Department, changes to traffic patterns as a result of the proposed project were discussed and feedback from the department was obtained regarding fire access needs.

In addition to the coordination with the city on parking needs for the police department, two meetings were held in 2020 to discuss the proposed project's overall parking loss. The City of Oakland recommended additional stakeholder outreach with neighborhoods and businesses to identify potential impacts. Potential parking losses were discussed with stakeholders including Oakland Chinatown and 428 Alice Homeowners Association. Additional coordination regarding loss numbers was renewed in late summer 2020 with the City and Chinatown representatives and is currently ongoing. Potential mitigation strategies are currently being discussed.

4.7. CITY OF ALAMEDA

A total of 42 meetings were held with the City of Alameda between 2016 and 2020. Early meetings focused on the City's feedback on project alternatives and the identification of project stakeholders. The City provided feedback on design refinements, including modifications to the Tubes and the proposed bicyclist/pedestrian infrastructure. Future development projects, within or near the project study area, were discussed.

Stakeholder coordination and public outreach were routinely discussed. The City provided feedback on presentation materials provided at the 2017 public scoping meeting, and staff participated at the meeting. Also, feedback received from the City of Oakland was relayed at these meetings, facilitating cross-city development of the proposed project.

4.8. PORT OF OAKLAND

The project team met with the Port of Oakland on March 4, 2016, to provide information on the proposed project and to solicit feedback. Port of Oakland staff generally supported the proposed design concept.

4.9. EAST BAY MUNICIPAL UTILITY DISTRICT

Caltrans and Alameda CTC held a meeting with EBMUD on December 8, 2015 to discuss potential water line conflicts associated with the proposed on- and off- ramps. Future EBMUD projects within the project study area were also discussed to avoid additional conflicts.

4.10. AC TRANSIT

Caltrans and Alameda CTC coordinated with AC Transit on November 21, 2017. A project overview was provided, and design options were discussed. Feedback was solicited on potential impacts to AC Transit operations. AC Transit commented on the proposed locations of bus routes and stops, streetscaping elements, and pedestrian facilities.

4.11. BART

Caltrans and Alameda CTC held a coordination meeting with BART on November 21, 2017. A project overview was provided, and design options were discussed. BART expressed concerns about the proposed pedestrian facilities and noted potential ridership changes could occur as a result of the proposed Oakland Athletics ballpark. The Oakland Port Commission approved a tentative exclusive negotiation agreement with the Oakland Athletics to construct a stadium at Howard Terminal. The Draft EIR for the future stadium has not been released to the public yet. The City of Oakland would work with BART to address potential ridership changes if a stadium is constructed at that location as part of a separate project. The project team incorporated additional pedestrian improvements at the intersections of 7th Street/Jackson Street (shorter crossing length) and 6th Street/Oak Street (islands to protect crosswalks) to address some of the pedestrian crossing concerns raised by BART. Additional coordination regarding the Lake Merritt Transit-oriented Development began in Summer 2020 and is ongoing.

4.12. HISTORIC PROPERTY INTERESTED PARTIES

Correspondence was received from the OHA on October 30, 2017 citing concerns regarding the proposed project's impacts on the Posey Tube and the Oakland Waterfront Warehouse District. The OHA requested that alternatives be studied that would not impact portions of the Posey Tube. This group also requested a meeting with the City of Oakland's LPAB to solicit their feedback on the proposed project's impacts. The OHA wanted to review drawings of the proposed changes to the Posey Tube and the *Finding of Effects* report (when available). The group followed up on this request on February 5, 2018, and it extended an invitation for Caltrans to attend a future board meeting.

In coordination with Alameda CTC and Caltrans, the project team identified potentially interested local parties for this proposed project. Notification letters were mailed out on February 21, 2018 to the following parties:

- Oakland Cultural Heritage Survey
- City of Oakland Landmark Preservation Advisory Board
- City of Oakland Planning and Building Department
- Oakland Heritage Alliance
- Jack London Improvement District
- City of Alameda Community Development Department
- City of Alameda Historical Advisory Board
- Alameda Architectural Preservation Society
- Art Deco Society of California
- Alameda County Historical Society
- California Preservation Foundation

Only one party responded to this mailing, the Jack London Improvement District (see Section 4.14). Follow-up coordination was conducted with the remaining parties in April 2018; no additional responses were received.

The project team held a meeting with the City of Oakland's historic preservation staff on July 18, 2018. The following groups were in attendance: Alameda CTC, Caltrans, and City of Oakland Planning and Zoning Department staff. Efforts to avoid impacts to the historic properties/ historical resources were discussed, and it was determined the proposed project should be brought before the LPAB so the commissioners could provide design suggestions and express their opinions and concerns about historic resources. The Board commissioner also was extended an invite to the proposed project's general stakeholder meetings, which were held on a regular basis.

Alameda CTC and Caltrans attended a LPAB meeting on January 14, 2019. The presentation to the Board included illustrations of possible designs for the new wall at the Posey Tube. The LPAB expressed interest in seeing a contemporary style version of the new wall and the documentation for the Posey Tube and other historic properties that may be affected by the proposed project. The requested historic documentation was provided to the LPAB on January 15, 2019; however, the contemporary style version of the wall was not provided. A board member inquired about how project impacts on the Posey Tube would be determined and recommended the involvement of a historic architect. An interest was also expressed in seeing a contemporary style version of the proposed wall.

Three SWG meetings were held on March 21, 2018; October 3, 2018; and July 30, 2019 to provide stakeholders with a general overview of the proposed project and of design developments. During the July 30, 2019 meeting, the OHA asked to review and to discuss the impacts to the Posey Tube, and to obtain feedback from the group at the next SWG meeting. To date, the next SWG meeting has not been scheduled.

Alameda CTC and Caltrans would continue project outreach efforts to local historical agencies and organizations, and consult with SHPO, as necessary, throughout the duration of the proposed project.

4.13. OAKLAND CHINATOWN

A total of 12 meetings were held with representatives of Oakland Chinatown between 2017 and 2020. The majority of these meetings were held at Asian Health Services (835 Webster Street, Oakland). Attendees were encouraged to sign-in at each meeting. Proposed project improvements and alternatives were discussed, including design updates since previous stakeholder meetings, and results of the traffic analysis and pedestrian counts were provided. Feedback was received from these representatives regarding which streets should be prioritized for pedestrian infrastructure improvements. Interactions with future proposed projects within the project study area were discussed. The Coalition Representatives of Oakland Chinatown provided feedback regarding potential changes to bus routes and stops, the potential impact of proposed project improvements on delivery truck loading, and the proposed elimination of parking. An opportunity for stakeholder feedback was provided at all meetings, including project elements supported or not supported by the representatives. Ultimately, the project team was able to develop a consensus supporting the Build Alternative.

In August 2020, representatives of Oakland Chinatown provided feedback on outreach for the public hearing. This included identifying relevant newspapers for hearing advertisements, translation services for the hearing and open house website content, and locations that could potentially host hard copies of the draft environmental document.

4.14. JACK LONDON IMPROVEMENT DISTRICT

A total of six meetings were held with the Jack London Improvement District in 2017, 2018, and 2019. Meetings were generally held at the District's office in Oakland. Overviews of the proposed project improvements were provided, along with any design updates since the previous meeting. The District requested design information regarding the existing and proposed traffic patterns, proposed bicycle infrastructure, proposed utilities, and potential project alternatives. Concerns were received regarding the proposed project's potential effect on access to the District, as well as multimodal connectivity along 5th Street. Bicycle facilities including bicycle flow directionality and associated safety elements were discussed. The District's preference was to relocate bicycle facilities from Jackson Street to another local roadway due to potential safety and traffic congestion concerns. To remedy this, the proposed project improvements on Jackson Street do not extend south of 5th Street.

Coordination was conducted with the District regarding historic resource impacts. An email was received from the District's executive director on March 20, 2018 that stated their interest in preventing historic resource impacts. It provided links to published information on the Posey Tube and the Oakland Waterfront Warehouse District for the project team to reference.

4.15. 428 ALICE HOMEOWNERS ASSOCIATION

A workshop was held with residents of 428 Alice in December 2017. Design options were discussed, and feedback was requested to avoid potential impacts. Discussion topics included additional design options, unsheltered persons, bus route relocations, and parking loss.

In August 2018, the 428 Alice Homeowners' Association mailed a letter to Caltrans expressing their support for removal of the Broadway off-ramp and the proposed 6th Street ground-level improvements. The Board requested improvements under I-880 between Webster and Oak streets, an expanded landscape buffer between 5th Street and the I-880 off-ramp and sidewalks on both sides of Jackson Street. The Board expressed concerns about traffic accidents at 5th Street and Alice Street and the feasibility of a two-way bike lane on the east side of Jackson Street. The project team provided a response to the homeowners' association in November 2018 that included an explanation on why several of their recommendations were not feasible.

In July 2019, an updated project description was provided by Alameda CTC to the 428 Alice Homeowners Association for their information. The project team met with board members of 428 Alice Homeowners Association on June 5, 2020. The presentation included an introduction to the proposed project for the new board members. The board members were supportive of the on-street parking loss and for the proposed design of 6th Street. The Board expressed concerns about increased traffic in their neighborhood. However, the proposed improvements would be expected to reduce traffic congestion throughout the neighborhood.

4.16. OAKLAND ATHLETICS

Meetings were held with the Oakland Athletics on November 13, 2017 and January 24, 2019 to discuss the potential ballpark design near the project study area. Public comments were received regarding the possible impacts associated with a proposed ballpark at this location. An overview of the proposed project elements was provided. Traffic counts and modeling were shared with the ballpark traffic team to analyze the development project's potential impacts.

4.17. BIKE EAST BAY

Alameda CTC met with Bike East Bay on November 6, 2018 and July 15, 2019. Feedback was solicited regarding bicycle infrastructure, particularly the two-way cycle track along Oak Street. Elimination of parking and the cycle track location were evaluated based on their feedback. Overall, Bike East Bay preferred exploring a new estuary crossing bridge instead of the proposed improvements to the Tubes. The project team noted these improvements would be an interim solution until a new estuary crossing strategy could be determined. The estuary crossing is outside of the current project's scope, and it would be funded/constructed as a separate project.

At the invitation of Bike East Bay, the project team attended the Downtown Oakland Bikeways meeting on April 17, 2019. The proposed project was one of four bicycle improvement projects discussed at the meeting, which was provided in an open house format. Attendees were able to ask questions or provide feedback on topics that included the proposed bicycle improvements within the Tubes, potential impacts on vehicular traffic, cycle track safety elements, and project schedule.

4.18. BIKE WALK ALAMEDA

Alameda CTC hosted a meeting with Bike Walk Alameda on July 15, 2019. This group preferred a new estuary crossing bridge over the proposed improvements to the Tubes. The project team noted these improvements would be an interim solution until a new estuary crossing strategy could be determined. The estuary crossing is outside of the current project's scope, and it would be funded/constructed as a separate project.

Chapter 5 - List of Preparers

This document and its related technical studies were prepared under the review and supervision of Caltrans District 4 as the CEQA and NEPA lead agency on the proposed project. The PDT was comprised of representatives from Caltrans, Alameda CTC, and the HNTB team who were responsible for project oversight.

Key Project Development Team Members

Key PDT members in the following list are ordered based on functional unit or agency or consultant firm.

- Stefan Galvez, Principal Transportation Planner, Division of Environmental Planning and Engineering, Caltrans District 4
- Lindsay Vivian, Supervising Environmental Planner, Office of Environmental Analysis, Caltrans District 4
- Wahida Rashid, Branch Chief, Office of Environmental Analysis, Caltrans District 4
- Lily Mu, Associate Environmental Planner, Office of Environmental Analysis, Caltrans District 4
- Kevin Krewson, Branch Chief, Office of Environmental Engineering – Air Quality and Noise, Caltrans District 4
- Daisy Laurino, Air Quality/Noise and Vibration Engineer – Office of Environmental Engineering – Air Quality and Noise, Caltrans District 4
- Douglas Bright, PQS, Associate Environmental Planner, Office of Cultural Resource Studies – Architectural History, Caltrans District 4
- Kristina Montgomery, PQS, Associate Environmental Planner, Office of Cultural Resource Studies – Archaeology, Caltrans District 4
- Greg Currey, Bicycle/Pedestrian Planner, Division of Transportation Planning and Local Assistance – Pedestrian and Bicycle Branch, Caltrans District 4
- Michael Nguyen, Project Manager, Caltrans District 4
- William Fong, Design Engineer, Caltrans District 4
- Tony Mak, Transportation Engineer, Caltrans District 4
- Jerome Brunstein, Right-of-Way Engineering/Local Project Oversight, Caltrans District 4
- Susan Chang, Project Manager, Alameda CTC
- Rodney Pimentel, Project Manager, HNTB
- Lillie Lam, Deputy Project Manager, HNTB
- Carie Montero, Environmental Planning Director, HNTB
- Elisabeth Suh, Environmental Planning Director, HNTB
- Tami Podesta, Principal Environmental Planner, HNTB
- Thomas Warrner, Senior Environmental Planner, HNTB
- Rosanna McGuire, Environmental Planner, HNTB

Caltrans Reviewers

- Stefan Galvez, Principal Transportation Planner, District 4 Division of Environmental Planning and Engineering
- Christopher Caputo, Office Chief, Office of Cultural Resource Studies, District Native American Coordinator
- Wahida Rashid, Branch Chief, District 4 Office of Environmental Analysis
- Lindsay Vivian, Office Chief, District 4, Office of Environmental Analysis
- Lily Mu, Associate Environmental Planner, District 4 Office of Environmental Analysis
- Cristin Hallissy, Office Chief, District 4 Office of Biological Sciences and Permits
- John Yeakel, Branch Chief, District 4 Office of Biological Sciences and Permits
- Carli Baker, Associate Environmental Planner – Natural Sciences, District 4 Office of Biological Sciences and Permits
- Helen Blackmore, Branch Chief, District 4 Office of Cultural Resource Studies – Architectural History
- Kathryn Rose, PQS, Branch Chief, District 4 Office of Cultural Resources Studies – Archaeology
- Jennifer Blake, PQS, Associate Environmental Planner, District 4 Office of Cultural Resource Studies – Archaeology
- Douglas Bright, PQS, Associate Environmental Planner, District 4 Office of Cultural Resource Studies – Architectural History
- Kristina Montgomery, PQS, Associate Environmental Planner, District 4 Office of Cultural Resource Studies – Archaeology
- Chris Risden, Senior Engineering Geologist, District 4 Office of Geotechnical Design West
- Norman Gonsalves, Branch Chief, District 4 Office of Water Quality
- Trang Hoang, Transportation Engineer, District 4 Office of Water Quality – Stormwater Coordination Department
- Jiayi Pan, Transportation Engineer, District 4 Office of Water Quality
- Markus Lansdowne, NPDES Coordinator, Maintenance Services
- Ray Boyer, Branch Chief, District 4 Office of Environmental Planning and Engineering
- Kevin Krewson, Branch Chief, District 4 Office of Environmental Engineering – Air Quality and Noise
- Chris Wilson, Branch Chief, District 4 Office of Environmental Engineering – Hazardous Waste/Materials
- Chris Katrak, Transportation Engineer, District 4 Office of Environmental Engineering – Air Quality and Noise
- Daisy Laurino, Transportation Engineer – Air Quality/Noise and Vibration, District 4 Office of Environmental Engineering – Air Quality and Noise

- Sergio Ruiz, Pedestrian and Bicycle Coordinator, District 4 Local Assistance Program
- Gregory Currey, Associate Transportation Planner, District 4 Division of Transportation Planning and Local Assistance – Pedestrian and Bicycle Branch
- Lydia Mac, Branch Chief, District 4 Office of Landscape Architecture
- Keith Suzuki, Landscape Associate, District 4 Office of Landscape Architecture
- Robert Effinger, Office Chief, Office of Construction Environmental Compliance
- Morteza Azimi, Office Chief, District 4 Office of Design – Alameda
- Mahmood Momenzadeh, Branch Chief, District 4 Office of Geotechnical Design West
- Tung Nguyen, Transportation Engineer, District 4 Office of Geotechnical Design West
- Imadeddine Aljishi, Civil Engineer, District 4 Office of Design – Alameda
- Craig Tomimatsu, Supervising Engineer, District 4 Office of Hydraulics
- Erik Kawakita, Transportation Engineer, District 4 Office of Hydraulics
- Michael Nguyen, Project Manager, District 4 Project Management East
- Phillip Cox, Senior Transportation Engineer, Office of Traffic Operations – Traffic Forecasting
- Peter Lau, Senior Transportation Engineer, District 4 Office of Highway Operations
- Tony Mak, Transportation Engineer, District 4 Office of Highway Operations
- Reza Erfanian, Structure Liaison Engineer, Office of Special Funded Projects
- William Fong, Design Engineer, District 4 Office of Design
- Andra Speck, Transportation Engineer, Headquarters
- Jerome Brunstein, Right-of-Way Agent, Right-of-Way Engineering/Local Project Oversight
- Kanayo Nwobodo, Supervisor, Maintenance
- Gurdeep Bhattal, Senior Transportation Engineer, Headquarters Office of Hydraulics and Stormwater
- Barbara Wolf, Climate Change Policy Advisor, Headquarters Office of Environmental Management
- Brenda Powell-Jones, Senior Environmental Planner, Headquarters Division of Environmental Analysis

Consultants

The following key consultant team staff members were responsible for preparing the environmental technical studies and/or the environmental document.

HNTB

Kieran Kelly-Sneed, P.E., S.E., Structural Engineer. B.S. Architectural Engineering; California Polytechnic State University, San Luis Obispo; M.S.E. Civil Engineering, Princeton University. *Contribution:* Structure design and cost estimate quality control.

Huey Lee, P.E., PhD, Lead Structural Engineer. B.S. Civil Engineering, Seoul National University, South Korea; M.S. Civil Engineering, Seoul National University, South Korea; PhD Civil Engineering, University of Illinois at Urbana-Champaign. *Contribution:* Advance Planning Study preparation.

Rosanna McGuire, Environmental Planner. B.Sc. Ecology, University of Toronto; M.E.S., Environmental Studies, York University. *Contribution:* Environmental document preparation.

Carie Montero, Environmental Lead. B.A. Ancient Studies/Anthropology, University of Maryland Baltimore County; M.A., Anthropology, University of Illinois at Urbana-Champaign. *Contribution:* Environmental document manager and Energy Technical Memorandum preparation.

Emily Parigi, Technical Editor. B.A. Fashion Design and Merchandising, Virginia Commonwealth University. *Contribution:* Environmental document preparation support.

Christa Pijacki, Design/Report Planner. B.A. English Literature, Statue University of New York at Buffalo; A.A.S. Interior Design, Villa Maria College. *Contribution:* Environmental document preparation support.

Rodney Pimentel, P.E., Project Manager. B.S. Civil Engineering, University of California, Berkeley; M.S., Civil Engineering, California State University, Long Beach. *Contribution:* Project management.

Tami Podesta, Principal Environmental Planner. B.A. Art History – East Asian Studies, University of California, Los Angeles. *Contribution:* Environmental document and Individual Section 4(f) Evaluation preparation.

Robert Rodland, Senior Environmental Planner. B.A. Geography, University of Washington. *Contribution:* Environmental document, Section 4(f) Coordination, and Community Impact Assessment preparation.

Elisabeth Suh, Environmental Manager. B.A. Geography and City and Regional Planning, University of California, Berkeley. *Contribution:* Environmental document review, preparation, and quality control oversight.

Thomas Warrner, Senior Environmental Planner. B.S. Water Resources, Ball State University; M.S.E.S., Water Resources, Indiana University Bloomington. *Contribution:* Environmental document and Energy Technical Memorandum preparation.

Brandon Wong, P.E., Project Engineer. B.S. Civil Engineering, University of California, Berkeley. *Contribution:* Roadway design, design standard decision document, cost estimate, and ROW mapping.

Elliott Wong, Transportation Planner. B.A. Economics and Environmental Studies/Science, University of California Santa Cruz. *Contribution:* GIS analysis and mapping.

DKS ASSOCIATES

Terry Klim, Project Manager. B.A.Sc. Civil Engineering, The University of British Columbia; M.S.C.E. Transportation and Highway Engineering, University of California, Berkeley. *Contribution:* VMT analysis and Traffic Operations Analysis Report preparation.

Udit Molakatalla, P.E., PTOE, Deputy Project Manager. B.S. Civil Engineering, Osmania University; M.S. University of Nebraska-Lincoln; M.S. Civil Engineering-Transportation Engineering, North Dakota State University. *Contribution:* Traffic Operations Analysis Report preparation.

HAYGOOD & ASSOCIATES

Leah Haygood, P.L.A., PhD, Principal Landscape Architect. B.A. Environmental Design, University of California, Berkeley; PhD Clinical Psychology, Center for Psychological Studies. *Contribution:* Visual Impact Assessment author.

ILLINGWORTH & RODKIN, INC.

Manasi Biwalkar, Staff Consultant. M.S. Acoustics, Pennsylvania State University. *Contribution:* Noise measurements for the Noise Study Report.

Micah Black, Staff Consultant. B.A. Geography, Sonoma State University. *Contribution:* Noise Study Report graphics.

Carrie Janello, Senior Acoustics Consultant. B.S. Mechanical Engineering, The Ohio State University; M.S. Mechanical Engineering, The Ohio State University. *Contribution:* Noise measurements for the Noise Study Report.

Dana Lodico, P.E., INCE Bd. Cert., Project Manager. B.S. Civil Engineering, University of Colorado, Boulder; M.S. Architectural Acoustics, Rensselaer Polytechnic Institute. *Contribution:* Noise measurements, traffic noise modeling, and preparation of the Noise Study Report and Noise Abatement Decision Report.

Mimi McNamara, Air Quality and Greenhouse Gas Consultant. B.S. Environmental Science and Management, University of California, Davis. *Contribution:* Noise Study Report preparation.

James Reyff, Senior Project Scientist. B.A. Geoscience (Meteorology), San Francisco State University. *Contribution:* Air Quality Report preparation.

Richard Rodkin, P.E., Senior Consultant. B.S. Mechanical Engineering, University of California, Davis; M.S. Mechanical Engineering (Acoustic), University of California, Berkeley. *Contribution:* Noise measurements for the Noise Study Report.

Michael Thill, Senior Acoustical Consultant. B.S. Environmental Studies, University of California, Santa Barbara. *Contribution:* Noise measurements and quality assurance review for the Noise Study Report.

JRP HISTORICAL CONSULTING, LLC

Christopher McMorris, Principal. M.S. Historic Preservation, Columbia University. *Contribution:* Historic Resources Evaluation Report and Finding of Effect preparation oversight and Historic Property Survey Report preparation.

Toni Webb, Project Manager/Lead Architectural Historian. B.F.A. Historic Preservation, Savannah College of Art & Design. *Contribution:* Conducted field survey and research, prepared the Historic Resources Evaluation Report, and authored the Finding of Effect report.

PACIFIC LEGACY, INC.

Hannah Ballard, Principal Investigator (Historical Archaeology)/Lead Author. B.A. Anthropology (Archaeology), University of California, Berkeley; M.A. Cultural Resource Management, Sonoma State University. *Contribution:* Phase I Archaeological Survey and Extended Phase I Archaeological Investigations reports and contributing author of Historic Property Survey Report.

Lisa Holm, PhD, Senior Archaeologist, Geospatial Analyst. B.A. Anthropology (Archaeology), University of California, Berkeley; M.Sc. Computer Applications in Archaeology, University of Southampton; PhD Anthropology (Archaeology), University of California, Berkeley. *Contribution:* Phase I Archaeological Survey report preparation.

John Holson, Project Manager/Principle Investigator (Prehistoric Archaeology). B.A. Anthropology, San Francisco State University; M.A. Cultural Resource Management, Sonoma State University. *Contribution:* Phase I Archaeological Survey report and Extended Phase I Archaeological Investigations report preparation.

Mary O'Neill, Staff Archaeologist. B.A. Anthropology, University of California, Santa Cruz. *Contribution:* Phase I Archaeological Survey report preparation.

Christopher Peske, Cultural Resources Specialist, Geospatial Analyst. B.A. Anthropology, University of California, Davis. *Contribution:* GIS graphics, Phase I Archaeological Survey report and Extended Phase I Archaeological Investigations report preparation.

Elena Reese, Field Supervisor/Historical Archaeologist. B.A. Ancient History (major), 19th Century English History (minor), University of California, Santa Cruz; M.A. Archaeology, Boston University. *Contribution:* Conducted archaeological survey and Extended Phase I investigations and contributed to the Phase I Archaeological Survey and Extended Phase I Archaeological Investigations reports.

Shanna Streich, Staff Archaeologist. B.A. Humanities, San Francisco State University; M.A. Creative Writing, University of London. *Contribution:* Phase I Archaeological Survey report preparation.

Phillip Ryan Terry, Staff Archaeologist. B.A. Anthropology Archaeology, University of California, Berkeley. *Contribution:* Archaeological technician for Extended Phase I Archeological Investigations report.

PARIKH

Emre Ortakci, P.E., G.E, Project Engineer. B.S. Civil Engineering, Middle Eastern Technical University, Turkey; M.S. Geotechnical and Earthquake Engineering, Northeastern University. *Contribution:* Preliminary Geotechnical Report and Preliminary Foundation Report preparation.

Gary Parikh P.E., G.E., Project Manager. B.S. Civil Engineering, India; M.S. Geotechnical Engineering, University of California, Berkeley. *Contribution:* Initial Site Assessment preparation.

David Wang, PhD, P.E., Senior Project Engineer. B.S. Civil Engineering National Cheng-Kung University, Taiwan; M.S. Geotechnical Engineering, University of California, Berkeley; PhD Geotechnical Engineering, University of California, Berkeley. *Contribution:* Preliminary Geotechnical Report and Preliminary Foundation Report preparation.

PROCURA360 GROUP

George Hunter, P.E., PMP, CVS, Value Analysis Study Team Leader. B.S. Civil Engineering, California State University, Sacramento. *Contribution:* Value Analysis Study Report preparation.

WRECO

James Allen, P.G., Geologist. B.S. Geology, Sonoma State University; M.S. Geology, California State University, San José. *Contribution:* Paleontological Identification/Evaluation Report and Paleontological Mitigation Plan preparation.

Ashley Chan, Associate Environmental Scientist. B.S. Ecology and Evolutionary Biology, University of California, Irvine. *Contribution:* Water Quality Assessment Report preparation.

Andrew Chin, Senior Engineer. B.S. Environmental Engineering, University of California, Riverside. *Contribution:* Water Quality Assessment Report preparation.

Scott Elder, Associate Environmental Scientist. B.S. Environmental Geography, California State Polytechnic University, Pomona. *Contribution:* Aquatic Resources Delineation Report and Natural Environment Study (Minimal Impact)/No Effect Determination preparation.

Jared Elia, Associate Biologist. B.S. Earth Systems Science and Policy, California State University, Monterey Bay. *Contribution:* Aquatic Resources Delineation Report and Natural Environment Study (Minimal Impact)/No Effect Determination preparation.

Sandra Etchell, Senior Biologist. B.A. Biology (Zoology), Sonoma State University; M.S. Environmental Management, University of San Francisco. *Contribution:* Aquatic Resources Delineation Report and Natural Environment Study (Minimal Impact)/No Effect Determination preparation.

Haimet Kassaye, Associate Engineer. B.S. Civil and Environmental Engineering, University of California, Berkeley; M.S. Civil and Environmental Engineering, Georgia Institute of Technology. *Contribution:* Location Hydraulic Study Report and Sea-level Rise Memorandum preparation.

Emily Matthews, Staff Environmental Scientist. B.S. Environmental Science, Saint Mary's College of California. *Contribution:* Aquatic Resources Delineation Report and Natural Environment Study (Minimal Impact)/No Effect Determination preparation.

Analette Ochoa, P.E., QSD/P, ToR. Supervising Engineer. B.S. Civil Engineering, University of California, Davis. *Contribution:* Aquatic Resources Delineation Report, Location Hydraulic Study Report, Natural Environment Study (Minimal Impact)/No Effect Determination, Paleontological Identification/Evaluation Report and Paleontological Mitigation Plan, Sea-level Rise Memorandum, Stormwater Data Report, and Water Quality Assessment Report preparation.

Cuyler Stapelmann, Senior Environmental Scientist. B.S. Conservation and Resources Studies, University of California, Berkeley. *Contribution:* Aquatic Resources Delineation Report, Natural Environment Study (Minimal Impact)/No Effect Determination, and Paleontological Identification/Evaluation Report and Paleontological Mitigation Plan preparation.

Kazuya Tsurushita, P.E., Senior Engineer. B.S. Civil and Environmental Engineering, University of California, Davis. *Contribution:* Location Hydraulic Study Report and Sea-level Rise Memorandum preparation.

Gregory Wattley, Associate Biologist. B.S. Environmental Biology, Utah State University; M.S. Environmental Biology, University of Utah. *Contribution:* Aquatic Resources Delineation Report and Natural Environment Study (Minimal Impact)/No Effect Determination preparation.

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Chapter 6 - Distribution List

The following agencies, organizations, and individuals received printed or electronic copies of this document. Organizations, businesses, and individuals on the project mailing list were notified of the availability of this document and public meetings as described in Chapter 4.

FEDERAL AGENCIES

Richard Bottoms, Regulatory Division Chief **U.S. Army Corps of Engineers - San Francisco District Regulatory Division** 450 Golden Gate San Francisco, CA 94102	Holly Costa, North Branch Chief **U.S. Army Corps of Engineers - Transportation and Special Projects Branch San Francisco District** 1455 Market Street #16 San Francisco, CA 94103
U.S. Fish and Wildlife Service* 2800 Cottage Way Room W-2605 Sacramento, CA 95825	Director, Office of Environmental Policy and Compliance **U.S. Department of the Interior** 1849 C Street, NW (MS 2628-MIB) Washington, D.C. 20240

STATE AGENCIES

Office of Planning and Research State Clearinghouse P.O. Box 3044 Sacramento, CA 95812-3044	Gregg Erickson, Regional Manager **California Department of Fish and Wildlife Bay Delta Region*** 2825 Cordelia Route, Suite 100 Fairfield, CA 94534
David Bunn, Director **California Department of Conservation*** 801 K Street, MS 24-01 Sacramento, CA 95814	Julianne Polanco, State Historic Preservation Officer **Office of Historic Preservation*** 1725 23rd Street, Suite 100 Sacramento, CA 95816
Steve Perea, Commander (370) **California Highway Patrol** 3601 Telegraph Avenue Oakland, CA 94609	Barbara A. Lee, Director **California Department of Toxic Substances Control*** P.O. Box 806 Sacramento, CA 95812-0806
Wade Crowfoot, Secretary **California Natural Resources Agency*** 1416 9th Street, Suite 1311 Sacramento, CA 95814	Alice Stebbins, Executive Director **California Public Utilities Commission San Francisco Office** 505 Van Ness Avenue San Francisco, CA 94102
Richard Corey, Executive Officer **California Air Resources Board** 1001 I Street Sacramento, CA 95814	Christina Snider, Executive Secretary **Native American Heritage Commission*** 1550 Harbor Boulevard, Suite 100 West Sacramento, CA 95691

STATE AGENCIES

Eileen Sobeck, Executive Director **State Water Resources Control Board Water Quality Division*** 1001 I Street Sacramento, CA 95814	Susan Bransen, Executive Director **California Transportation Commission*** 1120 N Street Sacramento, CA 95814
Matthias St. John, Executive Officer **North Coast Regional Water Quality Control Board*** 5550 Skyline Boulevard, Suite A Santa Rosa, CA 95403-1072	**California Native American Heritage Commission** 1550 Harbor Boulevard, Suite 100 West Sacramento, CA 95691

*Agency received document through State Clearinghouse

REGIONAL AND LOCAL AGENCIES

Therese McMillan, Executive Director **Metropolitan Transportation Commission** Bay Area Metro Center 375 Beale Street, Suite 800 San Francisco, CA 94105-2066	Andrew Thomas, Director of Transportation and Planning **City of Alameda** 2263 Santa Clara Avenue, Room 130 Alameda, CA 94501
Jesse Arreguin, President **Association of Bay Area Governments** Bay Area Metro Center 375 Beale Street, Suite 800 San Francisco, CA 94105-2066	Gary Huisingh, Deputy Executive Director of Projects **Alameda County Transportation Commission** 1111 Broadway, Suite 800 Oakland, CA 94607
Lee Huo **San Francisco Bay Trail Project** 375 Beale Street, Suite 700 San Francisco, CA 94105	Ed Manasse, Deputy Director - Planning & Building Department **City of Oakland** 250 Frank H. Ogawa Plaza, Suite 2114 Oakland, CA 94612
Dana Riley, Assistant Director, Parks & Recreation **City of Oakland** 250 Frank H. Ogawa Plaza, Suite 2114 Oakland, CA 94612	Mohamed Alaoui, Principal Civil Engineer **City of Oakland** 250 Frank H. Ogawa Plaza, Suite 2114 Oakland, CA 94612
Brian Carthan, Manager, Park Services **City of Oakland** 250 Frank H. Ogawa Plaza, Suite 2114 Oakland, CA 94612	David Moore, Tree Supervisor II, Public Works **City of Oakland** 250 Frank H. Ogawa Plaza, Suite 2114 Oakland, CA 94612
Lily Soo Hoo, Project Manager, Public Works **City of Oakland** 250 Frank H. Ogawa Plaza, Suite 2114 Oakland, CA 94612	Ben Alaoui, Principal Civil Engineer **City of Oakland** 1 Frank H. Ogawa Plaza, 3rd Floor Oakland, CA 94612

REGIONAL AND LOCAL AGENCIES

Robert E. Doyle, General Manager Brian Holt, Chief of Planning/GIS **East Bay Regional Park District** 2950 Peralta Oak Court P.O. Box 5381 Oakland, CA 94605	Jim Cunradi, Transportation Planning Manager **AC Transit** 1600 Franklin Street Oakland, CA 94612
Hannah Lindelof, Principal Planner **Bay Area Rapid Transit** 300 Lakeside Drive, 21st Floor Oakland, CA 94612	

ELECTED OFFICIALS AND STAFF

Honorable Kamala Harris **United States Senator** 333 Bush Street, Suite 3225 San Francisco, CA 94104	Honorable Dianne Feinstein **United States Senator** One Post Street, Suite 2450 San Francisco, CA 94101
Barbara Lee **U.S. House of Representatives California 13th District** 1301 Clay Street, Suite 1000-N Oakland, CA 94612	Buffy Wicks **California State Assembly 15th District** 1515 Clay Street, Suite 2201 Oakland, CA 94612
Nancy Skinner **California State Senate District 9** 1515 Clay Street, Suite 2202 Oakland, CA 94612	Wilma Chan **District 3 Alameda County Supervisor** 1221 Oak Street, Suite 536 Oakland, CA 94612
Dave Brown **Chief of Staff for District 3 Supervisor Wilma Chan** **Alameda County** 1221 Oak Street, Suite 536 Oakland, CA 94612	Libby Schaaf **Mayor** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612
Shereda Nosakhare **Chief of Staff for the Mayor of Oakland** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612	Rebecca Kaplan **Council President** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612
Dan Kalb **District 1 Councilmember** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612	Nikki Fortunato Bas **District 2 Councilmember** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612

ELECTED OFFICIALS AND STAFF

Lynette Gibson McElhaney **District 3 Councilmember** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612	Sheng Tao **District 4 Councilmember** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612
Noel Gallo **District 5 Councilmember** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612	Loren Taylor **District 6 Councilmember** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612
Larry Reid **District 7 Councilmember** **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612	Zac Wald, Chief of Staff for District 3 Councilmember Lynette Gibson McElhaney **City of Oakland** 1 Frank H. Ogawa Plaza, 2nd Floor Oakland, CA 94612
Marilyn Ezzy Ashcraft **Mayor** **City of Alameda** 2263 Santa Clara Avenue Alameda, CA 94501	John Knox White **Vice Mayor** **City of Alameda** 2263 Santa Clara Avenue Alameda, CA 94501
Jim Oddie **City Councilmember** **City of Alameda** 2263 Santa Clara Avenue Alameda, CA 94501	Tony Daysog **City Councilmember** **City of Alameda** 2263 Santa Clara Avenue Alameda, CA 94501
Malia Vella **City Councilmember** **City of Alameda** 2263 Santa Clara Avenue Alameda, CA 94501	Christian R. Patz **Mayor** **City of Emeryville** 1333 Park Avenue Emeryville, CA 94608
Dianne Martinez **Vice Mayor** **City of Emeryville** 1333 Park Avenue Emeryville, CA 94608	Ally Medina **Councilmember** **City of Emeryville** 1333 Park Avenue Emeryville, CA 94608
Scott Donahue **Councilmember** **City of Emeryville** 1333 Park Avenue Emeryville, CA 94608	John J. Bauters **Councilmember** **City of Emeryville** 1333 Park Avenue Emeryville, CA 94608

COMMUNITY ORGANIZATIONS

Ginger Jui, Executive Director **Bike East Bay** P.O. Box 1736 Oakland, CA 94604	Esther Rivera, Interim Director **California Walks** 1300 Clay Street, Suite 600 Oakland, CA 94612
David Lewis, Executive Director **Save the Bay** 300 Frank H. Ogawa Plaza, Suite 280 Oakland, CA 94612	Aatish Singh, Development Director **TransForm** 560 14th Street, Suite 400 Oakland, CA 94612
Olga Bolotina, Chair **Sierra Club, SF Bay Chapter** 2530 San Pablo Avenue, Suite 1 Berkeley, CA 94702	Luis Amezcua, Generation Senior Campaign Representative **Sierra Club (Northern Alameda County Group)** 2530 San Pablo Avenue, Suite 1 Berkeley, CA 94702
Victoria Fierce **East Bay for Everyone** 2044 Franklin Street Oakland, CA 94612	Bill Fritz, Chairman **8 Orchids Homeowners Association** 423 7th Street Oakland, CA 94607
Rick da Silva, Vice President **Oakland Chinatown Chamber of Commerce** 388 9th Street, Suite 290 Oakland, CA 94607	Vince Sugrue, Chairman **Landmarks Preservation Advisory Board - Oakland City Hall** 1 Frank H. Ogawa Plaza Oakland, CA 94612
Amber Kaur Gill, President **428 Alice Homeowners' Association** 428 Alice Street #621 Oakland, CA 94607	Pat Potter, President **Bike Walk Alameda** P.O. Box 2732 Alameda, CA 94501
Robert Ogilvie, Oakland Director **San Francisco Bay Area Planning and Urban Research Association (SPUR)** 1544 Broadway Oakland, CA 94612	Chris Hwang, President **Walk Oakland Bike Oakland** 1330 Broadway, 3rd Floor Oakland, CA 94612
Tom Debley, President **Oakland Heritage Alliance** 446 17th Street, Suite 301 Oakland, CA 94612	Chris Buckley, Chair **Alameda Architectural Preservation Society** P.O. Box 1677 Alameda, CA 94501
Julia Liou, Chief Deputy of Administration, Development **Asian Health Services c/o Chinatown Coalition** 101 8th Street, Suite 100 Oakland, CA 94607	Alan Yee **Siegel, Yee and Brunner** 475 14th Street, Suite 500 Oakland, CA 94612

COMMUNITY ORGANIZATIONS

Carl Chan, President **Oakland Chinatown Chamber of Commerce c/o Claremont Realty** 388 9th Street, Suite 290 Oakland, CA 94607	Henry Chang gismochang@aol.com No address available
Kevin Johnston 2288 Buena Vista Avenue Livermore, CA 94550	Corinne Jan, Executive Director **Family Bridges, Inc.** 168 11th Street Oakland, CA 94607
Monica Lau **Family Bridges Child Care Center** 301 12th Street Oakland, CA 94607	

BUSINESS GROUPS

Richard Sinkoff, Director of Environmental Programs and Planning **Port of Oakland** 530 Water Street Oakland, CA 94607	Savlan Hauser, Executive Director **Jack London Improvement District** 333 Broadway Oakland, CA 94607
Madlen Saddik, President and CEO **Alameda Chamber of Commerce** 2215-A South Shore Center Alameda, CA 94501	Sandra Wong, Immediate Past President **Oakland Chinatown Chamber of Commerce** 388 9th Street, Suite 290 Oakland, CA 94607
Greg Pasquali, Vice President, Development **Carmel Partners** 1000 Sansome Street, 1st Floor San Francisco, CA 94111	Barbara Leslie, President/CEO **Oakland Metropolitan Chamber of Commerce** 1333 Broadway Plaza Level, Suite 100 Oakland, CA 94612

EDUCATION

Atheria Smith, Director of Facilities Planning and Development **Peralta Community College** 333 East 8th Street Oakland, CA 94606

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Existing view of entrance to the Webster Tube.

Rendering of entrance of proposed improvements to the Webster Tube.

Oakland Alameda Access Project

ALAMEDA COUNTY, CALIFORNIA
DISTRICT 04 – ALA – 880, (PM 30.47/31.61)
DISTRICT 04 – ALA – 260, (PM R0.78/R1.90)
EA 04-0G360/PROJECT ID# 0400000326A
SCH# 2017092041